No.

ENGINEERING DEVELOPMENT BOARD
MINISTRY OF INDUSTRIES AND PRODUCTION
THE ISLAMIC REPUBLIC OF PAKISTAN

PROJECT
FOR
AUTOMOBILE INDUSTRY DEVELOPMENT POLICY
IN
THE ISLAMIC REPUBLIC OF PAKISTAN

MAIN REPORT

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JAPAN INTERNATIONAL COOPERATION AGENCY

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Abbreviations and Acronyms

ABS	Antilock Brake System
ACMA	The Automotive Component Manufacturers Association of India
ADB	Asian Development Bank
AIDC	Auto Industry Development Committee
AIDP	Auto Industry Development Programme
AIIP	Auto Industry Investment Policy
AIP	Automotive Institute of Pakistan
ANS	American National Standards
AT&TC	Automotive Testing & Training Center Ltd
ATT	Afghanistan Transit Trade
BS	British Standards
CAD	Computer Aided Design
CAM	Computer Aided Manufacturing
CBU	Completely Built-Up
CEN	Comité Européen de Normalisation
CENELEC	Comite Europeen de Normalisation Electrotechnique
CKD	Complete Knock Down
CNC	Computer Numerical Control
CNG	Compressed Natural Gas
CoE	Center of Excellence
CPI	Consumer Price Index
DAE	Diploma of Associate Engineer
DIN	Deutsches Institut fur Normung
DOE	Department of Education
DRTA	District Regional Transport Authority
ECC	Economic Cordination Committee
EDB	Engineering Development Board
EMC	Emerging Market Countries
ENERCON	National Energy Conservation Centre
EPZA	Export Processing Zone Authority
FBR	Federal Board of Revenue
GB	Guobiao (Chinese Standard)
GCT	Government College of Technology
GDP	Gross Domestic Product
GST	General Sales Tax
GTDMC	Gujranwala Tools, Dies and Moulds Centre
GTTTC	Government Technical Training College in Faisalabad
HCV	Heavy Commercial Vehicles
HEC	Higher Education Commission
HRD	Human Resource Development
IEC	International Electrotechinical Commission

IMF	International Monetary Fund
ISDP	Industry Specific Deletion Programme
ISO	International Organization for Standardization
ISP	Industry Support Program
JAMA	Japan Automobile Manufacturers Association, Inc.
JAPIA	Japan Auto Parts Industiries Association
JASO	Japan Automotive Standards Organization
JETRO	Japan External Trade Organization
JIS	Japanese Industrial Standards
JV	Joint Venture
KS	Korean Industrial Standards
KTDMC	Karachi Tools, Dies & Moulds Centre
LCV	Light Commercial Vehicles
LTC	Lahore Transport Company
MIRDC	Metal Industry Reserch Development Center
MoC	Ministry of Communication
MoIP	Ministry of Industries and Production
MoST	Ministry of Science and Technology
MVE	Motor Vehicle Examiner
MVR	Motor Vehicle Registration
NAVTEC	National Vocational & Technical Education Comission
NBP	National Bank of Pakistan
NEEDS	National Engineering Exports Development Strategy
NIPDM	National Indsutrial Parks Development and Management Company
NISTE	National Institute of Science and Technical Education
NPL	Non-performing Loans
NPO	National Productivity Organization
NQF	National Qualification Framework
NSC	National Standard Committee
NTB	National Training Bureau
NTRC	National Transport Reserch Center
OEM	Original Equipment Manufacturer
OJT	On the Job Training
PAAPAM	Pakistan Association of Automotive Parts Accessories Manufactures
PACO	Pakistan Automotive Corporation
PAMA	Pakistan Automotive Manufactures Association
PCSIR	Pakistan Council of Science and Industrial Reserch
PDCA	Plan, Do, Check, Action
PIDC	Pakistan Industrial Development Corporations
PITAC	Pakistan Industrial Technical Assistance Centre
PPP	Pakistan People Party
PS	Pakisntan Standard

PSDP	Product Specific Deleition Programme
PSI	Pakistan Standards Institute
PSQCA	Pakistan Standard & Quality Control Authority
PTA	Pakistan Transport Authority
PTA	Preferential Trade Agreement
PVTC	Punjab Vocational Training Centre
QC	Quality Control
QCD	Quality, Cost, Delivery
R&D	Research and Development
S.T	Sales Tax
SAFTA	South Asian Free Trade Area
SBP	State Bank of Pakistan
SKD	Semi Knock Down
SMEDA	Small And Medium Enterprise Development Authority
SNI	Indonesian National Standard
SRO	Statutory Regulatory Order
STEVTA	Sindh Technical Education and Vocational Training Authority
TAI	Thailand Automotive Institute
TASS	Technology Acquisition Support Scheme
TBS	Tarif Based System
TDAP	Trade Development Authority of Pakistan
TEVTA	Technical Education and Vocational Training Authority
TOT	Training of Trainers
TRIMs	Trade Related Investment Measures
TUSDEC	Technology Upgration and Skill Development Company
UN/ECE	United Nations Economic Commission for Europe
VAT	Value Added Tax
VTCs	Vocational Training Centers
WP29	World Forum for Harmonization of Vehicle Regulations
WPI	Wholesale Price Index
WTO	World Trade Organization

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Introduction

Introduction

The Project is entitled "Project for Automotive Industry Development Policy in Pakistan" and is carried out, as development planning study type technical cooperation, by Japan International Cooperation Agency (JICA), at the request of the Government of Pakistan. Pursuant to the Scope of Work agreed between JICA and the Engineering Development Board (EDB), the Ministry of Industries, Production and Special Initiatives (MOIP) in September 2009, JICA commissioned implementation of the Project to a study team organized by UNICO International Corporation. The Project was then started in April 2010. To this date, four field surveys have been conducted. This report compiles the results of these surveys as the Final Report (F/R), covering key issues relating to the Pakistan automotive industry, its development policies and programs, systems, and institutions, and proposing action plans for the development of the automotive industry.

1 Project Outline

1.1 Background of the Project

The Pakistan government, in "Vision 2030" which was formulated in 2007, sets a goal of achieving per capita GDP of US$4,000 by 2030. For this purpose, further industrial development is considered to be critical. In particular, the automotive industry is expected to play an important role in driving the development process, for it has broad upstream and downstream linkages and its development has significant ripple effects on the rest of the economy. At the same time, the industry has to overcome a variety of issues that impede its healthy growth, against the backdrop of the recent economic crisis.

The Pakistan government formulated the Auto Industry Development Program (AIDP) in 2007 to accelerate the industry's growth. Due to the lack of budget backing, however, AIDP is virtually inactive. Furthermore, considerable environment changes have taken place after the announcement of AIDP and create the need for reconsideration and revision. In particular, healthy development of the automotive industry should be promoted by clearly defining quality and safety standards for automotive products and strengthening policy implementation capability toward the goal of meeting such standards. Then, policy priorities and action plans on the basis of AIDP should be established by taking into account the actual market and industry conditions, followed by their effective application and implementation.

In this recognition, a six member delegation including representatives of MOIP, PAMA, PAAPAM, EDB and TSUDEC has visited Japan in 2009 to learn a lesson and measures from

Japanese automotive industry development. The delegation had meeting with Ministry of Economy, Trade and Industry (METI), Ministry of Land, Infrastructure and transport (MLIT), Japan Automobile Manufactures Association (JAMA), Japan Automobile Research Institute (JARI), Japan Automobile Standards Center (JASIC) and major local assemblers.

On return, the Pakistan government made a formal request to the Japanese government for technical cooperation in relation to the development of the automotive industry. In response, JICA decided implementation of the Project and signed the Scope of Work in September 2009. The Project has been carried out for approximately nine months.

1.2 Objectives and Expected Results

(1) Objectives of the Project

The objectives of the Project are to review the implementation status of Auto Industry Development Program (AIDP) in relation to the current state of the country's automotive industry and market, to propose measures to promote the progress of the AIDP and provide necessary cooperation, and thereby to ensure that policies and programs targeting the development of the automotive industry are implemented for further development of the Pakistan industry in terms of value added as well as the improvement of its international competitiveness. At the same time, as part of promotion of the AIDP, the Project will include cooperation in the establishment of quality and safety standards for automotive related products as well as capacity building for government organizations to provide effective technical assistance.

(2) Scope of the Project

In order to achieve the above-mentioned objectives, the Project covered the following TOR;

TOR-1 Development of major automobile industry standards

1-1 To review existing standards and regulations of quality and safety relating to automobile products.

1-2 To assess the current status of standards adoption and regulatory enforcement in the automobile market and industry.

1-3 To study international standards on automobile quality and safety that may be applied to Pakistan.

1-4 To formulate a mid-term strategy and short-term prioritized action plans to develop automobile industry standards.

1-5 To draft (or revise) prioritized automobile industry standards.

1-6 To formulate action plans to ensure the adoption of the prioritized automobile industry standards by both the market and the industry.

TOR-2 Dissemination of automobile technologies and techniques

2-1 To conduct seminars and workshops with automobile industry players to discuss strategy and action plans for technological/technical improvement based on customer need.

2-2 To assist EDB to form and activate a dedicated team for technology/technical dissemination to automobile industry players.

2-3 To make recommendations to promote technology transfer of components and parts for local manufacturing.

TOR-3 Review of AIDP

3-1 To review AIDP and assess its progress.

3-2 To assess the market need and requirements for automobiles and auto parts/components to identify prioritized action areas in implementing AIDP.

3-3 To make recommendations for the AIDP in the light of latest developments.

3-4 To formulate complementary programs and projects to enhance the outcomes of AIDP.

3-5 To provide other advice and support for EDB and other organizations involved for the implementation of AIDP.

3-6 To study and recommend how to integrate domestic vendor industry in to the global supply chain.

3-7 To explore and recommend strategy for making Pakistan a Hub for the production of selected types of autos.

3-8 To make recommendations for promoting export of autos.

(3) Overall goal

To develop an environment to develop high value added, manufacturing industries in Pakistan with international competitiveness.

(4) Project goal

To formulate policies and programs and action plans for improvement of products and technological capability of the Pakistani Automotive industry, followed by promotion of their effective implementation.

(5) Expected benefits

1) Major standards relating to quality and safety of automotive products are established.

2) EDB improves the ability to provide effective technical assistance for the automotive

industry.

3) Implementation of the AIDP is promoted and driven.

Notably, EDB holds, among the above benefits, the highest expectation for 1) Major standards relating to quality and safety of automotive products are established. As a result, the study team emphasizes the development of quality and safety standards in the course of the field survey, although the scope of study remains unchanged.

2 Subsequent Schedule

The Project has been implemented since April 2010 for the total period of nine months. It is comprised of the following three phases, each of which consists of the following activities.

First phase: baseline survey

(Late March – mid July 2010)

(1) Preparatory work in Japan, including collection and compilation of relevant information, and preparation and submission of the inception report (IC/R)
(2) Establishment of a field survey organization and its support system in Pakistan, selection of a local contractor to conduct field survey activities, including the issuance of instruction and guidance, and implementation of the baseline survey
(3) Field surveys relating to quality and safety standards for the automotive industry (conducted by the local contractor and the study team until the second phase)
(4) Customer needs surveys on the automotive market to be conducted by the local contractor (until the second phase)
(5) Research and study on international standards relating to automotive quality and safety
(6) Study on the current state of technical assistance projects targeting the automotive industry
(7) Review of the AIDP's progress

Second phase: Current state analysis and identification of issues

(Late July – late September 2010)

(1) Field surveys relating to quality and safety standards for the automotive industry, as continued from the first phase, and compilation and analysis of survey results
(2) Customer needs surveys on the automotive market, as continued from the first phase, and compilation and analysis of survey results
(3) Development of draft standards relating to automotive products, and identification of issues
(4) Planning and holding of seminars on technology improvement for private companies
(5) Discussion and confirmation of issues and direction relating to development

(6) Preparation and submission of the interim report (IT/R)
(7) Discussion on the establishment of an organization, within EDB, specialized in technical guidance for private companies
(8) Study on feasibility of the industry's integration into an international supply chain

Third phase: Development of policy packages and proposals
(Early October – mid January 2011)
(1) Development of draft standards relating to priority products
(2) Development and discussion on proposals for promotion of technology transfer to the automotive parts industry
(3) Development and discussion on proposals relating to AIDP's implementation and supplemental programs
(4) Development of proposals relating to the strategy to build a production base for specific automotive products
(5) Development of proposals relating to promotion of automotive product exports
(6) Formulation of medium- and long-term action plans and short-term priority action plans
(7) Preparation of, and presentation and discussion on the draft final report (DF/R)
(8) Preparation of the final report (F/R) on the basis of DF/R and its submission

3 Organization of This Report

This final report is organized as follows.

Introduction
Chapter 1 General Outline of Proposals and Recommendations
Chapter 2 National Economy and Automotive Industry
Chapter 3 Current State of the Pakistani Automotive Industry and Major Issues
Chapter 4 Government's Industrial Policy and Development Support System
Chapter 5 International Standards for Quality and Safety of Automotive Products
Chapter 6 Proposals and Recommendations for Development of the Pakistani Automotive Industry and Action Plans
Appendix I User Survey Results
Appendix II Questionnaires

4 Stakeholder Consultation

While the JICA Study Team conducted meetings and workshops for stakeholder consultation in the Study, the analysis and recommendations in the Final Report reflect mostly the view of the JICA Study Team and do not necessarily represent full consensus with EDB and other stakeholders."

Chapter 1: General Outline of Proposals and Recommendations

Chapter 1　General Outline of Proposals and Recommendations

This chapter presents main points of the report as an executive summary, by chapter, and lists the proposals and recommendations made in Chapter 6.

1　National Economy and Automotive Industry (Chapter 2)

(1) The Pakistan economy in the past two decades has shown good performance until 2007 with more than 5% annual growth (as average) which was bit lower than that of Asian new rising countries.

(2) Macroeconomic conditions are still in a severe state.　Due to the flood damage in July 2010, the GDP growth rate in 2010/11 is expected to fall from late 4% to the 2% level.

(3) Foreign trade deficits are a persistent problem for the Pakistan economy.　To reduce them, expansion of industrial goods exports (which account for only 4.3% of the total in 2009) holds the key.

(4) The manufacturing sector's GDP share is still low at 18.5%, albeit steady growth in recent years.　For further growth, the sector needs to boost investment and exports.

(5) The largest manufacturing sector is textile and garment, accounting for 35.2% of total industrial output.　On the other hand, the automobile industry represents only 5.3% of the total.

(6) Nevertheless, the automobile industry is linked to a wide range of industries and is highly expected as a growth industry with export potential.

2　Current State of the Pakistani Automotive Industry and Major Issues (Chapter 3)

(1) In Pakistan, there are over 100 companies that assemble motor vehicles (including passenger cars, buses, trucks, motorcycles, rickshaws, and tractors).　On the other hand, there are around 1,700 automotive parts manufacturers, including sole enterprises.

(2) OEM assemblers are led by Japanese companies, while parts manufacturers are mainly local capital companies.

(3) The country's assembly capacity in 2009/10 was around 270,000 passenger cars (140,000 units sold. That means the capacity utilization rate is almost half), 1,870,000 motorcycles (1,300,000 units sold), and 70,000 tractors (70,000 units sold).　In the same year, 6,500 used cars were imported.　The market size is still small and it is a fundamental problem for development of the automobile industry.

(4) The ownership rate in 2007 was 8 passenger cars per 1,000 population and 22 motorcycles, below India and China (although growth potential is high).

(5) Approximately 70% of passenger cars sold in Pakistan are medium-sized cars (1,000cc or larger), whereas more than 80% of sales in India are small cars (less than 1,000cc).

(6) Generally, the automotive parts industry has weakness in terms of production system and technology due to the lack of a competitive mechanism caused by localization requirements. It is also not structured well (lacking the tiered supplier base). Furthermore, there is a slow pace of foreign investment in the parts industry, in comparison to Thailand and India.

(7) With small exceptions, most parts manufacturers are not well modernized in terms of management and cannot meet the request by OEM assemblers in terms of production volume or quality, i.e., incapable of satisfying QCD requirements.

(8) The largest number of parts manufacturers is engaged in production of sheet metal parts, which account for the largest number of quality problems claimed by OEM assemblers too. The major problem lies still in low level of technology for dies and molds (related technologies such as heat treatment and jig are insufficient.).

(9) Machining parts are largely affected by machine tools, because modernization equipment is not made due to a small scale of production.

(10) Prior to the development of quality standards, production methods and other essential activities need to be standardized.

(11) The key element of public support programs is to ensure technology transfer and input of knowledge and information to local parts manufacturers.

(12) 70 % of users agreed to more strict inspection system on the other hand many users put highest priority on price at selection in purchase according to Users Survey.

3 Industry Development Policies and Organizations (Chapter 4)

(1) The Pakistan government's policy for development of the automotive industry is characterized by the lack of consistency, i.e., drastic changes from nationalization to privatization and from localization to tariff control.

(2) Government policy to permit used car imports missed own initial aim that is to fulfill growing domestic demand. The current situation, however, brings an unintended impediment to the local industry development, where domestic production capacity exceeds market demand.

(3) Auto Industry Development Program (AIDP) sets production targets for 500,000 passenger cars and 1.7 million motorcycles in its final year (2011/12) by combination of Tariff and Non-tariff Programs. The Non-tariff Program declares development support for the following six themes.

1) Human Resource Development
2) Productive Asset Investment Incentive
3) Technology Acquisition Support Scheme
4) Auto Cluster Development
5) Auto Industry Investment Policy
6) Auto Industry Development Committee

However, programs undertaken under the Non-tariff Program have made little progress.

(4) The Tariff Program has not led to stimulate growth of the local parts industry and has produced insufficient results (half measures).
(5) Clear definition of the responsible minister/agency in relation to the development of the automotive industry, together with the reinforcement of EDB's organization is called for.
(6) New tools, dies and moulds centers newly established in Karachi and Gujranwala serve two functions (human resource development and trial production of dies and molds) and receive high expectation from the automotive industry because of high demand for sheet metal processing.
(7) According to vender survey, 54 companies among 115 use testing facilities outside including AT & TC. While there are higher needs for AT&TC's parts testing function, they do not correspondent to them due to limited testing capability. AT&TC is in difficult condition in terms of finance and management and needs restructuring.
(8) PSQCA does not have an adequate vehicle inspection system and is not accepted by the industry as a credible organization to conduct PS mark examination.

4 Quality and Safety Standards for Automotive Products (Chapter 5)

(1) Common understanding about standards (e.g., industrial and safety) should be developed among related parties in Pakistan. At present, there are standards and laws but they cannot be properly applied or enforced.
(2) There are urgent needs for safety and environmental considerations relating to the increasingly motorized society in Pakistan, (e.g., presence of 20 years or older cars on road, illegally remodeled and/or overloaded buses and trucks, poor quality fuels, and poorly maintained vehicles etc.).
(3) PSQCA does not have an adequate system to conduct conformity test for motorcycles and rickshaws.
(4) The vehicle examination system must be conducted by each provincial government, but it does not function well due to the lack of equipment and human resource.

(5) There are strong needs for the legal vehicle examination system, but expansion of its coverage (other than commercial vehicles) is questioned.

(6) The government should seriously consider possibility of participating in WP29 of UN/ECE.

5 Proposals and Recommendations for Development of the Pakistani Automotive Industry and Action Plans (Chapter 6)

The JICA Study Team proposes the following strategies and action plans in this report.

(1) Overall goal

To establish Pakistan as a major automobile producing country in Southwest Asia, thereby contributing to job creation and income growth for people, and development of the national economy.

(2) Strategic framework

- Strengthening of international competitiveness of the automotive industry in the country
- Enhancement of human resource development and equipment modernization for the automotive industry
- Reinforcement of EDB's organization and smooth implementation of AIDP
- Action for conformance to automobile safety and environmental standards and the development of the inspection and monitoring system for it

(3) Recommendations relating to policy coordination and implementation by the Pakistan government (as the precondition of implementation of action plans)

1) Establishment of EDB's positioning within the government as the leading agency for development of the automotive industry
2) Banning of used car imports
3) Establishment of the strategic tariff policy for automotive parts
4) Concerted efforts to explore export markets for automobiles and automotive parts
5) Development of the supplier base for industrial materials and securing of stable electricity supply

(4) Action plans

Action plans are generally structured as follows (cf. Figure 1-1 and P1-7).

Some of the proposed action plans such as establishment of the EDB Automotive Wing or strengthening of PAAPAM are part of internal organizational and also sensitive matter for those institutions. The Report, however, includes those action plans as proposals by the JICA Study Team and those are formed a part of prerequisite development for developing of the automotive industry.

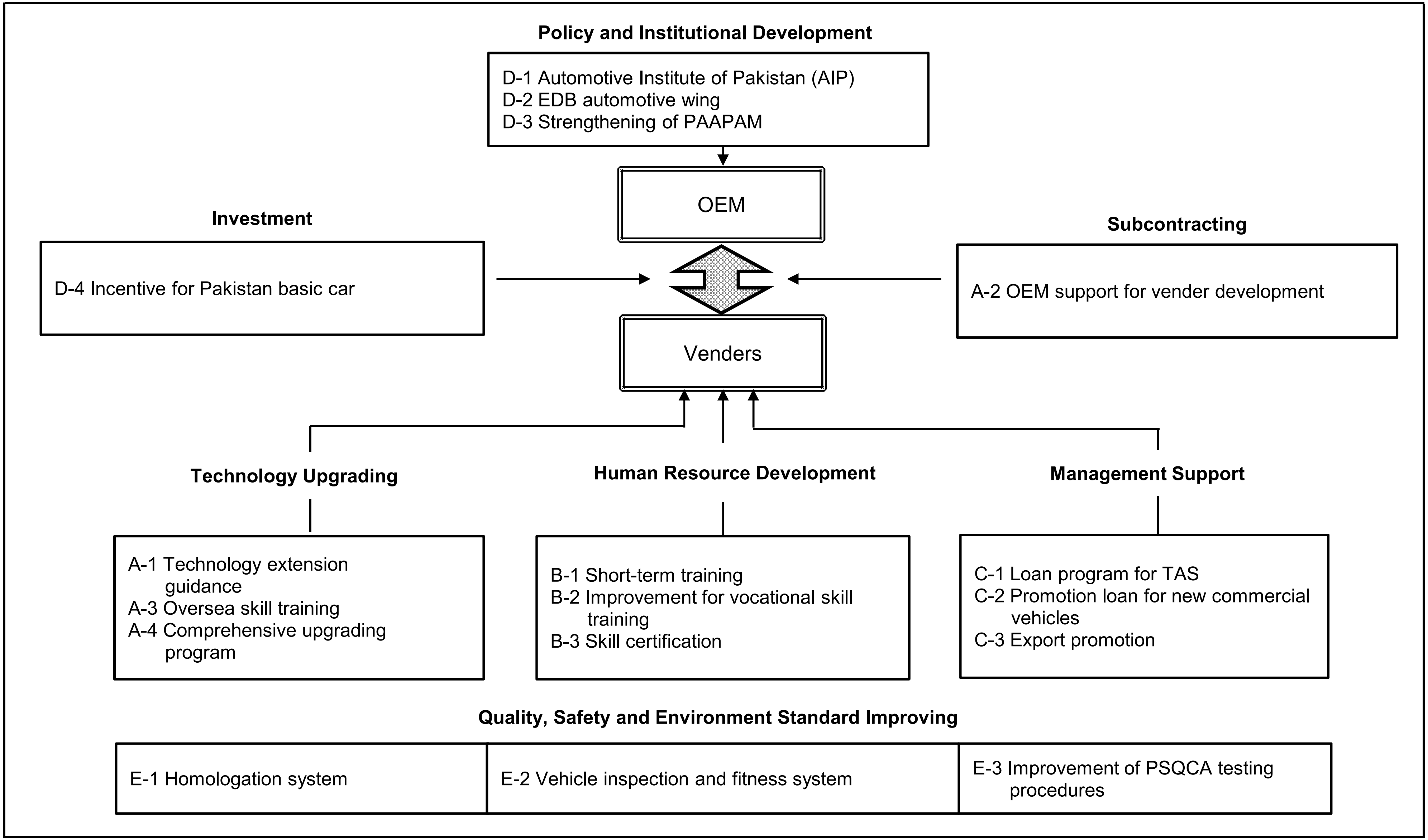

Figure 1-1 Action Plans for Pakistan Automotive Industry Development

A. Technological Upgrading Support
   A-1 Technology Extension Guidance Program
   A-2 OEM Support Program for Vender Development
   A-3 Oversea Skill Training Program
   A-4 Comprehensive Technology Upgrading Program

B. Human Resource Development Support
   B-1 Short-Term Training Program by Japanese Technical Exports
   B-2 Improvement Program for Vocational Skill Training
   B-3 Preparation for the Establishment of the Skill Certification System

C. Management Support
   C-1 New Financial Loan Program for Technology Acquisition Support
   C-2 Promotion Loan Program for Replacement of Commercial Vehicles
   C-3 Export Promotion of Automobiles and Automotive Parts

D. Support for Development of Policies, Programs and Systems
   D-1 Pakistan Automotive Institute (PAI) Establishment Project
   D-2 Establishment of the EDB Automotive Wing
   D-3 Project for Strengthening of PAAPAM Organization
   D-4 Incentive for Pakistan Basic Car

E. Improvement of Quality, Safety and Environment Control Standards
   E-1 Development of the Automotive Homologation System in Pakistan
   E-2 Vehicle Inspection System and Facilities Development Project
   E-3 Improvement Project for Testing Procedure of PSQCA

(5) Roadmap for Development of the Pakistani Automotive Industry

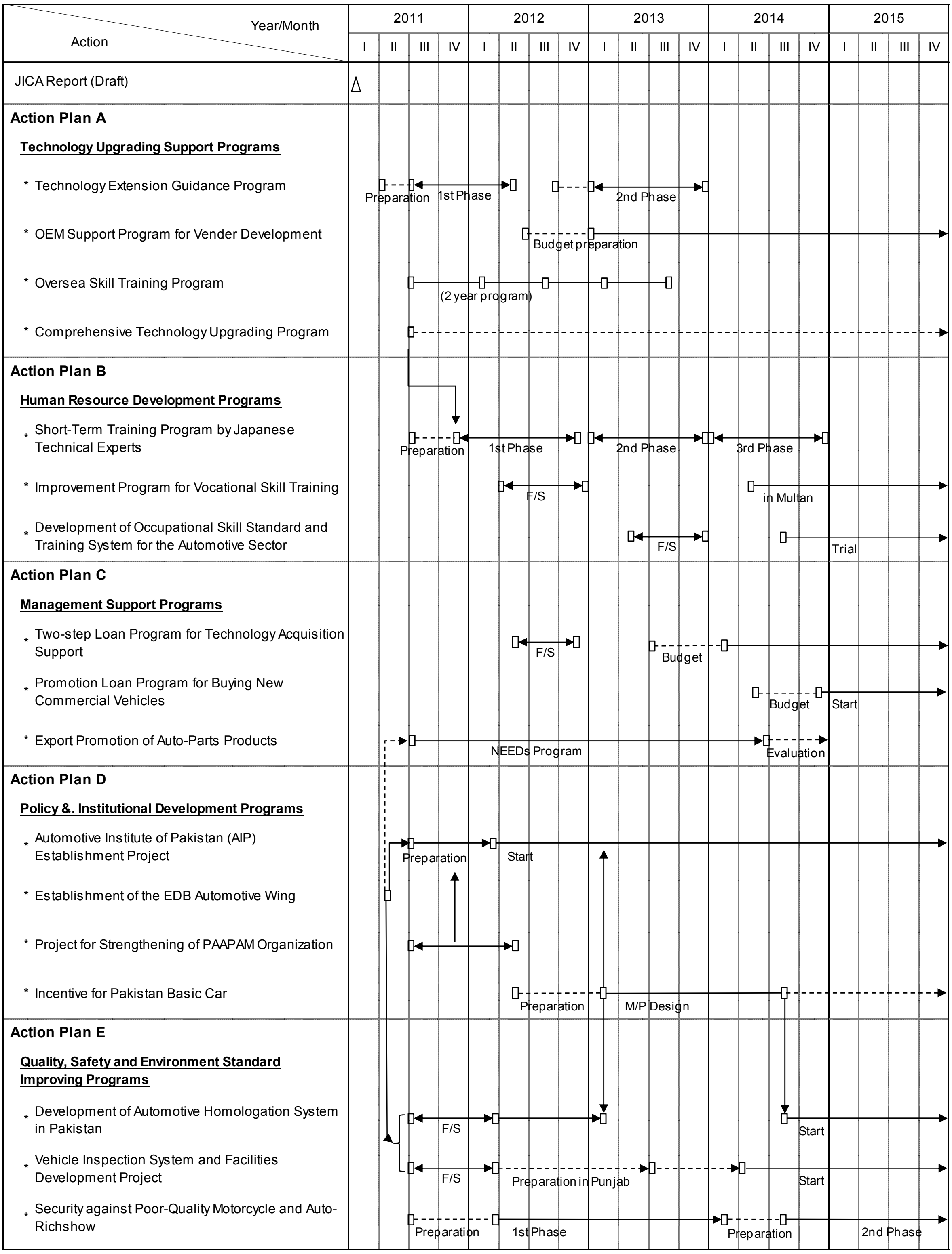

Figure 1-2 Action Plan Schedule

Chapter 2: National Economy and Automotive Industry

Chapter 2 National Economy and Automotive Industry

2.1 Economic Trends of Pakistan

2.1.1 General economic conditions and trends

The Islamic Republic of Pakistan has population of over 170 million and borders India on the east, China on the northeast, Afghanistan on the northwest, and Iran on the west. Recently, the country's economy is adversely affected, including investment and trade, due to geopolitical situation followed by earthquakes and floods. Furthermore, the deluge of the Indus in August 2010 has produced 18 million sufferers and has wreaked havoc on the country's major economic base by damaging farmlands cultivating rice, maize, sugarcane, and vegetables.

The Pakistani economic conditions have deteriorated significantly from a combined effect of the oil price hike in 2007, the global financial recession in 2009 and the worsening of the domestic investment climate,. To combat the worsening of international balance of payments, the IMF decided to provide a US$7.6 billion loan in November 2008. The government is currently making economic reforms under the IMF's guidance (an additional US$3.2 billion loan was decided in August 2009, followed by emergency support for flood damages of US$450 million in September 2010). However, there are still a number of factors for impeding economic recovery, including the aftermath of the natural disaster.

According to major economic indicators (Table 2-1), the Pakistani economy seems to have bottomed out in 2007/08, followed by general upturns in 2008/09 and 2009/10. Nevertheless, the economic growth rate is much lower than India (7.0% in 2008), Indonesia and Vietnam (6% levels). The uptrend in the recent two years, such as reduction of deficits in international balance of payments (due to the increase in foreign remittance and the decline in crude oil prices) and the increase in foreign currency reserves to the US$17 billion level, has been damped by the severe flood, inevitably resulting in a temporary setback. While the GDP growth rate of 4.7% was originally forecasted, the IMF's forecast announced after the flood is 2.75% or lower. Also, the flood damage to the agricultural sector creates concern about a substantial rise in the inflation rate, as led by food prices. As foreign direct investment and tourism are expected to continue stagnating, unfavorable macroeconomic conditions, including dwindling growth, high inflation, deteriorating balance of payment, and large fiscal deficit will likely prevail.

Table 2-1　Major Economic Indices of Pakistan

	2005/06	2006/07	2007/08	2008/09	2009/10
Real GDP growth rate (market price, %)	6.2	5.7	1.6	3.6	4.4
GDP (nominal, US$ billion.)	127.3	143.0	164.5	162.0	174.8
Population（million）	155.37	158.17	160.97	163.76	166.52
Per capita GDP（US$）	836	921	1,038	1,018	1,095
Increase rate of CPI (%, year average)	7.92	7,77	21.53	13.13	12.69
Exports (US$ mill.) fob	16,553	17,278	20,427	19,121	19,636
Imports (US$ mill.) fob	28,994	26,989	35,397	31,747	31,013
Trade balance (US$ mill.)	-8,441	-9,711	-14,970	-12,627	-11,423
Remittance from overseas (US$ mill.)	4,600	5,494	6,451	7,811	8,906
Current balance (US$ mill.)	-6,750	-8,286	-15,663	-9,261	-3,495
Growth rate of domestic private fixed capital investment (real, %)	22.2	8.8	9.3	-11.1	15.1
Foreign direct investment (US$ mill.)	3,521	5,140	5,410	3,720	2,209
Foreign reserves（US$ mill. end of the fiscal year）	14,354	18,890	13,436	13,971	17,513
Exchange rate (Rs./ US$, fiscal year average)	59.86	60.63	62.55	78.50	83.56

Sources: National Bureau of Statistics, “National Account”, State Bank of Pakistan, “Statistical Bulletin Sep 2010”, and Ministry of Finance, “Economic Survey 2009-10”

One of the major macroeconomic problems is the high inflation rate. As seen in Table 2-2, SBP raised the policy rate to 13.5% in quick succession in August and September 2010. As discussed above, however, an outlook is not bright in consideration of the rise in vegetable prices as a result of the flood damage and the hikes in electricity and gas charges. Meanwhile, the depreciation of the rupee continues after the rapid decline in 2008/09, down 34% in the past two years, and causes major impacts on domestic industries (especially, automobile and other subsectors with a high import ratio).

Table 2-2 The Policy Rate by SBP

Year	Month	Policy Rate (%)
2006	July	9.5
2007	August	10.0
2008	February	10.5
	May	12.0
	July	13.0
	November	15.0
2009	April	14.0
	August	13.0
	November	12.5
2010	August	13.0
	September	13.5

Source: State Bank of Pakistan, "Statistical Bulletin Sep. 2010"

2.1.2 International trade and investment trends

2.1.2.1 International trade

(1) Exports and imports by commodity

As shown in Table 2-3, Pakistan's trade balance is consistently in deficit even before 2007. In 2009/10, the trade deficit amounted to US$11,381 million, as a result of exports totaling US$19,632 million versus imports of US$31,130 million. Although exports of textile and agricultural products are leveling off, imports of key commodities, including crude oil and fertilize, cause the increase in trade deficits. Basically, the country's major export items are low priced textile, agricultural products, and processed food, whereas imports are led by industrial products such as electrical products, transportation and other equipment, agricultural chemicals, fertilizers and metal, as well as crude oil and petroleum products. It is a major challenge for the country, therefore, to change the trade structure in a favorable direction, i.e., to boost exports by the engineering sector, which shows around US$800 million. In the recent few years, current balance improves somewhat because of steady growth of remittance as of 45.5% of export by overseas workers in the Middle East (such as the UAE and Saudi Arabia), Europe, and the U.S. Nevertheless, additional efforts are required to decrease trade deficits significantly.

Table 2-3 Foreign Trade

(Unit: US$ million)

		2007-08	2008-09	2009-10
Exports	Food group	2,588	2,796	3,289
	Textile group	10,354	9,776	10,177
	Petroleum group & coal	1,330	983	1,183
	Other manufacturing group	3,399	3,510	3,522
	(Engineering goods)	(800)	(800)	(800)
	All other items	2,755	2,055	1,461
	Total	20,426	19,120	19,632
Imports	Food group	3,526	3,586	3,079
	Machinery group	5,749	4,922	4,132
	Transport group	1.199	981	1,408
	(Road vehicles)	(931)	(639)	(834)
	Petroleum group	10,496	10,031	10,463
	Textile group	1,820	1,354	1,550
	Agriculture & other chemical group	5,111	4,847	5,283
	Metal group	2,314	2,041	2,027
	Others	742	613	646
	All other items	3,128	2,832	2,595
	Total	35,397	31,747	31,013

Source: State Bank of Pakistan

(2) Exports and imports by market

While exports to the country's traditional markets, i.e., the U.S. and Europe, decrease slightly or level off recently, those to China and Afghanistan are on the rise. EU and the U.S. are considering applying preferential tariffs in response to the flood disaster in July-August 2010, exports to these countries are expected to grow for a while.

As for imports, crude oil from the Middle East continues to account for major portions, while food and machinery imports increase from China, Singapore, Malaysia and India, while those from Japan and Germany are on the decline.

Pakistan formed SAFTA (South Asian Trade Area) of seven countries with Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka in January 2004, which aims to eliminate tariffs on trade within the region. As for the trade relationship with India, tariff rates were mutually lowered in 2005, but its effect has still to be seen as hampered by the disputes relating to Kashmir and water resources. Yet, India is the ninth largest trade partner in imports.

Table 2-4 10 Largest Countries in Foreign Trade

(Unit: US$ million)

		2007-08	2008-09	2009-10
Exports	1 USA	3,740	3,540	3,558
	2 UAE	1,722	1,398	1,475
	3 China	674	660	1,209
	4 Afghanistan	1,031	975	1,204
	5 UK	1,071	963	1,123
	6 Germany	826	802	830
	7 Italy	679	624	607
	8 Hong Kong	697	508	550
	9 Turkey	455	434	471
	10 Spain	518	438	422
	(SAFTA)			
	Bangladesh	318	404	449
	India	262	313	259
	Sri Lanka	205	226	287
Imports	1 UAE	5,129	4,399	4,781
	2 Saudi Arabia	3,609	3,544	3,644
	3 China	3,029	2,708	3,283
	4 Singapore	1,694	1,570	2,124
	5 Kuwait	2,439	2,244	2,111
	6 Japan	1,473	1,068	1,138
	7 Malaysia	1,269	1,294	1,270
	8 Germany	1,322	1,072	1,075
	9 India	1,442	1,032	1,061
	10 Iran	381	506	1,017
	(SAFTA)			
	Bangladesh	66	70	70
	India	1,442	1,032	1,061
	Sri Lanka	61	60	49

Source: State Bank of Pakistan

2.1.2.2 Investment

(1) Domestic investment

Private investment in Pakistan recorded strong growth of annual 40.5% in 2005/06 but declined in 2009/10. In the manufacturing sector, large corporations cut back investment in the three consecutive years since 2007/08, reflecting sluggish sales caused by demand weakening. Yet, the manufacturing sector accounts for the largest share of private investment, except for the 2007 – 2009 period, during which it was surpassed by the transportation and communication sector. On the other hand, investment by the agriculture sector is around one half that by the manufacturing sector, while it is twice as much as that by the mining sector. Investment by the electricity and gas sector is very small because it is taken care of by government investment.

Private investment as percentage share of GDP is fairly high in the range between 24% and 26%, far below emerging economics that boast more than 30%. Clearly, the further increase in private investment is critical in accelerating growth of the national economy.

Table 2-5 Domestic Private Fixed Investment

	2005-06	2006-07	2007-08	2008-09	2009-10
Private investment total (current prices, Rs mill.)	1,197,740	1,335,847	1,539,647	1,620,982	1,564,427
Investment rate (private investment total, %)	40.5	11.5	15.3	5.3	-3.5
(Manufacturing, %)	30.8	8.1	4.6	2.3	-4.9
(Large companies, %)	31.7	7	-0.7	-7.4	-4.9
(SMEs, %)	27.7	12.7	24.4	30.6	10.7
GDP components (private total, %)	23.1	24.3	27.7	28.1	26.0
Agriculture	2.8	2.7	2.6	3.0	3.2
Mining	0.6	0.9	1.1	1.6	1.6
Manufacturing	6.2	6.3	6.5	6.4	5.9
Large companies	4.9	5.0	4.9	4.3	3.6
SMEs	1.3	1.4	1.6	2.1	2.2
Construction	0.4	0.4	0.3	0.5	0.4
Electric & Gas	0.6	0.5	0.6	0.5	0.4
Transport & Communication	6.0	5.9	6.7	6.2	5.1
Wholesale & Retail	0.6	0.7	0.8	0.9	0.9
Banks & Insurance	0.7	1.4	2.6	1.4	0.8
Private dwelling	2.8	2.9	3.0	3.8	3.8
Services	2.3	2.4	3.1	3.7	3.8

Source: National Account, "National Bureau of Statistics"

(2) Foreign direct investment

As shown in Table 2-6, foreign direct investment in the country grew relatively steadily up to 2007/08 but dropped sharply due to the global recession, down to 40% of the 2006/07 level in 2009/10. Major investing countries are the UK and the U.S. (mainly in the communication and oil and gas sectors), followed by the UAE and other Middle East countries. The recent decline appears to reflect the decline in the country's economic performance, political instability, persistent terrorisms, and deficient infrastructure. In particular, the deterioration of public security appears to discourage foreign investors.

Foreign direct investment in the country, including the capital market, is generally characterized as follows.

1) While the UK and the U.S. continue to act as principal players, investment from the Netherlands and Switzerland grows steadily but that from Japan and Germany is hovering low.
2) Among developing countries, oil producing countries made substantial investment, which fell sharply in 2008/09 and afterwards, except for the UAE. In Southeast Asia, Hong Kong, Malaysia and Singapore continue investment, while China and Korea do not show much interest. In Africa, Mauritius is actively investing in Pakistan.

Japan's investment was previously concentrated in the textile industry and later in the automobile sector, but it represents a relatively small share in comparison to other countries. To encourage Japanese investment, the Pakistan government has established a special economic zone for Japanese companies (JSEZ), but there are few prospects, such as a project considered by a motorcycle manufacturer.

Table 2-6 Foreign Direct Investment
(Direct investment + Security investment)

(Unit: US$ million)

	2005-06	2006-07	2007-08	2008-09	2009-10
Developed Countries	1,737	4,701	2,912	1,324	2,042
Europe	831	2,779	964	638	887
Netherland	120	778	146	47	279
U.K.	224	1,820	335	185	298
Switzerland	182	47	71	202	187
Germany	25	85	69	77	53
North America	825	1,777	1,762	430	962
U.S.A.	820	1,766	1,748	427	961
Japan and Australia	79	134	137	156	100
Australia	31	65	-3	87	62
Japan	48	68	141	68	38
Others	1	10	13	2	1
Developing Countries	1,996	1,831	2,155	1,360	252
Carib	2	43	-1	61	85
Africa	88	98	416	364	-56
Mauritius	83	90	362	351	-60
Asia	1,900	1,686	1,722	730	253
*West Asia	1,803	856	885	218	83
Kuwait	21	82	64	28	-68
Bahrain	1	-62	32	27	-68
Saudi Arabia	278	105	44	-89	-133
UAE	1,487	677	593	228	246
*East and South Asia	97	829	836	512	169
China	1	712	13	-101	-3
Hong Kong	55	-40	94	158	29
South Korea	1	1	2	-1	5
Malaysia	3	-5	656	211	15
Singapore	5	139	44	242	124
Others	5	3	17	204	-30
Others	138	427	361	524	498
Total	3,872	6,959	5,429	3,209	2,793

Source: State Bank of Pakistan, "Statistical Bulletin"

2.1.3 Government budget and banking system

(1) Government budget

Pakistan has constitutionally a decentralized government system. Local governments have relatively strong power and authority, e.g., provincial governments have a departmental organization and power similar to the federal government. The federal government is relatively small, with each ministry staffed by around 100 persons, although it has a large number of organizations attached thereto.

Taxes are mainly collected by the federal government (Federal Board of Revenue: FBR), which transfers around one third of the total tax revenue to provincial governments. In addition, provincial governments impose and collect their own taxes. FBR sets its annual tax collection target, but actual revenue remains unchanged at around 8% of GDP, which is considered to be a very low level by international standard. The IMF requests the Pakistan government to improve its taxation system. Meanwhile, government expenditure continues to increase without adequate control partly because of public security problems, although the government's investment project (ADP) has been cut significantly. As a result, government finance is in chronic deficits at the federal and local levels and is considered to be in a critical condition. In particular, the federal government covers deficits by domestic bonds (three years or longer), together with sizable loans from the central bank. As of the end of June 2010, total debts are equivalent to 565% of GDP. The government has decided to introduce the general sales tax (GST) – a revised version of VAT - instead of sales tax, on November 1.

As seen in Table 2-7, the government's latest fiscal plan announced in July 2010 envisages low growth of revenue while increases transfer to local governments. Under the IMF's guidance, government investment is maintained at the same level as the previous year. As foreign aids are expected to decrease in 2010/11 according to the "Federal Budget 2010/2011" by MoF, the fiscal crisis will likely persist. The government predicts that inflation will subside and the economic growth rate will rise. Foreign aids relating to relief activities for the flood damages and Afghanistan will likely increase, but political and economic unrests will persist, as led by public security issues.

Table 2-7 National Budgets in Pakistan

(Unit: Rs. bil.)

	2009-10 Budget	2009-10 Revised budget	2010-11 Budget	2011-12p (estimation)	2012-13p (estimation)
I Total receipt	2,298	2,496	2,597		
1. Federal receipt	1,786	1,916	2,175		
Current revenue	2,007	2,051	2,410		
Tax	1,493	1,483	1,778		
Non tax	513	568	632		
Income from capital	362	443	666		
Federal revenue by provincial Gov.	72	77	166		
Federal transfer to provincial Gov.	△ 655	△ 655	△ 1,033		
2. Receipt from overseas	510	578	386		
II Total expenditure	2,462	2,585	2,764		
1. Current expenditure	1,698	2,017	1,997		
2. Capital expenditure	803	628	786		
3. Cash shortage	40	60	20		
III Balance (Bank's credit)	△ 144	△ 89	△ 166		
Economic estimation by the Gov.					
Real GDP growth rate		4.1	4.5	5.0	5.5
Inflation		12.0	9.5	8.0	7.0
Budget deficit /GDP		△ 5.0	△ 4.0	△ 3.7	△ 3.2

Note: Federal transfer to provincial government is calculated by each item in current revenue by province.

Source: Ministry of Finance, "Federal Budget 2010-2011"

(2) Banking system

Money supply (M2) ran fairly high at 19.3% in June 2007, contributing to inflation, but it was reduced to 12.5% in June 2010 under the IMF's guidance.

In Pakistan, there are 8 government banks, 25 commercial banks, 7 foreign banks, 8 development banks established jointly with foreign governments, 29 microfinance organizations, and 23 non banks. Deposit interest rates are in the range between 7% - 8%, depending on the period. On the other hand, loan rates are high at 16-18%, prohibiting long-term borrowing even if inflation is taken into consideration. In response to the increase in non-performing loans (NPL), the commercial banks are diverting loans from the private sector to the government sector.

Commercial loans to private enterprises are on the rise, and the manufacturing sector's share is stable at the 40% level, reflecting the lending policy of commercial banks in Pakistan, i.e., they attach importance to collateral and manufacturers can offer machinery in security, in addition to land and buildings. Industrial loans mainly go to the textile industry, while the automobile industry accounts for a meager 0.6%. In addition to the manufacturing sector, the commerce sector accounts for 11% of total loans, the electricity sector 8%, the construction sector 8%, the real estate sector 5%, the agriculture sector 4%, and the mining sector 1%. The agriculture sector receives small portions in comparison to its large output because it can obtain special loans (8% interest rate and 5 years) from ZTBL (Zari Taraqiati Bank Limited: ZTBL, government agricultural bank) for the purchase of tractors and other purposes, thereby reducing the need for commercial loan. Industrial Development Bank of Pakistan (IDBP), established in 1961 under equity participation of the central and local governments and SBP, and used funds provided by the World Bank and ADB, but discontinued new loans in 2004 under the cabinet decision on privatization in 2003. Now it is engaged in collection of outstanding loans. There are six development banks jointly established by the Pakistani government and the Middle East countries (not collecting deposits). They extend medium- and long-term loans but interest rates are high at KIBOR (Karachi Interbank offered rate, six months) + 1-4%, i.e., 12-16%. Personal loans account for 18% of the total loan because businesses are reluctant to borrow bank loans, which are thus diverted to wealthy persons. The NPL rate is maintained fairly low at 3.81% for commercial banks, whereas it is three times as high (10%) for government banks.

Government debts have been increasingly steadily, reaching Rs. 8,602 billion in June 2010 (domestic debts totaling Rs. 3,860 billion and foreign debts Rs. 4,742 billion (US$55.6 billion (at the exchange rate of Rs. 85.2844/USUS$1)). The debt/GDP ratio is 58.6%, which is the fourth highest among emerging market countries (EMCs) next to India, Hungary and Brazil, far above the EMC average of 40%. Debt service is equivalent to 4.4% of GDP and 45.7% of current revenue in federal government budget. As a result, the government is required to do refinancing and issue bonds each year.

Table 2-8 Monetary Indicators (end of the fiscal year)

	Jun. 2006	Jun. 2007	Jun. 2008	Jun. 2009	Jun. 2010
Money supply (M2, Rs. mill.)	3,406,905	4,065,155	4,689,143	5,137,218	5,777,231
Increase ratio of money supply (%)	15.1	19.3	15.3	9.6	12.5
Volume of currency (Rs. mill.)	722,723	803,839	1,325,371	1,629,991	1,934,553
Credit to Gov. (All the banks, Rs. mill.)	833,686	926,531	1,510,322	2,034,305	2,440,941
Credit to private (All the banks, Rs. mill.)	2,113,889	2,479,608	2,888,035	2,906,897	3,019,822
Increase ratio of credit to private (%)	23.5	17.3	16.5	0.7	3.9
Credit to manufacturing (city bank, Rs. mill.)	865,087	954,641	I,177,764	1,186,757	….
Credit to automobile (city bank, Rs. mill.)	15,557	14,766	14,079	18,413	….
Deposit rate (All the banks, 1-2 year weighted average, %)	5.26	6.75	7.33	8.52	….
Public local debt (Rs. bill.)	2,337	2,610	3,274	3,860	4,652
Public foreign debt (US$ bill.)	37.2	40.3	46.2	52.0	55.6

Source: Finance Division: Economic Survey 2009-10: Statistical Bulletin: State Bank of Pakistan

2.1.4 Provincial economies

At the time of independence, Pakistan consisted of two provinces, East Pakistan and West Pakistan. Then, when East Pakistan gained independence and became Bangladesh, West Pakistan chose a federal system consisting of four provinces. Each provincial government is led by Chief Minister, and together with the provincial assembly, stands face to face with the federal government.

As seen in Table 2-9, Punjab is the largest province by accounting for 54.6% of population and 59.1% of employment. It has a well developed irrigation system using canals constructed under the British rule and thus boasts high crop production. The province is far ahead of other three provinces in terms of population share, namely Sindh 22.8%, Kyber-Pakhtunhwa 13.4%, and Baluchistan 5.1%. Similarly, Punjab dominates in the number of manufacturing establishments and the value of production, representing 55.9% and 45.2% respectively. On the other hand, Sindh accounts for 28.4% and 40.9%, Kyber-Pakhtunhwa 10.5% and 8%, and Baluchistan 3.3% and 4.7%, respectively. On the other hand, Sindh's industrial production competes closely with that in Punjab. Female workforce is fairly small, accounting for 31.0% of population, because women in Pakistan do not generally work, except for farming. Finally, the unemployment rate is relatively low throughout the country, but it is much higher in urban areas.

Provincial governments earn around 30% of revenues from their own tax base, and the remaining 70% comes from transfer from the federal government. However, they almost always face budget constraint. Under the 18th constitutional amendment, however, decentralization to local governments has expanded and the 2010/11 budget cuts allocation to the federal government and increases transfer payment by 60%. As the amendment adopted by the parliament is now left to the Supreme Court's decision on constitutionality, 27 budget items to be transferred to local government will be cleared in the course of time.

Table 2-9 Provincial Economy in Pakistan

		Nation	Punjab	Sindh	Khyber Pakhtunkhwa	Baluchistan		
Population & employment	Population (million, 2010.9)	173.5	94.7	41.3	23.3	8.8		
	Labor force (million, 2008-09)	53.7	31.8	13.2	6.5	2.2		
	Regions	37.3	22.6	7.5	5.5	1.7		
	Cities	16.4	9.2	5.7	1.1	0.5		
	Employees (million, 2008-09)	50.8	30.0	12.7	6.0	2.2		
	Regions	35.5	21.4	7.4	5.0	1.7		
	Cities	15.3	8.5	5.4	0.9	0.5		
	Working population (%, 2008-09)	45.7	47.2	45.8	40.2	41.8		
	Regions	49.2	50.5	54.6	41.0	43.8		
	Cities	39.3	40.8	37.8	36.5	36.1		
	Unemployment rate (%, 2008-09)	5.5	5.9	3.3	8.5	2.9		
	Regions	4.7	5.1	1.9	8.0	2.4		
	Cities	7.1	7.9	5.3	11.2	4.7		
	Manufacturing, no. of companies (2005-06)	6,417	3,590	1,825	673	212		
	Manufacturing, Value added production (2005-06, Rs. mill.)	912,147	411,990	373,429	72,983	42,682		
Budget	National budget & allocation to provinces (Rs. billion)						4 Provincial Gov. total	Federal Gov.
	2009-10, Budget	2,007	334	194	85	41	655	1,351
	2009-10, Revised	2,051	331	199	83	41	655	1,396
	2010-11, Budget	2,411	494	279	160	99	1,033	1,377

Source: Federal Bureau of Statistics, "Labor Force Survey 2008-09", Finance Division, "Federal Budget"

2.2 Industrial Structure and Automotive Industry

2.2.1 Industrial structure and manufacturing sector

The country's industrial structure, as measured by GDP composition in 2009/10, is dominated by the service sector, which accounts for 53.3% of the total, and the agriculture and fishery sector 21.5%, with a combined total of 74.8% (Table 2-10). On the other hand, the manufacturing sector, which is expected to play a primary role in economic development, holds only 18.5% share. Furthermore, the industrial production index fell by 8.1% in 2008/09, due to the global recession and the decrease in foreign direct investment (Table 2-11). As Pakistan is traditionally an agricultural country, the past decade saw a steady rise in the manufacturing sector's GDP share from 14.7% in 1999/2000 to 18.5% in 2009/10. As a major shift of the country's economic base from the primary sector to the secondary sector, and the tertiary sector, is an essential factor for ensuring sustainable economic development, the reinvigoration of the industrial sector, together with reinvestment, is therefore considered as a major issue to be addressed if the Pakistani economy is to develop further.

Table 2-10 GDP Components (2009/10)

(Unit: %)

Agriculture, forestry, fishery	21.5	Construction	2.3
Mining	2.4	Electricity, gas, water	2.0
Manufacturing	18.5	Service	53.3

Source: National Bureau of Statistics, "National Account"

Table 2-11 Growth Rate of Manufacturing Production Index

(Unit: %)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Growth rate of manufacturing index	18.51	18.10	9.18	8.75	4.05	-8.08	4.71

Source: National Bureau of Statistics：Quantum Index of Manufacturing,

Within the manufacturing sector, the automobile industry is positioned as midsize but one of the fastest growing industries (according to 2009/10 data). Table 2-12 shows production by key subsectors as share of total industrial output in 2009/10. While the textile and apparel industry holds the largest share of 35.2%, the automobile industry's share is limited to 5.3%. Nevertheless, it shows the high growth in 2009/2010, 44.1% for passenger cars and CLV, 19.0 for tractor, 50.5% For motor cycle etc. under the 4.71% of manufacturing average and it is expected to become a major industrial sector, including exports, on account of its broad expansion of supportive industries as seen in any country.

Table 2-12 Component Ratio of Value Added in Manufacturing (2009-10)

Groups	Ratio (%)
Textile & Apparel	35.16
Food, Beverage & Tobacco	19.11
Petroleum Group	6.96
Pharmaceutical	6.69
Non-Metallic Minerals Products	5.58
Automobile	5.27
Fertilizers	4.50
Chemicals	3.84
Electronic	3.31
Leather Products	3.02
Paper & Paper Board	0.79
Engineering Products	0.59
Tyres & Tubes	0.40
All Manufacturing Group	100.00

Source: Ministry of Finance：Pakistan Economic Survey 2009-10

2.2.2 Positioning of the automotive industry in the national economy

A general trend in the automotive industry can be traced from Census of Industry that is conducted every five years. According to the 2005/06 census (leakage of unregistered companies), parts manufacturers constitute the largest group. In the assemblers, motorcycle occupies domain and 4 wheels were less than 20 even including tractor. In terms of production value, passenger cars accounted for a dominant share, followed by motorcycles, parts for four wheeled vehicles, and tractors. Employment was relatively small. The entire industry has around 26,000 workers, which are divided into 12,000 at car assembly plants (including tractors), 9,000 at parts manufacturers, and 5,000 at motorcycle plants in 2005. These plants are concentrated in Punjab and Sindh Provinces. There are some in Baluchistan, suburbs of Karachi, but none in Kyber-Pakhtunhwa.

However EDB estimates that now, assemblers are 82 companies (6 cars & LCV companies, 5 bus & truck, 2 tractors and 9 motorcycle joins PAMA, but 60 companies outsides PAMA), and part makers are 1,700-2,000 among them 500 are the members of PAAPAM, and the total employees will be 192 thousand in manufacturing, and 1.392 million including indirect sectors of 12,500 car dealers. There are much difference between Census data and EDB's information, however, JICA Study Team supposes that the data which was officially announced by EDB indicate real situation of the industry.

Table 2-13　Number of Factories by Province, Value Added, Employees in Automobile Production

	No. of firms	Production	Employment	No. of firms by province			
		Value added (Rs. mil.)	No. of employees	Punjab	Sindh	Khyber Pakhtunkhwa	Baluchistan
Motor vehicles	12	135,453	5,589	7	4	-	1
Passenger cars and jeeps	6	135,453	4,413	3	2	-	1
Motor vehicles for more than 10 persons & tracks	6	13,386	1,176	4	2	-	-
Bodies and trailers	5	419	350	3	2	-	-
Bodies for motor vehicles, trailers & semi-trailers	-	-	-	-	-	-	-
Reconditioning of motor vehicles	5	419	350	3	2	-	-
Parts and accessories	123	23,137	9,072	51	61	-	11
Parts of engines	9	2,108	1,262	-	9	-	-
Other parts for motor vehicles & Safety seat belt & assembly of parts	86	17,373	6,132	51	24	-	11
Assembly of parts	18	3,487	1,497	-	18	-	-
MR of motor vehicles	10	172	181	-	10	-	-
Motor cycles	34	33,476	5,425	24	8	-	2
Motor cycles and three wheelers	17	32,444	4,507	8	7	-	2
Other motor cycles & parts	17	1,031	918	16	1	-	-
Agriculture tractor	9	19,159	877	2	6	-	1

Source: Federal Bureau of Statistics, "Census of Manufacturing Industries 2005-2006"

Chapter 3: Current State of the Pakistani Automotive Industry and Major Issues

Chapter 3 Current State of the Pakistani Automotive Industry and Major Issues

3.1 Current State of Automakers in Pakistan and Major Issues

3.1.1 Development history of the Pakistani automotive industry

Pakistan's automotive industry has one of the oldest histories in Asian countries. Following the independence from British India, semi-knockdown (SKD) production of trucks (Bedford) was started in 1949 by General Motors, marking the beginning of the industry's history. However, it is far from pursuing a steady growth path and undergoes a lackluster period to this date. As a result, it has been overtaken by emerging Asian countries, such as Thailand, China and India, and its positioning in the global market is being questioned. Before analyzing the current state of the Pakistani automotive industry, this section briefly reviews its history from the beginning to this date.

The industry's development history can be roughly divided into the following four phases: 1) nascent period (1949 – 1971); 2) nationalization period (1972 – 1982); 3) partnership with the private sector (1983 – 1990); and 4) post privatization (1991 to present). Each phase is briefly described as follows.

(1) Nascent period (1949 – 1971)

In 1949, National Motors Limited was established as the first automaker in 1950, under equity participation of General Motor Corporation. It built an assembly plant in Lahore and started SKD production of passenger cars and Bedford trucks. In the 1960s, Rover and Massey Ferguson Tractors launched CKD production of jeeps and tractors, respectively. Production of automotive parts began concurrently, but the majority of manufacturers were family-operated small enterprises having primitive levels of technology. As a result, the automakers imported most parts and components, whereas local production was limited to large-size parts not suitable for import as well as those not relating to vehicle performance, such as passenger seats. Local content in the 1960s is estimated at around 20%. At the time, British Ford and Vauxhall were produced as passenger cars.

(2) Nationalization period (1972 – 1982)

In 1972, nationalization of all industries was announced, including the automotive industry, which was reorganized and integrated under Pakistan Automotive Corporation (PACO). Automotive parts manufacturers were also nationalized. PACO produced pick-up truck of

Suzuki and Toyota (Hi-Ace), truck of Mazda, van of Ford by Knock Down style in small scale. . Meanwhile, production of two wheelers was started by PACO in cooperation with Suzuki. Similarly, Honda and Yamaha embarked on CKD production in the 1970s.

Localization of automotive parts progressed steadily by PACO and state enterprises under the MOI, ranging from cast products such as cylinder blocks for trucks and tractors to gears.

(3) Partnership with the private sector (1983 – 1990)

In 1980, PACO started to invite private enterprises to participate a joint project aiming to foster the local automotive industry by authorizing private companies to start automobile production in exchange for the accomplishment of the75% local content in five years.

In 1982, the project received the first application by Suzuki Motor, which led to the establishment of PAC Suzuki Motor by PACO and Suzuki (which contributed 12.5%) in 1983. The joint venture exclusively manufactured passenger cars, pickups, vans, and jeeps[1] at four PACO assembly plants, totaling around 45,000 units annually. Then, new plant was built in Bin Qasim area in 1990. It marked the start of modern automobile production as Suzuki's all types of vehicles were made in the integrated production process from steel plates to final assembly. Under the project, Honda, Toyota and Daihatsu started local assembly of passenger cars, and Hino started manufacturing of buses and trucks. Further, Daihatsu's small cars were produced by Indus Motors, and Nissan Diesel and Isuzu's trucks were produced by local companies.

The joint project between PACO and the automakers benefited local automotive parts suppliers most. At that time, the automotive parts industry was dominated by small enterprises with no experience in supplying their products to automakers. The government's decision to mandate 75% local content urged automakers to look for local sourcing. They provided technical assistance for local parts manufacturers, regardless of their experience, in order to ensure product quality and stable supply. They also paid the same prices as imported parts. These efforts caused the number of automotive parts suppliers to increase substantially. However, as it did not take place under the truly competitive environment, quality of locally produced parts did not follow. And it was widely practiced by automakers to repair delivered parts within their own assembly plants.

(4) Post privatization (1991 – present)

Then the turning point came in 1991, when many state enterprises under PACO were privatized, and the automobile industry entered a new phase. As a result of privatization, the following companies emerged.

[1] All the vehicles were equipped with a standard 800cc engine.

1) Pak Suzuki Motor Company Limited

In 1992, Suzuki acquired the majority of Pak Suzuki's shares. Then, it extended a new assembly plant having integrated production lines (capable of handling presswork, welding, coating, and assembly). The plant added press line slater. Further, bumpers and instrument panels are produced in plastic molding machines and painting lines within their own plant. Besides, eight factories of part manufactures are located in the surrounding area.

2) Indus Motor Company Limited

In 1993, Toyota Motor Corporation established a joint venture, Indus Motor Company Limited, with Toyota Tsusho Corporation and Habib Group, with equity contribution of 40% by Habib Group, 12.5% by Toyota Motor[2], and 12.5% by Toyota Tsusho. Indus Motor also constructed a plant in Bin Qasim and has commenced production of Corolla mainly, as well as Hi-Lux and Daihatsu Cuore.

3) Honda Atlas Cars Pakistan Limited

In 1992, Honda Atlas Cars Pakistan Limited was established as a joint venture of Honda Motor Company Limited and local Atlas Group, and commercial operation started in 1994. It manufactures the City and Civic models at a newly built plant in the suburbs of Lahore.

4) Atlas Honda Limited (two wheelers)

Honda established Atlas Honda Ltd. with Atlas Group, with equity contribution of 49% by Honda and 51% by Atlas. The joint venture built assembly plants in Karachi and in the suburbs of Lahore, and has started production of 70cc, 100ccand 125cc vehicles.

5) Other companies

Other leading automakers in Pakistan are Ghandhara Nissan Limited (GNL) and Dewan Farooq Motors Limited.

GNL has an assembly plant in the suburbs of Karachi, although Nissan Motor and Nissan Diesel make no equity contribution and provide technical assistance only.

Dewan Farooq Motors Limited was jointly established by Hyundai Motor (Korea) and Kia Motors (Korea) and Dewan Farooq Group (local). Hyundai and Kia provide technical assistance for Dewan Farooq Motors without equity participation.

[2] At present, Toyota Motor's equity has increased to 25%.

Pakistan's automotive industry is characterized by full-line production including buses, trucks, rickshaws, and tractors, although it serves a relatively small market. Nevertheless, it has not been always developing smoothly. Despite a long history of operation, the industry has not increased the purchase of locally made automotive parts and is regarded as a collection of labor-intensive assembly shops, rather than modern production plants. On the other hand, assembly manufacturers are making efforts to procure from local suppliers forced by Deletion Program, but the local supplier base needs to be reinforced significantly if global quality standards are to be satisfied.

In fact, most of local suppliers have not reached international levels because of problems relating to technology, quality control, and production capacity, although some strive to meet demand by Japanese automakers and a handful of them are capable of exporting their products to the international market. Also, most of them can only supply a single part or component, rather than a complex assembly. As a result, local suppliers have still to form a three-tier structure typical of the automotive industry. Rather, most of them are simply divided into OEM vendors and aftermarket parts suppliers.

Table 3.1-1 lists major events relating to the development of the Pakistani automobile industry.

Table 3.1-1 Key Historical Events Relating to Development of the Pakistani Automobile Industry

1947	Independence of Pakistan	Nascent period
1949	Establishment of National Motors Limited ・The first automobile manufacturer in the country ・Start of commercial production of passenger cars and Bedford trucks ・Emergence of automotive parts manufacturers	
1950s	Start of jeep production by ROVER Start of tractor production by Massey Ferguson Tractors	
1960s	Local content of automotive parts reaching at the 20% level	
1972	Nationalization of all industries and establishment of PACO	Nationalization period
1970s	Start of two wheeler production by Suzuki, Honda and Yamaha Decline of the automobile industry (discontinuation of production other than tractors)	
1980	Partial modification of nationalization policy ・Start of solicitation for joint project with private companies	
1983	Establishment of Pak Suzuki Motors as part of the joint project with PACO	Partnership with the private sector
1980s	Invigoration of joint projects between PACO and private enterprises ・Start of joint ventures with Honda and Toyota (passenger cars) ・Start of joint ventures with Hino (trucks) Development of the automotive parts industry	
1987	Launching of Deletion Program	
1991	Privatization of state enterprises	Post privatization
1992	・Privatization of Pak Suzuki ・Establishment of Honda Atlas Cars	
1993	・Establishment of Indus Motor	
1994	・Establishment of PAMA	
2007	Launching of Tariff Base System ・Negative impacts on the local parts industry	
2008	Announcement of AIDP	

Source: JICA Study Team

3.1.2 Current State of Automakers in Pakistan and Major Issues

As of August 2010, over 100 manufacturers are estimated to be engaged in production of motor vehicles (including passenger cars, buses, trucks, two wheelers, rickshaws, and tractors) in the country. The study team has classified these manufacturers according to the vehicle type, as follows.

1) Four wheeler manufacturers: 10-12
2) Two wheeler manufacturers: 90-100
3) Rickshaw manufacturers: 40-50
4) Tractor manufacturers: 5-7
   Total: 145 – 169 companies

On the other hand, the country's total production (assembly) capacity is estimated from the present survey results, as follows.

1) Four wheelers: 284,000 units
2) Two wheelers: 25,000,000 units
3) Tractors: 82,000 units

Of these manufacturers, 20 major automakers are members of Pakistan Automotive Manufacturers Association (PAMA), as listed in Table 3.1-2.

Table 3.1-2 List of the Members of PAMA

	Name of Companies	Location (City)	Type of Vehicles
1	Pak Suzuki Motor Company Ltd.	Karachi	LCVs*, Passenger Cars
2	Indus Motor Company Ltd.	Karachi	LCVs*, Passenger Cars
3	Honda Atlas Cars (Pakistan) Ltd.	Lahore	LCVs*, Passenger Cars
4	Dewan Farooq Motor Ltd.	Karachi	-
5	Sigma Motor (Pvt) Ltd.	Islamabad	Trucks & Buses
6	Hinopak Motors Ltd.	Karachi	Trucks & Buses
7	Ghandhara Nissan Ltd.	Karachi	Passenger Cars
8	Sind Engineering Ltd.	Karachi	-
9	Ghandhara Industries Ltd.	Karachi	Truck & Buses
10	Master Motor Corporation Ltd.	Karachi	Truck & Buses
11	Millat Tractors Ltd.	Shahdara, Lahore	Tractors
12	Dewan Automotive Engineering Ltd.	Karachi	-
13	DYL Motorcycle Ltd.	Karachi	Two Wheelers
14	Atlas Honda Ltd.	Karachi	Two Wheelers
15	Pakistan Cycle Industrial Cooperative Society Ltd.	Lahore	Two Wheelers
16	Plum Qingqi Motors Ltd.	Lahore	Two & Three Wheelers
17	Fateh Motors Ltd.	Karachi	Two Wheelers

	Name of Companies	Location (City)	Type of Vehicles
18	HKF Engineering Pvt. Ltd.	Lahore-	Two and Three Wheelers
19	Ravi Automobile Pvt. Ltd	Lahore	Two Wheelers
20	Sazgar Engineering Works Ltd.	Lahore	Two and Three Wheelers

Note: LCV means Cars and Light Commercial Vehicles

(1) Current state of passenger car manufacturers

There are ten automakers manufacturing passenger cars, trucks, buses, and jeeps, which are PAMA members. In addition, there are a few automakers that do not join PAMA. As production of these companies is fairly small, the ten PAMA member companies hold a combined share of 99.9%.

Of the ten automakers, five companies make passenger cars: 1) Pak Suzuki; 2) Indus Motor; 3) Honda Atlas; 4) Dewan Farooq; and 5) Ghandala Nissan. As Dewan Farooq has suspended commercial production, there are four passenger car manufacturers in operation. As there is no passenger car manufacturer that does not belong to PAMA, the passenger car market in the country is dominated by three Japanese automakers (Suzuki, Toyota (Indus Motors), and Honda (Honda Atlas), which boasts a combined share of 99.5%.

(2) Truck and bus manufacturers

Five companies are registered with PAMA as truck and bus manufacturers: 1) Signma Motors; 2) Hinopak Motors; 3) Sind Engineering; 4) Ghandhara Industries; and 5) Master Motor Corporation. However, Sind Engineering does not operate at present and four companies are engaged in commercial production. Among them, Master Motor has started as an automotive parts supplier serving Pak Suzuki and Indus Motor, and is now assembling trucks by using parts and components imported from China.

In addition, two non PAMA member companies, Afzal Motors and Bibojee Services, manufacture trucks. However, their production is fairly small, 100 – 150 units in total. Thus, the four PAMA member companies make most of trucks and buses in the country. Of total, three Japanese manufacturers (Hino (Hino Pak), Nissan (Ghandhara Industries), and Isuzu (Ghandhara Industries)) enjoy a dominant position, accounting for a combined share of 80% in the truck market and 74% in the bus market.

(3) Current state of two wheeler manufacturers

Eight companies are registered with PAMA as two wheeler manufacturers: 1) DYL Motorcycle Ltd; 2) Atlas Honda Ltd; 3) Pakistan Cycle Industrial Cooperative Society Ltd; 4) Plum Qingqi Motors Ltd; 5) Fateh Motors Ltd; 6) HKF Engineering Pvt. Ltd; 7) Sazgar Engineering Works Ltd; and 8) Ravi Automobile Pvt.

In addition to the PAMA member companies, there are a large number of Chinese manufacturers as well as local manufacturers[3]. Adding all the non-PAMA members, a total of more than 60 manufacturers are operating in the country.

Japanese manufacturers (Atlas Honda and Pak Suzuki) are losing market share in recent years, from 80% in 1999/2000 to 46% in 2009/2010.

The industry's total production capacity is estimated at 1,870,000 units, and there is still a substantial potential market as judged from the country's present economic conditions.

(4) Current state of rickshaw manufacturers

Three companies are PAMA members as rickshaw manufacturers: 1) Plum Qingqi Motors Ltd; 2) HKF Engineering Pvt. Ltd; and 3) Sazgar Engineering Works Ltd. As seen in the two wheeler industry, however, there are around small or medium-sized manufacturers. No Japanese company makes rickshaws.

(5) Current state of tractor manufacturers

Two companies, Millat Tractors and Al-Ghazi, are registered with PAMA as tractor manufacturers. In addition, there are non-member manufacturers, such as Hero Motors and Universal Tractors, which are relatively small in size. Thus, the two manufacturers are virtually monopolizing the country.

In the tractor market, FY2009/2010 recorded a historical high of 71,000 units and Millat Tractors and Al-Ghazi continue production near capacity.

3.1.3 Number of Vehicles on Road

The National Traffic Research Center (NTRC) announces annually the number of vehicles on road, which represents the total number of motor vehicles used in the country.

This data is obtained by adding the number of vehicles for which the road tax is paid and the number of vehicles sold and imported in the same year. It is considered to be most reliable among other data. Note that the number of vehicles on road includes passenger cars, two wheelers, rickshaws, buses, trucks, and tractors.

[3] Many of them are small or medium-sized enterprises, with annual production ranging between 200-300 and 2,000-3,000 units.

The total number of vehicles on road has been increasing steadily from 2.1 million in 1991/92, to 5 million in 2001/02 (2.5 times in ten years) and 9.4 million in 2008/2009, up 450% (Table 3.1-3). At present, it is getting close to 10 million. Note that the figures cover all the vehicle types and do not cover passenger cars only.

A general trend in each vehicle type is analyzed below. Note that the number of units shown below represents the accumulated total. (The number of vehicles out of service is subtracted on an estimation basis.)

Table 3.1-3 Number of Vehicles on Road

(Unit: '000)

	1991/1992	2001/2002	2003/2004	2006/2007	2007/2008	2008/2009	2009/2010
Motorbike	972	2,481	2,883	4,464	5,037	5,368	5,470
Passenger Car	429	1,040	1,193	1,682	1,853	2,029	2,076
Van	61	117	121	149	164	167	172*
Pick-Up	30	78	84	105	115	126	131*
Jeep	32	43	48	85	83	79	85*
Stn. Wagon	44	123	132	169	163	156	163*
Buses	45	97	100	108	110	111	120
Trucks	76	145	149	173	178	182	196
Rickshaw	42	81	81	79	89	88	97
Tractors	275	631	723	878	901	912	1,010
Others**	89	181	197	172	186	196	249
Total	2,096	5,017	5,711	8,064	8,879	9,413	9,768

*: Estimation, **: 'Others' include number of taxis, ambulances, and tankers.

Source: National Transport Research Center, "Number of Vehicles on Road"

(1) Passenger cars

In 2009/10, there are around 2,070,000 passenger cars in the country, in comparison to 430,000 units in 1991/92, which is equivalent to only three vehicles per 1,000 populations[4].

The general trend after 1991/92 indicates that growth slowed down throughout the 1990s and an annual average rate of increase was limited to around 60,000 units. Then in 2000, the market turned to rapid growth. During the seven-year period between 2001/02 and 2008/09, an annual average rate of increase reached at around 140,000 units. The highest rate of growth for passenger car production was recorded in 2007, totaling 170,000 units. (Note that the annual rate of increase can be deemed to be the number of newly registered vehicles.)

[4] It was calculated by using population data in 1991, or 110.8 million people.

Major impetuses for the rapid growth after 2000 include: 1) rapid expansion of the national economy; 2) launching of low interest auto loans by private financial institutions; and 3) the easing of used car import restriction imposed between 2004 and 2007. In particular, the third factor created significant impacts and used car imports totaled 42,000 units[5] in 2005/06 alone.

(2) Two wheelers

The number of two wheelers on road increased rapidly throughout the 1990s after 1991/92, with an annual average increase of around 150,000 units. Growth accelerated in the 2000s and the annual average increase reached 410,000 units between 2001/02 and 2008/09.

The highest growth was recorded in 2006/07 and 2007/08, with an annual increase of around 700,000 units. In 2008/09, the growth rate exceeded that of four wheelers. In 2009/10, the total number of two wheelers on road reached 5,470,000 units. The high growth in 2008/09 reflects the fact that the recession has diverted demand to two wheelers as many consumers decided not to purchase four-wheeled vehicles. With the rapid growth of two wheeler ownership since the early 1990s, their share in the total motor vehicle market rose from 46% in 1991/92 to 57% in 2008/09.

Notably, the two wheeler market is characterized by a large gap between annual unit sales and the number of vehicles on road. For instance, in 2007/08, while over one million two wheelers were sold, those on road increased only by 600,000 units. This gap appears to be caused by various reasons, e.g., many two wheeler owners do not register their vehicles, and service life of two wheelers is generally much shorter than other vehicles. In particular, two wheelers powered by engines made in China are said to be serviceable for less than five years[6].

(3) Trucks and buses

In 2009/10, there are approximately 196,000 trucks and 120,000 buses in the country. Between 1991/92 and 2008/09, both trucks and buses increased much slower than passenger cars and two wheelers. In 1991/92, there were 76,000 trucks and 45,000 buses. The annual average increase in the 1990s was limited to 6,900 trucks and 5,000 buses. Growth further decelerated in the 2000s to 6,300 and 2,800 units during the eight-year period between 2001/02 and 2009/10.

(4) Tractors

The number of tractors on road increased rapidly in the 1990s, by 350,000 units. Between 2000/01 and 2009/10, the segment recorded the third highest growth next to two wheelers and passenger cars, with the growth rate of over 50%.

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[5] Accounting for 25% of the number of passenger cars produced in the same year.

[6] As heard from several Atlas Honda dealers.

There are two reasons for such a growth. First, the country's leading sector, agriculture, expanded exports steadily and many farmers purchased tractors to expand operation. Secondly, agricultural banks actively provided low interest loans for tractor purchase. As a result, the total number reached 1,010,000 units in 2009/10. Also, tractors are widely used as multi-purpose vehicles in the country.

(5) Rickshaws

In 2009/10, there are approximately 97,000 rickshaws in the country. They are largely used as taxi cab and are mostly owned by personal business operators. In the 1990s, the number of rickshaws on road increased by 38,000 units (90%). After 2000, however, it leveled off, suggesting that the market is already in the maturing stage. Nevertheless, demand grows steadily in large cities such as Karachi and Lahore and is expected to maintain momentum until modernization causes market urban problems, as seen in Thailand.

(6) Overall trend

In Pakistan, there are approximately 10 million vehicles, the majority of which (57%) is motorcycles. Passenger cars account for around 20% of the total, or 2 million units on road. Characteristically, tractors represent sizable portions (around 10% of the total) to reflect the fact that they are also used for carrying goods and people.

3.1.4 Vehicle sales trend

In this section, motor vehicle sales are analyzed for major vehicle types, i.e., passenger cars, commercial vehicles, two wheelers, rickshaws, and tractors. Note that unit sales of motor vehicles are regarded almost equal to unit production (unit shipments) due to local conditions peculiar to the relationship between manufacturers and dealers in the country.

(1) Passenger cars

In 2002/03, approximately 66,000 passenger cars were sold in the country. Then, unit sales grew further on strength of economic expansion, totaling 100,000 units in 2003/04 and 180,000 units in 2006/07. In 2007/08, however, sales turned into negative growth for the first time due to the recession and recorded a significant 50% decline to 82,000 units in 2008/09. In 2009/10, sales turned upward as fueled by economic recovery and came back to the 120,000 unit level.

At present 800cc to 1, 800cc passenger cars are assembled in the country. For the purpose of this report, 800cc-1,000cc cars are classified as small cars, 1,000cc – 1,300cc medium-sized cars, and over 1,300cc large cars.

Looking at sales by engine size, large cars hold the highest share of 37% in 2002/03 (Table 3.1-4) because the customer base was dominated by wealthy people and companies. After 2003/04, however, steady economic expansion brought about rapid increase in purchase of small cars by the middle income group. In 2008/09, the market shrank by more than 50% due to the rapid deterioration of the national economy. Medium-sized and small car sales were hit particularly hard, down 77% and 58% respectively, making a sharp contrast to a 25% decrease in large car sales.

In 2009/10, unit sales rebounded strongly on account of economic recovery and the rise in agricultural prices. Nevertheless, the market is still driven by the large car segment consisting of large income people, companies, and government organizations, whereas medium-sized and small cars sales led by lower income groups remain at the 2003/04 level. As a result, share of large cars in total unit sales has reached historical high of 49%. In the following sections, sales for each size class are analyzed.

Table 3.1-4 Number of Cars Sold by Engine Size

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
800cc-1,000cc	25,521	38,999	46,998	54,316	65,349	64,939	27,937	39,253
1,000cc-1,300cc	15,763	24,865	34,051	45,244	55,295	48,887	16,152	23,696
1,300cc-1,800cc	25,031	37,984	53,501	66,405	60,190	50,824	38,755	61,008
Total	66,315	101,848	134,550	165,965	180,834	164,650	82,844	123,957

(JICA Study Team using the data compiled by PAMA)

1) Small cars (800cc – 1,000cc)

The segment represents the smallest class and consists of 3 models, which are Suzuki Mehran, Suzuki Bolan, and Daihatsu Cuore[7]. They are produced by two companies, Suzuki and Indus Motor, but Suzuki virtually monopolizes the segment by maintaining more than 80% share (Table 3.1-5).

[7] Daihatsu Cuore is manufactured by Indus Motors. Note that Cuore is equipped with an 850cc engine, but it is classified as an 800cc car because it is viewed so by dealers and users.

Table 3.1-5 Number of Cars Sold in 800cc-1,000cc Segment

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Daihatsu Cuore	4,579	6,339	8,592	7,883	12,776	12,204	5,852	5,301
Suzuki Mehran	16,582	27,432	31,165	35,982	37,007	35,526	13,421	22,513
Suzuki Bolan	4,360	5,228	7,241	10,451	15,566	17,209	8,664	11,439
Total	25,521	38,999	46,998	54,316	65,349	64,939	27,937	39,253
Suzuki Share	82%	84%	82%	85%	80%	81%	79%	86%

(JICA Study Team using the data compiled by PAMA)

The customer base for small cars is divided equally to individuals and companies (including government organizations)[8]. Personal customers mostly belong to the middle income group earning monthly income of around Rs. 30,000. As for corporate customers, it is general practice for companies in Pakistan to provide cars for their employees. As company-supplied cars are replaced with new ones in every three to five years, they create steady demand[9].

The small car market expanded rapidly from around 25,000 units in 2002/03 to 65,000 in 2006/07. In particular, an annual increase of over 10,000 units occurred between 2005/06 and 2006/07. The high rate of growth continued in 2007/08.

The strong growth between 2004/05 and 2007/08 was driven by expansion of the national economy and the offering of low interest auto loans by commercial banks. During the period, the Pakistani economy grew at 5.8% - 8.9% annually, accompanied by the rise in per capita GDP from US$655 to US$912. As a result, some of middle income consumers that previously bought motorcycles shifted to passenger cars. In the process, small car demand gained popularity as the entry model.

Meanwhile, financial institutions were aggressively offering auto loans between 2002/03 and 2005/06 in response to rapid economic growth. In addition, interest rates in the range between 7% and 16% were affordable for consumers as the inflation rate was controlled to annual 7-12%[10]. Against this background, more than 80% of personal customers used auto loans at that

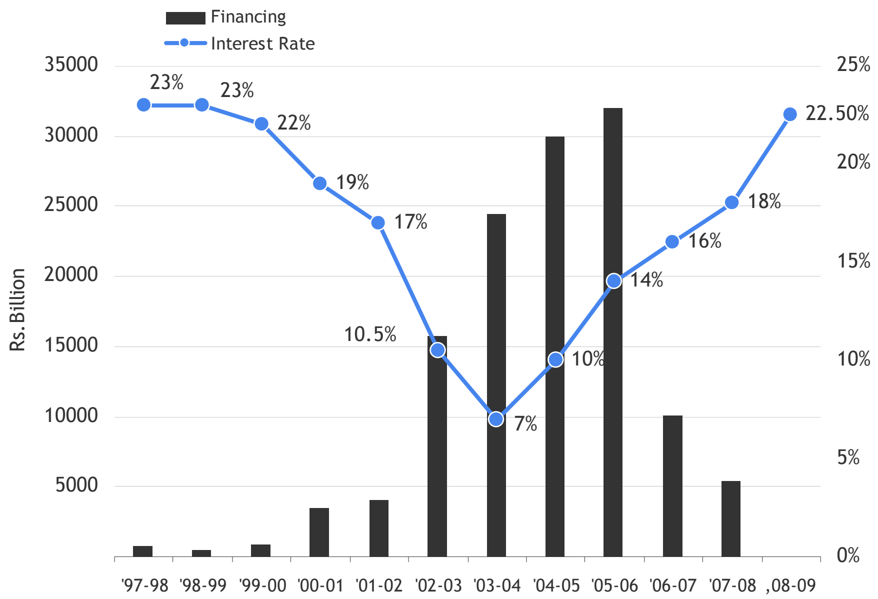
8 As heard from five Pak Suzuki dealers.

9 Companies provide cars for employees in either of the following two methods: one is that a company leases a car through a bank and provides it for an employee, and the other is that a company purchases a car and provides it for an employee in exchange for a fixed amount payment deducted from his or her monthly salary. Company-supplied cars are specified according to job title, and small cars are often provided for middle managers.

10 The repayment period for auto loans is generally in the range between three and five years, with interest rates being varied according to the period.

time (Figure 3.1-1).

In 2007/08, however, the deterioration of the national economy resulted in increasing cases of default among auto loan borrowers and banks started to apply severer examination standards. Also, they raised interest rates to 18% in response to the rise in the inflation rate to 15%. These actions affected mainly the middle income group (major customers of small cars), who were not able to obtain auto loans and gave up the purchase of cars. As a result, small car sales in 2007/08 recorded negative growth for the first time. In 2008/09, sales fell by 50% the worst record, due to the recession and sales price hikes. Although unit sales turn upward in 2009/2010, thanks to economic recovery, they still remain at the 2003/04 level.



(JICA Study Team using the data compiled by EDB)

Figure 3.1-1 Interest Rate for Auto Financing

2) Medium-sized cars (1,000cc – 1,300cc)

The medium-size car market in the country is relatively small and accounts for only 19% of the passenger car market as a whole. Models under this category are Suzuki Cultus, Suzuki Alto, and Hyundai Santro. As production of Hyundai Santro was terminated in 2008/09, Suzuki virtually monopolizes the market (Table 3.1-6).

Table 3.1-6 Number of Cars Sold in 1,000cc-1,300cc Segment

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Suzuki Cultus	7,927	10,795	15,611	21,390	29,837	27,563	9,198	12,658
Suzuki Alto	4,701	7,148	11,431	16,823	21,988	19,097	6,550	10,794
Hyundai Santro	3,135	6,922	7,009	7,031	3,470	2,227	404	244
Total Sold	15,763	24,865	34,051	45,244	55,295	48,887	16,152	23,696
Suzuki Share	80%	72%	79%	84%	94%	95%	97%	99%

(JICA Study Team using the data compiled by PAMA)

As seen in the small car segment, medium-sized car sales expanded strongly from 15,000 units in 2002/03 to 55,000 in 2006/07. Then, they declined to the 48,000 unit level in 2007/08 as economic conditions started to deteriorate. In 2008/09, they dropped to around 16,000 units, which are equivalent to the 2002/03 level. Although sales in 2009/10 came back to 23,000 units, they still remain at the 2003/04 level.

3) Large cars (1,300cc – 1, 800cc)

In 2009/10, large car sales regained the 60,000 unit level and their share in the passenger car market reached the highest level of 49%. Under this category, five models are sold, namely Honda Civic, Honda City, Suzuki Liana, Suzuki Swift, and Toyota Corolla[11]. By company, Honda accounted for 34%, Toyota 51%, and Suzuki 10% in 2002/03. After the start of the recession, Toyota's share rose to 66% in 2007/08 and 71% in 2009/10 (Table 3.1-7).

[11] While the engine size is 1,299cc, Corolla is known as a 1,300cc car and is thus classified as a large car.

Table 3.1-7 Number of Cars Sold in 1,300cc-1,600cc Segment

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Honda Civic	4,637	6,097	12,352	11,998	6,513	5,762	4,662	5,908
Honda City	3,749	7,271	11,714	16,136	11,848	8,439	6,482	8,212
Suzuki Baleno	2,588	4,062	5,879	3,173				
Suzuki Liana				4,571	6,067	2,983	851	1,025
Suzuki Swift								2,353
Toyota Corolla	12,867	20,321	23,002	30,527	35,762	33,640	26,760	43,510
Nissan Sunny	69	25	1					
Kia Classic	687	81	546					
Kia Spectra	434	127	7					
Total	25,031	37,984	53,501	66,405	60,190	50,824	38,755	61,008
Honda Share	34%	35%	45%	42%	31%	28%	29%	23%
Toyota Share	51%	53%	43%	46%	59%	66%	69%	71%
Suzuki Share	10%	11%	11%	12%	10%	6%	2%	6%

(JICA Study Team using the data compiled by PAMA)

Customers purchasing large cars are divided into individuals (20-30%) and companies including government organizations (70-80%)[12]. Personal customers are mostly corporate owners and other people in the high income group.

Large car sales were fairly small in 2002/03, amounting to around 25,000 units. Then they expanded rapidly to 66,000 units in 2006/07. In particular, they increased by over 10,000 units between 2004/05 and 2005/06. In 2007/08, the recession pushed down on sales to the 50,000 unit level. The decline continued in the following year, resulting in as much as 38,000 units, which are equivalent to the 2003/04 level. Then, the market showed strong recovery in 2009/10, as driven by the general economic upturns, and the 60,000 unit level was regained. In particular, Toyota Corolla is in extremely tight supply, causing consumers to wait for six months from purchase to delivery.

[12] Confirmed from ten dealers of Pak Suzuki, Indus Motor, and Honda Atlas.

(2) Commercial vehicles

Commercial vehicles sold in the country are divided into six types, LCVs, vans, jeeps, pickups, buses, and trucks. In 2009/10, approximately 22,000 commercial vehicles were sold throughout the country, far below passenger car sales. Between 2004/05 and 2007/08, sales grew steadily with economic expansion from 23,000 units to 29,000 units. However, they plummeted to the 20,000 unit level in 2008/09, a 31% decrease over the previous year (Table 3.1-8). In 2009/10, the market shows rebound to around 22,000 units, which are equivalent to the 2004/05 level.

Table 3.1-8 Number of Commercial Vehicles Sold

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
LCVs/ Vans/ Jeeps	1,514	2,520	3,397	1,448	1,066	1,201
Pick Up	16,301	18,951	19,981	21,321	15,400	16,496
Trucks	3,345	4,273	4,293	5,350	3,136	3,620
Buses	1,605	927	978	1,195	686	657
Total	22,765	26,671	28,649	29,314	20,288	21,974

(JICA Study Team using the data compiled by PAMA)

1) LCVs, vans and jeeps

Unit sales of these vehicles in the country are fairly small, ranging between 1,000 and 3,000 units annually. Up to 2003/04, Suzuki controlled 73% of the market. As Master started production of low-cost cars in 2002/03, however, Suzuki's share fell substantially. In 2007, Suzuki discontinued production of these vehicles. At present, Master enjoys the monopolistic position (Table 3.1-9).

Table 3.1-9 Number of Sales: LCVs/ Vans/ Jeeps

	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
LCVs/ Vans/ Jeeps	1,514	2,520	3,397	1,448	1,066	1,201
Suzuki Share	73%	52%	55%	2.5%	-	-
Master Share	27%	48%	45%	97.5%	100%	100%

(JICA Study Team using the data compiled by PAMA)

2) Pickup trucks

Unit sales of pickup trucks in 2009/10 grew by 7% over the previous year, totaling around 16,500 units. Up to 2005/06, Dewan[13] controlled nearly 50% of the market. Then, Suzuki gained share rapidly by launching a new model (Ravi) in 2006 and attained 80% share in 2009/10.

Table 3.1-10 Number of Sales: Pick Ups

	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
Pick Up	16,301	18,951	19,981	21,321	15,400	16,496
Suzuki Share	20%	29%	51%	56%	77%	80%
Toyota Share	21%	13%	0%	9.3%	10%	12%
Dewan Share	49%	49%	43%	32%	12%	7%

(JICA Study Team using the data compiled by PAMA)

3) Trucks and buses

The truck and bus market in Pakistan is fairly limited. Annual sales range between 3,000 and 5,000 trucks and between 600 and 1,600 buses (Tables 3.1-11 and 3.1-12). Japanese manufacturers account for a combined share of over 80% in the truck market. In the bus market, Hino holds more than 70% share.

Small sales are largely attributable to the customer base mainly consisting of individual business operators and personal customers.

Table 3.1-11 Numbers of Sales: Trucks

	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
Trucks	3,345	4,273	4,293	5,350	3,136	3,620
Hino Share	37%	34%	47%	53%	55%	56%
Nissan Share	41%	35%	20%	22%	18%	14%
Master Share	18%	11%	9%	12%	12%	14%
Isuzu Share	5%	20%	22%	17%	16%	10%

(JICA Study Team using the data compiled by PAMA)

[13] Joint venture by local capital and Hyundai

Table 3.1-12 Numbers of Sales: Buses

	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
Buses	1,605	927	978	1,195	686	657
Hino Share	80%	70%	79%	77%	76%	73%

(JICA Study Team using the data compiled by PAMA)

(3) Two wheelers

The two wheeler market expanded rapidly over the decade between 1999/2000 and 2009/10, from 120,000 to 1.19 million units, respectively. It grew by 320,000 units in 2002/03 and by 430,000 units in 2003/04, followed by steady expansion until 2007/08. Notably, sales grew in 2007/08 when four-wheelers sales turned downward and exceeded one million units for the first time by attracting consumers who gave up the purchase of four-wheelers.

In 2008/09, unit sales experience the first decline after 2000. In 2009/10, they resumed rapid growth because of an improved sentiment on the macroeconomic conditions, reaching a historic high at the 1.2 million unit level (Table 3.1-13).

Table 3.1-13 Number of Sales: Motorbikes

(Unit:000”)	1999/00	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Honda	82	185	260	300	370	335	420	345	425
DYL	24	48	58	72	80	60	55	66	125
Suzuki	12	18	18	18	20	24	30	15	18
Others	3	72	92	117	287	422	495	443	626
Total	121	323	428	507	757	841	1,000	874	1,194
Japanese[14]	97%	63%	64%	63%	52%	43%	45%	41%	37%

(JICA Study Team using the data compiled by PAMA)

The two wheeler market in Pakistan is roughly divided between Japanese and Chinese manufacturers, which are engaged in fierce competition. While only two Japanese companies, Honda and Suzuki, are operating in the country, there are over 60 Chinese companies[15]. Among them, only six companies including Quinchi are PAMA members, and the rest of Chinese

[14] As DYL terminated alliance with Yamaha in 2000 and continues production on its own, the company is no longer classified as a Japanese manufacturer.

[15] 44 companies operated in 2005/06, 59 in 2007/08, and 65 in 2009/2010, as confirmed from the interview survey at EDB.

manufacturers are fairly small and focus on niche markets. Two wheelers made by Chinese companies are specialized in 70cc class and feature low prices. Honda's flagship model, CD70, is sold for Rs. 62,000, whereas Chinese products are priced at around at Rs. 40,000. This large price differential is noteworthy in light of the fact that Honda's products are said to have achieved local content of over 90% and seems to come from unique production strategy taken by Chinese companies. While they copy designs from Honda and do not require high development costs, they have also established a production chain consisting of specialized manufacturers, rarely seen in Pakistan. As two wheelers can be assembled from module parts and components, Chinese assemblers use multiple suppliers to make low-cost modules in large quantities by applying reengineering techniques and assembly them with low-cost engines made in China. Although their two wheelers are considered to be inferior to Honda products in terms of quality and safety, consumers still buy them because of price advantage. Also Chinese manufacturers have established firm position by offering gifts and other special favors to dealers and consumers in order to make up for weakness in sales network.

As viewed from the country's current income level, two wheeler sales are expected to grow faster than passenger cars for a while. As the total market size is estimated at 30 - 35 million units, it is an important issue for the government to promote sales and use of two wheelers that meet international quality standards and incorporate locally made parts.

(4) Ricksahws

Rickshaws, which are a popular means of transportation in the country, are used to meet demand that is satisfied by taxi in other countries. As they effectively serve as public transportation, rickshaw sales vary according to regulation or purchase by state governments. Previously, most rickshaws were powered by two-stroke engines and were major sources of air pollution and noise. At present, the mainstream product is shifting to four-stroke CNG/gasoline vehicles, especially in Punjab province. In addition to environmental impacts, four-stroke rickshaws with better riding comfort are expected to dominate the market. Rickshaws engines come in two sizes, 175cc and 200cc, and are mounted on the rear or the front according to manufacturers. Prevailing sales prices are around Rs. 150,000, twice that of two wheelers.

Only three companies, including Qingqi, are registered with PAMA as rickshaw manufacturers and reportedly produced a combined total of 28,000 units in 2008/09. In addition, there are around 50 smaller, unregistered manufacturers.

Most rickshaws are equipped with engines made in China and largely use locally made parts, especially sheet metal products. As seen in the case of two wheelers, rickshaws are assembled from standard module parts and components, resulting in a very low barrier to market entry[16]. As the market is considered to be very stable in terms of demand, some parts suppliers are considering to start rickshaw production on their own. In any case, the future of the market seems to be governed by state government policy.

(5) Tractors

The tractor market is controlled by two leading manufacturers, Al Ghazi (in alliance with Fiat of Italy) and Millat (partnering with Massey Ferguson of the U.S.). (Table 3.1-14)

Table 3.1-14 Number of Sales: Tractors

	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
Al Ghazi	21,163	24,649	26,927	25,907	30,177	31,432
Millat	22,415	24,153	27,125	27,296	30,234	40,080
Total	43,578	48,802	54,052	53,203	60,411	71,512

(JICA Study Team using the data compiled by PAMA)

Notably, tractor sales recorded firm growth between 2007/08 and 2008/09, during which other vehicles experienced sharp declines in sales. In 2009/10, they reached a historic high of 71,000 units[17]. Major reasons for robust growth during the deterioration of general economic conditions include low interest loans by government banks and favorable grain price trends.

A special loan scheme for tractor purchase is operated by Agriculture Development Bank of Pakistan (ADBP), offering interest rates of 8-12% that are far below commercial interest rates (18-22%). As a result, many customers buy tractors by using the loan, totaling around 16,000 cases in 2007/08 and 25,000 cases[18] in 2008/09.

Grain prices have large impacts on farmers in Pakistan as these products account for around 50% of the total agricultural production[19]. Grain prices continue to rise since 2000 and recorded the highest level in 2008. Then, they plummeted due to worldwide good harvests, but they remain at fairly high levels[20]. The favorable market condition continues to encourage a large

16 A sheet metal company visited by Study Team also started production of rickshaws in the recent years.

17 The volume of tractor sales in 2009/2010 has far exceeded that of Toyota Corolla which is the most sold car for the year (43,150).

18 Confirmed from the interview survey of ADBP.

19 State Bank of Pakistan 2006-2007 (http://222.sbp.org.pk/reports/annual/arfy07/Chp-2.pdf)

20 Ministry of Agriculture, Forestry and Fishery, World agricultural price trend (http://www.maff.go.jp/j/zyukyu/jki/j_zyukyu_kakaku/pdf/kakaku.pdf)

number of farmers to boost production capacity, including the purchase of tractors.

(6) Comparison between AIDP and an actual production trend

AIDP sets target unit production for four wheeled vehicles, i.e., 380,000 units in 2009/10 and 560,000 units in 2011/12 (Table 3.1-15).

When AIDP's targets and actual production are compared, the annual target was mostly achieved in 2006/07, with actual production of 187,000 units versus 200,000 units. In the subsequent years, however, the gap between the target and actual production widens gradually. In 2008/09, actual production was limited to 210,000 units in comparison to the target of 310,000 units. In 2009/10, actual production remained at only 41% of the target (157,000 units versus 380,000 units).

As a substantial increase in production cannot be expected, the gap is expected to expand further in 2010/11 and afterwards.

Table 3.1-15 Projection and Actual Production of 4 Wheelers

(Unit:000')	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Projection (AIDP)	200	250	310	380	440	560
Actual*	187	172	123	157	-	-
Difference	-13	-78	-187	-223	-	-

Note: *: "Actual" means the total number of the productions of Passenger Cars, Jeeps, LCVs, Pick-Ups, Buses, and Trucks

(JICA Study Team using the data compiled by EDB and PAMA)

3.1.5 Imported used cars

Imports of used cars to the country are permitted for Pakistanis who work or stay overseas, under any of the following three schemes: (1) Transfer of Residency Scheme; (2) Personal Baggage Scheme; and (3) Gift Scheme. Used cars cannot be imported for commercial purpose. In practice, however, there are agencies that buy the right to import a used car from people living overseas and are engaged in the business to import cars for commercial purpose.

Import used car policy is determined by Ministry of Commerce basing on the cooperation with MOIP and other economic governmental agencies.

(1) Imports of used cars

The number of imported used cars ranged between 3,000 and 4,000 units per year during the period between 2000 and 2003. In 2005/2006, however, it grew more than tenfold to 43,000 units[21]. At the time, automotive demand increased rapidly with economic expansion to create a substantial gap between local demand and supply. In particular, for some popular models, supply capability was unable to meet demand and customers had to wait for more than eight months from the order to actual delivery. The government expected that used cars help fill the supply and demand gap and deregulated their imports. Import restriction was relaxed to three years after the manufacture instead of two years, and the discount rate for import tariff (called depreciation allowance) was relaxed from 1% to 2% (See the following box).

As a result, the number of imported used cars increased nearly tenfold in the year. The next year (2006/07), the government further eased import restriction to five years after the manufacture. At the time, however, domestic production increased and customers selected new cars over used ones, and imports declined to around 16,000 units. Then, in 2008/09, domestic demand started to cool down and the government shifted policy toward the tightening of import restriction in an effort to protect the domestic market, i.e., three years after the manufacture and the depreciation allowance of 1%. It led to the decline in imports to the 5,600 unit level. At present, a real issue relating to used car imports lies in their impacts on the development of the domestic automotive industry, especially the parts industry that largely consists of local companies. For the upgrading of the industry's technology base, it is imperative to expand the market and reach critical mass, suggesting the need for the government to reconsider the present policy to allow used cars to be imported to a limited market.

Table 3.1-16 Number of Imported Cars (New cars inclusive)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Up to 1,000cc	N/A	19,272	14,108	7,596	3,022	4,565,(24)*
1,000cc-1,300cc	N/A	4,131	2,631	1,301	499	350,(110)*
1,300cc-1,600cc	N/A	6,967	3,801	2,824	458	774,(467)*
Over 1,600cc	N/A	3,659	3,330	2,186	1,210	584(259)*
Jeeps (4X4)	N/A	9,251	3,097	2,214	367	309,(61)*
Total	App 5,500	43,280	26,967	16,121	5,556	6,582,(921)

Note: (-)*:Number of imported new cars (JICA Study Team using the data compiled by EDB)

(2) Domestic sales of imported used cars

There are said to be over 500 used car dealers in the country[22], most of which are independent

[21] Accounting for 17% of the total number of four wheeled vehicles produced in 2006/07.
[22] Confirmed from the interview survey with EDB.

and do not have the collaborative relationship with OEM companies. They purchase and sell used cars through their own channels. Most popular models are 1,000cc Toyota Vits (more than 50% of the total imports) and 1,300cc Toyota Belta. Also, the recent economic recovery leads to the increase in imports of jeeps and 1, 800cc or more high-grade cars. Prices of imported used cars are relatively expensive, as the most popular model (Toyota Vits, 2007) is sold at Rs. 800,000 – 900,000, in comparison to Rs. 400,000 for the new Mehran model.

(3) Illegal imports of used cars

Illegal imports of used cars are said to be widely made using the route so-called Afghanistan Transit Trade (ATT), i.e., they are first imported to Karachi for re-export to Afghanistan, and after transportation to Afghanistan, they are smuggled to Pakistan. The route is used to take advantage of Afghanistan's low import duty in comparison to Pakistan's. According to the customs, as much as 2,000 used cars (equivalent to 30% of the total import) are illegally imported each year[23]. As these cars cannot be registered due to the absence of the customs certificate, they are not allowed to run on public roads. As a result, most of smuggled cars are used in the border areas where government control is not strict.

<u>*Key issues relating to import restriction on used cars*</u>

Two issues are involved in restriction on import of used cars. One is the age of used cars (the year of manufacture) and the other the depreciation allowance for import tariff.

The year of manufacture as definition of used cars has been repeatedly changed according to government policy. In 2004/05, the government allowed used cars of two years old (within two years after manufacture) to be imported. Then, the restriction was eased to three years in 2005/06 and then to five years in 2006/07. In 2008/09, it was again tightened to three years.

The depreciation allowance for import tariff was set at 1% up to 2004/05 and was lifted to 2% in 2005/06. It went back to 1% in 2008/09.

The import tariff is calculated from the engine size and the year of manufacture. The depreciation allowance is applied as follows. An importer of an 800cc or smaller used car is subject to the flat tariff rate of US$ 4,400[24], which is discounted according to the year of manufacture (calculated on the basis of the number of months that have passed after the manufacture). If the car is one year old and the 1% depreciation allowance is applied, the tariff of US$4,400 is discounted by 12% (1% x 12 months), or US$4,400 x 88%. The higher the depreciation allowance becomes, the less the tariff is payable. The government uses it as a means to control used car imports.

[23] Confirmed from the interview survey with Karachi Customs Office.

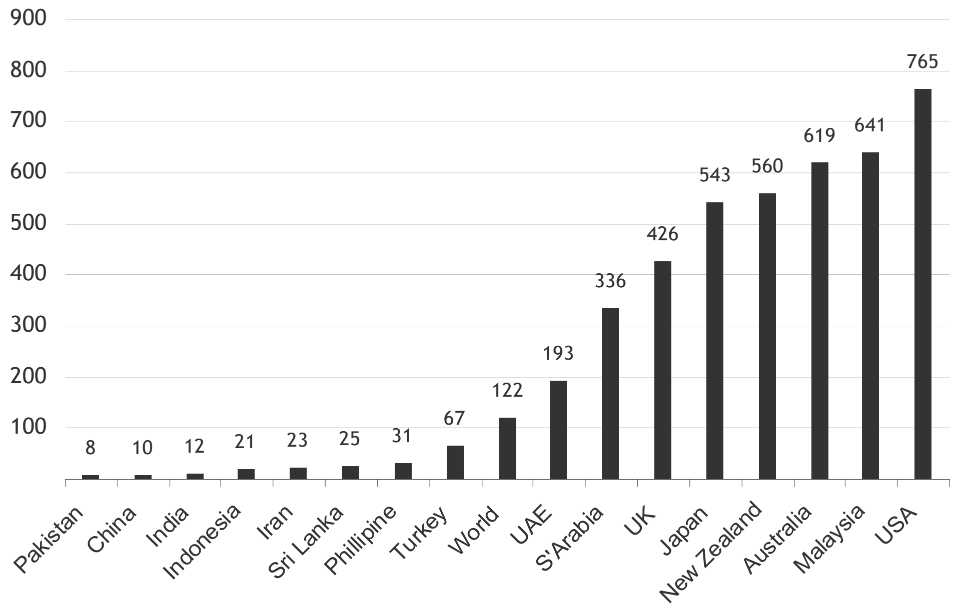
[24] Flat tariff rate for 800cc-1,000cc is US$ 5,500; 1,001cc-1,300cc is US$11,000; 1,301cc-1,500cc is US$15,400.

3.1.6 Car ownership

The car ownership rate is calculated as the number of cars per population. In 2007, the country's ownership rate for four wheel cars was 8 per 1,000 persons and for two wheelers 22, far below that in India and China. The followings analyze the ownership rates for four wheeled cars and two wheelers.

(1) Four wheeled cars

As of 2007, there were approximately 1,850,000 cars in Pakistan. This is translated to the ownership rate of only 8 units per 1,000 persons, which is much higher than 3 in 1991, but far below the world average (122) and lower than that in India (12) and China (10). (Figure 3.1-2) Major reasons for the slow pace of ownership growth are as follows: 1) the developing state of the national economy; 2) large disparity in wealth; and 3) the rapid rise in car prices.



(JICA Study Team using the data compiled by BOI)

Figure 3.1-2 Number of Cars per 1,000 Persons (2007)

1) The developing state of the national economy

Generally, the car ownership rate increases rapidly as per capita GDP (nominal) in a country exceeds US$3,000[25]. For example, China saw a rapid increase in car sales in 2008 when its per capita GDP surpassed US$3,000.

[25] Roland Berger, "The Automotive Newspaper December 2005" and Development Bank of Japan, "Topics of this month, No.135"

On the other hand, the average household income in Pakistan is Rs. 12,326 (US$144) per month as of 2007/08 and per capita GDP remains at around US$1,090 per year (2009/10). Judging from the present income level, the country is not in position to experience rapid motorization.

2) Large disparity in wealth

As of 2008/09, 36.1% of the country's population - approximately 62 million - is classified into the poverty group[26]. At the same time, the average income of middle income consumers, who are expected to be the central part of the four wheeled car market, remains at the lower level as discussed above. Thus, car customers are limited to wealthy people and companies. This is reflected in unit sales in 2009/10, which are dominated by large cars purchased by wealthy people, accounting for 49% of the total sales.

In contrast, the middle income group constitutes the central part of the car market in India and small cars account for more than 80% of the total. Large car sales represent only 2% (Figure 3.1-3).

Thus, the large disparity in wealth limits potential car owners to consumers with higher income, thus preventing pervasiveness of four wheeled cars.

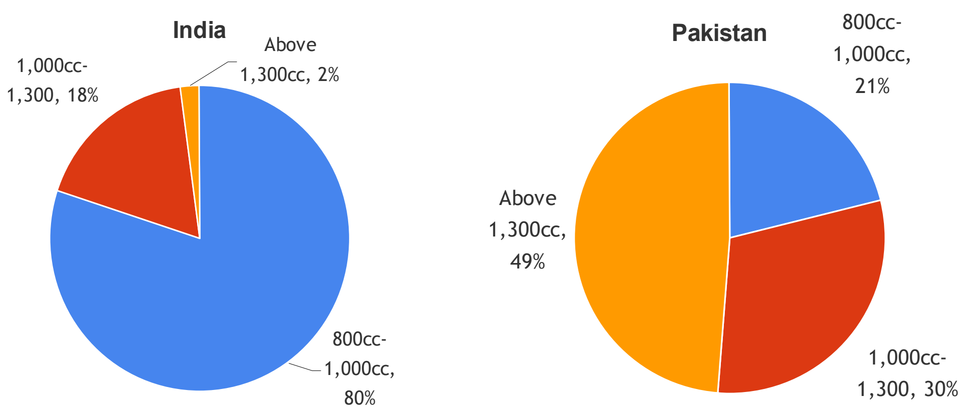


Figure 3.1-3 Classification of Sold Cars by Engine Size (2009/2010)

3) Rapid rise in car prices

As of March 2008, typical car prices[27] were Rs.327, 000 for small cars, Rs.586, 000 for medium-sized cars, and Rs.910, 000 for large cars. Then, in the ensuing two years (up to

[26] People whose daily income is less than one dollar, from State Bank of Pakistan "Annual Report"

[27] The retail price including tax

March 2010), small car prices rose by 31%, medium-sized car prices by 37%, and large car prices by 41% (Table 3.1-17).

The major factor for the rapid price rise is the depreciation of the national currency[28]. In March 2008, the exchange rate for the U.S. dollar was 66.62 rupees. Then the rupee weakened due to the deterioration of the national economy and depreciated by 27% to 84.37 rupees vs. the U.S. dollar in March 2010. While localization of automotive parts production is reportedly making steady progress, especially for two wheelers and small cars, major portions of automotive parts and raw materials are still imported and thus automobile production in the country is directly influenced by the exchange market trend, especially imported parts and components.

As a result, car prices in 2010 are equivalent to 34.8 times the average monthly income (around Rs.12, 000[29]) for small cars and 100 times for large cars. Thus, four wheeled cars are far from affordable for many people.

Table 3.1-17 Increase of Sales Price from 2008-2010

Category	Company/ Name	Price			Price Change	Percentage of
		2008/3	2009/3	2010/3	2008-2010	Average Salary
1) 800cc-1,000cc	Suzuki Mehran	327,000	433,000	429,000	31%	3,480%
2) 1,000cc-1,300cc	Suzuki Cultus	586,000	787,000	805,000	37%	6,530%
3) 1,300cc-1,600cc	Toyota Corolla	910,000	1,299,000	1,289,000	42%	10,457%

(JICA Study Team using the data compiled by All Pakistan Motor Dealers Association)

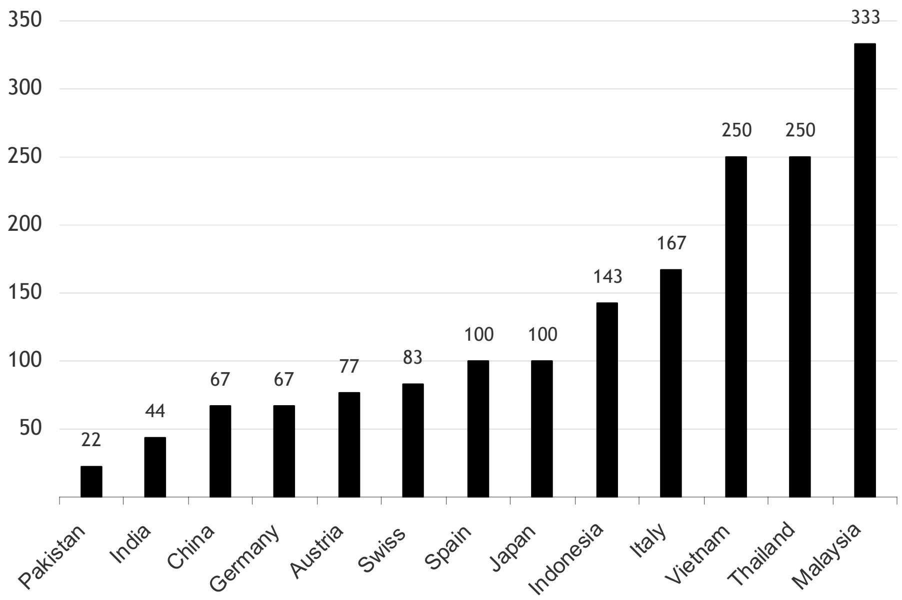
(2) Two wheelers

As of 2007, the ownership rate for two wheelers was 22 per 1,000 populations. Although higher than the rate for four wheeled cars, it is still much lower than India (44) and China (66). (Figure 3.1-4)

The two wheeler market in Pakistan is characterized by rapid expansion in recent years and a very large potential market.

[28] Automakers import 30-50% of parts (CKD) on the average, so that the depreciation of the local currency directly leads to the rise in the production cost.

[29] However, the average monthly income (RP12, 000) is the figure as of 2005, and it is assumed the amount has been increased by 2010.



(JICA Study Team using the data compiled by JAMA)

Figure 3.1-4 Number of 2 Wheelers per 1,000 Persons (2007)

As a result of rapid expansion, unit sales reached around 1,190,000 units in 2009/10. Major drivers are the decline in sales price as a result of increased competition and the recession that forces a large number of middle income people to give up the purchase of four wheeled cars and select two wheelers instead. The potential market is said to be in the range of 30 - 35 million units[30]. In comparison to 5,470,000 units on road, over 20 million units can be newly purchased in the future.

Thus, the two wheeler market will continue to grow faster than the four wheeled car market for a while.

3.1.7 Major Characteristics of the Pakistani Automobile Market

The automobile market in Pakistan has the following three distinctive characteristics.

(1) High market share by Japanese manufacturers

In the Pakistani automobile market, both four wheeled vehicles and two wheelers, Japanese companies hold dominant share. They account for a combined total of 99.5% of the passenger car market, 94% of the truck market, and 73% of the bus market. In the two wheeler market, Japanese manufacturers hold 45% share (Table 3.1-18).

[30] Confirmed from the interview survey of EDB.

Table 3.1-18 Japanese Share in Automotive Sector (2009/2010)

(Unit: '000)	Sales Volume	Japanese Share
1) Passenger Cars	124.0	99.5%
800cc-1,000cc	39.3	100.0%
1,000cc-1,300cc	23.4	99.0%
1,300cc-1,600cc	61.0	100.0%
2) Truck	3.6	80.0%
3) Bus	0.7	73.0%
4) 2 Wheelers	1,194.0	46.0%
5) 3 Wheelers	28.0	0.0%
6) Tractor	71.5	0.0%
7) Others	15.8	-
Total	1,561.3	-

(JICA Study Team using the data compiled by PAMA and Ravi Auto)

1) Passenger cars

Within the entire market where Japanese companies boast 99.5% share, Suzuki and Toyota monopolize the small car segment with 90% and 10% share, respectively, and Suzuki enjoys 99% share in the medium-sized segment. The large car market is also dominated by Toyota (71%), Honda (23%), and Suzuki (6%). Except for Toyota, however, their unit sales are sluggish since 2008. Suzuki has cut back production by setting up holidays at the assembly plant. Honda's production is leveling off, although equipment investment continues.

2) Trucks and buses

The truck market is dominated by three Japanese manufacturers, which hold a combined share of 80%; Hino accounts for 56% of the total, Nissan 14%, and Isuzu 10%. Hino also controls 73% of the bus market. However, since 2008, low-cost buses and trucks (CKD production using bodies and parts made in China) have been gaining share significantly. Also, there is concern about large imports of used vehicles in comparison to the entire market size.

3) Two wheelers

Up until 1999/2000, the two wheeler market was dominated by two Japanese companies, Honda and Suzuki, which held a combined share of 87%. Then, they have lost large share due to the entry of over 50 companies (Chinese and local) but still maintain 46% share in 2009/10.

(2) Characteristics of customers

The second characteristic of the Pakistani automobile market is the dominance of the passenger car market by the high income group, while main customers for the truck and bus markets are individuals and small business owners.

In other developing countries including India and China, low and middle income groups are major purchasers of passenger cars, so that popular models are concentrated on small cars in the lowest price range[31]. Also, the market undergoes rapid expansion.

On the other hand, the Pakistani market is led by the high income group (representing the smallest percentage of population) and companies. This is reflected in popularity of large cars, which account for 49% of the total market. As a result, the market growth rate is lower than that of India and China.

In other countries, the truck market is largely driven by companies and government. In Pakistan, major customers are individuals and small business owners[32]. The market's grow rate is fairly low, with market size being limited to around 3,600 vehicles per year.

The same customer base is observed in the bus market. While government organizations and private enterprises are major customer in other countries, individuals and small business operators lead the market in Pakistan, because transportation service using buses is mainly provided by individual or small operators under the government's license, while public transportation networks are not well developed. Hence, annual sales are limited to around 600 vehicles[33].

(3) Skewed popularity on specific models

The third characteristic of the market is that consumer popularity is concentrated on specific models.

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31 As mentioned earlier, small cars account for more than 80% of the total sales in India.

32 According to dealers visited by the study team, 80% of their customers are individuals or small business owners.

33 Many customers purchase imported used cars.

Table 3.1-19 Share and Operation Rate of Companies (2009/2010)

Category	Company/Product	Share in the Category	Operation Rate of Factory
1) Passenger Cars			
800cc-1,000cc	Suzuki/ Mehran,Bolan	86%	40%
1,000cc-1,300cc	Suzuki/ Alto, Cultus	99%	40%
1,300cc-1,800cc	Toyota/ Corolla	71%	97%
2) Truck	-	-	Less than 35%
3) Bus	-	-	17%
4) 2 Wheelers	Honda/ CD70	36%	81%
	DYL/ YD70	10%	100%
5) Tractor	A) Al Ghazi/ Tractor	44%	79%
	B) Millat/ Tractor	50%	100%

(JICA Study Team using the data compiled by PAMA and interview survey)

1) Passenger cars

In the small car segment, Suzuki's Mehran and Bolanare the two dominant models. They meet requirements for an entry model and account for more than 86% of total small car sales (Table 3.1-19). For these models, demand greatly exceeded supply in 2005/06 and 2006/07, forcing consumers to wait for over four months until purchased cars were delivered. However, demand softens in 2009/10, resulting in a lower operating rate of around 40%.

In the medium-sized car market, Suzuki's Alto and Cultus are the most popular models and account for a combined share of over 99% of the total. As seen in the small car segment, supply shortage continued in 2005/06 and 2006/07 and it took more than three months from purchase to delivery.

Finally, the large car market is dominated by Toyota's Corolla, enjoying 71% share. In 2009/10, tight supply persists to result in a six-month waiting period, although assembly plants are operated at as high as 97% of capacity[34].

2) Trucks and buses

In the truck and bus markets, supply (production) capacity continues to surpass demand substantially. Since 2006/07, all truck assembly plants are operated at less than 35% of capacity. Similarly, the average operating rate of bus manufacturers hovers low at less than 30% since 2006/07 and fell to 17% in 2009/10.

[34] As of July 2010

3) Two wheelers

In the two wheeler market, popularity is widely distributed because of presence of more than 60 manufacturers. Honda boasts the largest unit sales but its market share is limited to 36%, followed by DYL (10%). Demand grows rapidly in 2009/10 and manufacturers maintain high capacity utilization rates, although no supply shortage is seen.

4) Tractors

In the tractor market, popularity is divided equally between Al Ghazi and Millat. In 2009/10, supply does not catch up with demand and customers are required to wait for over six months after purchase, although both companies operate near capacity.

Thus, popularity is generally concentrated on specific models in Pakistan, causing supply shortages. In fact, the tight supply situation encourages an illegal practice to pay a briber fee called "own money."

3.2 Current State of Automotive Parts Manufacturers

3.2.1 Automotive parts industry in Pakistan

Automotive parts suppliers operating in Pakistan are estimated at around 1,600 – 1,700 companies. The majority of them are engaged in production of repair parts and 200 – 240 companies supply parts for OEM production. They mainly supply single unit parts and few make components combining multiple parts. In this sense, the auto parts industry in Pakistan does not consist of clear multiple tiers as seen in other countries, and most of them are considered to be the first tier suppliers as they directly supply products to automakers.

In light of the fact that automobile production in the country was started in the form of CKD production, the history of the automotive parts industry was originated in the nationalization phase in the 1970s. Initially, manufacturers introduced production equipment from other countries and made parts such as cylinder blocks, gears, and castings. Later, the parts industry expanded strongly with the progress of privatization. Its growth accelerated in the 1990s, when localization of automotive parts became pervasive. In 1995, the government announced the Product Specific Deletion Program (PSDP) to clearly define localization rules. Basically, PSDP has the primary objective of protecting and fostering the domestic automobile industry and requires automakers to achieve local content of over 70%. As a result, the parts industry has grown steadily in terms of production volume, while it has still to obtain international competitiveness in terms of quality and other factors, because it is not subject to competition with foreign products. Improvement of the industry's competitiveness constitutes a major issue for the Pakistani automobile industry.

PSDA ended its role in 2007 when Tariff Base System (TBS) was introduced. As TBS permits imports of parts that are locally available, provided that customs duties are paid, automakers are allowed to expand their sourcing choices. In contrast, local parts suppliers face strong competitive pressure. Although automakers moved to make a switch to imports for a while under TBS, they are now going back to local procurement in response to the recent depreciation of the Pakistan rupee, which makes imported parts more expensive.

Finally, raw materials and structural members for automotive parts are largely imported in the country, and increasing their local supply is an important issue facing the automotive parts industry.

3.2.2 PAAPAM

PAAPAM is mainly organized by manufacturers supply parts to automakers. It is headquartered in Lahore and has a branch office in Karachi, although, in practice, the former is responsible for the southern region and the latter the northern region. It has 253 formal member companies, of which 153 are located in the Karachi region and 100 in the Lahore region. The total membership is around 450 companies including associate members. The president and the vice president are elected each year, alternatively between the north and south regions. PAAPAM has 16 executive officers, of which 8 representing each region, from which the president and the vice president are elected. They include representative of the government sector.

In Pakistan, motor vehicles are classified into four categories, cars/LCVs, tractors, motorcycles, and trucks/buses. PAAPAM members are required to make parts for any of these vehicles and do not include companies engaged in trade and sales of parts. As there are around 100 companies that supply parts to assembly manufacturers of four wheel cars, PAAPAM appears to be highly represented by specialized manufacturers of motorcycle and tractor parts.

At present, the major issue facing PAAPAM is the further expansion of membership, which is still small in comparison to the total number of automotive parts manufacturers, estimated at around 1,600 – 1,700. It needs to make innovative efforts to attract new members. PAAPAM has the following 12 subcommittees that are said to plan and implement activities. During the present survey, however, the study team was not able to confirm their activities (Table 3.2-1).

Table 3.2-1 List of Subcommittees in PAAPAM

1)	Finance & Taxation
2)	Seminars & Training
3)	Information Technology & E-Marketing
4)	Government Liaison
5)	Members Services
6)	Publication, Communication & Media
7)	Sectorial Committee Cars
8)	Exhibition & Exports
9)	Tractors
10)	Truck & Buses
11)	Sectorial Committee Two & Three Wheelers
12)	Special Initiatives

（JICA Study Team）

3.2.3 Results of interview survey of automotive parts manufacturers

Under the project, interview survey using a questionnaire was conducted for a total of 140 automotive parts manufacturers. Its primary purpose is to identify issues relating to their production technology, quality/safety improvement, and management, while reflecting the results in the formulation of policies and programs for development of the automobile industry.

Of 140 manufacturers, 100 companies were interviewed by staff members of a local contractor hired by the study team[35], and the JICA study team visited the remaining 40 companies as part of evaluation on their production facilities. Then, on the basis of the questionnaires collected and the results of field evaluation, the current state of the auto parts industry was analyzed. Note that responses to the questionnaire were obtained from 115 companies, accounting for 82% of the total number of companies interviewed (140).

In selecting the companies to be surveyed, companies registered with PAAPAM were first classified into the following eleven categories[36]. Then, a total of 140 companies were selected in such manner that the number of companies selected from each of the eleven categories, as

[35] A local consulting firm called Technology Links

[36] While some companies are engaged in production that straddles over more than two categories, each company was classified into a specific category that is considered as its principal activity, for the purpose of the study.

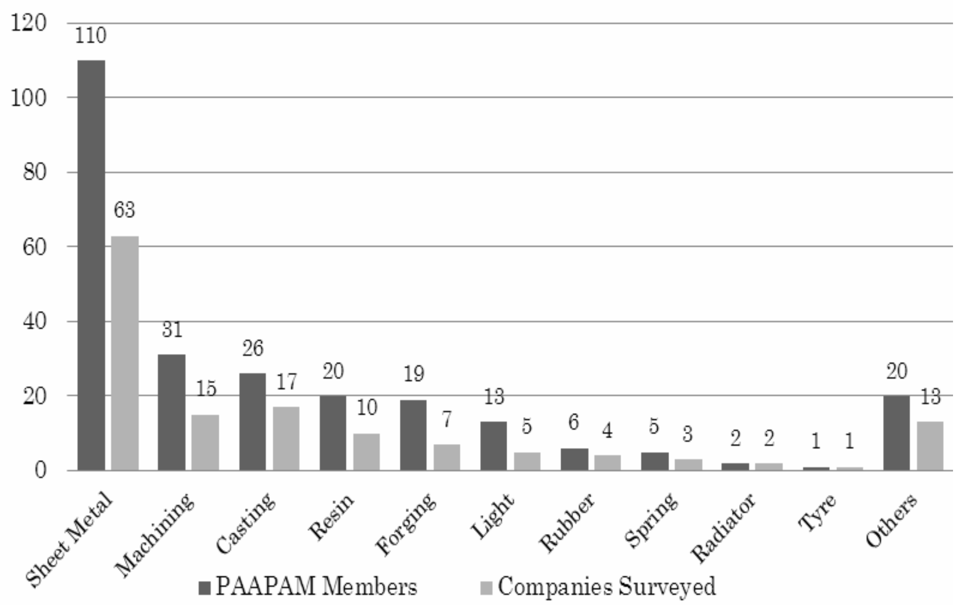
percentage of the total, was more or less the same as the number of PAAPAM member companies in respective categories, as percentage of the total PAAPAM membership.

1)	Sheet Metal
2)	Machining
3)	Casting
4)	Forging
5)	Plastics
6)	Rubber
7)	Tire & Tube
8)	Spring
9)	Radiator
10)	Light
11)	Others

(JICA Study Team)

As a result, sheet metal companies account for the highest percentage of the survey population, totaling 63 (43% of the total), followed by casting (17 companies, 12%), and machining (15 companies, 11%). (Figure 3.2-1)

In consideration of geographical distribution (cities), 70 companies (50%) are located in Karachi and 64 (43%) in Lahore.



(JICA Study Team)

Figure 3.2-1 Companies Surveyed by Study Team

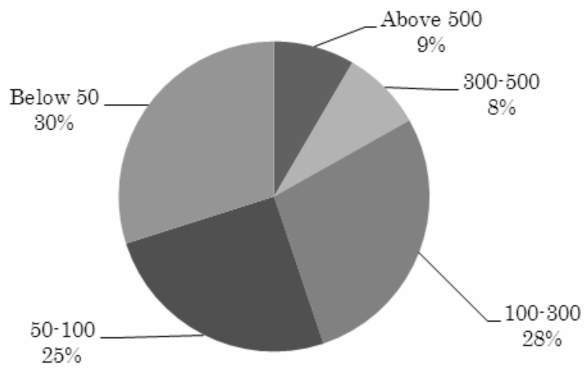
In the following sections, responses to the survey questions are analyzed to understand the current state of the automotive parts industry in Pakistan.

3.2.3.1 General information

(1) Number of employees

Companies with 50 or less (below 50) employees held the highest percentage (30%), followed by those with 50 – 100 employees (25%). Thus, companies having 100 or less employees accounted for a combined total of 55% (Figure3.2-2).

As most companies surveyed are members of PAAPAM that is organized by parts manufacturers operated in a company form, the parts industry as a whole (consisting of over 1,500 companies) seems to be dominated by SMEs and MEs. On the other hand, large enterprises with over 500 employees represent 9% of the total.

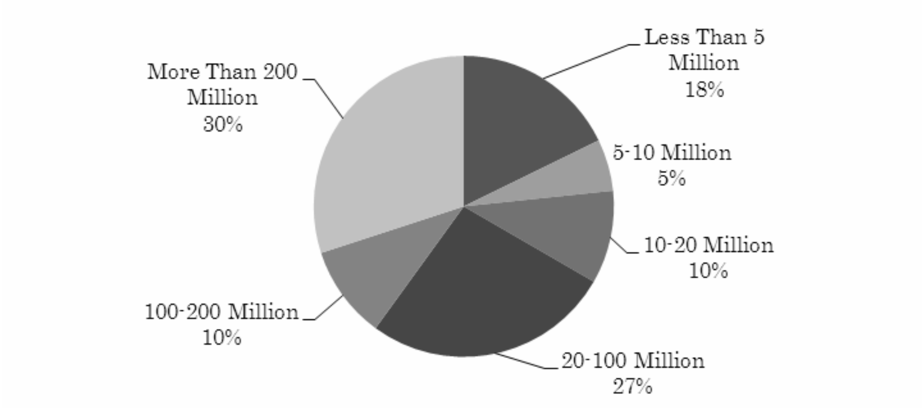


(N=107/115) (JICA Study Team)

Figure 3.2-2 Number of Employees

(2) Annual sales

Companies reporting annual sales of more than Rs. 200 million accounted for the highest percentage share of 30%, followed by those with Rs. 20 – 100 million (27%). Thus, 67% of surveyed companies earn annual sales of more than Rs. 20 million (Figure 3.2-3). On the other hand, companies with annual sales of less than Rs. 5 million accounted for 18% of the total.



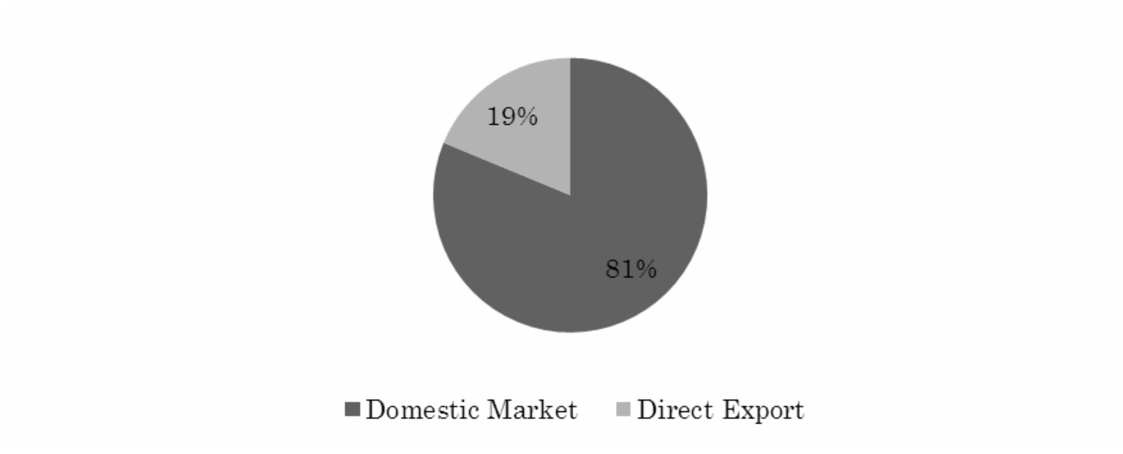
(N=90/115) (JICA Study Team)

Figure 3.2-3 Annual Sales

(3) Market

As the parts manufacturers mainly serve the local market, companies that responded "domestic market only" accounted for 81% of the total (Figure 3.2-4).

On the other hand, there were 21 companies (19%) that made direct exports as well as local sales. The categories where the largest number of companies made direct exports were rubber and plastics, mainly serving the aftermarkets in the Middle East and Africa. In addition, there are said to be around 10 parts manufacturers that make exports to the overseas aftermarkets, while having no experience in supplying to local assembly manufacturers. Thus, at least 30 parts manufacturers are currently engaged in export on a regular basis.



(N=112/115) (JICA Study Team)

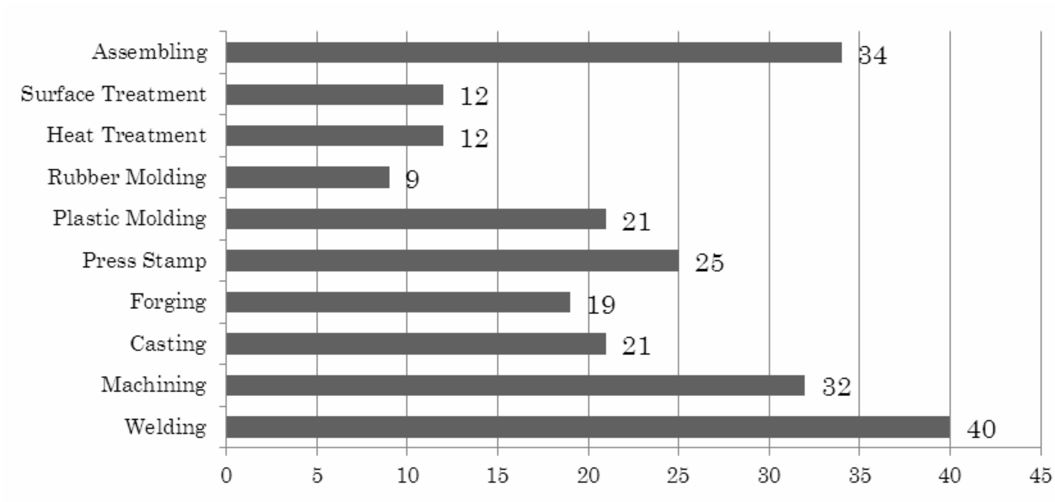
Figure 3.2-4 Market of Companies

3.2.3.2 Production and materials

(1) Processing method

As discussed earlier, sheet metal companies account for the highest percentage of the automotive parts industry in the country. Among companies registered with PAAPAM, there are 110 sheet metal companies, 43% of the total.

In terms of production method, welding is carried out by the largest number of companies (40), accounting for 35% of the total, followed by assembling 34 companies (30%), machining 32 (28%), press stamp 25 (22%), and plastic molding and casting 21 each (18%). On the other hand, heat treatment and surface treatment, requiring special equipment, are carried out by a relatively small number of companies.



(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-5 Processing Method

(2) Products

In Pakistan, production of two wheelers exceeds one million units in 2009/10, whereas car production is limited to the 160,000 unit level. As a result, the largest number of companies makes parts for two wheelers, totaling 52 (45% of the total). Then, 50 companies (43%) supply parts for passenger cars. Finally, as tractor production increases rapidly in the recent years, 25 companies (22%) make tractor parts.

In terms of components to which supplied parts are incorporated, the largest number of companies, totaling 39 (34% of the total), makes body parts through sheet metal, casting, forging, resin and/or rubber process operations. Then, 34 companies (30%) manufacture engine parts (sheet metal, casting, forging, and spring making) and 26 companies (23%) brake parts (casting, forging, and spring making). (Figure 3.2-7)

Generally, localization of automotive parts starts with body parts that are voluminous and require high transportation costs. As localization rises to a certain level, production of engine and brake parts is launched because of the ease of production. In the final stage, production of transmissions that require the highest level of technology is transferred. In Pakistan, localization is currently in the first stage (body parts), whereas some portions of engine and brake parts are made for tractors and two wheelers.

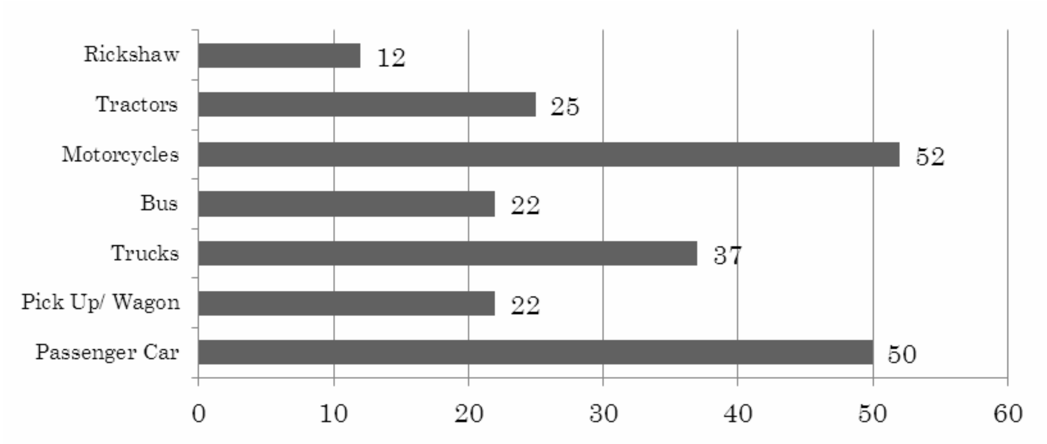


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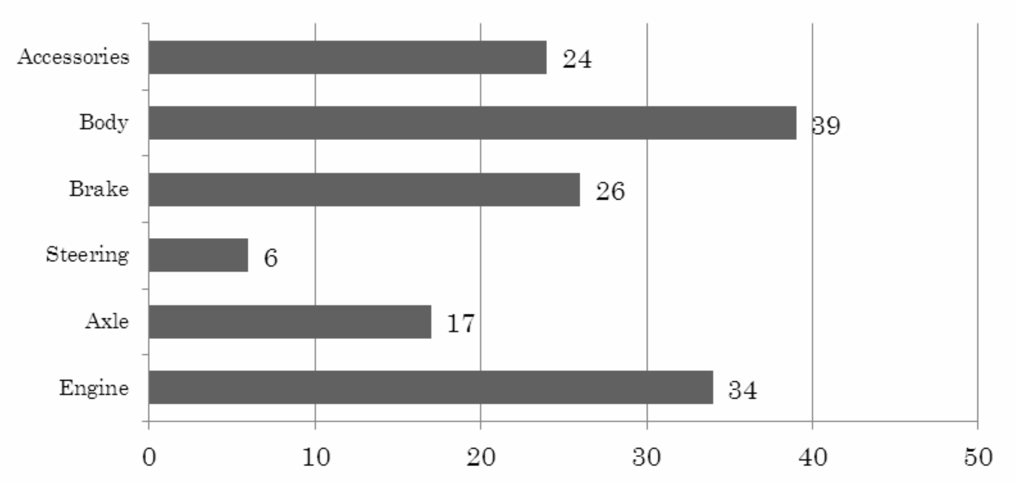
Figure 3.2-6 Product Classification



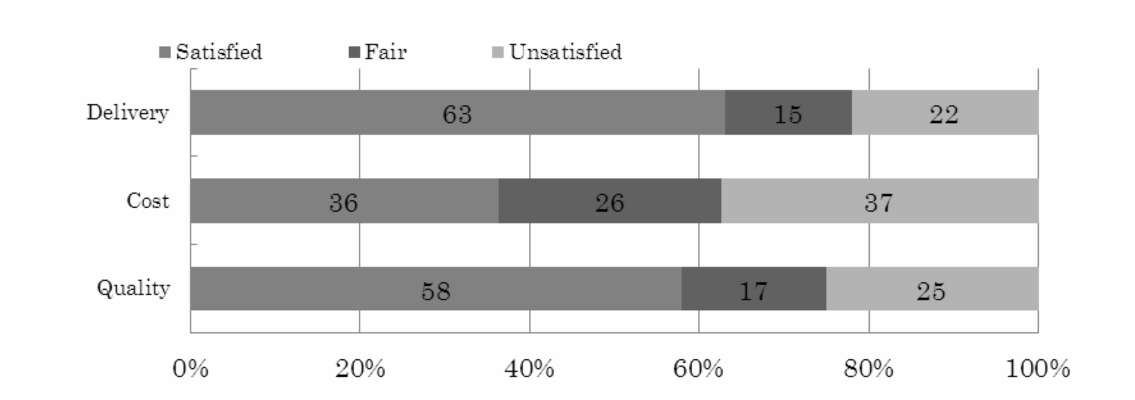
(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-7 Product Classification (Component)

(3) Raw materials

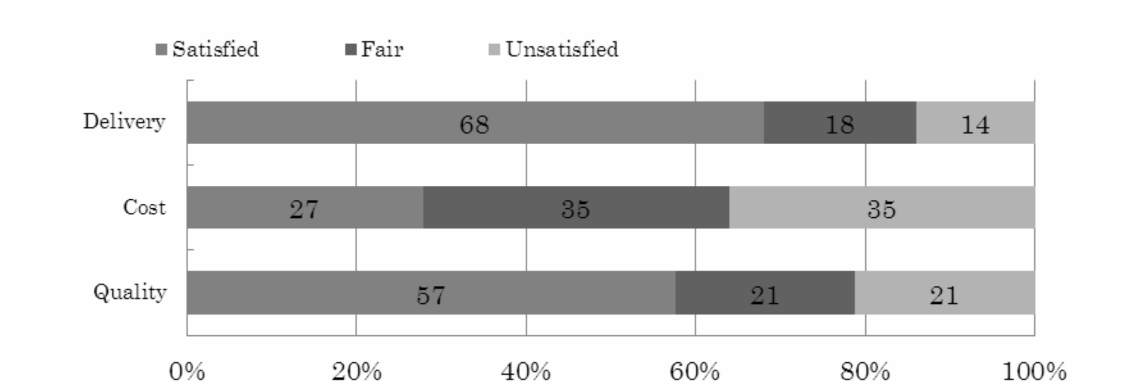
Raw materials that are most heavily used for motor vehicle production are steel plates and plastic materials (resin). As steel plates made in the country are very poor in quality, imported products are mostly used. As for evaluation by parts manufacturers, 63% of respondents are satisfied with delivery and 58% with quality. When responses giving “fair” rating” are added, 78% and 75% are satisfied, respectively (Figure 3.2-8). On the other hand, 43 companies (37%) are unsatisfied with cost because of the depreciation of the rupee (Figure 3.2-9).

The results indicate that most of local parts manufacturers are satisfied with delivery and quality of raw materials, while they are strongly dissatisfied with cost.



(N=115) (JICA Study Team)

Figure 3.2-8 Evaluation of Raw Material (Steel)



(N=115) (JICA Study Team)

Figure 3.2-9 Evaluation of Raw Material (Plastic)

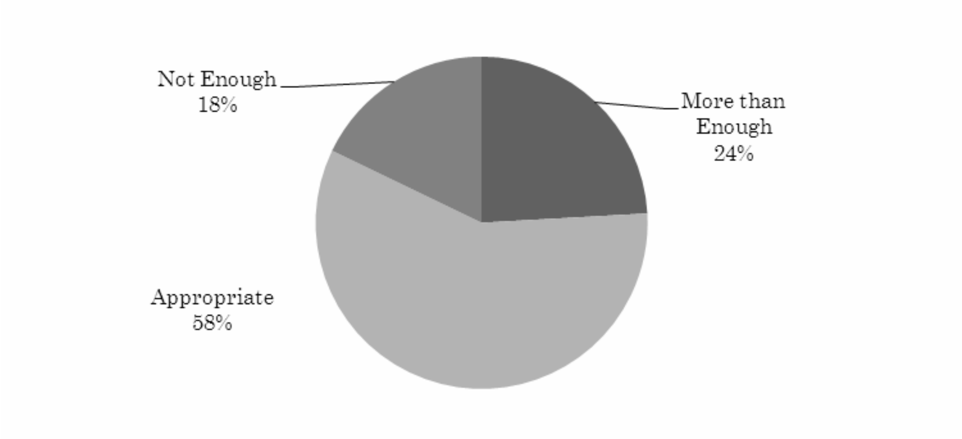
3.2.3.3 Machinery and equipment

Many plants and shops have not installed latest equipment and continue to use old equipment that was made in the 1980s or before. Production using old equipment causes the decrease in production capacity and the decline in product quality.

(1) Production capacity

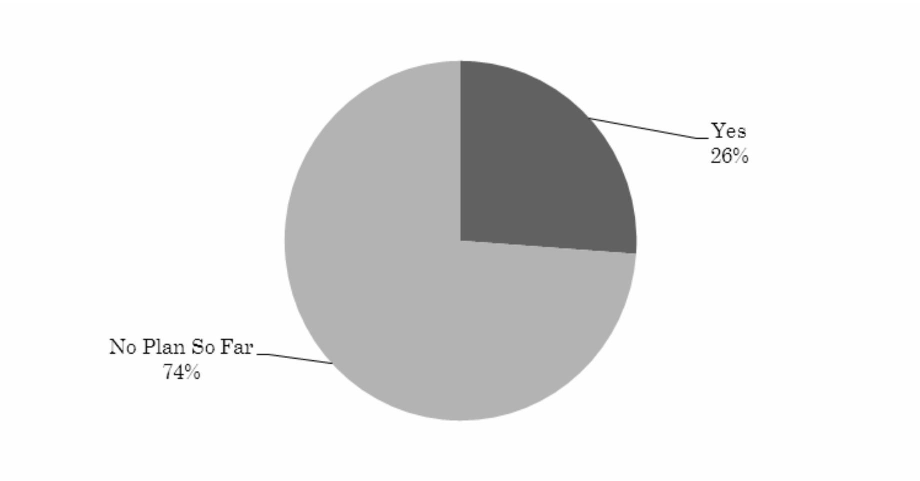
In 2008/2009, passenger car production in the country decreased by 50% over the previous year to the 83,000 unit level. In 2009/10, although production shows a substantial increase on account of the general economic recovery and the rise in crop prices, it still remains at the 123,000 unit level seen in 2004/05. The trend is reflected in responses. 58% of respondents consider their production capacity as “appropriate,” and 24% as “more than enough.” On the other hand, only 18% responded that production capacity was “not enough.” (Figure3.2-10)

By the same token, 74% of respondents do not consider the purchase of new machinery and equipment for capacity expansion. Thus, many companies plan to use the present equipment in the future (Figure3.2-11).



(N=112/115) (JICA Study Team)

Figure 3.2-10 Production Capacity

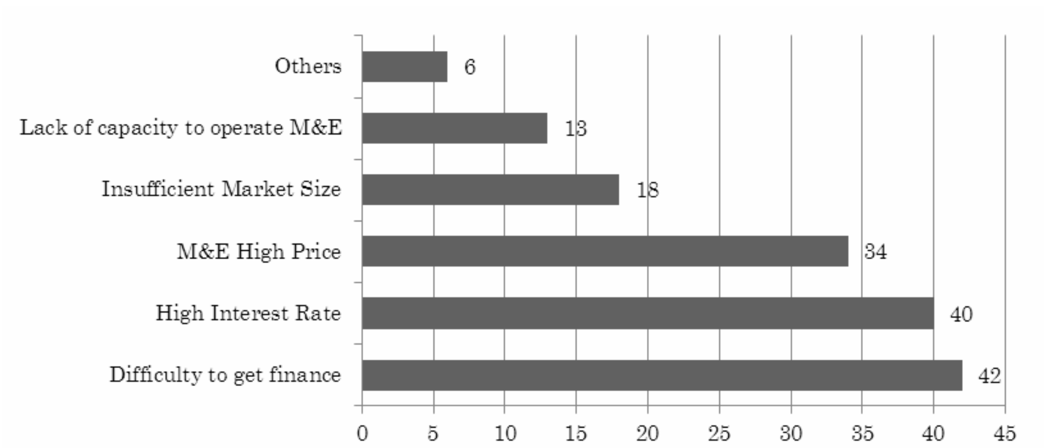


(N=107/115) (JICA Study Team)

Figure 3.2-11 Future Plans for Purchasing New Machine

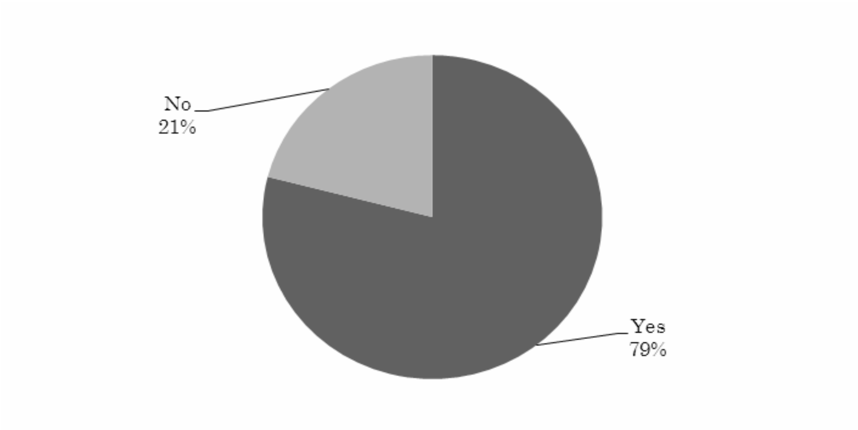
(2) Problems relating to the purchase of new machinery and equipment

The largest problem for companies in relation to the purchase of new equipment is the "difficulty in getting finance," totaling 42 companies (37% of the total). The difficulty arises from the fact that many parts manufacturers are SMEs and cannot pledge collateral or mortgage demanded by financial institutions. Also, 40 companies (35%) are dissatisfied with the high interest rate. The interest rate continues to rise after 2007/08 and reaches 16.5% - 18% in 2009/10. Other problems are "high M&E price" (34 companies) and "insufficient market size" (18 companies). These factors make it difficult for many companies to purchase new machinery and equipment, and 79% of respondents consider the purchase of less costly, used machinery (Figure3.2-12).



(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-12 Problems Facing in Purchase of M&E



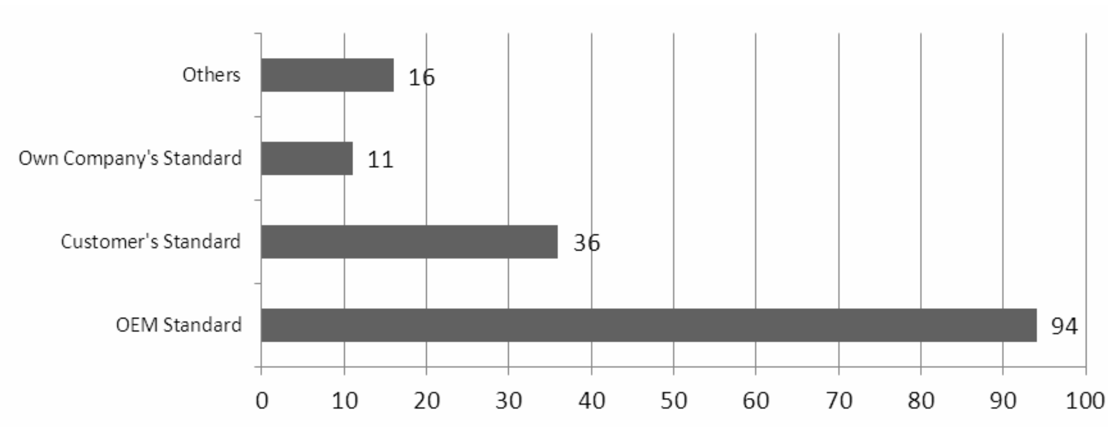
(N=100/115) (JICA Study Team)

Figure 3.2-13 Interest in Purchasing Used Machines

3.2.3.4 Quality and safety control and standards

(1) Quality standard applied

Generally, there are two types of quality standards to be complied with by manufacturers, namely "own company's standard" and "customer's standard and OEM standard." The large number of parts manufacturers that responded the survey cited "OEM standard" as quality standard applied by them, totaling 94 companies, followed by 36 companies citing "customer's standard." In total, virtually every company applied quality standard designated by the customer (Figure 3.2-14). On the other hand, only eleven companies adopted "own company's standard."



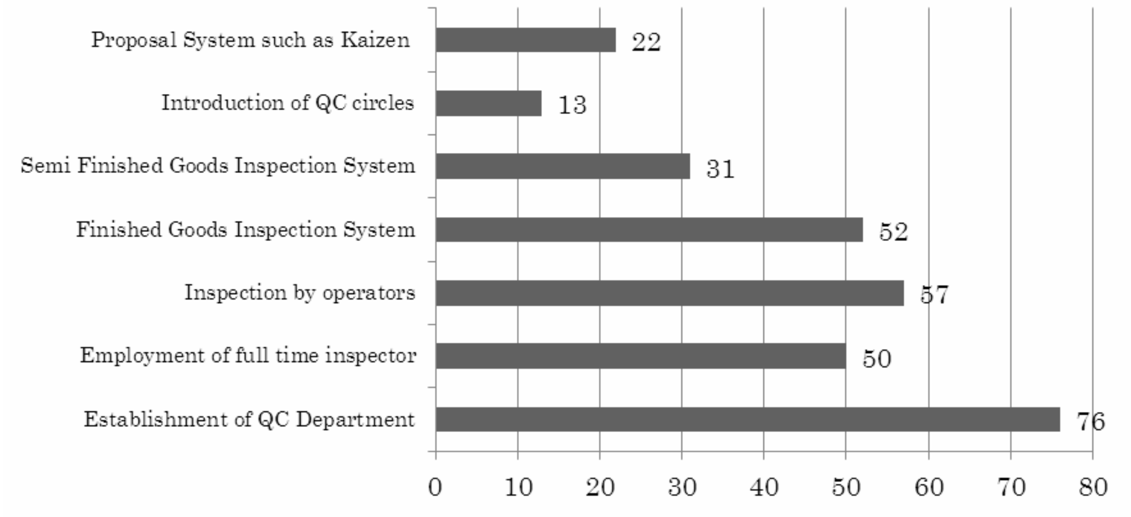
(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-14 Quality Standard Applied in the Company

(2) Quality control practiced within the company

Major purposes of quality control practiced in the factory are "quality improvement" and "quick discovery of defective products[37]." The most basic measure to be taken for "quality improvement" is "the establishment of QC department" specialized in quality control. In the survey, 66% of responding companies (76) have the QC department. In addition, 22 companies cited "proposal system such as kaizen" and 13 "introduction of QC circles." In the Pakistani auto parts industry, companies realize the need for "quality improvement" but a limited number of them make efforts toward it (Figure3.2-15)

For "quick discovery of defective products," the largest number of companies practice "inspection by operators" throughout the organization, totaling 57 (49% of the total), followed by "finished goods inspection system" (52 companies) and "employment of full time inspectors" (50 companies). On the other hand, 31 companies maintain the semi-finished goods inspection system. In fact, the semi-finished goods inspection system is implemented by large enterprises with 500 or more employees and is not adopted by SMEs.



(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-15 Quality Controls in the Company

(3) Compliance with customer standard

53% of respondents consider the compliance with the customer standard to be "east to meet" and 45% "somehow can be managed." Thus, 98% believe that they more or less meet the customer standard (Figure 3.2-16).

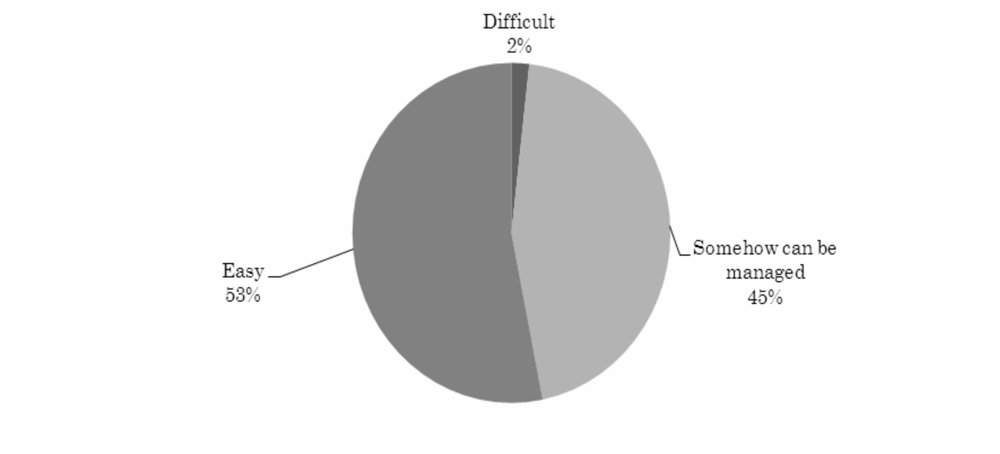
[37] At any factor, it is impossible to prevent the occurrence of defective completely. Thus, it is very important to find a defective within the factory and to avoid the situation that it is founded by the customer.

In reality, however, many customers are dissatisfied with quality of locally made parts but purchase them because they are less costly than imported parts. For the quality control, many parts manufacture conduct total inspection and adjustment of the products in the final process before supplying to OEM. However, the above processes by parts manufactures are not fully effective (or not reliable), OEMs also conduct the same processes before assembling.

In case of Japan, however, OEMs generally conduct the inspection only for the first batch of the parts to be supplied, and afterwards, all the parts are assembled without inspection.

Especially, for the sheet metal parts, which have higher rate of defection, many OEMs conduct total inspection and utilize the defective products after adjustment in their own factories.

If the production of cars are increased, and new machines are introduced, it is necessary to ensure the consistent level of the quality, also the necessity for the quality control within a process of a supplier will also increase.



(N=111/115) (JICA Study Team)

Figure 3.2-16 Meeting Customer Standards

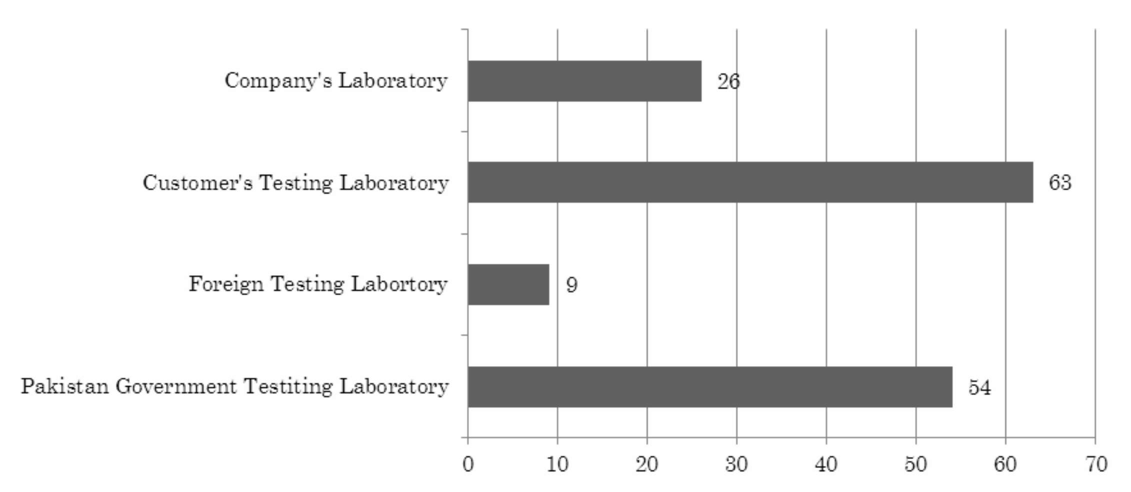
(4) Quality inspection system

There are three types of quality inspection organizations used by the automotive parts industry, internal laboratory, customer's laboratory, and government laboratory.

In Pakistan, the largest number of respondents use "customer's testing laboratory," totaling 63 (55% of the total)[38]. Then 54 companies use the government testing laboratories, such as AT&TC, PCSIR, and Shipyard. On the other hand, only 26 companies conduct quality inspection at their own testing laboratory (Figure 3.2-17). As for the type of testing requested to be conducted at a laboratory, composition analysis on sample parts to be newly delivered is mostly frequently conducted by customer's testing laboratory. On the other hand, government

[38] The high popularity reflects the fact that they are equipped with latest equipment.

testing laboratories seem to be mainly used for relatively simple tests, such as strength analysis and salt spray test, reflecting the fact that they mainly have old equipment and are limited in terms of competent personnel.



(Multiple Answers) (N=115) (JICA Study Team)

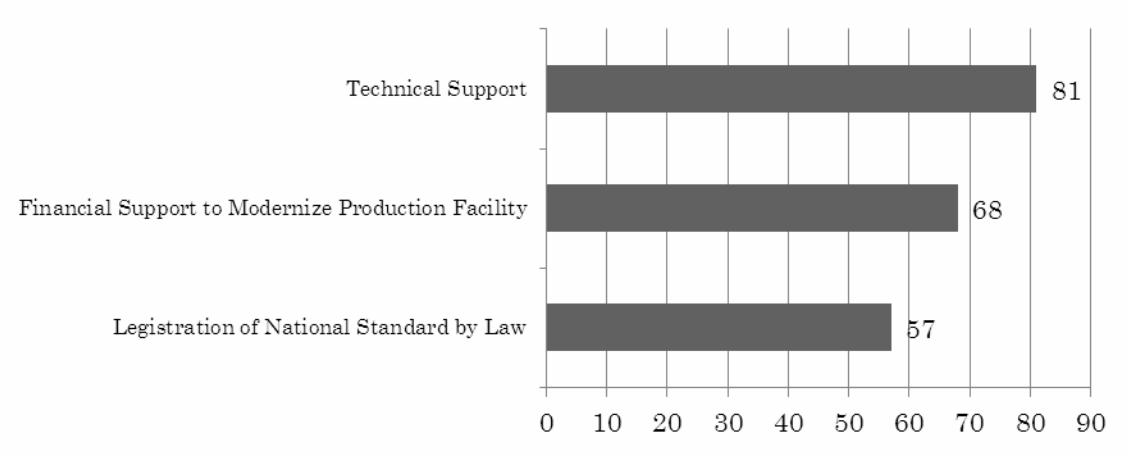
Figure 3.2-17 Quality Testing Laboratory

(5) Request to government for quality and safety control

As for the request to government for quality and safety control, "technical support" holds the highest share, totaling 70 companies (60% of the total). Activities most frequently cited as technical support are "field guidance" under which government staff visits the factory periodically and "advice service" upon request from individual companies (Figure 3.2-18).

The second largest item is "financial support to modernize production facility," totaling 59 companies, in light of the fact that many companies consider new production equipment to be critical for quality improvement. The most frequently item is "special loan at a low interest rate (10%)," followed by "government guarantee for commercial loans."

Then, "legislation of national standards by law" is cited by 57 companies. In this connection, many companies believe that legislation alone is not sufficient and should be combined with "technical support" and "financial support." Overall, many automotive parts manufacturers primarily want "technical support" for quality and safety control, whereas they accept the importance of "legislation" under the condition that it should be combined with related support measures.



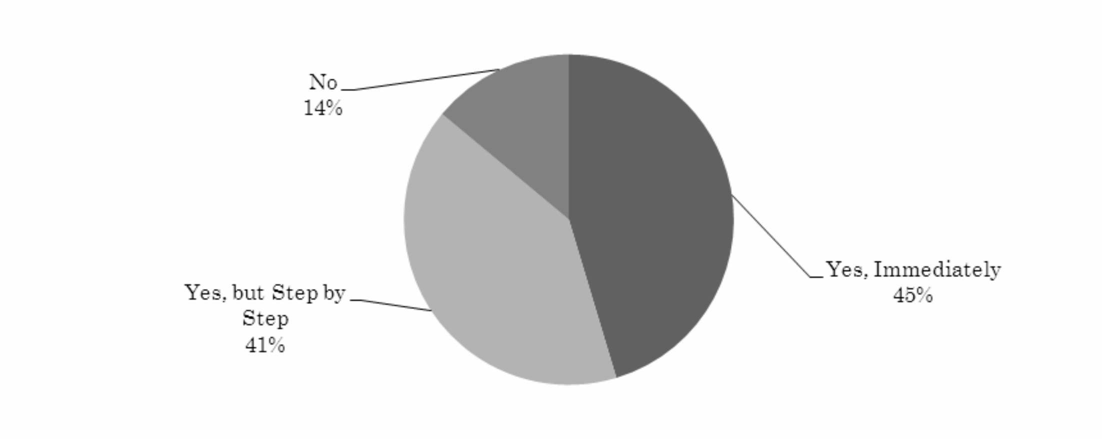
(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-18 Request to Government for Quality and Safety Control

(6) Emission control

48% of respondents think that emission control should be immediately, and 38% "step by step." Thus, 85% favors emission control (Figure 3.2-19).

On the other hand, 14% of respondents, expressing the opposition to emission control, cite reasons such as "lack of technology for compliance" and "additional cost burden." In fact, they accept stricter emission control under the condition that they can obtain government's technical/financial support. Also, some companies want "development of government action plans" prior to the strengthening of emission control.



(N=96/115) (JICA Study Team)

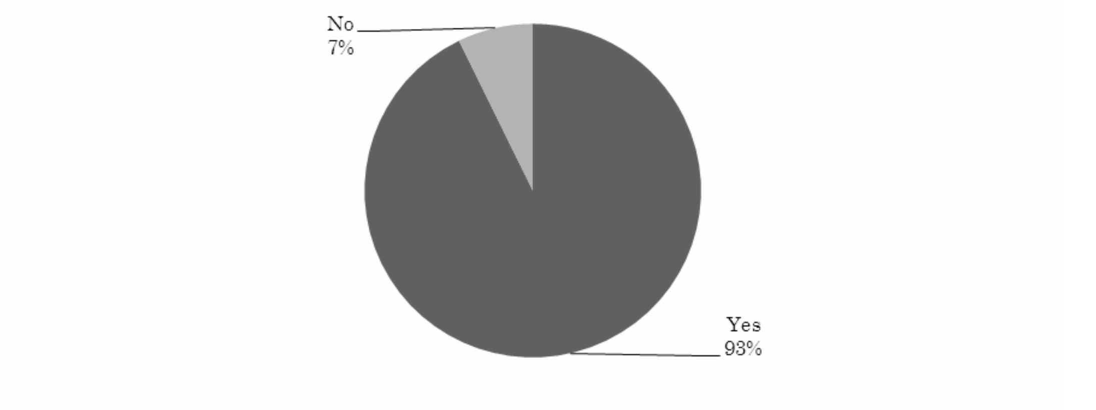
Figure 3.2-19 Strengthen Emission Control

(7) Introduction of national quality standards

As for introduction of new quality standards by government, 93% of respondents say "yes." They mainly expect that national quality standards will replace customers' standards and help simplify compliance efforts. Besides, with introduction of new quality standards, when required to meet the higher quality standards beyond the national ones by OEMs, manufactures may invoke the national standards as an excuse for not meeting such higher standards.

However, these reasons represent only expectation of the parts manufacturers. As customer standards often reflect management philosophy of automakers, as suggested in the expressions like "Toyota Standard" and "Honda Standard," suppliers are probably required to comply with them even if national standards are established.

Also, unified standards are expected to serve as quality guidelines in the case of new product development, facilitating companies to set quality targets. On the other hand, 7% of respondents are against it on the ground that currently used customer standards are sufficient (Figure 3.2-20).



(N=98/115) (JICA Study Team)

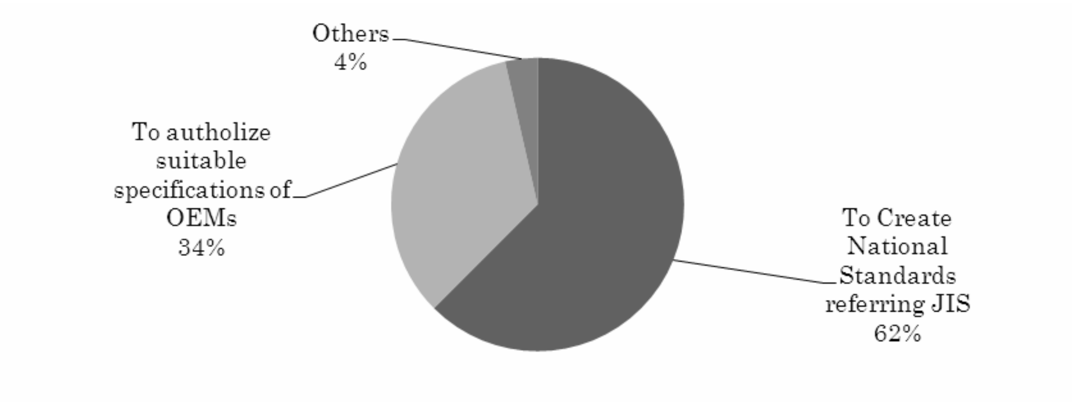
Figure 3.2-20 Introductions of National Standard of Quality and Safety of Auto-Parts

(8) Content of national quality standards

62% responded that national quality standards should be developed with reference to JIS because it is used by most customers (OEM assemblers)[39] and is recognized as international standard (Figure 3.2-21).

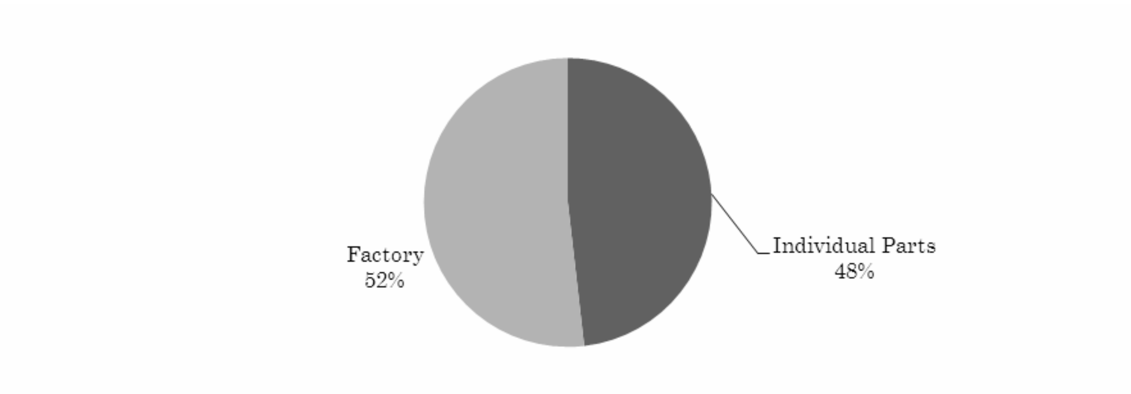
On the other hand, 35% preferred "adoption of suitable specifications of OEMs." Few respondents support the idea of developing Pakistan's original standards, because many companies want to export their products and thus need to comply with JIS and other international standards (Figure 3.2-22).

[39] More than 90% of the Pakistani auto market is produced by Japanese automakers, which adopt JIS for quality control and other production management purposes.



(N=112/115) (JICA Study Team)

Figure 3.2-21 Contents of New National Standard for Safety and Quality



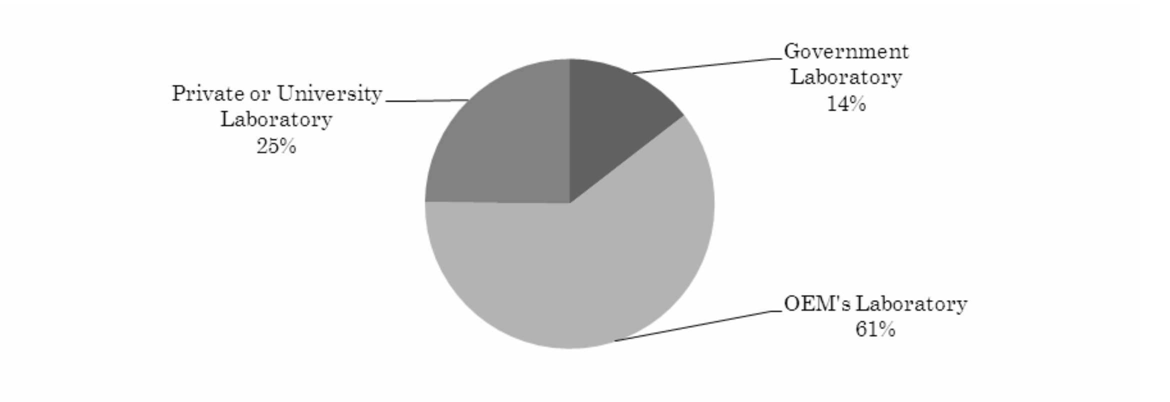
(N=110/115) (JICA Study Team)

Figure 3.2-22 The Place of Standards should be applied

(9) Future quality testing organization

As for the quality testing organization to be used in the future, 61% of respondents selected "customer's laboratory," followed by 23% "private or university laboratory" and 16% "government laboratory (Figure3.2-23)." A relatively small percentage of companies expect to use "government laboratory" because they are not confident about service quality of government laboratories, which still use old equipment and lack human resources, as discussed earlier.

Clearly, many parts manufacturers will continue to use "customer (OEM) laboratory," while responding negatively to the use of government laboratory.



(N=112/115) (JICA Study Team)

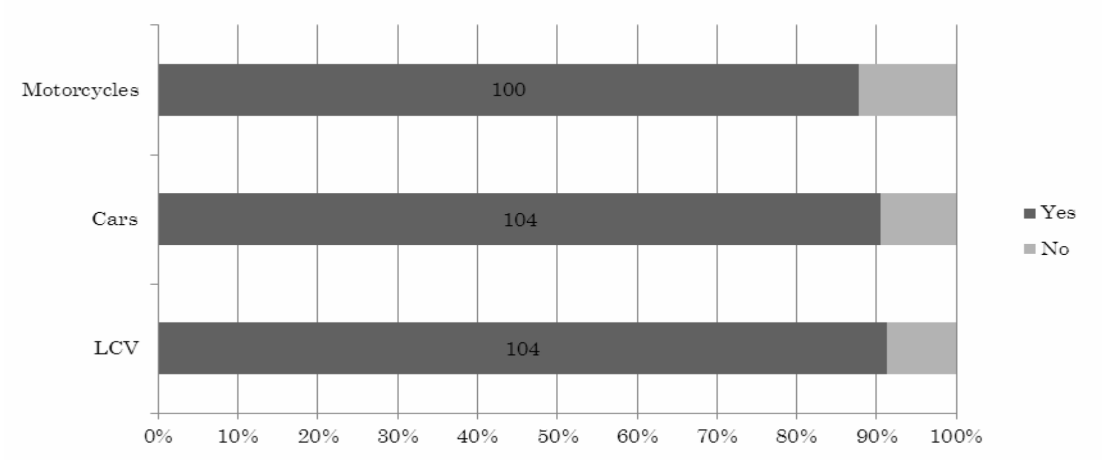
Figure 3.2-23 Future Quality Testing Institution

(10) Introduction of a new vehicle inspection system

As for introduction of a new vehicle inspection system covering two wheelers, passenger cars, and LCVs, more than 85% of companies favor it (Figure3.2-24). The biggest reason cited by companies answering "yes" is that most of them expect the sales of spare parts will increase after introduction of the compulsory inspection system[40]. On the other hand, most of the users understand the needs and importance of such inspection system, but they are reluctant to use such system which could be required certain expenses. Many users prefer simply bringing their cars to a repairing shop in case of troubles. For the introduction of new vehicle inspection system, Government should raise the public awareness on the importance of compulsory vehicle inspection system.

A major reason cited by companies saying "no" is that the fitness examination system covering commercial vehicles, currently in place, is not properly implemented. They accept the new system under the condition that it is appropriately implemented. It is therefore suggested that the local parts industry is concerned about quality and safety of vehicles on road and has a positive attitude toward the introduction of the new inspection system.

[40] However, as long as widely observed practice of passing the inspection through illegal means such as bribery is not corrected, the sales of spare parts will not increase.



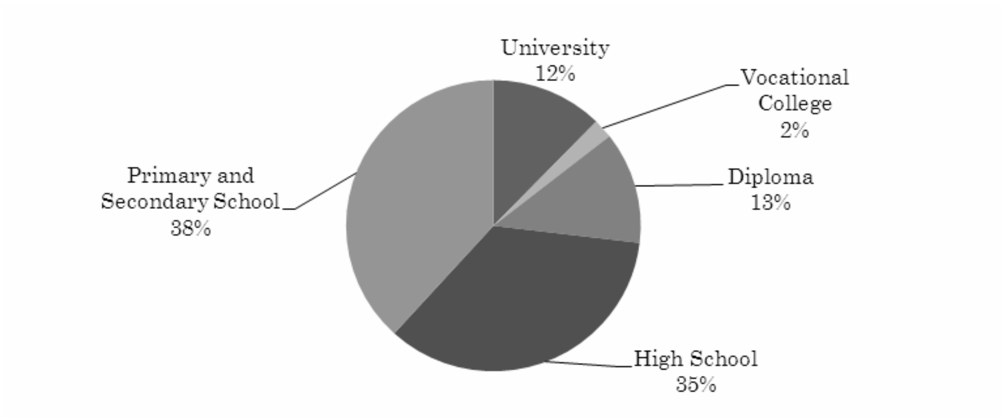
(N=115) (JICA Study Team)

Figure 3.2-24 Introduction of Periodical Inspection System to Private Vehicles

3.2.3.5 Human resource development

(1) Educational background and work experience

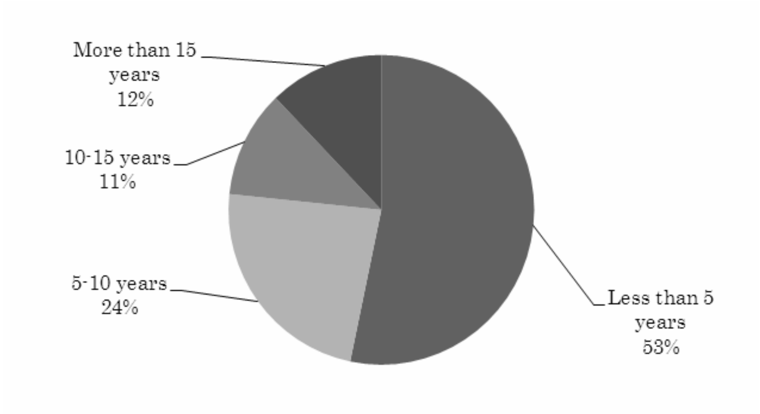
Among employees of the parts industry, "primary and secondary school" accounts for the highest share of 38%, totaling 4,353 persons, followed by "high school" 35%. On the other hand, "university," "vocational college" and "diploma" hold a combined share of 27% (Figure 3.2-25).



(N=11,454) (JICA Study Team)

Figure 3.2-25 Education Back Ground of Employees

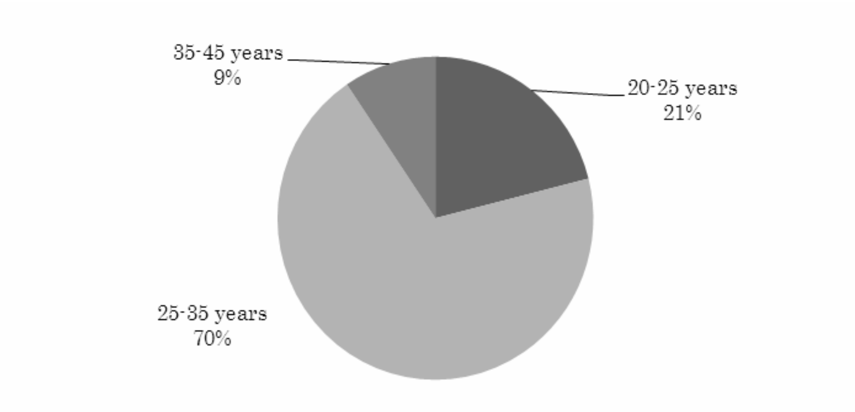
As for the average length of service, "less than 5 years" holds the dominant share of 53%, followed by "5 to 10 years" 24% and "10 to 15 years." On the other hand, "more than 15 years) is seen in 12% of companies (Figure 3.2-26). The background behind the high turnover rate is frequent job hopping motivated by higher salary.



(N=107/115) (JICA Study Team)

Figure 3.2-26 Average Length of Service of Employees

Thirdly, the average age of employees is mostly seen in the range of "25 to 35 years old" that accounts for 70%, followed by "20 to 25 years old" 21% (Figure 3.2-27).



(N=110/115) (JICA Study Team)

Figure 3.2-27 Average Ages of Employees

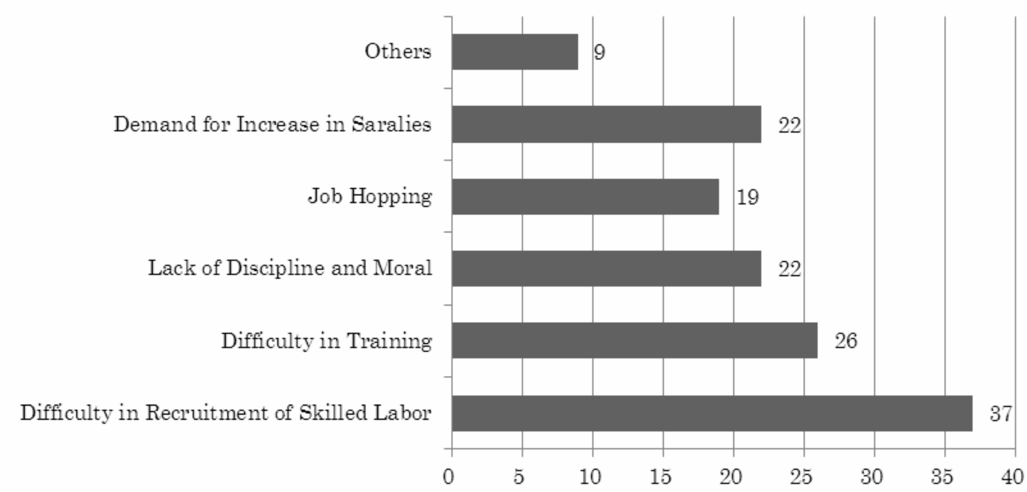
In summary, most of workers working for the auto parts industry have not reached professional education and training. They learn knowledge and skills through day-to-day work. On the other hand, as the majority of workers change jobs within five years after initial employment, many companies cannot build internal technology resources that can be inherited to younger workers. Also, companies need to hire a large number of workers to fill the gap created by the early leave, so that the average age of employees is very young.

(2) Problems relating to labor management

In this area, “difficulty in recruitment of skilled labor” was chosen by the largest number of respondents, 37 companies or 32% of the total. Then, “job hopping” is viewed as a major problem by 19 companies (17%). (Figure 3.2-28)

Also, “difficulty in training and education in the country” was pointed out by 26 companies (23%). Specifically, respondents cited the lack of training knowhow among HR staff and time and budgetary constraints relating to internal training.

In relation to the above, 22 companies (19%) recognized “lack of discipline and moral for their jobs, including late for work and absenteeism.



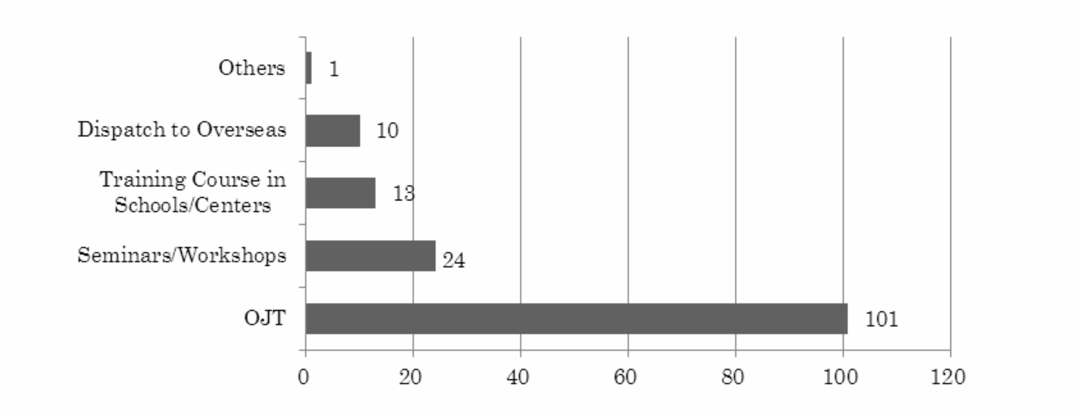
(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-28 Problems in Recruitment and Management

(3) Human resource development

Human resource development methods are roughly divided into on-the-job-training (OJT), seminars and workshops, and outside training. In Pakistan, 101 companies cited “OJT,” far exceeding 24 companies “seminars/workshops.” “Training in schools and centers” is used by only 13 companies (Figure 3.2-29).

It is worth noting that three among surveyed companies hired foreign experts including Japanese full time or part time such as four times a year. Generally, parts manufactures in Pakistan are not aware of the fact that certain cost is required such as for hiring foreign experts, in order to acquire the technical upgrade. Further, foreign OEMs are reluctant to provide technical cooperation to local manufactures. As such, one of the solutions might be to invite retired foreign experts.



(Multiple Answers) (N=115) (JICA Study Team)

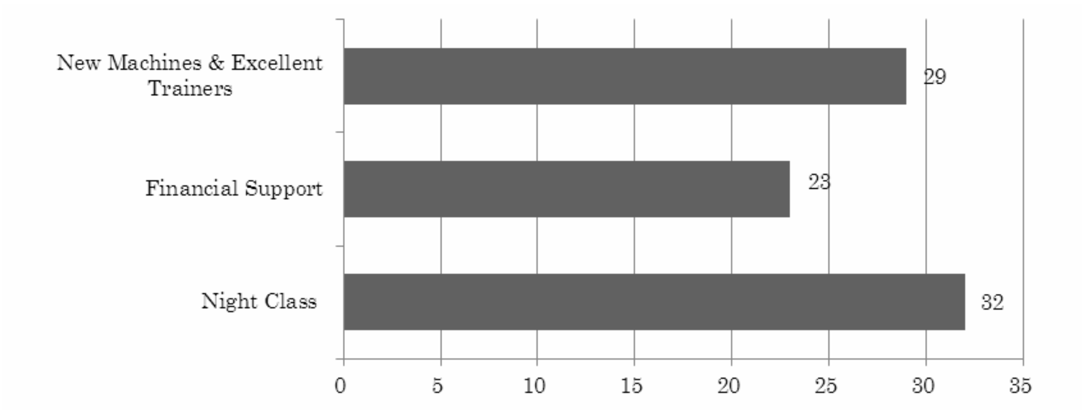
Figure 3.2-29 Training of Employees

(4) Request to seminars and workshops held by government organizations

In this question, the largest number of respondents wants “night class at training center,” totaling 32 companies or 28% of the total (Figure 3.2-30), followed by “new machines and excellent trainers” 29 companies, and “financial support” for seminars and workshops 23 companies.

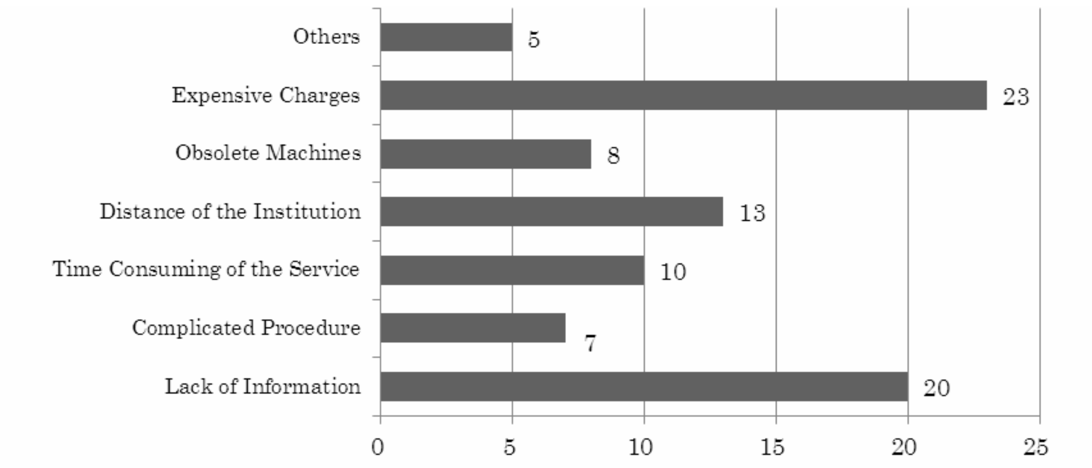
As for problems relating to present seminars and workshops, “expensive charges” was cited by the largest number of companies, totaling 23 companies or 20% of the total, followed by “lack of information about the service” 20 companies, “distance to the institution” 13 companies, “time consuming” 10 companies, and “obsolete equipment” 8 companies (Figure 3.2-31).

These responses suggest that many parts manufacturers want present seminars and training programs held by government to be improved in various aspects, including the night class, improvement of quality in terms of equipment and trainers, and financial support.



(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-30 Request to Governmental Training



(Multiple Answers) (N=115) (JICA Study Team)

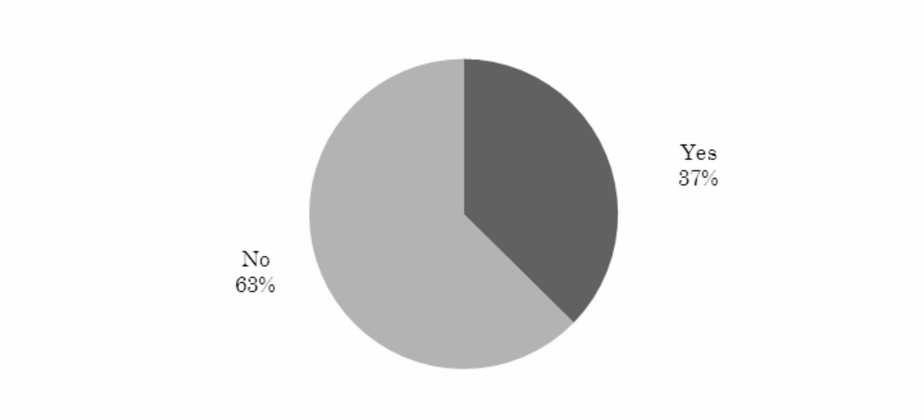
Figure 3.2-31 Problem of Governmental Training

3.2.3.6 Finance

(1) Need for finance

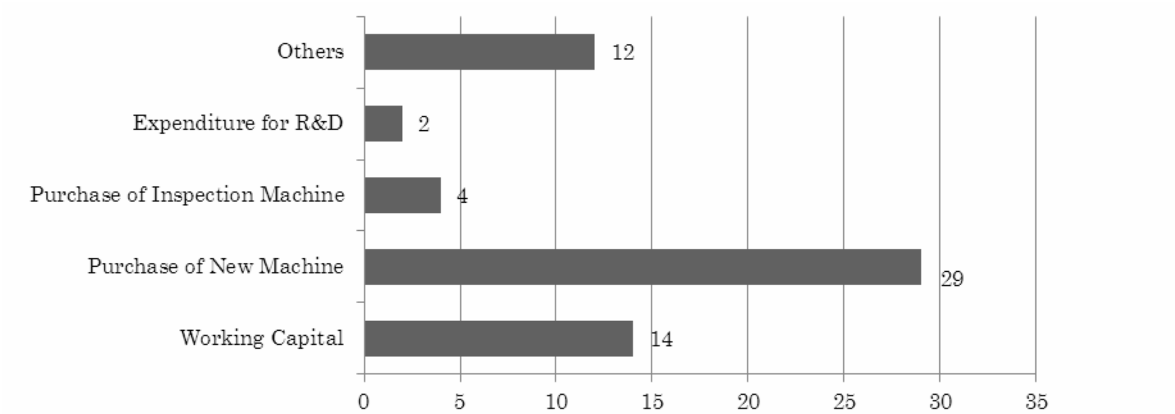
63% of respondents had no need for finance at present (Figure 3.2-32). On the other hand 29 companies responded that they needed finance for the purchase of new machine, and 14 companies as "working capital" (Figure 3.2-33). The small need for finance is largely attributable to a rapid shrinkage of the automobile market. Car sales declined sharply after 2008/09 due to the rapid deterioration of the national economy and remained at the 123,000 unit level, which is equivalent to 2004/05.

As a result, 74% of respondents considered their production capacity to be "appropriate" or "more than enough," and 80% stated "no plan so far" about capital investment that would require bank loans.



(N=91/115) (JICA Study Team)

Figure 3.2-32 Loan and Credit Requirement



(N=57/115) (JICA Study Team)

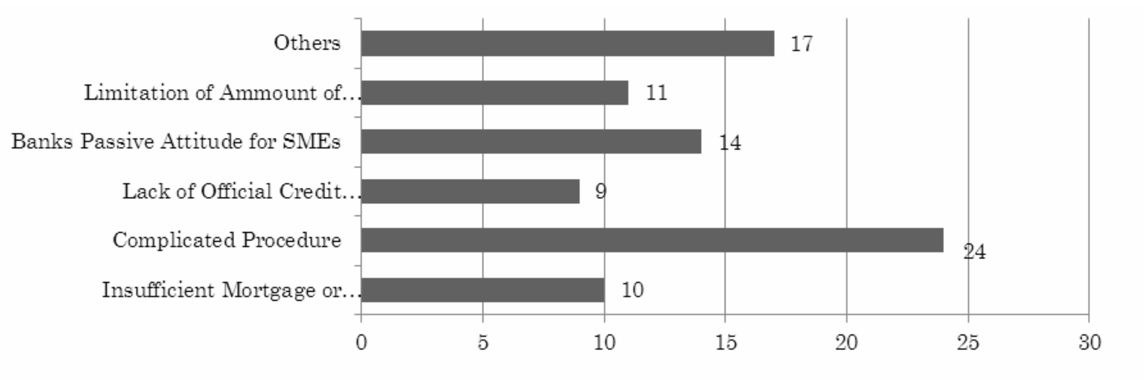
Figure 3.2-33 Use of Finance

(2) Problems relating to commercial loans

The most frequently cited problem is complicated loan procedures, totaling 19 companies. Loan application must be accompanied by the submission of business plans indicating future profits, which preparation requires management knowledge including estimation of income and working capital. SMEs that represent the majority of the parts industry often lack employees having such knowledge and cannot make a loan application...

Secondly, 13 companies cited "bank's passive attitude for SMEs" and 9 companies "limitation on amount of SME loans." Generally, banks are reluctant to SME loans on account of high uncertainty about repayment, and in order to avoid a risk of default, they take various measures, including the establishment of the upper limit on the loan value, and the mortgage or collateral requirement.

Thirdly, 7 companies cited "lack of official credit guarantee system" and 6 companies "insufficient mortgage or collateral."



(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-34 Difficulties in Borrowing Loans from Banks

3.2.3.7 Customer Linkage and Subcontracting

(1) Customer support

Customer support is roughly divided into the following five types: technical support; financial support; management support; human resource development; and supply of parts.

In Pakistan, the largest number of companies received "technical support" from customers, followed by "human resource development," "financial support" and "management support." As for "technical support," "drawing design" was cited by the largest number of companies, totaling 66 companies or 57%.

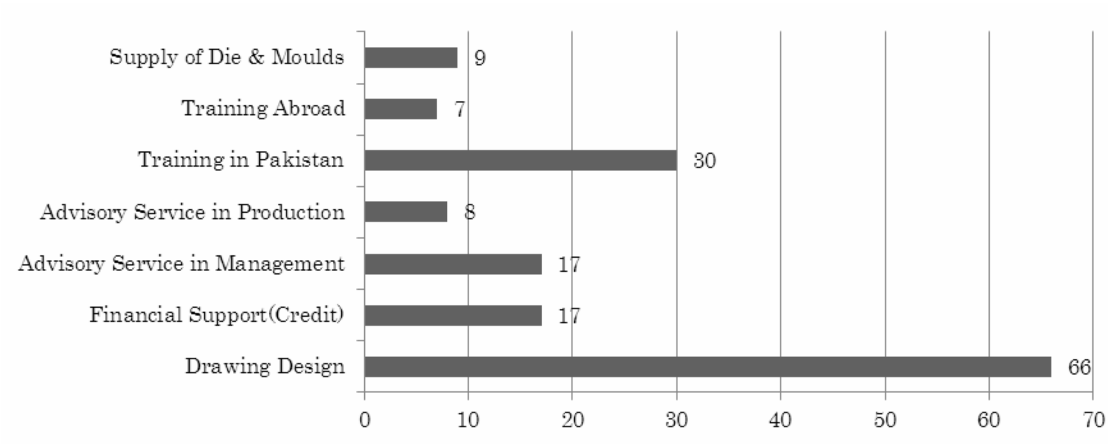
On the other hand, only 8 companies (7%) received “advisory service in production,” which is directly linked to improvement of product quality. A small number of customers provide parts suppliers with advisory service relating to production technology, because they are not in an exclusive agreement (“keiretsu” or captive relationship widely seen in Japan) and many parts manufacturers supply their products to other customers (competitors).

As for “human resource development,” 30 companies (26%) received “training in Pakistan” conducted by customers. On the other hand, only 7 companies received customer support for “training abroad” due to time and financial constraints.

With regard to “financial support,” 17 companies (15%) received customer credit for the purpose of purchasing new machinery.

Finally, 17 companies received advisory service in management from their customers in the areas of kaizen and 5S.

In summary, technical support is most widely practiced as customer support for parts manufacturers, but it is mostly composed of “drawing design” for product development purposes, whereas it is noteworthy that advisory service relating to production technology is rarely carried out, despite of its direct linkage to quality improvement.



(Multiple Answers) (N=115) (JICA Study Team)

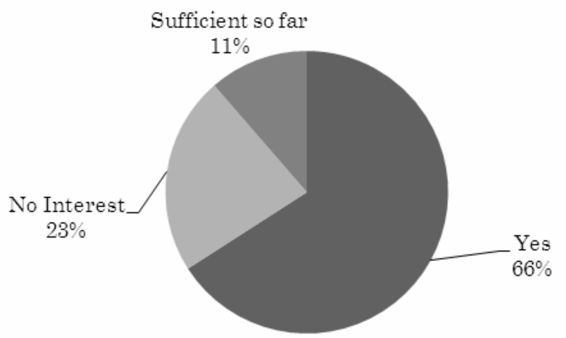
Figure 3.2-35 Cooperation from Customers

(2) Exploration of new customers

As for exploration of new customers in the domestic market, 66% of respondents indicated "yes." However, there are many obstacles to such efforts.

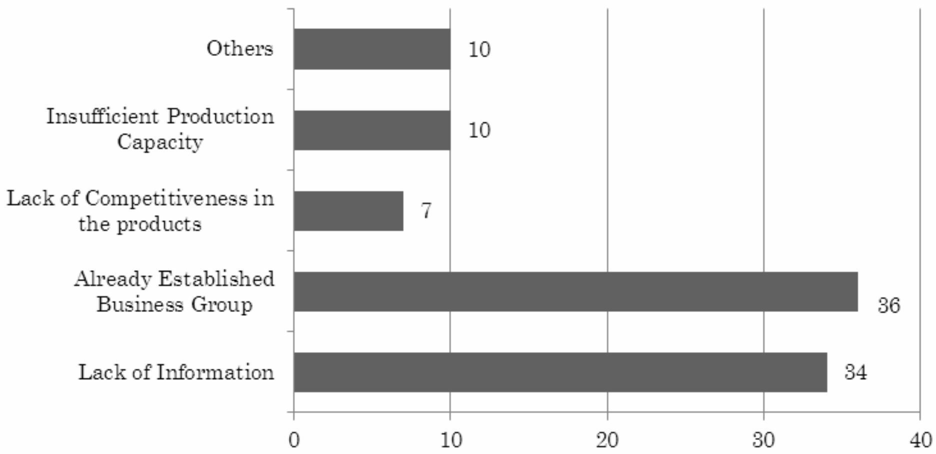
The largest problem felt by parts manufacturers is "marketing." 36 companies (31%) cited "already established a business group," followed by 34 companies (30%) "Lack of information." In the "others" category, some pointed out that exports were restricted under the supply contract with the customer.

With regard to "issues relating to internal technological capability," only 10 companies cited "lack of production capacity" and 7 companies "lack of competitiveness in products." Clearly, many parts suppliers consider marketing as the most difficult problem relating to exploration of new customers, while they are largely satisfied with their own technological capability.



(N=88/115) (JICA Study Team)

Figure 3.2-36 Interest in Obtaining New Customer

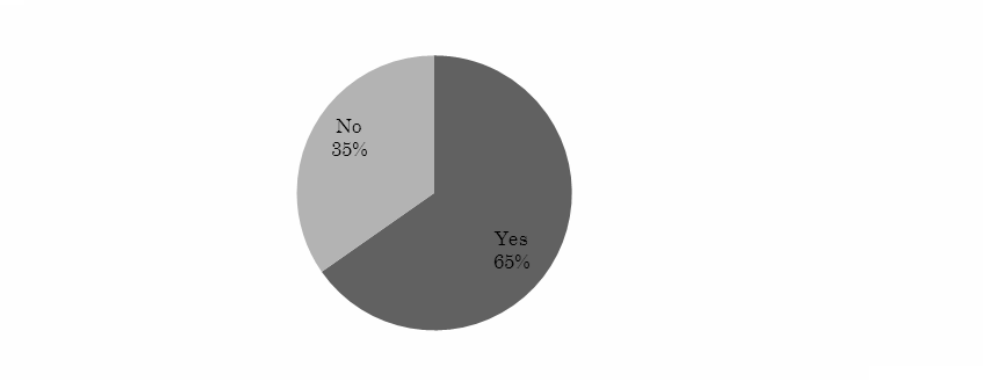


(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-37 Difficulty in Obtaining New Customer

(3) Interest in joint venture

65% of respondents showed interest in joint venture of foreign parts manufacturers. Japan was cite ed.



(N=72/115) (JICA Study Team)

Figure 3.2-38 Interest in Joint Venture

3.2.3.8 Export promotion

(1) Difficulty relating to export promotion

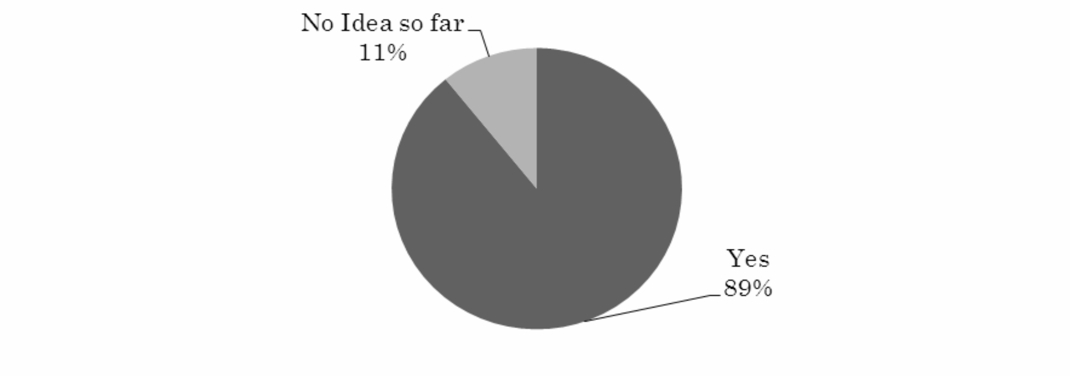
89% of respondents show interest in exporting their products (Figure 3.2-39). Expected destinations are roughly divided into neighboring countries and industrialized countries. Among neighboring countries, Sri Lanka and Bangladesh are favored most and are cited by 16% each of respondents. Among industrialized countries, Japan and Germany account for 16% each. On the other hand, it is notable to see that no company views India as a potential export market probably due to political conflicts between the two countries, despite the rapid growth of the automobile industry in India (Figure 3.2-40).

Then, major issues relating to export promotion are “marketing” and “own production technology,” which is also seen in relation to the exploration of new customers in the domestic market. Those peculiar to export markets are “finance” and “export procedures.” (Figure 3.2-41) The most difficult challenge for parts manufacturers is “marketing” (cited by 23 companies), especially “lack of information.”

Then, 12 companies cite “severe requirement for quality,” suggesting that many parts manufacturers feel difficulty in making exports in recognition that their products meet quality requirements within the country but are far from satisfying international standards.

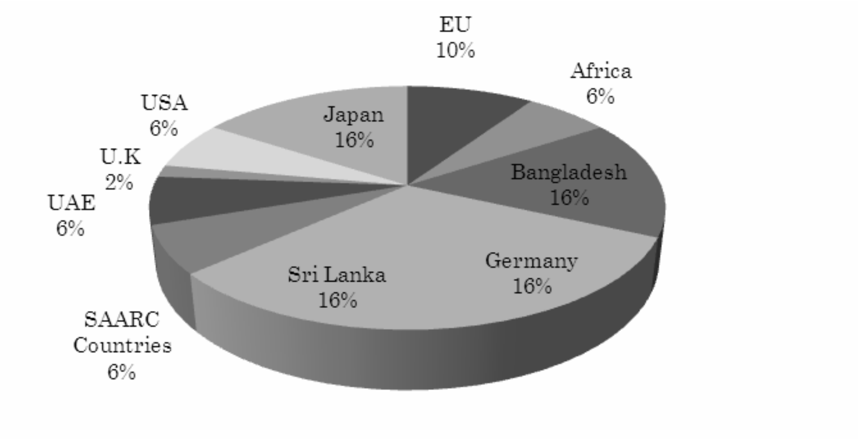
“Financial problems” are citied by 17 companies. Development of export markets requires new equipment investment, including production machinery and testing equipment, which impedes market expansion efforts.

Finally, “export procedures” are perceived as an export barrier. Specifically, “contract” and “procedure for external trade” are cited by 10 companies each.



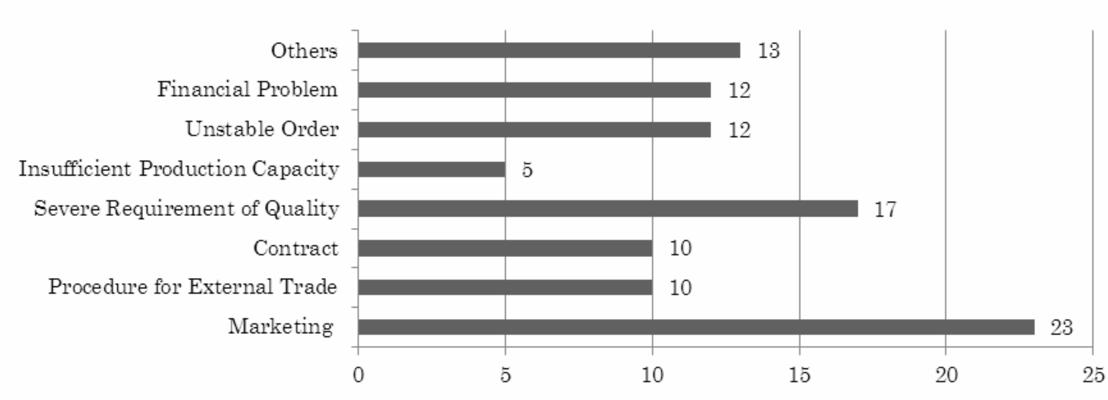
(N=111/115) (JICA Study Team)

Figure 3.2-39 Desire to Start Exporting



(N=70/115) (JICA Study Team)

Figure 3.2-40 Expected Destination Country



(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-41 Difficulties in Export Promotion

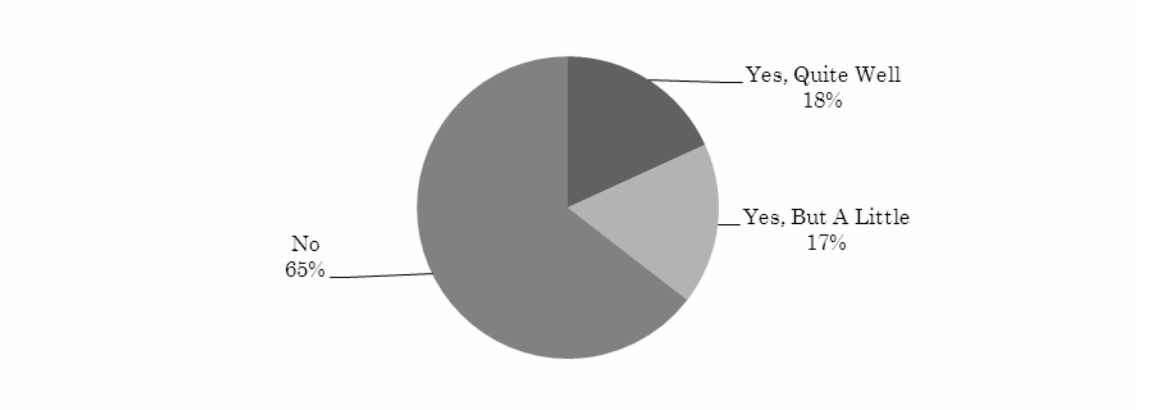
(2) Request to government

What parts manufacturers expect from government in relation to export promotion is generally divided into "financial support," "marketing support" and "technical support." As for financial support, "lowering of import tariff on raw materials," "government loan for purchase of new equipment, and "credit guarantee for commercial loan" are cited. With regard to marketing support, "provision of information on foreign companies," "organization of foreign trade fairs" and "networking with foreign companies" are voiced. Finally, technical support includes "extension service at factory" and "workshops."

3.2.3.9 Automotive industry development policy

(1) Knowledge about AIDP

AIDP was established in 2007 for the purpose of promoting the automotive industry. However, only 18% of respondents knew AIDP "quite well" and 17% "a little." On the other hand, the largest percentage (65%) of companies did not know of AIDP (Figure 3.2-42). The results indicate that AIDP is rarely known among automotive parts manufacturers, not to mention its mission.

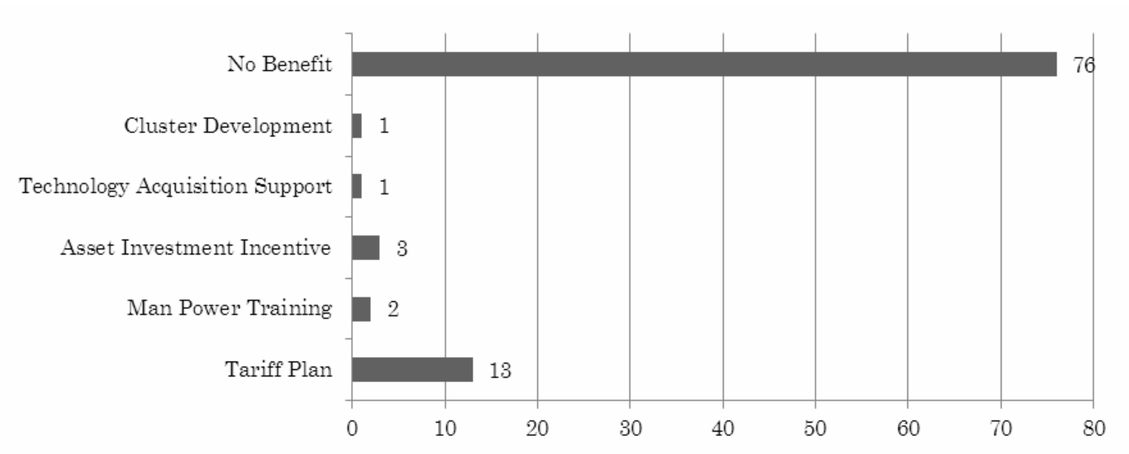


(N=110/115) (JICA Study Team)

Figure 3.2-42 Knowledge about AIDP

(2) Support by AIDP

AIDP is mainly composed of the following six elements, i.e., tariff plan, human resource, asset investment incentive, technology acquisition, cluster development, investment policy, and AIDC. However, 76 companies received "no benefit" from AIDP (Figure 3.2-43). "Tariff plan" was most frequently cited as AIDP support, totaling 13 companies. Other elements were cited by only 1-3 companies. This indicates that AIDP is not largely implemented in the past three years after its establishment.



(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-43 Benefit Taken from AIDP

(3) Request to government

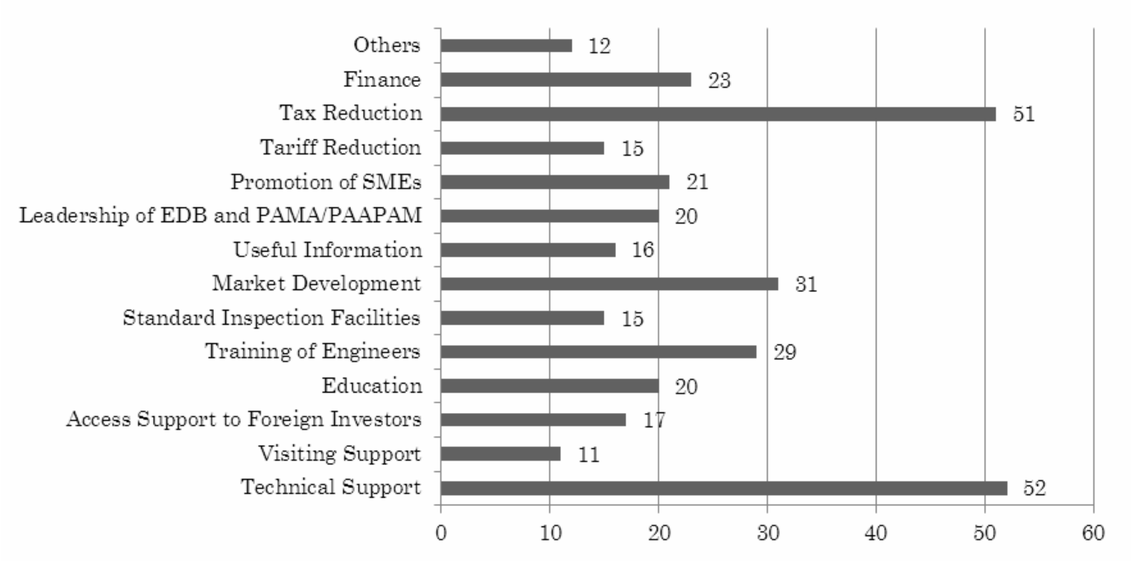
Requests made by respondents in relation to government support for invigoration of the automobile industry are classified into "technical support," "human resource development," "financial support," "tariff reduction" and "marketing support."

In the field of technical support, 52 companies cite “technical support (on-demand consulting service)” and 11 companies “periodical visiting support.” 51 companies want “tax reduction (relating to production),” followed by 15 companies “tariff reduction.”

As for “human resource development,” “training of engineer” is highly demanded (29 companies), followed by “employee education” (20 companies).

With regard to “marketing support,” 31 companies cite “market development,” followed by 17 companies “access support to potential foreign investors” and 16 companies “useful information.”

Finally, financial support is requested by 23 companies, mainly the provision of low-interest loans and credit guarantee for commercial loans.



(Multiple Answers) (N=115) (JICA Study Team)

Figure 3.2-44 Requests to Government

3.2.4 Technical Assessment of Automotive Parts Manufacturers

This section presents the results of technical assessment survey conducted by the JICA Study Team, which visited around 40 parts manufacturers. Their current state is analyzed by taking into account the study team’s experience in similar projects. It should also be noted that the survey primarily covered relatively large enterprises.

3.2.4.1 Technical Assessment by Processing Technology

(1) Press work

In Pakistan, not many parts manufacturers are specialized in press stamping. They assemble sheet metal products, form radiators, and assemble parking brake levers and motorcycles, even rickshaws. Generally, sheet metal parts are critical as they make up a skeletal structure of skeleton of motorcycles or automobiles, and they should have been localized earlier because of problems relating to physical distribution (initially CKD imported). Thus, assembly manufacturers seem to have contracted press work to local manufacturers, regardless of their experience.

Most manufacturers engaged in press stamping have started from reverse engineering, i.e., they receive a specific component from their customer (OEM assembler) and dismantle it into unit parts by disassembling welded sections. Their experience can be seen in their shops. Some manufacturers manually hammered out a component from an iron plate, with reference to a sample product provided by customers, because they could not make a die due to a small production lot. What they needed is the worker's skills developed through experience.

The press stamping process adopted by Pakistani manufacturers is divided into a stamping process using a hydraulic press and a back-end process using a small power press. As they only have a relatively small press, their process inevitably consists of multiple steps, resulting in piles of work-in-process between them. In fact, Pak Suzuki is the only company that operates press lines capable of volume production, which are equipped with 1,200-ton and 1,000-ton presses, totaling five presses each with moving bolsters, and conveyor systems. On the other hand, Honda and Indus have presses (used in Japan for more than 40 years) capable of stamping large outer plates, but because of a limited number of units (two and one, respectively), their productivity is low due to the need for die exchange. As there is no local press shop that can produce outer plates, automakers have to rely on imports if production is to increase further.

Most presses owned by parts manufacturers are secondhand and of hydraulic type. Some have recently purchased mechanical presses of over 50 years old (Note 44). However, the capacity utilization rate is low due the decrease in customer orders as local production does not increase due to the global recession. Besides, present press lines are difficult to achieve accuracy demanded by OEM assemblers, while new investment is not likely unless production increases significantly.

(2) Metalworking

Dies and molds are also used for plastic molding, casting and forging. They are indispensable in mass production and determine product quality as well as productivity. Thus, die making is the most important area in the production chain. The study team found that OEM assemblers pointed out problems relating to sheet metal parts. This means that they come from problems relating to dies. The study results indicate the absence of local manufacturer capable of making dies on a commercially reliable basis. In addressing the issues raised by OEM assemblers, die production capability should first be upgraded.

1) Difference from dies and molds for plastic molding, casting and forging

Dies and molds for plastic molding, casting and forging are formed by cavity, into which resin, molten metal and other materials are poured. Products can then be machined until they satisfy dimensional accuracy. On the other hand, press work is expected to produce a complex shaped component from a single plate, which cannot be handled by machining. Also, it entails a number of steps, which is governed by process design and the type of press. A die made by merely copying an original component is not enough. Automobile body is made from a number of press parts and its design is subject to frequent change as a result of restyling. New dies should be made accordingly. Press dies are therefore a critical investment item.

In Pakistan, public support is provided in relation to resin molds under the PITAC program, and KTDMC and GTDMC have mold making equipment. However, the equipment is only capable of forming cavity. The auto parts industry needs press die technology to make sheet metal parts that meet high precision requirements. This can be done by understanding basics of the press work process, including not only die making techniques but process design as well.

2) Introduction of CAD/CAM

In the near future, parts manufacturers are expected to receive design drawings in an electronic form from their customers. Sample products will no longer be supplied. Based on design data, they have to design the die making process, including jigs and tools. While CAD/CAM systems are introduced by an increasing number of companies, they are not utilized fully. Meanwhile, they are used for die making. When dies are made by the casting method, local companies can make a simple product such as sugarcane case by using a wooden or sand mold, but not by the FMC (full mold casting) method. As a result, dies are mainly made by means of welding. If dies are made by the FNC method and on the basis of digital data supplied by the OEM assembler, the die making time will be shortened significantly.

(3) Machining

Companies specialized in machining operation often emphasize that they have modern machinery, deliver tractor's transmissions and motorcycle parts, or export their products. However, they should realize that the manufacture of tractor or motorcycle parts is different from that of car parts. A passenger car must provide riding comfort in an enclosed space. A small vibration could cause resonance, which in turn produces confined noise to make the car unsuitable for passenger use. This is the quality requirement where OEM assemblers pay attention most and is different from tractors and motorcycles that do not confine noise. Most machining shops have testing equipment for a single product, not for an assembled component. They claim that they have modernized their equipment, but many of them are fairly old. Introduction of transfer machines is also required for volume production.

(4) Casting

Many foundries do not have an appearance or atmosphere that can win trust from customers. At the same time, they may be better than similar Japanese shops in the 1960s, which were known for poor working conditions. Some of them have modernized equipment under assistance of Japanese companies. A company operated by an engineer specialized in metallurgy has sufficient testing equipment and supplies automotive parts. Another company tries to make dies by the FMC method, but its foundry capacity is limited to five tons and can only make small dies. Capacity should be expanded to at least 10 tons. All in all, further modernization is called for.

3.2.4.2 Corporate diagnosis of parts manufacturers by the 7M approach

Parts manufacturers were diagnosed from technical aspects according to the following seven areas.

1) Man (workforce and labor relations)
2) Machine (plant location, production equipment, plant operation)
3) Material (raw materials and physical distribution)
4) Method (management techniques including quality control, production technology and management, and equipment maintenance)
5) Management (business administration and safety management)
6) Money (profit making)
7) Market (customer satisfaction)

As for "man," metrics include the number of team leaders (who head a production organization on the shop floor and are not directly engaged in production line work) and workers under them, and the most recent safety factor and severity rate. Also, the percentage of multi skilled workers (capable of handling 70% of tasks performed by the team) is important because many single-skilled workers mean the lack of flexibility, whereas many multi-skilled workers represent the high degree of freedom in terms of adaptability to environmental change.

In the area of “machine,” metrics are available production equipment, year of manufacture, the go-through rate or yield, overall efficiency of equipment operation, the net operating time ratio, and internalized capacity. As OEM assemblers are expected to switch from drawings and sample products to CAD data, suppliers must have equipment that is suitable for the new production environment.

As for “material,” evaluation criteria are availability of a required raw material or an alternative with same specifications, the rejection rate on delivery, the rate of on-schedule delivery, presence of kaizen activity, and ISO14000 certification. This means the degree of use of customer standards.

Evaluation on “method” looks into the production process (optimized for a specific product?), the status of the internal inspection system, availability of an inline inspection station, installation standards for the inline inspection station, and the desire to shorten the lead time. Key factors for evaluating process optimization are the use of real time piece rate management and control limit values.

The “management” aspects are examined by fixed-point observation, which reflects the fact that companies change with the management’s awareness and attitude. Check items include the current state of 5S activity, including the presence of its signboard within the plant. Also, the production system is managed separately in three key areas (quality, production, and planning). Especially, proper positioning of the chief executive in charge of quality is important. Furthermore, communication with employees and human resource development policy should be considered.

Finally, the prompt response to the questionnaire survey is a key evaluation factor. A company should be rejected if it fails to make timely response, no matter how well it explains that it is capable of supplying products that meet the QCD requirements.

Evaluation on “money” emphasizes the operating profit rate, and whether daily profit management is carried out or whether profit generation plans are made as part of monthly profit management.

From the “market” perspective, metrics are the customer rejection rate, the on-schedule delivery rate, the record of customer awards, and the record of commendation by outside organizations.

In addition to the 7M analysis, R&D capability is an important item. As OEM assemblers are about to terminate orders based on documents completely, suppliers can no longer rely on the reverse engineering approach using drawings and sample products. Instead, effective use of the CAD/CAM system governs the ability to win orders.

Previously, development of the products was based on the draft drawing or copied product made in Japan. However, most of the products are developed utilizing CAD/CAM, in recent years. Especially, in case of Honda, the copy products are not supplied to the part manufactures because the launching is requested simultaneously with Japan. The other OEMs also requests to the manufactures to develop the products not based on the copy products, but the data, in order to maintain the quality. Hence, to be equipped with CAD/CAM is a prerequisite for manufactures in order to obtain the orders from OEMs. OEMs will need to take several actions for manufactures such as providing technical assistance, and supplying die cast produced in Thailand and Japan. R&D capability is closely related to the ability to make a proposal in response to the customer’s demand for reduction of lead time.

(1) Man

The survey results indicate that employees with educational background higher than diploma have a relatively large share (37%). This reflects the fact that automobiles are considered as a typical integral product. The automotive parts industry needs well educated employees who can work together and communicate with their customers.

Traditionally, however, parts manufacturers have made parts on the basis of drawings and sample parts supplied by OEM assemblers. This reverse engineering approach does not need engineers, while skilled workers play a central role. Up until 2004, such skills were considered to be most valuable. Then, suppliers have been gradually shifting toward the use of engineers by sending employees to technical seminars or overseas training programs (e.g., Japan). As a result, workers are evolving from single skills to multi skills.

(2) Machine

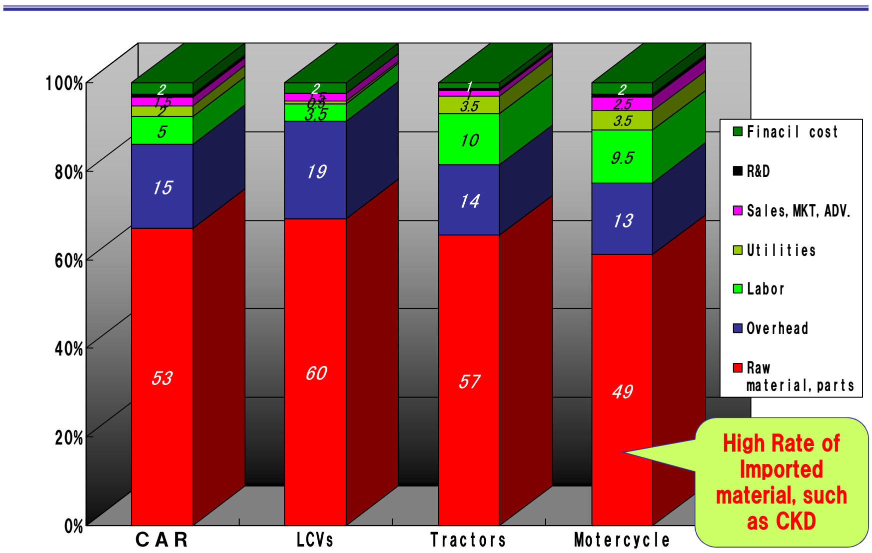
The major issue relating to production management is that many machines used by parts manufacturers are very old, constituting a large constraint on improvement of production technology. Also, many manufacturers use equipment that is suitable for reverse engineering. Also, some of key tasks are still manually operated and need to be mechanized to deal with quality variation. Many companies manage to make products by using very old equipment and skilled workers, but their productivity is very low. The largest percentage of companies was established in the 1980s and the 1990s, and their machines are at least 20 – 30 years old as no replacement has been made. Furthermore, secondhand machines were purchased in many cases to minimize initial investment. They are old enough to be displayed at a museum.

Some companies purchase new equipment imported form Korea and Taiwan. Although they recognize high quality of Japanese equipment, they have decided against it due to high prices and poor maintenance service (e.g., no technician will be sent).

A leading machining company has machine tools imported from Switzerland, which were highly advanced at the time of purchase. However, each machine is operated by an operator to inhibit the rise in productivity and requires additional setup time as a new product model is machined (although machining accuracy can be maintained). As a result, the company's production system lacks flexibility. In addition, the company needs to adapt itself to the CAD/CAM production environment, where orders by OEM assemblers are made in the digital form. In the near future, drawings and sample products will be eliminated and companies that do not have the CAD/CAM system will not be able to receive orders. Digitization will go beyond production and extend to the manufacture of jigs, tools and dies required for inspection and volume production. As assembly manufacturers make further efforts to improve productivity by automation and increased use of industrial robots, they are expected to demand higher accuracy levels for automotive parts.

(3) Material

For the purpose of this report, the word "material" means not only raw materials but also important elements of production technology, such as kaizen activity and ISO certification. Raw materials also include parts and components that are not available in the country, in addition to iron, aluminum, resin, and other materials. Raw materials in the broad definition account for more than 50% of the vehicle production cost, suggesting a high dependency on foreign sources (Figure 3.2-45)



(JICA Study Team)

Figure 3.2-45 Cost Structure of Pakistani Car

However, raw materials are not properly kept or maintained by manufacturers. Despite hot and humid conditions with sand particles in the air, steel materials were left rusted outside a plant. A material was cut manually by shears on the concrete floor. Inadequate handling of materials would lead to damage, allow sand or dust, or wear a die or production equipment.

Another aspect of material management includes kaizen activity for ISO certification and technical support by OEM assemblers. In fact, 57% of companies visited have obtained ISO8000 certification, indicating that they have a positive attitude as export industry. Many companies which have received training from AOTS and other organizations, including those that mixed products with scraps, are actively conducting 5S and kaizen activities.

(4) Method

Production knowhow cannot be entirely obtained from drawings and products themselves. Copying a product is only to reproduce its shape. Production technology determines how to make a product, i.e., selection of a proper process, equipment and treatment method to be used. When a simple defect – burr – occurs in a product, one tends to ask for a method to prevent it. However, determination of a proper method involves analysis of many factors to find a true cause for the defect. More precisely, the 4M (man, machine, material, and method) analysis should be carried out. Burr may be caused by the worker's error, an improper material, or equipment with insufficient accuracy. Finding a true cause leads to effective corrective measures. The process requires experience and standardization, which allows the company to come up with a solution when the same problem occurs again.

The problem solving process, including analysis and clarification, becomes a source of growth as it is accumulated. Parts manufacturers in Pakistan have still to build up such process on a sustainable basis. The first step is to obtain relevant information through various opportunities such as the technical meeting with the customer.

(5) Management

The questionnaire survey was conducted to obtain information useful for evaluating management philosophy of companies visited. However, only 46 out of 140 companies (32%) responded the questionnaire before the present deadline. The response rate rose somewhat (40%) after the reminder. It makes a sharp contrast to OEM assemblers, all of which responded in time. Judging from the low response rate, it is not very convincing that suppliers will keep promise of delivering products in accordance with QCD requirements.

Since companies are organized by people and their performance is driven by employees' performance, human resource development is a key success factor for any company. Many Pakistani companies are family operated and their key positions, including production management, are occupied by the owner's families and relatives. Accordingly, their human resource development efforts favor family members, e.g., family members are sent to seminars and overseas training.

At Pakistani companies, many workers believe that they get paid for a specific task and 5S activity is outside their job description. On the other hand, companies, which have participated in overseas training and have visited foreign companies, are successfully implementing 5S activity. Although close communication between the management and workers is known to help raise morale and invigorate kaizen activities, they are widely separated in the case of Pakistani companies. A many of them have obtained international standard certification (ISO900, ISO14000, TS16949, and QS9000), but they do not seem to make serious efforts to enforce and comply with such standards, as seen from the present status of documentation and its management.

Much less attention is paid to work safety. A small number of companies have safety standards (e.g., requirements for safety shoes, glasses and gloves) or require workers to wear uniforms. To change the old mindset about management in Pakistan, managers need to have overseas education and/or experience in working with multinationals so that they can think about production from global perspectives.

(6) Money

The financial condition of many Pakistani companies is not much different from their management style. They raise funds from family members. On the other hand, borrowing from financial institutions is difficult in consideration of the high inflation rate (over 10% in 2009/10), the depreciation of the rupee, and the decline in automobile production.

(7) Market

The key factor is whether parts are acceptable to OEM assemblers. Some of parts manufacturers visited by the study team proudly displayed certificates of commendation and plates. However, it should be recognized that commendations are given as incentive for suppliers and do not necessarily mean that they are truly excellent. In reality, suppliers deliver products that have been selected through the 100% inspection process. Truly excellent suppliers should be able to deliver parts as they come out of the production line, without selection or remaking.

(8) R&D

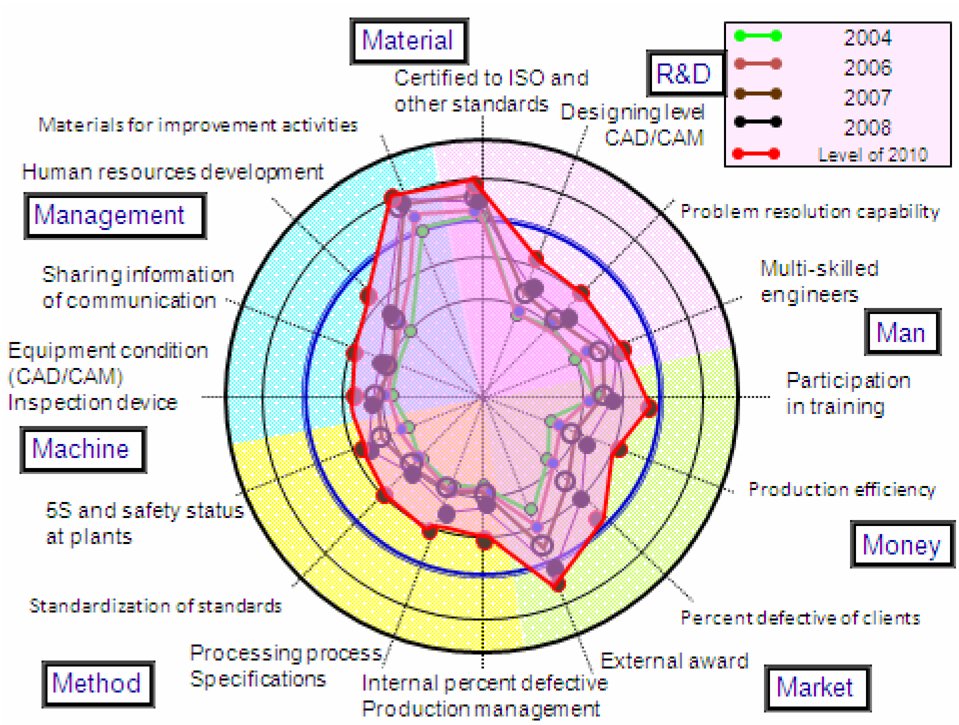
There are a fairly large number of companies having product development capability, more than expected by the study team. They strive to conceive innovative ideas about achieving small lot production by investing the minimum amount of money. A company has developed a manual method to manufacture hemming dies, contributing to reduction of capital investment on the assembler side. A filter manufacturer has developed a machine to pleat filter papers. Another company makes its own production equipment if the purchase price is expensive. These companies appear to inherit such practice from founders who had no choice but making machinery and tools by themselves. Yet, they still use very old machinery.

Product development activity will be increasingly relying on IT, as seen in the trend that suppliers are expected to use the CAD/CAM/CAE system to make a product on the basis of design data provided by assembly manufacturers. Use of IT by Pakistani parts suppliers is still in its infancy. They appear to lack the sense of rivalry as they benefited under the Deletion Program and should change their mindset under the tariff-base program.

The interview survey has revealed that the major issue is related to fundamentals of press work, e.g., how to make a high quality product at a steady rate and how to design a die making process. Clearly, it is before the stage where productivity or quality improvement and/or cost reduction is called for. It is therefore important to teach press technology to suppliers from basics.

Most companies use obsolete equipment that was used in Japan more than forty years ago. Some have CNC machines but cannot meet accuracy requirements by using data obtained from digitization of CKD parts.

To grow out of the reverse engineering practice, the role of OEM assemblers is also important. They should provide detailed design information for suppliers, including product drawings, junction parts, welding standards, inspection and measurement manuals, and the parts production process. It is impossible to learn a detailed production process from CKD parts alone, not to mention critical parts in the subsequent process. Clearly, it may not be practical for automakers to disclose knowhow to outside suppliers, in consideration of their sourcing strategy and other factors. Japanese manufactures receive payment by selling their products. However, the know-how of the production belongs to the manufactures. Hence, the technology transfer of the know-how requires values. Although JV and TC are preferable, these actions may be difficult in the actual condition in which receiving environment has not fully been developed. It is also true that suppliers need customer support until the parts industry improves competitiveness.



(JICA Study Team)

Figure 3.2-46 Evaluation by 7M Analysis

The Figure 3.2-46 shows a radar chart summarizing the 7M assessment results. In addition to major findings reported for each element, the following issues should be pointed out.

- What lacks most are information, network and communication (within the company). Many companies want to upgrade technology and management, but they do not know how to do it. They want to explore a new market, but they do not know where they should start, including initial contact.
- Some owners cannot understand why customers do not buy their products, while they have excellent casting and forging capabilities, with advanced machine tools. They do not realize their true technology levels because they do not know their competitors.
  - Owners of family-operated companies are often active and visit their own factories frequently. At the same time, they follow an old management style. To upgrade technology, it is imperative to change the management style by means of input from outside.
- Also, multi-skilled workers are in shortage. Some owners treat workers as if they were disposable tools. It is important to realize that employees are an indispensable asset and efforts should be made to improve the working condition, such as the provision of safeguards for machine and adequate supply of working shoes and protective devices.
- Most companies do not maintain or enforce production standards, including those that have ISO certification. Furthermore, they fail to accumulate technical expertise as the results of problem analysis and solving are rarely documented.

Two companies of high relevance were found during this survey.

One is a company which operates molding and machining in the same process, producing steering knuckle which is one of the most important parts for the safety control. This company used to produce balls for cement destruction which does not require strict quality control at the time of establishment in 1982. However, in accordance with Deletion Program, the company started to supply brake-drum to Pak Suzuki, and important safety products such as hubs to Hino Pak. With the financial assistance from Hino Pak, they expanded the factory and started export their products to manufactures which supply to USA and Europe. The export accounted to more than half of the total sales. Further the company practices strict quality control in accordance with Toyota Standard with support from Toyota.

The other is a company which has the capacity of producing 15,000 oil cleaners per day. The company supplies only to the aftermarket. Only the small pressing machines are used for the production due to the small size. The body and cap of the oil cleaner are produced in a single process on the same line. Few companies were observed in which several pressing machines were operated in the same line. The president of the company stated that he visited several companies in the same field, and he decided to equip his factory with the same machines. Thus, the company is fully equipped with quality testing machines.

After observing factories in Thailand and Japan, other manufactures also invested in machines in accordance with AIDP. However, with the market shrinking, Auto industry in Pakistan is in the critical situation.

It is worth noting some companies are making their continuous effort for expanding their business.

3.3 Automobile Sales and Maintenance Service

3.3.1 Current State of Automobile Dealerships

In Pakistan, automobile dealers provide after-sales services including periodical inspection and replacement of parts, in addition to automobile sales. They are called 3S shops (sales, service, and spare parts) and represent the business type widely seen in the Pakistani automotive market. In addition, 5S shops (3S plus secondhand and special service, i.e., finance) are emerging in recent years.

In 2009/10, there are more than 150 auto dealers in Pakistan. Most of them are captives under major automakers because imports of new cars are seldom made, together with the business practice that dealer inventories continue to be retained by OEM assemblers.

1) Pak Suzuki: 74 shops
2) Indus Motors: 30 shops
3) Honda Atlas: 46 shops

Auto dealers in Pakistan were first emerged in the 1960s, during which the automotive industry was started. At that time, they not only sold locally made cars but served as an import agent for foreign automakers as well. In the 1980s, the role of auto dealership changed significantly.

During the period, many Japanese companies entered the Pakistan market. In the process, they gave priority to the development of the dealership network capable of providing maintenance and inspection service, because many car owners faced many problems because they used local repair shops that did not have spare parts or maintenance technology. Japanese companies provided technical support for dealers tried in order to develop them to multi-functional service stations to meet diverse needs of car users, including maintenance and repair.

Technical support continues up until today. Now there are a large number of multi-functional dealers in more than 20 cities, including mountain and border areas.

As the development of such dealership network requires considerable cost and time, it constitutes a major barrier for new entrants.

3.3.2 Major Characteristics of Auto Dealers in Pakistan

Auto dealers in Pakistan are characterized as follows.

1) The ownership of cars is held by automakers.
2) Sales prices are determined by automakers.
3) The number of units to be sold is determined by automakers in the form of quota.

(1) Ownership

Distinctive characteristics of the dealership system in Pakistan in comparison to other countries include the ownership of cars to be sold.

In other countries, the ownership of a car is transferred to a dealer at the time of shipment from its assembly plant, and then it is transferred to the customer upon sales. In Pakistan, however, the ownership is retained by the automaker after shipment and is then directly transferred to the customer at the time of sales. (Because of this, the number of units sold is considered to be same as the number of units shipped.)

As a result, business risks that are usually assumed by dealers, such as inventory risk, are assumed by automakers, while dealers are responsible for provision of a store facility, staff and service.

(2) Sales price

Secondly, sales prices are set by automakers. In other countries, automakers suggest sales prices but dealers have a final say. In Pakistan, automakers determine final sales prices (retail prices) including a sales commission for dealers (margin) and labor costs. As a result, dealers cannot change sales prices, including discounts, and the same model is sold at more or less the same price by all dealers[41].

[41] Sales prices vary between geographical areas.

(3) Quota sales

Thirdly, automakers determine the number of cars to be sold by each dealer. In other countries, dealers set monthly unit sales and automakers supply cars accordingly. In Pakistan, automakers establish monthly quota for dealers. Dealers prepare and submit monthly sales plans to automakers, which then make a final decision.

3.3.3 Issues relating to auto dealers

The customer survey has revealed a large number of issues relating to auto dealers in Pakistan. Two major issues peculiar to the country are identified as follows.

1) Lack of competition between dealers
2) Own money

(1) Lack of competition between dealers

In other countries, dealers are in a competitive relationship and initiate various sales promotion activities to differentiate themselves from others, such as sales aggressive pricing and provision of unique after-sales service. In Pakistan, however, there is little competition between dealers, partly because they do not assume business risks such as inventory holding.

(2) Own money

It is a business practice unique to the country. Also called "premium," "own money" is special charge paid by customers, in addition to the vehicle price, in order to obtain cars within a short period of time. In Pakistan, it previously took more than six months to receive popular vehicles after purchase. "Own money" emerged during such period and persists until today. Its amount varies with vehicle types and is said to be in the range between R. 50,000 and Rs. 80,000[42].

In addition to tight supply of popular models, this business custom is sustained by the presence of persons who invest in cars as a subject of speculative hoarding and selling.

These investors buy up popular cars to create supply shortage and resell them to customers who want to obtain them quickly by marking up the original price with "own money."

Consumers complain that auto dealers tolerate the cornering by the investors or conspire with them by collecting the "own money." In fact, the customer survey has revealed that many respondents were asked for payment of the "own money" by auto dealers. Automakers call for elimination of the practice by putting ads on TV and newspapers, but it is still pervasive.

[42] According to the interview survey of customers.

3.3.4 Current state of auto repair shops

In Pakistan, auto repair shops perform repairing, maintenance and inspection of motor vehicles, including replacement of parts.

They are divided into two types: 1) authorized repair shops that receive technical support from automakers; and 2) independent repair shops that are not associated with automakers.

(1) Independent auto repair shops

In 2009/10, there are more than 1,000 independent auto repair shops in Islamabad alone, and totaling over 10,000 shops throughout the country[43]. Most of them are small in size, having 10 or less employees, and are family operated.

Major characteristics of non-authorized repair shops in the country are summarized as follows.

a) They provide the same service as that provided by authorized repair shops at less-than-half price.
b) They train workers under the apprenticeship system.

1) Service offerings

Independent auto repair shops offer maintenance, inspection, repairing, and parts replacement services at prices that less than half those offered by authorized repair shops. They can do so because of low labor cost and the use of non-genuine parts for replacement.

Authorized repair shops usually employ 60 or more workers each, many of whom have graduated from a vocational training school. On the other hand, independent repair shops have 10 employees at most and many of them have finished compulsory education only. Since independent repairs shops employ fewer workers than authorized ones, who are less educated, their labor cost is much lower.

Authorized repair shops use genuine parts approved by automakers for their service. On the other hand, independent repair shops use three types of parts according to the customer's budget: 1) genuine parts; 2) reconditioned parts (secondhand parts imported from Japan); and 3) locally produced parts. Among them, reconditioned parts from Japan are most popular and are selected by the majority of customers because of low price (half that of genuine parts) and high quality. Then, locally made parts are sold at half price in comparison to secondhand parts imported from Japan.

[43] According to the interview survey at EDB

Reconditioned parts are considered to be high quality, comparable to genuine parts[44] (Note 50). As a result, more than 50% of customers who want to have parts replaced chose Japanese parts because of price and quality advantages. The use of cheaper parts, together with the low labor cost, allows independent repair shops to offer service at less than half price.

2) Apprenticeship system

Independent auto repair shops in Japan train their workers in the form of apprenticeship. They hire many workers at the age of 10 – 12 years old[45], who then learn repair and maintenance skills from the shop owner (called "master) through day-to-day work over a period of 10 – 15 years. Then, workers having high skills start their own business[46]. Notably, a new repair shop requires initial investment of Rs. 2 – 3 million, but no bank loan is used due to the lack of collateral.

(2) Issues Relating to Independent Repair Shops

In the customer survey, poor service quality is cited as a major issue relating to independent repair shops. It is largely attributable to the use of aging machinery equipment[47], the continued reliance on manual labor[48], and use of poor-quality parts for replacement purpose[49].

In recognition of the service quality issue, many users use authorized repair shops for repair or maintenance work that requires high technology and skills, despite of high prices, while relying on independent repair shops for oil exchange and simple parts replacement.

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44 On the other hand, parts made in Pakistan are notorious for poor quality and most of them are said to be broken within six months after replacement.

45 Most of them are hired by repair shops operated by their families or relatives.

46 It is similar to the Japanese apprenticeship system and masters often provide funds required for opening a shop.

47 It is common that 30 years or older equipment is used.

48 For work requiring high skills, such as coating or sheet metal repairing, quality varies greatly among mechanics.

49 Some repair shops use cheap parts made locally or in China by claiming them as Japanese products, which often have quality problems including

Chapter 4: Industry Policies and Supporting Network

Chapter 4 Industry Policies and Supporting Network

4.1 Pakistan's Industry Policies and Automotive Industry

4.1.1 Transition of Pakistan's industry policies

This section briefly reviews Pakistan's industry policies since its independence in 1947.

(1) Declaration of industry policy in 1948

Immediately after the independence, the Government of Pakistan announced the "Declaration of Industry Policy", which meant that important industries such as heavy and chemical industry would be managed by the government but the core of economic activities would be left to private enterprises including foreign capitals. Based on this policy, PIDC was established in 1950. It embarked on a wide range of investment projects covering iron and steel mill, chemical fertilizers, cotton spinning, jute spinning, sugar mill, paper manufacturing and others, and then sold a number of factories to private companies. It can be said that this industrialization strategy prioritizing light industry by private capitals was successful in cotton spinning and other sectors.

The industry development strategy led by private companies was inherited by the next Ayub Khan administration. The development financing organization funded by the government and PDIC worked together to help achieve smooth economic growth in the 1960s according to five-year or 20-year economic development plans. Industry policies in 1960s were led by private companies but, from another viewpoint, import substitution strategy was used as a major driving force.

(2) Nationalization policy in the 1970s

In 1971, East Pakistan separated and became independent as "Bangladesh", while West Pakistan became the present nation as a federation of four provinces. In 1971, the Government nationalized industries under the economic reform REO. In 1972, nationalization of ten major key industries including the iron and steel mills, automotive, petrochemical, and cement industries was announced and 32 companies were nationalized. Thirteen private commercial banks were reorganized to five national banks in 1974. Then, in 1976, rice and flour milling industries were nationalized. However, the oil crisis in 1973 put the economy in chaos and political upheavals broke out in the course of the subsequent general elections.

(3) Promotion of privatization

After 1977, the Government gradually moved towards open economy. Most of key industries were maintained as public sectors, several exceptions were permitted as the seeds toward the subsequent policy to promote private initiatives. Islamization of the economy was manifested in various forms, including the introduction of the interest-free financing system in 1979, and zakat (charity) in 1980.

Subsequently The Government followed on industrialization path driven by the private sector. Thereafter private sector lead privatization seems to be the basic policy.

(4) Current status of privatization

As shown in Table 4-1, privatization since 1991 includes 168 cases, which amount to Rs. 476 billion. The telecom sector holds the largest share, amounting to Rs. 187 billion of four projects led by 26% sales of PTCL at the value of Rs. 156 billion. The automotive sector accounts for seven projects, which took place in the initial stage of privatization between 1991 and 1993, and were not very large (a total of Rs.1, 100 million).

In 1992 - 1993 and 2003 - 2005, privatization ramped up but is losing momentum recently. Since the start of nationalization in 1972, key industries remain as public sectors.

Table 4-1 Privatization (number of cases, value)

		Number																			Amount
		91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	Total	Rs. mill.
1	Banking	2					1	1					2	1							7	41,023
2	Capital market transaction											2	7	4	3	2	1	3			22	133,124
3	Energy				1		2				1	1	7			2					14	51,756
4	Telecom				2											2					4	187,360
5	Automobile	1	4	2																	7	1,102
6	Cement		8			1	2							1	3	1	1				17	16,177
7	Chemical		5		1	4	3						1	1	1						16	1,643
8	Engineering		4	1		1		1													7	182
9	Fertilizer	1											2			1	2		1		7	40,281
10	Cooking oil	1	10	6				1		1	1		2		1	1					24	842
11	Rice		5	2			1														8	236
12	Riti plants		12	1			1		1												15	91
13	Textile			1		1										1	1				4	370
14	Newspaper			1		1	3														5	270
15	Tourism								1	2			1			1					4	1,805
16	Others					1				3			1			1					6	159
	Total	5	48	14	4	9	13	3	2	6	2	3	23	7	8	12	5	3	1	0	167	476,421

Source: Privatization Committee, "Privatization through private partnership-policy guidelines and program"

4.1.2 Other industry policies

(1) Five-year economic development plans

Pakistan has been formulating and implementing nine five-year economic developments plans as shown below.

- The first development plan (1955-60)
- The second development plan (1960-65)
- The third development plan (1965-70)
- None (1971-76)
- The fifth development plan (Volume I 1977-83, Volume II 1978-83)
- The sixth development plan (1983-88)
- The seventh development plan (1988-93)
- The eighth development plan (1993-98)
- Medium Term Development Framework (MTDF: 2005-10)
- The tenth development plan (under working)

The five-year plan initially targeted agriculture. Then, the plan target was expanded to include infrastructure development and industry promotion measures. Since the eighth development plan, the social and cultural goals are also pursued.

(2) Industry policies of the Ministry of Industry

The Ministry of Industry develops its own industrial policies. Normally, it hires outside experts (universities, etc.) for analysis and formulation of draft policy from time to time. Then, a workshop including the government and private sectors is convened in each province, before final compilation by the Ministry of Industry. Presently, the industrial development plan for 2011-2020 is in the process of formulation.

- Towards A Prosperous Pakistan, A Strategy for Rapid Industrial Growth (January 2005)

  This sets forth a wide range of goals, including deregulation of capital, land, and labor force, execution of contracts, simplification of the tariff and income tax systems, export promotion, labor quality improvement, infrastructure development including electric power, transportation, and industrial parks, SME promotion, regional development, promotion of trade with Central Asia and India. However, these goals have not been realized due to the global recession, internal security problems, and the devastating flood, and other adversary factors.

- National Industrial Policy 2010, Rebuilding Pakistan's Manufacturing Base (December 2010, under development)

  This is a ten-year plan for 2011-2020. To double labor productivity in ten years, it aims for stabilization of the macro economy, correction of the provincial disparity in development between regions, and improvement of electricity supply and transportation. As the input needs industries (steel, chemicals, fertilizers) and value add industries, the knowledge based industries (auto sector and farm machinery, electronics, pharmaceutical) and skill and engineering industries (fan, cutlery, horticulture processing, surgical instruments, sports goods, ceramics, furniture, leather products, gems, marble, agriculture implements, home appliances, iron and steel tubes, pumps, electrical fittings, steel towers, prefabricated buildings, and fisheries) will be given of priority for promotion after established a science park. As the implementing organization, the EDB will be reorganized to the IDB (Industrial Development Board) for full exercise of its functionality.

Another major industrial development plan in recent years is "Vision 2030" developed in 2006 by National Economic Planning Committee. This is an industrial development plan setting the target year (2030) and aims to develop high value added industries and to ensure effectiveness of industry policies. Under the plan, the automotive industry is designated as a high value added industry. One of the goals stated in "Vision 2030," which now widely used as an economic development target is to increase per-capita income to $4,000 in 2030, which is four times the 2006 level.

Both the government and MOIP set similar industrial development directions in their plans but their ability to achieve the goals is uncertain. Although the political environment is a major impeding factor in recent years, strong government leadership in industrial development is needed more than ever.

4.1.3 Changes in policies and programs relating to the automotive industry

The history of automotive industry development in Pakistan is discussed at the beginning of Chapter 3. Although it is widely believed that the industry was born in 1953 when GM of the United States started SKD production of Bed Ford trucks, assembly operation was already underway under the British rule, before independence in 1947. In any case, its history is old and the industry covers a wide range of vehicles, from tractors to motorcycles, buses and trucks.

Development policy relating to the automotive industry has been evolving in line with the overall industrial policy. Under the nationalization policy, a state enterprise was established jointly with Suzuki Motor Corporation in Japan. Then government policy was switched to privatization, and foreign assembly manufacturers, including Japanese companies, have entered the market. Thereafter, the development policy was shifted from CKD production to the increased use of locally produced parts, currently focusing on development of the automotive parts industry by using the tariff system (Tariff Based System policy in 2006). Then, the current Auto Industry Development Program (AIDP) follows. The AIDP was developed when the number of domestic automobiles manufactured was increasing and received a lot of attention as the bellwether for the Pakistan's automotive industry. Although assembly manufacturers made capital investment pursuant to the AIDP, little progress has been made in comparison to targets due to the global recession and other unfavorable conditions. Today, it is largely fading away as the government faces financial difficulty. Major issues facing the AIDP are described in the next section.

To this date, frequent policy changes relating to nationalization, imports of automotive parts, and most recently, imports of cars (after 2006) have been impeding healthy growth of the automotive industry. Instead, introduction of incentives utilizing internal and external private capitals is called for.

(1) Tariff Based System (TBS)

As for import duties on automobiles and automotive parts, the Tariff Based System (TBS), announced as Statutory Regulatory Order (SRO) 655 in 2006, is currently applied (for tariff rates, see the section on the AIDP below). Although customs are responsible for collection of import duties, the EDB is in a position to judge suitable tariff rates imposed on automobiles and automotive parts. Presently, the tariff rate for major automotive parts is set at 32.5%, but its adjustment is always a subject of discussion between automakers and automotive parts manufacturers. While domestic automotive parts manufacturers claim that the tariff rate should be maintained as high as possible for protection purpose, OEM assemblers want the easing of the tariff rate for the purpose of encouraging the improvement of competitiveness and quality of locally made parts. In fact, the TBS envisages reduction of the tariff rate in several steps over five years, starting in 2007.

During the period, the domestic automotive parts industry is expected to improve competitiveness in the market, but little progress has been made in that direction. Some companies are making parts that are internationally competitive, but if the tariff rate is further lowered in 2012 and onward, it is obvious that some parts may lose competitiveness. For the entire automobile industry in Pakistan, it is imperative to implement public support measures to help enhance competitiveness of parts manufacturers, together with the establishment of an effective tariff reduction plan.

4.2 Current Status and Issues of the Auto Industry Development Program (AIDP)

4.2.1 Current status of the AIDP

(1) Outline of the AIDP

The AIDP (Auto Industry Development Program) is the government's five-year auto industry development plan announced in July 2007. It was developed through discussions between the EDB and PAMA/PAAPAM as representative of the automotive industry. It was finally adopted in the cabinet meeting after the approval by the prime minister. Presently, the Auto Industry Development Committee (AIDC) headed by the EDB administrator is in place to promote collaboration between the automotive industry and administrative agency. Discussion with organizations and individuals relating to the automotive industry is held on a regular basis. In addition to the committee consisting of 24 members (held once a year), sub-committees by subject are held once every 2 or 3 months and effectively service as an official place for discussion. The committee and subcommittees have secretariats established within the EDB.

The AIDP was originated in response to the changes in the government's industrial policy as prompted by its WTO membership. In the 1990s, Pakistan imposed local content requirements on the domestic automotive industry under the Deletion Program. Due to the TRIM covenant of the WTO, however, it became impossible to impose localization requirements as policy measures. As a result, the government abandoned policy to strengthen domestic parts manufacturers (i.e., domestic industry) through promotion of parts localization. Instead, the Tariff Based System (TBS) was embarked to use tariff rates relating to automotive parts and raw materials. Needless to say, tariff policy alone does not warrant development of the automotive industry. Concurrently with the TBS, a comprehensive development program for the automotive industry was discussed. It was summarized and announced as the Auto Industry Development Program (AIDP). Therefore, discussions about the AIDP are generally divided into tariff issues and non-tariff issues.

Specifically, the AIDP plans production of 500,000 cars and 1.7 million motorcycles in 2011/12 as the final fiscal year. To achieve this goal, the development measures for six fields below are proposed as non-tariff measures.

(1) Human Resource Development

(2) Productive Asset Investment Incentive

(3) Technology Acquisition Support Scheme
(4) Auto Cluster Development
(5) Auto Industry Investment Policy
(6) Auto Industry Development Committee

Additionally, the Tariff Based System (TBS) sets the five-year (2007 to 2012) automobile related tariff rates. The EDB conducts review every year, including partial reconsideration for automotive parts. Table 4-2 lists major items from the Five Year Tariff Plan Auto Sector. Notably, a basic idea is to develop the domestic parts industry by using tariff rates as a policy tool, thereby to strengthen the automotive industry as a whole.

Table 4-2 Five Year Tariff Plan Auto Sector

Description	2007/08	2008/09	2009/10	2010/11	2011/12
Cars up to 800cc	50%	50%	50%	50%	50%
Cars 801cc to 1000cc	55%	55%	55%	55%	55%
Cars 1001cc to 1500cc	60%	60%	55%	55%	55%
Cars 1501cc to 1800cc	75%	75%	70%	70%	70%
Cars Exceeding 1800cc	90%	90%	85%	85%	85%
LCV	60%	60%	60%	60%	60%
Alternator, Starter, Water Pump, Fuel Pump, Seat Recliner, Air Cleaner Assey.	35%	35%	32.5%*	50%	50%
Power Steering, Engines, Transmissions	35%	35%	35%	50%	50%
Prime Movers up to 280HP	30%	30%	30%	30%	30%
Prime Movers above 280HP	15%	15%	15%	15%	15%
Rigid Trucks	30%	30%	30%	30%	30%
Bus (Non CNG)	20%	20%	20%	20%	20%
Bus (CNG/LPG dedicated)	15%	15%	15%	15%	15%
Tractors	0%	0%	0%	0%	0%
Motorcycles (CBU)	80%	70%	65%	60%	60%
Components for assembly of motorcycles other than those at the next below	25%	20%	15%	12.5%	10%
Components for assembly of motorcycles as are listed SRO 693 (1)	50%	50%	47.5%	45%	45%
Regulator, Piston, Rectifier, Ignition Coil, Clutch Assey.	25%	50%	47.5%	45%	45%

Note: * was set 50% originally, but reduced by delayed production schedule in 2009.
Source: Auto Industry Development Programme (AIDP), January 2008

However, the aftermath of the global financial crisis that occurred in autumn in the year (2008) when this plan was announced affected the Pakistan's automobile market and its realization was frustrated at the start. In fiscal year 2008/09, production showed a significant drop to 109,000 cars and 494,000 motorcycles. Although a recovery trend is seen in 2010, import of second-hand cars as temporary measures accelerated reduction in domestic production. Domestic manufacturers have cut back production significantly and it will take substantial time to restart production lines. Thus, it would be difficult to achieve the quantitative targets for 2012, the last year for the AIDP.

(2) Current status of the AIDP

As the AIDP's non-tariff issues, the above six items will be addressed by actual programs. As of June 2010, three out of six items show advance to some degree. However, the remaining three items (Productive Asset Investment Incentive, Technology Acquisition Support Scheme, and Auto Industry Investment Policy) are not substantiated yet mainly due to financial problems. For the three items implemented, programs have progressed as follows:

- Human Resource Development

First, to filter out companies' needs, questionnaire survey was conducted for PAAPAM companies. Further, the Auto Industry Skill Development Company (AISDC) is established in Lahore and the Center of Excellence will be installed in Karachi and Lahore. These were originally planned in the AIDP.

- Auto Cluster Development

Construction of industrial parks including automobile related companies is underway in Karachi and Lahore.

- Auto Industry Investment Policy for New Entrants

Although seminars are planned to attract domestic and foreign investors, measurable results have not been achieved due to global economic crisis and slow down investment.

- Auto Industry Development Committee

The Auto Industry Development Committee includes the representatives from the PAMA and PAAPAM and it is a place for discussion on all AIDP programs (including Tariff items). It has been convened four times to this date. In 2010, it will be convened at the beginning of November. However, it functions as general meeting, and six sub-committees (se the description below) are organized to discuss specific subjects. Subcommittee meetings are held every 2 or 3 months. The situation has changed from the initial AIDP plan and implementation of specific programs may be delayed due to financial problems. However, the committee is very active. Among the sub-committees, the Safety, Quality and Environment Standards Committee are making significant progress in development of standards.

AIDC sub-committees in place
- Auto Cluster Development Sub-Committee
- Technology Acquisition Support Sub-Committee
- Human Resource Development Sub-Committee
- Export Development Sub-Committee
- Safety, Quality and Environment Standards Sub-Committee
- Auto Industry Development Sub-Committee

4.2 2 Issues relating to the AIDP

In 2005 and 2006 when the automobile market expanded and local automakers were demanded to boost production capacity, the AIDP was considered to be an ambitious plan for Pakistan to catch up with India and ASEAN countries. In reality, however, the AIDP is rarely put into practice except for the tariff policy, for various reasons. The present AIDP will end in 2011 and a new AIDP for 2012 and afterwards is being developed. In light of conditions facing the Pakistan's automotive industry at present, a prospect is not particularly bright. Nevertheless, it is possible to develop the automotive industry that establishes itself in the Southwest Asian region if efforts are made to capitalize on its advantages and potential. Although the present AIDP fails to achieve most of its goals, its proposed programs and issues to be addressed by them should be taken into account in the context of the new AIDP, as follows.

(1) Development of the tariff policy focusing on development of the automotive parts industry

The largest issues facing the Pakistani automotive industry are and continue to be the increase in vehicle production and the improvement of technological capability of suppliers. These two issues are closely linked to each other without any priority. As for technological upgrading, the Human Resource Development (HRD) and Technology Acquisition Support Scheme (TASS) were planned in the IDP but are not put into practice. However, even if they had been implemented, the current tariff policy relating to automotive parts would not have contributed much to the increase in car production while developing the domestic parts industry. In other words, such tariff policy would mean uncontrolled trade liberalization by allowing the flood of imports in exchange for tariff, which would then have devastating impacts of the local parts industry that lacks international competitiveness. Rather, additional measures should be taken, such as the provision of certain non-tariff barriers, as seen in India and Thailand. In other words, tariff policy should be undertaken from the standpoint of developing supporting industries serving the automotive industry.

(2) Commitments to the used car import policy

The easing of restriction on used car imports, which was installed in 2005, was launched because it was anticipated that domestic production capacity could not catch up with rapidly growing demand. Thereafter, however, the policy seems to have been used as the measures to control the rise in sales price of new cars or the emergence of the premium price. From the viewpoint that major challenges for Pakistan's automotive industry are to increase the number of assembled vehicles and to improve technological capability of parts manufacturers, the current policy should be terminated immediately because it aims to meet the market needs through increased imports of used cars. While imports of vehicles of type or engine size not available in the domestic market are permitted so far as they help fulfill the market needs, they should still back seat to the development of the domestic market led by locally assembled vehicles. In this connection, the government clearly states its principle within the AIDP.

(3) Establishment of the EDB's leadership

In developing the AIDP, the EDB played a leadership role. As for implementation, the EDB functions as secretariat for the AIDC. However, each development program is to be implemented by a responsible organization (other than check on tariff application). As the EDB is under control of MoIP, its program implementation is subject to decision made by MoIP or the cross-cabinet Economic Coordination Committee (ECC). On the other hand, from perspectives of the automotive industry, the EDB is expected to take specific actions conducive to the development of the automotive industry, but it merely functions as a primary contact point for government service. As it is not clearly as to who has power and authority to decide automobile related policy, it is difficult for the industry to know which programs are implemented by which organizations, including the AIDP. The EDB should therefore exercise its leadership by reviewing the current status and assuming responsibility for development of the automotive industry as a government agency.

(4) Promotion of collaboration between the government and private sectors

Partly due to the issues discussed in (2) and (3) above, the industry seems to be persistently distrustful of government, particularly inconsistency of policies, lack of feasibility for policy implementation, and the difference in understanding about the current status of the automotive industry. As discussed above, the AIDP has sub-committees including representatives from private companies, which are fairly active. Meanwhile, the EDB also points out the lack of organized efforts on the side of the private sector, including the discussion process. Thus, mutual distrust between the government and private sectors is still strong. In the industrial development process, the lack of collaboration between the government and private sectors is a fatal drawback and works against the spirit of the government's industry development policy. For development and implementation of the new AIDP, consideration must be given to these aspects.

4.3 Current Status and Issues Relating to the Industrial Development System (including training and technical guidance)

4.3.1 Policy implementation system

Development of the automotive industry in Pakistan is led by the Engineering Development Board, extra-departmental organization of the Ministry of Industry and Production (MoIP). The current state of the present policy implementation system, including government organizations involved, is outlined below.

4.3.1.1 Ministry of Industry and Production

The MoIP is the successor of the Ministry of Industry (MoI), which has a long history, and was created in 1993 by merging of the MoI and the Ministry of Production (MoP). The MoIP itself is staffed by around 100 persons and has extra-departmental organizations consisting of 18 agencies and state enterprises, of which EDB and SMEDA are positioned as organizations in charge of formulation and implementation of programs relating to industrial development. Programs and systems designed by these organizations are proposed to the Economic Coordination Committee (ECC), an inter-cabinet for economic issues, for coordination and discussion with related organizations prior to a formal decision. Thus, policies and programs formulated by EDB and SMEDA are considered to represent the MoIP’s industrial development policy, aside from the fact that their budgets are funded through the MoIP. On the other hand, state enterprises are under supervision of the MoIP as they inherit relationship with the former MoP, and they are currently moving toward privatization. The eighteen extra-departmental organizations under the MoIP are outlined below.

(1) Export Processing Zone Authority (EPZA), Karachi

EPZA has the major mission to help the country earn foreign currency through export promotion. Four EPZs have already been completed and six under planning. In addition, Special Economic Zones (SEZs) are being planned as joint efforts with China (Faisalabad) and Japan (Karachi).

(2) Engineering Development Board (EDB), Islamabad

EDB promotes industrial development for 19 subsectors including automotive and other engineering areas (details discussed in later sections).

(3) National Industrial Parks Development and Management Company (NIPDM), Karachi

The organization develops and manages infrastructure and industrial sites for textile and other sectors. Also, it is involved in the automotive cluster development scheme in an effort to provide auxiliary support for development of the automotive industry (details discussed in later sections).

(4) National Productivity Organization (NPO), Islamabad

This serves as an organization to promote improvement of productivity and competitiveness of Pakistani industries (details discussed in later sections).

(5) Pakistan Industrial Technical Assistance Center (PITAC), Lahore

PITAC has long history of nearly 50 years and is specialized in providing technical advice relating to the engineering sector and training for engineers and technicians. It has been expanding its organization and operation since 1982 under the JICA's assistance (details discussed in later sections).

(6) Pakistan Institute of Management (PIM), Karachi

Established in 1954, PIM provides training for managers in various industries as well as information service.

(7) Small and Medium Enterprises Development Authority (SMEDA), Lahore

This is the organization specialized in SME support and is largest among organizations under the MoIP in terms of organization and budget (details discussed in later sections).

(8) Technology Upgrading and Skill Development Company (TUSDEC), Lahore

This is a new organization established in January 2005 for the purpose of establishing Common Facility and Skill Development Centers for the engineering industry throughout the country.

(9) Department of Explosions (DOE), Karachi

DOE is responsible for regulation of imports and sales of dangerous chemical products

The rest of the extra-departmental organizations are state enterprises.

(10) National Fertilizer Corporation (NFC), Lahore
(11) Pakistan Automotive Corporation (PACO), Karachi
(12) Pakistan Gems and Jewelry Development Company (PGJDC), Peshawar
(13) Pakistan Hunting and Sporting Arms Development Company (PHSADC), Peshawar
(14) Pakistan Steel, Karachi
(15) Pakistan Stone Development Company (PSDC), Karachi
(16) State Engineering Corporation (SEC), Islamabad
(17) Enar Petro-tech Services (EPS), Karachi
(18) Utility Stores Corporation (USC), Islamabad

4.3.1.2 Engineering Development Board (EDB)

EDB was established in 1995, with the mission to develop domestic industries, especially the automotive industry, through the adjustment of tariff rates. The name includes the word "board" as the organization was expected to be responsible for deliberation and recommendation in the field of tariff adjustment – including cooperation with industries, rather than an agency in charge of policy implementation. Subsequently, it was reorganized in 2004 to cover all the engineering fields. Nevertheless, EDB places the automotive industry as center of its development activities because it is believed that the industry is broadly linked to a variety of industries and its development has significant impacts on the rest of the manufacturing sector.

EDB's mission states as follows: "to strengthen the engineering sector and integrate it with the world market to make it the driving force of economic growth."

EDB consists of the following four operational departments and a back-office department.

(1) Policy Development Department: Policy formulation and coordination with the MoIP and other related organizations
(2) Sector Development Department: Coordination of sector development policies including technical aspects
(3) Tariff Rationalization Department: This is considered as the core of EDB and handles the majority of EDB's activities, including examination of tariff rates relating to the engineering sector, as well as coordination and monitoring relating to field application
(4) Business Development Department: Market development, international trade fairs, export promotion, and support for localization. Recently, expansion of the organization and tasks are being examined for implementation of NEEDS.
(5) Support Department: HR management, finance, etc.

EDB has 90 employees as of September 2010, of which 63 are in regular position and 27 in contract position. At the same time, they can be divided into 44 officials and 46 staff members. 15 officials have been assigned to Tariff Rationalization Department and 5 to each of the other three operational departments, i.e., (1), (2) and (4). EDB's annual budget for 2009/10 totals Rs. 73 million, of which around 65% are personnel and miscellaneous expenses. For 2010-11, the initial budget was Rs.78 million but Rs.5 million was reduced to undertake emergency measures against the heavy flood and the budget became equivalent to the 2009-10 level. Note that the budget for actual program implementation is not included in the annual budget. EDB's budget proposal is submitted to the MoIP in April – May each year. In addition, the program budget (such as participation in trade fairs) is separately requested to the MoIP for negotiation.

Although it is not clear as to which industries/subsectors make up the "engineering sector", EDB has originally listed 22 subsectors in its tariff rationalization process (at present 15 subsectors (items) are covered). Subsequently, several subsectors have been merged, and at present, the following 19 subsectors categorized in accordance with HS code system from Chapter 72to 90 are said to be covered by EDB's definition of the engineering sector.

Note that subsectors in 2), 3), 4) and 5) below are relating to the automotive industry.

1) Industrial machinery and equipment
2) Automotive vehicles
3) Motorcycles and auto rickshaws
4) Auto parts
5) Tractor, farm machinery and equipment
6) Home appliances (electrical)
7) Cutlery, blades and kitchenware
8) Surgical instruments
9) Electric fans
10) Iron and steel pipes and tubes
11) Pumps
12) Electrical machinery
13) Electrical fittings
14) Wire and cables
15) Valves and flanges
16) Steel structures
17) Prefabricated buildings
18) Special purpose vehicles

19) Casting and forgings
20) Etc.

CKD import relating to the engineering sector requires EDB's approval, i.e., EDB examines and determines as to whether the import is eligible for incentive. Also, EDB checks if imported products are appropriately handled by visiting a company. It is engaged in industrial policy formulation including automotive-related tariff rates, not responsible for transparent regulation. For automotive-related tariff, any of the three orders are applied, i.e., Statutory Regulatory Order (SRO) 655 (mitigation of tariff on parts), 656 (mitigation of tariff on assembled cars) or 693 (additional tariff on CKD and imported new cars). Their details are made available by customs. In this connection, definition of parts and components and tariff rates are determined by taking into account EDB's opinions.

Policy Group is led by a General Manager (GM) and one Deputy General Managers (DGM) and is divided into two groups, one in charge of the automotive industry (2 staff members) and the other in charge of the rest of the engineering sector (2 staff members). Previously, EDB was viewed as being specialized in development of the automotive industry, but it is responsible for policy formulation and tariff coordination of other subsectors. It also makes efforts to promote exports for the engineering sector. It intends to formulate "National Engineering Exports Development Strategy (NEEDS) in February 2010, which prescribes long-term plan. The MoIP is examining specific industrial support based on this strategy.

EDB has its head office in Islamabad and a branch office in Karachi. The latter conducts tariff-related inspection and supervision relating to imported goods under SRO 655, 656 and 693 in Sindh and Baluchistan. 70% of its activities are said to target the automotive and related industries. The head office sends staff to Punjab in order to perform the similar activities, but EDB plans to establish an office in Lahore for the purpose in the near future. It should be noted, however, that EDB is basically responsible for program formulation, coordination with related organizations, and supervision relating to application of tariff, whereas actual program implementation is left to other organizations.

4.3.1.3 Other MoIP organizations relating to industrial development

(1) National Industrial Parks Development and Management Company (NIP)

NIP is a public-private partnership organization with PIDC's equity participation to develop industrial parks. NIP has two large industrial estates in Karachi and four small ones in Lahore. Its industrial estate development projects are funded by revenues from sales of developed industrial lots as well as bank loans. NIP also builds or provides infrastructure facilities for industrial estates, including electricity, water, roads, workforce, housing, and educational facilities, in cooperation of related organizations.

1) Industrial estates in Karachi

i) Korangi, Creek Industrial Park (240 acres): 70% completed

ii) Bin Quassim (930 acres): Construction will start at the yearend or afterwards. The industrial estate intends to accommodate automakers and suppliers, especially Suzuki. It is expected to form an integral part of the automotive industry cluster development scheme under AIDP.

2) Industrial estates in Lahore : The Punjab Government constructed three industrial estates, that is Sundar, Multan and Kotlakhpat during 2003 and 2007. 650 factories are operating in Sundar.

i) Rachma Industrial Park (148 acres): It is located south-west of Lahore and in proximity to Honda's motorcycle plant. It is designed to accommodate manufacturers in the automotive, leather, and food processing and pharmaceutical industries. Construction work started in June 2010 and is scheduled to complete in December. The total direct workforce is estimated at 10,000 persons and related industries will employ around 50,000 persons.

ii) Marble (185 acres): It is located north of Mardan and will house manufacturers of mosaic pattern products that process stones supplied by PSDC under the MoIP. Construction started in June 2010.

iii) Kamaria (50 acres): The industrial estate will accommodate cottage industries. The project budget request is being made to the MoF. Construction is scheduled to start in 2011.

iv) Okara (100 acres): This is designed to accommodate silos and storage facilities for agricultural products. The project budget has been requested to the MoF and it is planned to start construction in 2011.

(2) Pakistan Industrial Technical Assistance Center (PITAC)

PITAC, established in 1962, is located in Lahore and conducts technical assistance and training projects for factories. It has short-term training facilities, workshops, and accommodation facilities (for 60 persons) on an 8-acre site (3.2 ha). One building is partially rented to PSQCA for office use. As of May 2010, PITAC had 253 employees and 58 instructors (plus 11 part-time instructors). The operation budget for 2009/10 is Rs.95 million. In addition, PITAC earns around Rs.9 million annually from its training activities.

PITAC's training programs are relatively short in duration, i.e., two, four or six weeks, and are not related to government organizations engaged in vocational training, such as the National Vocational and Technical Education Commission and TEVETA under the provincial government. Daytime courses run five hours (8:00 – 13:00) and night courses three hours (16:00 – 19:00 or 19:00 – 22:00). There are a total of 43 courses, which are divided into 14 regular courses (e.g., CAD/CAM, die/mould design & making, electrical engineering), 9 plastics processing courses, 6 electrical and automation courses, 4 welding and inspection courses, and 10 miscellaneous courses (such as pipe connection, temperature control, graphics, and English). Popular courses are limited to computer, mechanical CAD, architectural CAD, engineering, and mobile repairing, which attract 120 – 280 participants each. On the other hand, some courses show poor attendance, e.g., three courses have only one participant, three courses two participants, and three courses three participants. Although PITAC is positioned as an educational institution providing short-term training in engineering fields and the majority of its courses are relating to the automotive industry, participants sent by auto-related companies are limited in number. 60% of participants live in Lahore. Participants from Punjab account for 85% of the total, while those from Karachi are limited to 2-3%. Educational background of participants varies from high school to vocational training institute or engineering university. Participants sent by their companies represent 30%.

The recent participation trend is as follows:

- FY2007/08: 1,441
- FY2008/09: 1,779
- FY2009/10 (up to May): 1,910

A project is currently proposed to the MoIP, under which PITAC's facilities will be used for practical training courses conducted by University of Engineering & Technology (UET) in Lahore, which will grant diplomas for three-years and degrees for four-year. To realize the joint project, however, PITAC's aged equipment (furnished under JICA's assistance) needs to be replaced or upgraded.

(3) Technology Upgrading and Skill Development Company (TUSDEC)

This is a relatively new organization and was established on January 24, 2005 under financial contribution of Rs.100 million by PIDC for the purpose of building common facility and skill development centers for the engineering sector throughout the country. It is headquartered in Lahore and borrows one building that have been newly built within a former site (2.4 ha) of a state enterprise (cement) owned by PIDC. During the past seven-year period, TUSDEC has been conducting the following projects.

1) KTDMC (Karachi Tools, Dies & Moulds Center)

It was established by acquiring land and equipment and constructing buildings under PIDC's contribution of Rs.500 million. At present, KTDMC is under its own management and in consultation with PIDC.

2) Ceramic Research and Development Institute (CRDI)

CRDI was established by using Rs.400 million provided by ADB. It is conducting research and development projects to improve household kitchens, bathrooms and toilets in the country.

3) National Institute of Design & Analysis (NIDA)

NIDA has five facilities in Karachi, Lahore, Sialkot, Peshawar, and Quetta, which were constructed at the total cost of Rs.371 million. It is engaged in design-related research projects using computers and software.

4) Skill Development Center (SDC)

After the major earthquake that caused significant damage to the northern part of the country in 2007, Skill Development Centers were established in Botagroa and Khati (Mount Marcela) at the cost of Rs.250 million and provide vocational training for children who had lost their parents.

5) Garments Industry Upgrade Project

The project was carried out for three years with the total budget of Rs.230 million. It invited around 40 technicians from Thailand, the U.S., the UK, Sri Lanka, China, and the Philippines, and assigned 2-3 persons to each of selected garment factories for technology transfer.

6) Gujranwala Tools, Dies & Moulds Center (GTDMC)

The center was completed on January 10, 2010, at the total budget of Rs 1,000 million. Its facilities and equipment exceed them at KTDMC. Machinery and equipment is imported from Italy, Germany, Taiwan, and Korea. Laser cutting, plastics processing, and CDS are relating to the automotive industry.

TUSDEC develops project proposals and makes budget request to the MoF or a donor, via the MoIP. It sets aside 5% of the project cost as the fund to management the center. While TUSDEC is positioned as a government organization, it does not receive financial assistance from the government to cover labor costs and thus has to earn its own revenue to pay salaries. Recently, as new projects are suspended or delayed, TUSDEC's revenue declines and its staff have decreased from around 50 to 30.

(4) Other organizations relating to industrial development

1) Pakistan Industry Development Corporation (PIDC)

PIDC was established in 1952 under a government decree for the purpose of promoting industrial development. Originally, it was positioned as a support organization to divert investment to heavy industries, which cannot be funded by the private sector alone, with an aim to promote job creation and local industrialization through industrial development. Between 1954 and 1982, PIDC implemented 94 projects, covering investment in a variety of industries, including heavy and chemical industries, shipbuilding, textile, paper, and sugar refining. In 1985, it was privatized. At present, its activities have expanded to development of infrastructure and human resources for industrial development. Also, investment areas have expanded from heavy industries to local industries such as furniture, marble and jewelry. Finally, it is participated in management of AT & TC, which is a technical support and inspection organization for the automotive industry.

2) Karachi Tools, Dies & Moulds Center (KTDMC)

It is a vocational training institute established by TUESDEC under PIDC's fund. Started as a private enterprise in August 2004, KTDMC performs dual functions, i.e., skill training for the engineering sector and the manufacture of dies and moulds. It is equipped with a variety of machinery and equipment, including CNC, heat treatment, welding, press, and jig making. It was established at the initial cost of Rs. 515 million, which was entirely funded by PIDC. It is managed by the board consisting of ten directors, which represent the private and public sectors. At present, the annual operating cost is estimated at around Rs.50 million. If the production division is operated fully, the center will be able to become self-sufficient, although it is receiving financial support, including EDB. It offers a variety of training courses including those relating to human resource development as well as nighttime courses. Its training curriculum is basically designed by German consultants, with reference to those used by similar organizations in four Southeast Asian countries (inspected before the establishment of the center). KTDMC's staff members generally view their company as a private enterprise. As the automotive industry is closely related to die/mould making, it may be a good idea to use KTDMC as a technical support organization for the automotive industry.

3) Gujranwala Tools, Dies & Moulds Center (GTDMC)

Encouraged by the success of KTDMC in Karachi, TUSDEC built a large center in Gujranwala, northwest of Lahore, which was completed on January 10, 2010. Gujranwala is an industrial city and is famous for production of electric appliances, kitchen equipment, tractor fittings, etc. It adjoins Sialkot that is famous for surgical instruments and sports goods. With a budget of Rs.11 billion, GTDMC constructed a large workshop and introduced the newest equipment. The facilities surpass those of KTDMC. Training is also conducted.

4) Automotive Testing & Training Center (AT&TC)

Originally, it was established as Vender Development and Training Cell (VDTC) in 1986 by Automobile Corporation Ltd. (PACO) under UNIDO's assistance. The VDTC was originally established as an agency for conducting services such as parts inspection for the PACO's Operating Units. Then, as a result of privatization, the PACO's Operating Units were inherited by Japanese manufacturers, which required the local automotive parts industry to procure parts as well as the parts testing center. At the same time, the functionality of the inspection agency for checking automotive parts for conformity with Japanese Industrial Standards (JIS) was required. Therefore, nine major domestic OEMs purchased VDTC's shares from the PACO to restart an organization as the quality inspection agency for the Pakistan's automotive industry and as the human recourse development agency through training courses. The organization was named the Automotive Testing & Training Center (AT&TC). Thereafter, AT&TC faced some accidents such as theft of testing equipment or low functioning in testing services due to return of foreign experts by UNIDO, so that it was hard to operate on a sustainable basis. In May 2003, its shares of more than 50% were again transferred to the government (in a form of donation of shares from Japanese auto manufacturers to the government) that was consulted by a JETRO expert. Then, JICA has sent experts to AT&TA to advice its testing and training business, however, it was still difficult to restructure the business. And finally staffs dispatched by JICA were also returned to Japan since public security become worse.

At present, AT&TC employs two staff members and two assistants. Although it sometimes performs inspection service, old equipment used since the VDTC is unusable. The equipment introduced under the advice of JICA's senior volunteers in 2007/08 is used to meet the needs. The center is thus in the danger of closedown. However, as it is located in proximity to around 60 automobile related companies in the vicinity; it will be able to operate viably if it acquires sufficient resources and staffing to meet the customer needs.

4.3.1.4 Technical support by organizations under the Ministry of Science and Technology

(1) Pakistan Council of Scientific and Industrial Research (PCSIR)

It is attached to the MoST and serves as a testing and research organization that ranks with PSQCA. It has laboratories in Karachi, Lahore, Quetta and Peshawar, each of which has around 700 staff members. It is generally engaged in application research that can be useful for industrial development, rather than basic research. It provides testing service in a variety of areas, ranging from food, livestock, minerals, jewelry, textile and garment, dyeing, agricultural chemicals, pharmaceuticals, chemicals, glass and ceramics, electrical and electronics products, leather, paper and plastics, petroleum products, and metrology & standard, including tests entrusted by the private sector. Since collaboration between administrative agencies is poor, the MoIP does not use this agency effectively for its policy implementation in industrial technology.

1) PCSIR in Karachi

PCSIR Karachi has a vast site of 150 acres (60 ha) including staff housing (70 houses) across the road, located 40km east to the central part of Karachi. Its operating budget for FY2009/10 is Rs.120 million. It is staffed by around 700 persons, more than PSQCA (520). In particular, there are 250 engineers/scientists capable of performing tests, which rival a combined total of staff members at Quality Control Center in Karachi (166) and Technical Service Center in Lahore (83). The primary purpose of PCSIR Karachi is to promote research and development relating to industrial products as well as reduction of wastes, thereby to improve competitiveness. It conducts 90% of tests entrusted to PSQCA, of which more than 50% are related to food, followed by textile, pharmacy, and metal. The engineering sector accounts for 20-30% of the total, but mostly relating to cement and power generation. Areas relating to the automotive industry are rubber and textile. PCSIR Karachi conducts 6,000 – 7,000 tests annually. There are two attached organizations, namely the Institute of Industrial Electric Engineering (IIEE) and Pak Swiss. Finally, the MoST has the following two educational institutions, which are separated from the MoE and grant academic degrees.

i) National University of Science & Technology (UNST)
ii) Computer Science & Technology (Comsat University)

It has workshops specialized in mechanical, chemical, food, and pharmacy, and its calibration laboratory, opened in 1999, has latest equipment. It has developed around 30 medical equipment and tools by using private companies and sells them to the market under the PCSIR brand. As PCSIR Karachi is located midway between the central part of Karachi and Bin Qusim, it is accessible by parts suppliers in these areas and can expect to provide test service for the automotive industry.

2) PCSIR in Lahore

PCSIR Lahore is located on the front side of PITAC. Its site is much smaller (20%) than that of PCSIR Karachi, or 30 acres (12.1ha) and is well maintained. It has 668 employees, whose salaries amount to Rs 76 million in the FY2010 budget. In 2009, it conducted around 12,000 tests on a contract basis. It uses 60% of testing and other service revenues (outside of the annual budget) for purchase of research-related books and materials as well as equipment maintenance. PCSIR Lahore accepts test requests via either of the following two routes:

(1) When a request is made directly to PCSIR Lahore, together with a specimen for testing; or

(2) When a request is made via an industrial liaison office (ILO) of other PCSIR, which sends a specimen forward to PCSIR Lahore.

In fact, it handles the largest number of contract tests in the fields of automotive and household appliance. As for automotive-related tests, it performs many tests for Honda's plants assembling motorcycles and four-wheel vehicles. Mainly, metallic materials are tested and customers are generally satisfied with service in terms of promptness. In addition, there are a large number of test requests for food and textile products, as seen in PCSIR Karachi. In the area of emission test, the automotive industry accounts for 30% and on average 8-10% of test are related to automobiles. Its calibration shop is well equipped. The laboratory consisting of two rooms has been built by digging the floor down to 6m below the ground level and by building the foundation for equipment installation.

PCSIR has obtained ISO17025 certification. Its auto sector laboratory has 21 reference books for the 2004 version of the U.S. ASTM, and the library at the head office has full volumes of the BS Standard.

4.3.1.5 Pakistan Standard and Quality Control Authority (PSQCA)

(1) Background and mission

Originally, Pakistan Standard Institution (PSI) was established in 1951, as an organization attached to the MoI, located in Karachi. In 1961, it was officially recognized as Pakistan Standards Institution Quality Marks under Certification Marks Ordinance. Then, in May 1995, it came under jurisdiction of the MoST. In 1996, PSI was integrated with Central Testing Laboratories（CTL）and Metal Industry Research Development Center (MIRDC) to become Pakistan Standard & Quality Control Authority (PSQCA). Note that it's Technical Service Center in charge of metal and emission is located in Lahore by inheriting MIRDC's location. PSQCA represents the country in relevant international organizations, including International Organization for Standardization (ISO), International Electro-technical Commission (IEC), and

International Organization of Legal Metrology (OIML).

PSQCA’s principal responsibilities are listed as follows.

1) Establishment of national standards
2) Enforcement of national standards under compulsory/voluntary certification marks scheme
3) Registration of inspection agencies
4) Testing and assessment of industrial raw materials and finished products to establish their quality, grade and composition with reference to national or diverse international specifications of quality in the fields like textile, chemical and mechanical engineering, electrical and electronic goods and appliances, building materials, etc.
5) Assistance to metal working industry in product improvement, technological advancement and increased productivity
6) Promotion of development of metallurgical techniques and skills in the country through the transfer of technology and expertise in the metallurgical fields
7) Research and development (R&D) work in standardization, on analytical/testing techniques in chemical and other field and on metallurgical techniques
8) Dissemination of technical information about standardization, quality control and metallurgical fields through seminars, workshops, symposia, press, print and electronic media to increase awareness about quality with the aim to create a quality conscious culture in the country

PSQCA establishes national standards and inspects and certifies applicable products accordingly. Thus, it is the organization which is the major target of the Project. Products certified by PSQCA are allowed to affix or indicate the PS mark that represents quality assurance. At present, 78 products are required to obtain certification for the PS mark. Of total, food products are the largest in number (38), while the rest of the items vary greatly, ranging from construction materials (such as cement), to light bulbs and motors. In the Automotive industry, two wheelers (motor bikes) and three wheelers (rickshaw) are included.

For two and three wheelers, quality assurance is required at the time of shipment, i.e., an assembly plant has to obtain certification by means of PSQCA's annual field check to see if the plant conduct product inspection according to specified standards (the quality of food and other products are inspected within PSQCA's inspection facility). In Pakistan, national standards are currently established for 27,081 products, of which those for around 15,000 items are transferred from ISO and those for 6,081 items are based on IEC. For the rest, local standards are mainly established.

In developing a national standard, PSQCA reviews requests and opinions of the private sector and sets up a technical committee on detailed assessment. Generally, the technical committee consists of 15 - 20 members who represent various fields including the private sector and the academia. At present, there are 147 technical committees in place. After discussions at the technical committee, a proposed standard will be adopted or rejected by the National Standard Committee (NSC), which is a permanent organization within PSQCA.

(2) Organization of PSQCA

PSQCA has 526 employees and consists of the following three centers which perform the following functions.

1) Standard Development Center (SDC): 208 staff members, Karachi

Responsible for acceptance of a proposed standard, evaluation of test results at QCC, discussion and approval procedures at the committee, and the granting of the PS mark license

2) Quality Control Center (QCC): 166 staff members, Karachi

Responsible for performing tests in ten product categories, namely, agriculture, food, chemical, mechanics, civil engineering, electric, electronics, weight & measurement, automotive, and textile

3) Technical Service Center (TSC): 83 staff members, Lahore

Responsible for performing tests relating to metal and emission

4) PSQCA head office: 69 staff members, Karachi

Within SDC, Standardization Division is divided into the following ten groups according to product category: 1) agriculture; 2) food; 3) chemical; 4) mechanics; 5) civil engineering; 6) electric; 7) electronics; 8) weight & measurement; 9) automotive; and 10) textile. Each group is led by Deputy Director and consists of an assistant director, a deputy assistant director, a computer operator, and a peon. The division has slightly over 50 staff members. Note that there are only two engineers (deputy and associate directors) in Automotive Group because the position of the deputy assistant director is currently vacant.

Standardization Division is responsible for acceptance of a proposed standard, evaluation of test results at QCC, the granting of the PS mark license, and acceptance of application for use of the PS mark. As outlined above, a national standard is established after examination at the Technical Standard Committee (at present, there are 147 committees (including 29 on food, 29 on electric, and 1 on automotive), with their member serving three years) and the final approval at the National Standard Committee that is held biannually. Other divisions are responsible for selection and management of each committee and the drafting of a standard.

4.3.1.6 Other technical support

In addition to PCSIR, the following organization provides testing service.

(1) Shipyard and Engineering Works Ltd.

This is a state enterprise entirely owned by the government and is under control of the Ministry of Defense Production. It operates only one shipyard in the country and builds and repairs ships under contract from foreign customers. It has over 2,000 employees. Within the enterprise, there is a unit called Material Testing Laboratories, having 12 engineers. The unit is operated on a self-supporting basis and actively takes orders from outside to earn revenue.

Using three laboratories, the unit performs tests using chemical and mechanical engineers. The laboratories have a variety of equipment, ranging from old equipment made in the UK, to relatively new ones imported from China or Germany, and calibration equipment made in Japan. All of them have been purchased by the unit under its own budget. In April 2010, it received orders worth Rs. 138,000 from the military and Rs. 750,000 from private companies (representing 80% of the total). Major customers are an airline company (PIA), and power and steel companies. Automotive-related companies account for only 2-3%. In 2009, the unit won around 2,500 contracts (of which 600 contracts were related to calibration) and performed over 200 tests per month. Requests come from all over the country, including Karachi. The test fee ranges between Rs. 300 and 3,000.

(2) Peoples Steel Mills Ltd.

Pakistan has only one integrated steel mill. While Peoples Steel Mill Ltd. set up with Japanese assistance and produces 70,000 tons of alloy iron a year, most of which use own consumption. Peoples Steel Mill has fairly good testing facilities including the shock-resistant room. It mainly inspects its own products but accepts about 500 requests from the outside a year. The customs bureau in Karachi requests for check against documents, while gas companies, oil companies, and railway companies request for testing of iron constituents and strength. Iron is widely used as raw materials. There are many requests for testing to check that composition of purchased products is according to specifications.

4.3.2 Historical background of vocational training and technical education in Pakistan

4.3.2.1 Vocational training and technical education by the Ministry of Labor and Manpower

In Pakistan, the following seven ministries are engaged in vocational training and technical education in their respective fields.

1) Ministry of Agriculture
2) Ministry of Industry and Production
3) Ministry of Science and Technology
4) Ministry of Labor and Manpower
5) Ministry of Education
6) Ministry of Social Welfare
7) Ministry of Communication

In 1993, the vocational training and education system underwent major reforms in Pakistan. First of all, the National Vocational and Technical Education Committee (NAVTEC) were created within Prime Minister's Office to formulate government policy. Actual policy implementation is left to Technical Education and Vocational Training Authority (TEVTA) of each provincial government, thus policies and programs are implemented on a provincial basis. However, it was decided to provide vocational training and technical education according to uniform system throughout the country. At the same time, vocational training and technical education activities undertaken by all of the above six ministries, except for the Ministry of Labor and Manpower (MoLM) are continued.

(1) National Training Bureau (NTB)

The MoLM started skill-specific vocational training by establishing the National Training Bureau (NTB) in 1976. Generally, vocational training is dominated by practical training (80%), with theoretical education accounting for the remaining 20%. At present, there are around 1,500 vocational training institutes (6 months, 1-year, 2-years and 3-years) and technical institutes (2-years and 3-years). Of total, there are around 400 institutes operated by the private sector. Before 1976, the MoLM supervised 37 institutes to train around 300,000 people annually. Upon the establishment of NAVTEC, all the institutes but the Technical Training Center (TTC) in Islamabad was transferred to each province, while their operating budgets were transferred from the federal government to provincial governments. On the other hand, NTB reviews provincial curriculums for the vocational training institutes and conducts retraining for instructors.

With a 3-year program and a total business cost of Rs. 62.71 million, the NTB has implemented training of 770 instructors in the government and private training centers according to the following courses since May 2006: Since short-term training of female instructors were strongly needed, a 2-week course for 40 female instructors has been added although it was not initially planned.

a) Two 6-month courses for 140 instructors; twice as the past results (94 instructors)
b) Five 3-month courses for 350 instructors: five times as the past results (230 instructors)
c) Four 1-month courses for 280 instructors; four times as the past results (216 instructors)
d) 2-week course, not scheduled: once as the past result (40 instructors)

Total 770 instructors: 12 times in the past result (580 instructors)

Training for 4,000 construction instructors for a two years and half course was performed (ten times for 400 instructors). This training gained popularity and 5,132 people have already completed the training. Presently, the Hostel Building (50 rooms for 100 people) is under construction to accommodate trainees according under a two-year project.

Further, the Vocational Training Center is under construction in Kashmore, Sindh. This center will provide six courses (computer, radio/TV, RAC, carpenter, dress making, electrical work). Annually, 720 people will be trained with 120 people for each course.

Additionally, the following 20 courses are available. For the textile sector that is very important, there are separate training institutes. Therefore, it is not offered here. On the other hand, there are six automobile related courses, which account for 30% of the total. Then, there are four construction related courses and three large machine operation courses. Thus, NTB's program is putting more weight on construction and machinery sectors than industrial production, in response to the present or future needs.

1) Mason
2) Plumber/Sanitary Installer
3) Shutter Carpenter
4) Steel Fixer
5) Auto CAD Civil
6) Surveyor
7) Quantity Surveyor
8) Crane Operator
9) Dozer Operator
10) Excavator Operator
11) Loader Operator
12) Road Roller Operator

13) Draughtsman (Civil)
14) Auto Mechanic
15) Auto Electrician
16) Welder (Arc-Gas & Tig-Mig)
17) Machinist/Turner
18) Electrician
19) Industrial Electrician
20) Heavy Duty Driver

(2) Technical Training Center, Islamabad

It is currently located in an 8-acre site and has acquired a 5-acre site to build accommodation facilities for trainees. At present, the 13-acre site is dotted with various buildings. It is offering a one-year training program that accepts trainees of 18 – 22 years old. The dropout rate is relatively low at 5-10%. Instructors are not required to be college graduates but have high practical skills, thus including those who have received vocational training or have work experience in the shop floor. The program is divided into the morning session (8:15 – 13:30) and the afternoon session (14:00 – 18:00).

The program offers a total of 22 courses (classes) in the following seven areas (with the computer and architecture courses being divided into smaller elements). Class capacity ranges between 25 and 30 persons. The enrollment totaled 749 persons as of the end of May 2010.

1) Machinist
2) Auto mechanic
3) Electrician
4) Welding (arc & gas)
5) Draughtsman (civil)
6) Draughtsman (mechanic)
7) Computer

Computer skills are required for all the courses. Generally, manual training is conducted for six months and practical training using a computer for the remaining six months. Some courses require CAD/CAM training. Training equipment including computers is generally old, but they are available in a sufficient number. Foreign language education consists of English (one hour per day) and Korean (five times per month – one hour each). After graduation, one half of them finds jobs in the Middle East or Europe and contributes to overseas remittance. The remaining half works in the country. Trainees come from areas other than Islamabad but they have to commute by bicycle, motorcycle or bus because the center has no dormitory. Practical training is often disturbed by power outage, due to the absence of alternative power generators.

4.3.2.2 Technical training by the MoE

(1) Number of schools, enrollment, and the number of teachers (2007/08)

Table 4-3 Overview of General Education

	No. of schools	No. of students	No. of teachers
Kindergarten	815	7,402,946	3,470
Mosque	9,989		14,066
Primary school (five years) (Compulsory)	146,603	17,228,274	421,265
Middle school (three years)	40,829	5,362,718	320,611
High school (four years) first/second terms (element school teacher license)	26,396	3,345,798	437,716
University (four years - Master and six years - PhD)	1,983	352,303	31,730
Total	226,615	33,692,039	1,228,858

Source: Academy of Educational Planning and Management, "Pakistan Education Statistics 2007-08"

In preschool education, mosques (madressah) play an important role. The number of primary schools and enrollment are fairly small for the country of 170 million populations. Also, the number of primary school teachers is small in comparison to the number of students. In contrast, the ratio of teachers to students is higher at middle school and higher levels.

(2) Technical education

The MoE is not responsible for vocational training. It is in charge of technical education as a part of government service in the field of science and technology. Technical education by the MoE is offered for middle school graduates, consisting of one- to three-year courses to train skilled workers (male students; Certificate for one and two years courses, and Diploma issued for the 3-year course) and (female students) with the certificate to be issued after completion of the first, second and third years and the diploma issued after three years to become vocational training instructors. In 2005, the system was reformed to make NAVTEC (under Prime Minister's Office) largely responsible for policymaking relating to vocational and technical training (1-3 year). NISTE (National Institute of Science and Technical Education) of MoE used to prepare, review and finalize of all the curricula of technical education, but this work transferred to TEVTA and NAVTEC. NISTE retain trainers of technical education.

4.3.2.3 National Vocational and Technical Education Commission (NAVTEC)

The National Vocational and Technical Education Commission (NAVTEC) were established in 2005. It is located in the Prime Minister's Office and is in charge of the vocational and technical education policy. Instead of the NTB and NISTE, it was assigned with responsibility for development of the curriculum for vocational and technical education. Although the curriculum may be created by a provincial government to reflect local conditions, it must be submitted to the NAVTEC for approval. The vocational and technical training institutes of each ministry must follow the same rule. To modernize the traditional vocational education and put it closer to the market and social needs, the National Skills Strategy 2009-2013 was announced. For the industrial area, the Industrial Advisory Group is examining implementation details. Presently the EU led by the GTZ is proceeding with examination for developing the implementation details to specific projects. On the other hand, subsidies are given to local vocational education agencies that focus on skill quality improvement and implement certain courses to improve the skills for more employment. NAVTEC has over 100 employees and its budget for vocational education including women is on the rise year after year.

Its Industrial Advisory Group is developing actual policies and programs relating to the industrial sector. In addition, NAVTEC works to expand vocational training for internally displaced people (IDP – people who live in refugee camps or a similar environment and whose number increases rapidly, especially in border areas with Afghanistan, along with a longer duration of stay).

Actual training is implemented by four provincial governments. In addition, vocational training is provided under support of other ministries, private enterprises, and donor organizations. Among them, there are an auto related course (Auto & Diesel) offered at Government College for Technology (GCT), Railway Road, in Lahore.

4.3.2.4 Technical Education and Vocational Training Authority (TEVTA) in Punjab and Sindh

Among TEVTAs operated by provincial governments, TEVTA in Punjab plays a leadership role against the background of the province’s strong economy, richest among the fours.

TEVTA is a relatively new organization established in 1999 by merging the following 7 departments. It has a 4-acre (1.6ha) site located in a newly urbanized area of Lahore. It has a total of 403 employees and the following organization.

1) Technical education department
2) Labor department
3) Small industry cooperation department
4) ABAD (Agency for Balani Area Development)
5) Cooperation department
6) Agriculture department
7) Industries

(1) Three levels of vocational training

The education system in the country is roughly divided into the following four stages. Vocational training is primarily designed for persons who have completed middle school education.

- Primary education (from five years old): 5 years (5 years at primary school)
- Middle school education: 3 years (graduates advance to vocational/technical training or secondary education)
- Secondary education: 2 years (graduates advance to university or vocational/technical training for 0.5 – 3 years)
- Higher education: 4 – 8 years (university) (Bachelor's degree – 4 years; PhD – 2-4 years)

Vocational and technical training is classified into the following levels.

1) Vocational training (practical training accounts for 80-90% of class hours)
   - Semi-skilled workers (less than one year; 50% of students discontinue study at this level)
   - Skilled workers (completion of the second year; 10% of students discontinue)
   - High skilled workers (completion of the third year; Master of Craftsman)
2) Technical training (3-year course for diploma; theory accounts for 40% and practical training 60%; academic elements added)
   - Diploma of Associated Engineer (DAE) available
3) Graduate of technologist level
   - Bachelor of Technology (34 categories)

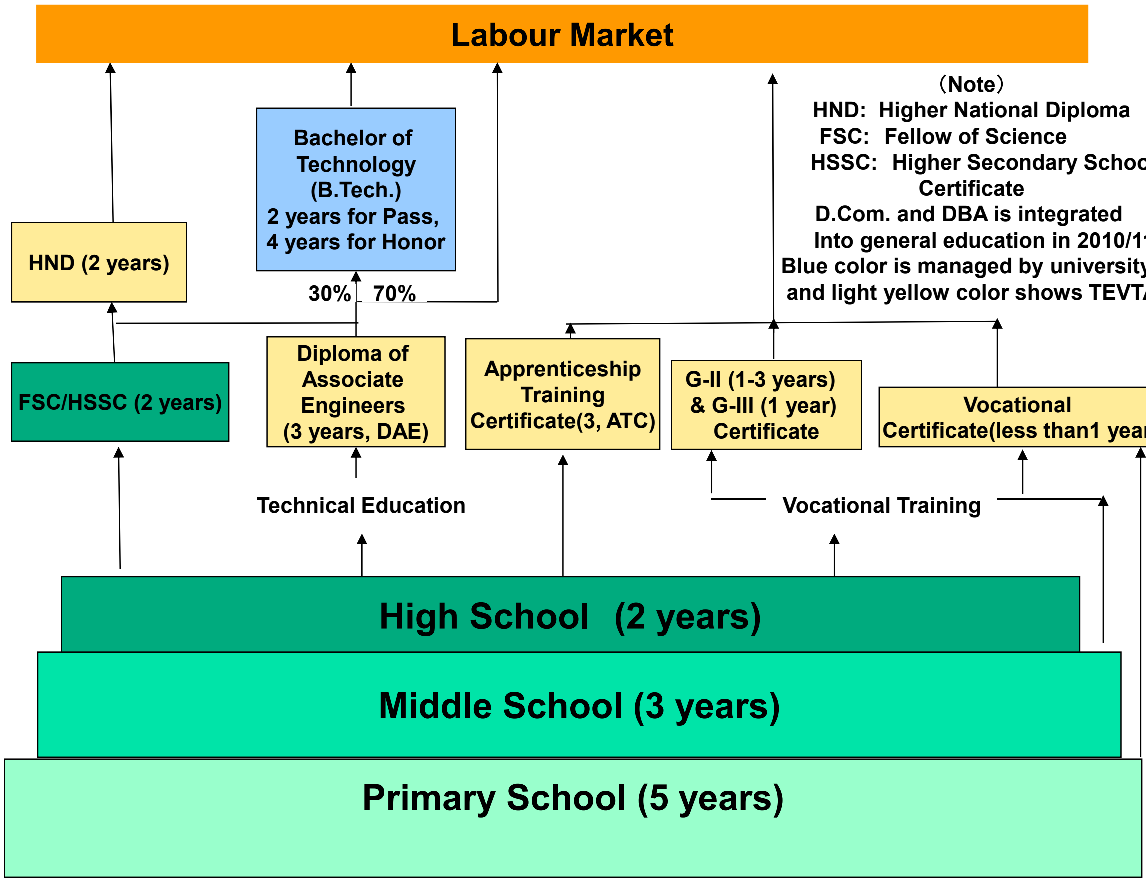


Figure 4-1 Technical Education and Vocational Training

(2) TEVTA's budget and plan

TEVTA's operating budget is summarized below. It represents a relatively large part of the provincial government's projects.

	FY2009/10	FY2010/11 (request basis)
Current expenditure (salary, etc.)	Rs 3.1 billion	Rs 4.3 billion
Investment (buildings, equipment)	Rs 1.8 billion	Rs 1.5 billion
Total budget	Rs 4.9 billion	Rs 5.8 billion

Land is not included because nationally-owned land is used. The total cost of opening a new training center is estimated at around Rs. 404 million, as follows.

- Salary and other costs (e.g. Printing of diploma): Rs. 4 million
- Building construction and procurement of equipment: Rs 400 million

(3) Numbers of vocational schools, teachers and students

Between the end of FY2000 (immediately after the establishment of TEVTA) and the end of FY2009, the number of vocational & technical institutes increased by 17.9%, the number of teachers by 43.8%, and the number of students by 150%, as follows. The number of Institutes is composed of 7 technical colleges, 17 polytechnics, 314 vocational institutes, 38 commerce colleges, 80 commerce institutes, 18 service centers in January 2010.

	No. of institutes	No. of students	No. of teachers
End of FY2000	402	53,000	3,200
End of FY2009	474	131,142	4,600

Generally, they are relatively small in size, i.e., 10 teachers and 280 students per training institute on average. In Lahore City, there are 126 vocational & technical training institutes... On average, there are around 10 institutes in each of 36 districts. However, the dropout rate is fairly high. 50% of students leave school in the first year, 40% remain in the second year and 30% in the third year. The third year students at several schools are often integrated to make up a relatively small number of students, so that many schools have the first- and second-year students only. Of 126 schools in Lahore, there are only 31 schools that have the third-year students, one fourth of the total, as shown below.

1) Vocational (0.5-3 years): 22 schools
2) Technical (3-5 years college and three-year polytechnic): 4 schools (graduates mainly go to the manufacturing sector)
3) Commerce (3-5 years college and three-year institute): 5 schools (graduates mainly go to the service sector)

(4) Technical education

In Punjab, there are technical colleges in the following seven districts.

1) Lahore
2) Guirat
3) Sialkot
4) Sahiwal
5) Attock
6) Faisalabad
7) Bahawalnagar

(5) Establishment of a new vocational and technical training institute

In establishing a new vocational & technical training institute, a standard process (detailed demand survey, course design, capacity setting, and the hiring of instructors) is followed.

(6) Tuition

Vocational training institutes charge monthly tuition of Rs. 300 per student, which does not include textbooks, a uniform, a notebook, and pens and pencils. Partly due to the high cost, many parents chose not to send children to school and to make them work in order to support family.

(7) TEVTA's instructor training and fee

1) Qualification

30-40% of university graduates obtain teacher's license. Many of them become TEVTA's instructors after graduation from practical training courses by TEVTA. On the other hand, not many college graduates become school teachers, which salaries are lower than private company employees.

2) Three teacher education agencies

There are three agencies for education of TEVTA teachers. The first one is in Faisalabad (Govt. Technical Teachers Training College: GTTTC). The other two are in Lahore; one is for male vocational education (Staff Training Institute) and the other is for female vocational education (Govt. Vocational Teachers Training for Women). Since other provinces have no teacher retraining organization, they send their teachers for retraining. To the NTB and NISTE in Islamabad But these two facilities have limited capacity and there is financial difficulty in bearing business trip expenses.

3) Hiring of technical college graduates

TEVTA's technical and commerce colleges for three years are highly rated. Their graduates are considered to be equivalent to university graduate and their professional knowledge (equipment, etc.) is valued.

4) Senior instructors

They are selected from applicants (engineers and technicians) who have masters or higher degree and field experience.

5) Textbooks

TEVTA develops and prints its own textbooks and other teaching and learning resources.

6) Mobility of instructors

Instructors are hired in each district and receive training. Only 5 – 6 instructors move from one district to another in Punjab, and those who move to other province account for less than 0.1%. As some students come from a remote area, vocational training institutes have dormitories.

(8) Sindh Technical Education and Vocational Training Authority (STEVTA) in the Sindh province

The Sindh province decided to establish the STEVTA in August 2007 under a provincial law. Then vocational education services, previously managed by various bureaus of the provincial government, were integrated into the STEVTA, which was started in 2009. There are 71 technical schools, 72 vocational schools, 36 manpower schools, and 57 commerce and socioeconomic schools (totaling 238 schools), which are about a half of 482 institutes in October 2010 of the TEVTA in Punjab. STEVTA has 115 employees and the operating budget of Rs. 0.5 billion each for 2009/10 and 2010/11, which is only one ninth that of the Punjab TEVTA.

The USAID provides employment counseling service and the ILO aids teacher retaining and equipment maintenance. In July 2010, a three-year, US$2 million project was started under assistance of the World Bank (90% of training expenses covered).

(9) Punjab Vocational Training Council (PVTC)

For education of children of low-income earners (Rs. 5,000 - 6,000/month or below), PVTC was established in 1998, ahead of the TEVTA, under the donation from the provincial government, private companies, and zakat (charity fund). Although the government contributes capital, PVTC provides vocational training only under private management. As a result, its facilities are operated at high frequency and teacher retraining is conducted in an efficient manner. Every month, each student receives Rs. 2,500, of which Rs. 2,000 paid to the school as tuition. All school facilities are accommodated in former government offices that have been repaired and remodeled for the purpose, and are generally located in a small lot. Already, 146 Vocational Training Institutes (TVIs) have been opened. They are run by an administrative board consisting of 15 members (13 business persons and 3 provincial government officials). TVI courses extend to 11 fields and offer 22 twelve-month courses, 20 six-month courses, and one three-month course. There are five automobile-related courses. The upper limit of age for enrollment is 35 years old. The curriculum is different from that of the TEVTA. Teachers are frequently retrained at the PVTC head office and the dormitory is provided. Teaching and training materials are prepared each year under the financial assistance by zakat.

4.3.2.5 Auto-related vocational training

(1) Government College for Technology (GCT) in Punjab

1) Lahore Technical College

Technical and commerce colleges provide the highest level of technical training and education. For instance, Lahore Technical College in Punjab is regarded as an important provider of secondary education in the province. It receives technical support from Toyota, which has donated equipment relating to car maintenance and emphasizes education in 3S (sales, service, and spare parts). As latest equipment is used, class is very popular and there are few dropouts. It is located south of the Lahore railway station and has a 3.4 ha site. A dormitory accommodates 46 students. Courses are divided into morning and afternoon sessions.

Table 4-4 Teachers and Students per Course of GTC Railway

Course	Teachers	OJT instructors	Students
Three-year course diploma			
Mechanical technology	27	14	1,321
Auto and diesel technology	13	7	491
Architecture technology	5	3	262
Refrigeration & air conditioning technology	5	3	152
General culture	10	-	all

70% of students who have enrolled in the first year continue to study until the third year (much better than 20-30% for TEVTA's technical schools). Each class has 50 students (quota). There is no survey on career after graduation. Graduates from the Auto & Diesel Technology course largely find jobs with the power sector, because diesel fuel is used for power generation made by private enterprises.

2) Cooperation of private enterprises

GCT has many workshops, where Toyota and Yamaha engines and accessories are displayed, and the companies send instructors a few times annually.

(2) Concept of establishing the Center of Excellence for the TEVTA and STEVTA

The JICA sends three resident experts to GCT Railway in a five-year project to review the curriculum of two technology courses (Mechanical and Architecture), developing teaching materials, and procure equipment. In the long term, for the courses of Auto & Diesel etc. which strongly demanded by the industry TEVTA is considering possibility to widen the JICA support horizontally as a new project by finding a suitable site because the existing site (3.4ha) is filled with current 2,000 students in the two-shift system. The GCT Multan in Multan (the third largest city in Punjab) has a 20.9ha site and operates seven courses. Since the site is largely vacant and unused (85%), TEVTA wants to build the Technical Training Center of Excellence for the two technology courses, accompanied by curriculum redesign, development of teaching materials, and equipment purchase.

In Sindh where many automobile assembly plants are located, the provincial government hopes to start vocational training courses on Auto & Diesel and Auto & Farm Machinery and then transfer them to technical education in order to establish them as the Center of Excellence. As candidates, the provincial government has listed two institutes (Govt. Monotechnic, Razzakabad and Pakistani Swedish Institute of Technology, Landi).

(3) Others

1) Teacher retraining facility expansion plan for Govt. Technical Teachers Training College, Faisalabad

In Pakistan, vocational education is booming as the means to escape from poverty and find jobs. It is offered at as many as 1,500 schools throughout the country. Each year, additional 200-300 schools are established. On the other hand, there is a serious shortage of teachers, while retraining facilities and programs are also in severe shortage. Traditionally, retraining was carried out in Islamabad. At present, there is intensive competition for retaining because of an increasing number of applications, as well as the cost burden (transportation) for trainees from other provinces.

The Govt. Technical Teachers Training College, Faisalabad has an expansion plan. In addition to four trades (Mechanical, Civil, Electric, Electronics), three trades (Textile, Auto& Diesel, and Auto & Farm Machinery) will be newly offered. This college already has a 4.5ha idle land. Although needs survey and preliminary design (to build a new facility in adjacent to the existing building) have been completed, the plan has not obtained approval by the provincial government.

2) Automobile course of the PVTC

The PVTC under private management is planning vocational education for poor families. It is scheduled to construct new 27 schools in 2010/11 in the areas damaged by the recent flood. However, the PVTC faces problems relating to curriculum review and equipment supply and expects assistance from donor organizations.

PVTC's plan will be influenced by availability building for training, number of students and financial capacity. Trainers and trainees, in general are more serious than TEVTA, owing to scholarship privilege and last chance for securing jobs (18-35 years old). At a moment, many graduates are working at repairing houses.

Chapter 5: Quality and Safety Standards for Automotive Products

Chapter 5 Quality and Safety Standards for Automotive Products

5.1 Basic Concept of Quality and Safety Standards

Concept of standards for quality and safety is obscure for everyone. Therefore, Chapter 5.1 defines what is “standard” in the Project (and also in the Final Report). And then current situation and system of Pakistani industrial and safety standards, and cases of vehicle inspection system in other countries are described in Chapter 5.2 and 5.3 respectively. Finally idea and preparation of industrial and safety standard for automobile industry in Pakistan are formulated.

5.1.1 Type of standards

The following definition and pattern are referred to Japanese Industrial Standard from free-encyclopedia "Wikipedia”.

(1) Type by nature and characteristics

The word "standard," when used in the context of industry, technology or science, refers to a criterion established by authority, or a custom and the like to define, determine or measure quality and other characteristics of a specific product, service, organization, or activity. In other words, the standard means a rule agreed by members or otherwise stakeholders of industry or society, and "standardization" represents the rule making process. Industrial standardization, therefore, means the process of establishing standards that can be applied to a specific industry or technology, typically in an entire country. In Japan, for instance, its own industrial standards (JIS) are established and widely adopted. Many countries have their own industrial standards. Standards can be classified into the following four categories according to the subject of standardization, i.e., what is to be standardized. Note that, in practice, some standards cover two or more of the categories and cannot be classified single-handedly.

1) Standardization of shape, size and other physical characteristics

Many products have a distinctive shape, size or other physical appearance, which can be standardized, e.g., screws, batteries, films, and compact disks. Standardization of such products may include compatibility or interchangeability. Furthermore, design concept is recently becoming the subject of standardization. A primary example is "accessible design" which tries to realize a shape, size or other design features that ensure the ease of use or user-friendliness, as seen in a shampoo bottle and a notch of a prepaid card.

2) Standardization of quality, performance, and their testing methods

Unlike a shape or size, quality and performance represent intangible aspects of a product that can only be verified by a scientifically objective test. Industrial standards such as JIS, BS, ANS, and ISO define and specify what quality or performance requirements a product must conform to and how such conformity should be evaluated and verified. Thus, they provide fair and neutral "metrics" for products that are useful for people's life, society and economy. JIS, for instance, sets forth quality conditions for a specific product and allows a product that meets said conditions to bear the JIS mark. The same is true for the product's function. JIS defines a standard method for testing and evaluating the product to see if it performs a required function. As a result, industrial standards are widely used by companies as a reliable basis of assuring product quality.

3) Standardization of social infrastructure

In this context, character codes, bar codes, technical terms, and symbols used for electronics and other products, including signboards and notices, form the foundation of modern society by conveying important information on a specific product or service to people, and their standardization is increasingly critical as they grow in number and variety.

4) Standardization of organizational management

There are standards that define a form of organization required to achieve a specific objective or perform a specific function and its management method including necessary techniques and procedures. Primary examples are ISO9000 (quality management), ISO14000 (environmental management), ISO22000 (food safety), and ISO16949 (quality control on automobiles). Essentially, the PDCA (plan/do/check/act) cycle constitutes the basis of these management standards.

In addition, there are other types of classification, such as product standards (covering both 1) and 2) above), standards of technical terms (corresponding to 3) above), management system standards (corresponding to 4) above), and testing standards. They are widely used in industrial circles, including daily production activities.

(2) Classification by scope of application

Standards can be classified according to the scope of application.

1) Internal standards

Internal standards are developed on the basis of agreement among related parties within a company, for the purpose of executing the company’s activities effectively and smoothly.

Nowadays, most of OEM manufactures have standards that are enforced to affiliated companies and outside suppliers, as see in the automobile industry.

2) Organizational (group) standards

They are established by trade associations and other organizations representing a specific industry and are generally applied to their members. Also called as sector standards or industry standards, many of organizational standards complement national standards, such as industrial standards covering automotive and motorcycle parts established by Japan automotive Standards Organization (JASO). Also, MIL, IEEE NEMA, and ASTM in the U.S. are organizational standards.

3) National standards

They are also called national standards and are established by an organization accredited as a national standard organization for application in the entire country. Many countries maintain their own national standards, including JIS (Japan), BS (UK), ANSI (USA), DIN (Germany), GB (China), KS (Korea), and SNI (Indonesia).

4) Regional standards

Some regions, typically Europe, establish and maintain standards that are applicable in their respective regions, such as CEN and CENELEC.

5) International standards

There are standards established by international organizations and made available to use throughout the country. ISO and IEC are typical examples.

5.1.2 Effect of standardization

Standardization is expected to create the following benefits.

Benefits for business operators

(1) Market expansion through the establishment of compatibility

Standards allow manufacturers to create compatible parts and modules, share quality information required for adequate selection of products, thereby to reduce costs relating to parts.

(2) Reduction of production costs

Standards encourage reduction of product types and development of standard parts that can be commonly used, resulting in the improvement of production efficiency and yield, that would lead to reduction of cost and lead time as well as saving of resources.

(3) Promotion and streamlining of international trade

International standards established under global consensus, which are consistent with applicable national and regional standards, serve as an impetus for international trade.

(4) Improvement of organizational management

Technical requirements and specifications based on the standard as common language can serve as a tool to promote mutual understanding and effective communication between related parties.

Benefits for consumers

(1) Price reduction and shorter turnaround time as a result of increased compatibility

Standardization of design methodology and procedures (including terms, symbols, size, construction and other basic design features) allows the product design process to be streamlined for reduction of design costs and turnaround time.

(2) Assurance of product quality and function in terms of uniformity

Standards help to create consumer confidence in that a product or service has a certain level of quality and/or performs a stated function.

(3) Improvement of safety

Standardization of production and testing methods leads to overall quality improvement, including safety for consumers.

In establishing an industrial standard (technical standard), it is important to take into account the needs of consumers (users) and society in general, rather than the needs of companies that are expected to conform to the standard. For instance, the American Quality Association defines quality as "the degree of meeting specific requirements by characteristics inherent in a product or service," suggesting the importance of reflecting the needs of users and society. This implies that quality requirements for automakers are defined by what users want from automobiles. In turn, quality requirements for automotive parts suppliers are governed by what automakers want.

5.1.3 Industrial standards in Japan

The word "standard" in English is translated to either "hyojun" or "kikaku" in Japanese. The latter is generally used to refer to standards established by public organizations, such as ISO, IEC, JIS and JAS. For the purpose of this study, however, standards covering the automobile industry in Pakistan should mean both of the Japanese equivalent terms. The following sections describe industrial standards, automobile-related standards, and the vehicle inspection system in Japan.

5.1.3.1 Japanese Industrial Standard (JIS)

(1) General background

JIS represents a body of industrial standards in Japan, which are established by a competing minister pursuant to the Industrial Standardization Law (enacted on June 1, 1949) and on the basis of a report submitted by the Japanese Industrial Standards Committee (JISC). Together, they constitute one of the national standard systems in Japan. Industrial standardization, as defined in the law, means an act of unifying or simplifying the following matters on a nationwide basis, and industrial standards serve as the basis of such unification or simplification.

- Kinds, types, shape, dimensions, construction, fittings, quality, grade, constituent, performance, durability and safety of mining and industrial products
- Methods for production, design, drafting, use of mining and industrial products, or their per unit energy consumption
- Work method or safety conditions relating to production of mining and industrial products
- Kinds, types, shape, dimensions, construction, performance or grade of packages for mining and industrial products
- Method for packaging of mining and industrial products
- Methods for testing, analysis, assessment, inspection, examination or measurement relating to mining and industrial products
- Terms, abbreviations, symbols, codes, standard quantity or unit relating to mining and industrial technology
- Methods for designing and construction of buildings and other structures or safety conditions

Note that "mining and industrial products" do not include pharmaceutical products, agricultural products, chemical fertilizers, and agricultural chemicals.

As JIS is established through statutory procedures, a certain level of fairness is warranted. As a result, some Japanese laws designate JIS as a technical standard to be conformed. In this sense, JIS is considered as the "de jure standard." On the other hand, JIS itself does not prohibit production, sales and use of a product that does not conform to it. In this sense, JIS is regarded as a voluntary standard.

(2) Establishment and abolition of JIS

The establishment of a JIS starts at the direction of the competent minister or upon request by an interested party.

In the former case, the competent minister or a person who has been entrusted by the competent minister prepares a draft standard. The minister may entrust investigation or research relating to standardization and preparation of a draft standard to JSA (Japanese Standards Association) or other qualified organization. The organization responsible for development of the draft standard creates a drafting committee within it, which is responsible for the preparation of the draft standard. The minister sends the draft standard to JISC for official investigation.

Any interest party may submit a draft standard that it has prepared to the competent minister and request for adoption as a formal industrial standard. The minister then sends the draft standard to JISC for investigation. At present, many standards are established upon request by interested parties.

JISC investigates each draft standard sent from the minister at the technical committee that is established under the Standard Board. The president of JISC reports its decision to the minister, who then establishes the draft standard as JIS. The minister announces the establishment in an official gazette. Note that detailed content of the established standard is not published in the gazette and is made available to public review at the Ministry of Economy and Industry, prefecture governments, and JISC’s Web site. Nearly 90% of all JIS standards are established by the Minister of Economy and Industry as the competent minister.

The competent minister reviews each JIS after its establishment. Specifically, he conducts reaffirmation on it in five years after its establishment and decides on revision or withdrawal as required. The minister announces the revision or withdrawal of a JIS in the same manner as its establishment.

Provisions of each JIS are published in a standard sheet issued by JSA. At the same time, JSA compiles standard sheets according to the field, edit them as a reduced-size edition, and publish it as JIS Handbook. Note that JIS Handbook does not contain supplemental notes that are attached to tables of many standards.

(3) JIS classification

JIS classification has 21 categories by using 18 alphabetic letters (excluding I, J. N. O, U, V, and Y, which can easily be mixed up with other letters) and TS (representing standard specifications) and TR (standard reports). The automobile industry is classified as D. Chemical and electrical/electronics sectors account for large volumes. 21 categories under JIS are same as BSI (Table 5-1).

Table 5-1 JIS Classification

A	Civil engineering
B	General machinery
C	Electronic/electrical machinery
D	Automobile
E	Railway
F	Ship
G	Iron and steel
H	Non-ferrous metal
I	Chemical
L	Textile
M	Mining
P	Pulp and paper
Q	Management system
R	Ceramics
S	Household goods
T	Medical safety devices
W	Aviation
X	Other
TS	Standard specifications
TR	Standard reports

Source: JIS Handbook 2010

(4) JIS and intellectual property

When a product is certified for its compliance with JIS, the JIS mark can be affixed to or indicated on the product, its package, container or invoice. Thus, compliance with JIS can be assumed by presence of the JIS mark. As for patent and other intellectual property rights that may conflict with JIS, a license under non-discriminatory and rational conditions should be obtained from a right holder in the process of developing the draft standard.

At present, it is disputable in Japan as to whether JIS is protectable under the Copyright Law. In many countries, copyright to all national standards is considered to be under the government's ownership. In Japan, however, draft standards prepared by interested parties are often made into JIS as they are, so that it is generally believed that their copyright should belong to their authors (interested parties). On the other hand, the JIS mark is considered not to be copyrightable because it constitutes an integral part of the ministerial ordinance.

5.1.3.2 Automobile related standards in Japan

Auto related standards in Japan consist of JIS (national standard), which is supplemented by JASO (organizational standard). In addition, many companies adopt and enforce internal standards that set forth stricter requirements than JIS and JASO. As discussed above, these internal standards take into account not only the needs of users and society but corporate quality policy as well. They stand out as a differentiating factor for companies in terms of quality and design. Nevertheless, JIS and JASO are considered to be important standards for the automotive industry.

Interested parties that develop draft standards relating to the automobile industry are mainly the following trade associations. In practice, each organization mobilizes experts from its member companies for the purpose of developing a draft standard.

- Japan Automobile Manufacturers Association
- Japan Auto-Body Industries Association
- Japan Auto Parts Industries Association
- Japan Automobile Tyre Manufacturers Association
- Society of Automotive Engineers of Japan
- Japan Automobile Research Institute

In JIS, there are 396 items relating to the automobile industry, in comparison to 373 items in JASO. In JIS's general index, automobile is classified as item D, which consists of eight sections, namely D0001 (General), D1000 (Testing and Inspection Methods), D2000 (Standard Parts), D3101 (Engine), D4001 (Chassis and Body), D5001 (Pneumatic Device and Instruments), D6001 (Construction Equipment and Industrial Vehicles), D7301 (Repairing, Investigating, Testing, and Inspection Tools), and D9001 (Bicycles). All of them are shown in correspondence to equivalent ISO standards, i.e., JIS's items relating to automobiles follow those in ISO. (However, in JIS's standards sheet, ISO is indicated in number and title only.)

On the other hand, JASO (organizational standard) is composed of eight sections, i.e., B (body, 26), C (chassis/parts, 90), D (electrical parts, 52), E (prime mover, 30), F (key parts, 39), M (materials and surface treatment, 68), T (two wheelers, 28), and Z (automobiles in general and others, 35).

In JIS, Item D "Automobile" contains 369 standards, which are classified according to component. There are 90 standards relating to chassis, followed by materials (68) and electrical parts (52). There are only 28 standards relating to two wheelers. 7 standards have been abolished.

Table 5-2 Automobile related JIS Codes

List No.	B: Body	C: Chassis parts	D: Electrical parts	E: Prime mover	F: Key parts	M: Materials/ surface treatment	T: Two wheelers	Z: Automobiles in general and others
0	General	Same as left	Same as left	Same as left	Same as left	Same as left	Same as left	Same as left
1	Frame/body	Clutch	Ignition device/ Starter	Moving parts	Screw	Iron and steel	Body	Common testing method
2	Working parts	Transmission	Lighting equipment	Fuel feeding device	Screw/fast	Non-ferrous metal	Chassis parts	Terms and symbols
3	Fuel tank	Driving unit	Instruments	Lubricating device	Washers	Chemistry	Electrical parts	Maintenance
4	Fittings	Control device (1)	Switch	Cooling system	Fitting seal	Textile	Prime mover	-
5	Trailers, tractors and special-purpose vehicles	Control device (2)	Repair parts	Exhaust and air cleaner	Bearing	Ceramics	-	-
6	-	Suspension	Wiring	Suction/ exhaust pipes	-	Surface treatment	-	-
7	-	Steering apparatus	-	-	-	-	-	-
8	Terms and symbols	Same as left	Same as left	Same as left	Same as left	Same as left	Same as left	Same as left
9	Others	Same as left	Same as left	Same as left	Same as left	Same as left	Same as left	Same as left
Supplemental	Body related parts including coupling devices and fittings for trailers, tractors and special-purpose vehicles	-	-	-	-	-	-	-
Numbers in effect	26	90	52	30	39	68	28	35
Numbers abolished	2	1	1	2	0	0	0	1

Source: Japan Standards Association, "JIS Handbook 2010"

Reference: ISO's auto-related standards

Classification and item	Number of standards
Road vehicle in general	63
Road vehicle systems	
In general	84
Car informatics	64
Lighting	20
Indicating and control devices	8
Braking systems	58
Transmissions, suspensions	23
Bodies and body component	58
Grassing and wiper systems	19
Coupling	24
Crash protection and restraint systems	24
Other road vehicle systems	1
Internal combustion engine for road vehicles	
In general	3
Engine block and internal component	27
Pressure charging and docking system	13
Cooling system, lubricating	6
Fuel systems	67
Electrical and electronic controlling system	38
Commercial vehicles	
In general	9
Buses	4
Passenger cars (caravans and light vehicles)	25
Electric road vehicles	10
Motorcycles and mopeds	56
Diagnostic, maintenance and test equipment	39

5.1.4 International standards relating to automobiles

Auto-related international standards are established by ISO. They are voluntary standards mainly covering testing methods and are positioned as international standards within the framework of the WTO agreement. Although ISO moves toward the establishment of unified standards, major industrialized countries continue to use their own standards, including SAE (US), DIN (Germany), JIS and JASO (Japan).

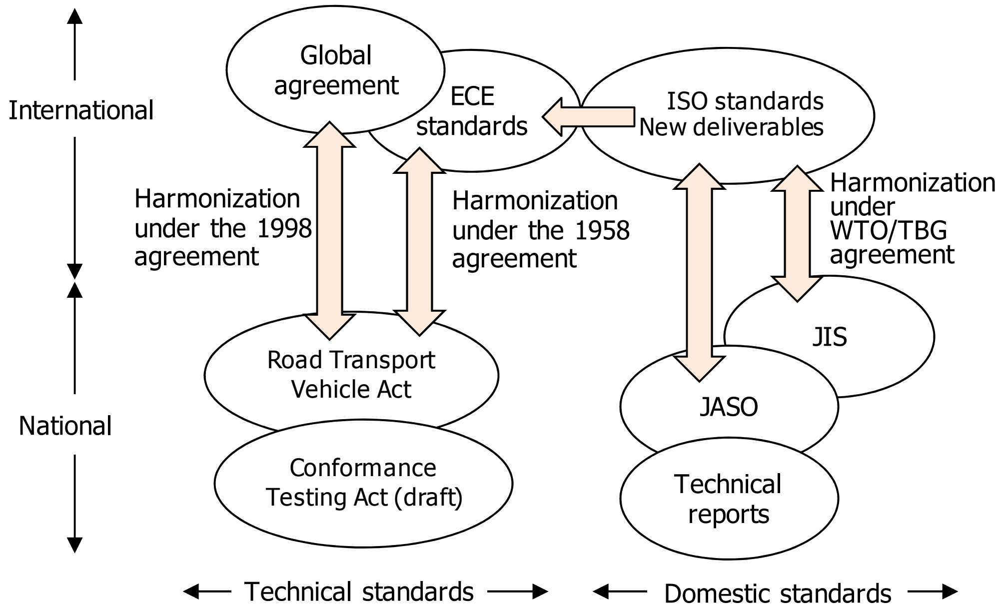
When a new car is launched in these countries, governments check and verify its conformance to technical standards relating to safety and pollution control. Auto-related national standards consist of technical requirements covering the automobile's construction, onboard devices, and performance from the viewpoint of ensuring safety and pollution control. Specifically, they define testing methods (including testing equipment and conditions) and evaluation criteria in order to achieve the following goals.

- To prevent a traffic accident caused by or related to a motor vehicle and to minimize a damage whet an accident occurs.
- To protect people's health and the living environment.
- To refrain from imposing undue restriction on the manufacture or use of automobiles.

In Japan, safety standards are revised from time to time in response to the traffic accident trend, the changes in the road and transport-related environment, and technological advancement. Revision is made on the basis of recommendations made by an ad-hoc organization called the Transportation Technology Council. Likewise, pollution control standards are revised in response to recommendations by the Environmental Council. Note that these safety and pollution control standards are compulsory standards because all vehicles running on the road are required to comply with them. On the other hand, voluntary standards are established for the purpose of encouraging rationalization of automobile production, use or consumption, normalization of trade, and etc.

Meanwhile, as the automobile supply chain becomes increasingly complex in the tide of globalization as well as global marketing of automobiles, there is a growing need for international harmonization of safety and pollution control standards. In this connection, the World Forum for Harmonization of Vehicle Regulations (WP29) of the United Nations Economic Commission for Europe (UN/ECE) is making strenuous efforts for harmonization, together with the establishment of "the Agreement Concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts (1958 Agreement), which aims to eliminate duplication of efforts, in terms of time and cost, in relation to certification of standards by establishment an inter-governmental agreement on mutual recognition (Figure 5-1).

Assuming that each government checks and verifies that a new car conforms to safety and pollution control standards prior to its market introduction, harmonization of standards is proceeded as follows.



Underway at the World Forum for Harmonization of Vehicle Regulations (WP29) of UNECE (United Nations Economic Commission for Europe)

Source: JAMA

Figure 5-1 Harmonization of Technical Standards Relating to Automobiles

Many countries are operating the certification system for automobiles and parts, under which the government verifies and approves production and sales.

Reciprocal approval contemplated at WP29 offers a major advantage in that an automobile device approved by a country that adopts the reciprocal approval system and rules can be approved by other signatory countries without testing. Also, when the same device is used for different models, it can be omitted from the examination process. This leads to the simplification of the homologation system for automotive devices, the reduction of turnaround time, and cost reduction. At the same time, the venue for certification procedures can be reduced to one country, thereby to reduce time and cost burdens significantly and facilitate exports and imports of automobiles and parts.

The establishment of the international certification system is becoming increasingly important for automakers and parts manufacturers that intend to export their products, as it simplifies the homologation process. Development of international standards relating to automobiles is largely led byTC22 of ISO, which is organized by 23 companies including France (acting as the secretary general).

5.2 Current State of Industrial Standardization in Pakistan

5.2.1 Pakistan standards and their application

In Pakistan, Pakistan Standards and Quality Control Authority (PSQCA) under the MoST serves as the organization responsible for the establishment and maintenance of national standards, including industrial standards. As discussed in Chapter 4, PSQCA's primary mission is to establish national standards. Its history dates back to 1951 when its predecessor, Pakistan Standard Institution, was created, totaling nearly 60 years of operation.

According to PSQCA, there are a total of 27,081 Pakistan standards. The number is more or less the same as JIS and BS. However, few persons recognized existence of Pakistan standards at auto-related companies and technical support organizations that the study team visited during the field surveys. A print version of the guidebook “Pakistan Standard Catalog” is published but has not been found in any of the companies visited. Thus, Pakistan standards are not widely recognized within the country.

PSQCA is responsible for the establishment of PS and conformity assessment. Development of a draft standard is led by experts representing a specific industry, who prepare a joint draft as a result of extensive discussion. Draft standards so prepared go through the screening process at PSQCA’s technical committee, and the selected ones are adopted or rejected by NSC. At present, PSQCA has 149 technical committees, each of which consists of around 15 experts. Note that some of the technical committees also function as industry-led committees. As for conformity assessment, 78 items are currently required to obtain certification for conformity (indication of the PS mark) and PSQCA is primarily responsible for monitoring their conformity. Note that nearly one half (38) of 78 items are related to food.

Pakistan has ostensibly a well developed system to establish and enforce national industrial standards, e.g., 27,081 Pakistan Standards and the compulsory certification for the PS mark covering 78 items. Despite presence of standards and rules, however, there is an apparent lack of systems, institutions and resources to enforce them properly, including monitoring and promotion. At the same time, as the government system is highly decentralized, there are often the cases that the same standard is interpreted or applied differently among the four provinces. These conditions are also observed in relation to automobiles, as discussed below.

5.2.2 Current state of conformity in the automotive industry

(1) Recognition and acceptance of standards in Pakistan

Consumers in Pakistan, in checking product quality, attach more importance to company or product name (also the recommended deadline for consumption), rather than the PS mark. This is typical in development countries, where imported products dominate the domestic market before the emergence of local industries and their brands serve as the mark for quality assurance.

In Pakistan, the PS mark system was introduced in 1961, together with the establishment of the testing facility. Thus, it has over 50 years history, but it only covered food and textile sectors for most of the period (35 years). As mentioned earlier, 38 out of 78 items for conformity certification are related to food. Some food companies indicate on the billboard or transportation vehicles that they have obtained the PS mark certification. On the other hand, standards relating to automotive parts have been prepared since 1980s, but because of on voluntary base those are not commonly used for all practical purpose. The standards on vehicle type by enforcement were established in 1997 and afterwards. Due to the relatively short history of 13 years on implementation of standards, the PS mark for automobiles, including motorcycles, has been little recognized or accepted by consumers.

On the other hand, PSQCA's voluntary standards do not receive much attention from manufacturers, who do not understand their importance or simply ignore them because they cannot be used for sales promotion purpose. Efforts should be made to promote recognition of industrial standards by companies, while the government should advertise the PS market to the general public.

(2) PS mark fee

At present, manufacturers who affix or indicate the PS mark on their products are required to pay a fixed rate fee to PSQCA, which is equivalent to 0.1% of sales prices for non-food items and 0.05% for food products. As the fee is assessed for actual sales volume, it is added up to a substantial amount for consumer products that are sold in large quantities, such as mineral water and milk. Thus, leading food manufacturers are demanding to set the fixed amount for each shipping establishment. As a compromise, PAQCA halved the rate to 0.025% for food and beverage on an experimental basis in September 2010, while maintaining the fixed rate system. In addition, it plans to examine possibility of lowering the rate for non-food items and introducing the fixed fee system.

(3) Conformity status of automobile related standards

PSQCA has indicated, in response to the study team's inquiry, that the following eight enforced standards have been established or in the process of being established, in addition to the above extensive list covering 27,081 standards. Among them, three standards in a), b) and c) are already enforced. Other five standards are currently under review at NSC or in the drafting process. Notably, as all of them have "PS" as affix, they have gone through NSC's examination and have been adopted in some forms. Thus, five of them are considered to be in process of revision or reconsideration.

a)	PS 4707/2008 (R)	Two Wheeler Motor Cycle	(revised in 2010)
b)	PS 4708/2008 (R)	Three Wheeler Auto Rickshaw	(revised in 2010)
c)	PS 1806/1977, 88	Reciprocating Internal Combustion engine	
d)	PS 4845/2008 (R)	Four Wheeler Automobile	(under revising)
e)	PS 4870/2008	Light Commercial Vehicle	
f)	PS 4868/2008	Semi Trailer, Full Trailers	(ready for NSC)
g)	PS 4869/2008	Heavy Commercial Vehicle	(ready for NSC)
h)	PS 953/1986 (R)	Exhaust Silencer for Auto Vehicles	

These standards are characterized by their coverage of assembled cars, rather than individual parts and components. As a motor vehicle is made up of thousands or even hundreds of thousands of parts, the vehicle's quality standards are governed by design specifications of individual parts manufacturers. Design specifications vary with parts and their manufacturers, so that the overall quality (the assembled car) is built up through the design and production process. This means that quality of motor vehicles cannot be defined in a national, uniform standard. From this viewpoint, the standards in a) through g) above are considered to be closer to safety standards in 5.3.1.5, rather than JIS, in the context of the Japanese standard system shown in Table 5-2. Also, these standards are clearly designed to prevent defective vehicles from being put into use, thereby characterizing them as safe standards, rather than industrial standards.

There are 433 voluntary standards for auto parts referring to ISO, IEC, JIS etc., and 19 own standards, which were developed in 1980s or 1990s, however there is no use of them including EDP, due to no review reflecting technology advancement, no propaganda except a report by three years.

In addition, PSQCA issues production permission, so called CM License (Certificate Marks License) on two wheels and three wheels by SRO 06 (1)/2002. Producers have to submit detailed description to PSQCA. PSQCA examines length, weight, brake, lamps etc. by eyes. If it is necessary to test questionable ones, they will test it at the manufacture's test facility. When

MoE implements environment regulation on emission gas and noise by SRO 72 (KE)/2009 since July 2009, PSQCA added test items to procure small portable equipment and QCC at Karachi and Lahore implement those tests. Effective period of CM license is one year initially, and its renewal is every two years. These tests are lacking in durability, strength, accuracy, impact etc. This CM License is not homologation

(4) Standards relating to two and three wheelers

PS4707/2008 (R) (two wheeler motorcycles) and PS4708/2008 (three wheeler auto rickshaws) are already established compulsory standards that require manufacturers to affix the PS mark to their products. Accordingly, factories of these vehicles receive PSQCA's conformity assessment at regular intervals. As of the end of April 2010, more than 70 models of two wheeler motorcycles three wheeler auto rickshaws have been certified. The two standards consist of the following items. (Note: Items marked by "☆" are applicable to three wheelers only, and the standard for three wheeler auto rickshaws has three more items than that for two wheelers.)

a. Scope
b. Definition (only covering two wheelers)
c. Emission
d. Requirement of emission
e. Marking and labeling
f. Sampling and criteria of conformity for production conformity test
g. Testing
h. ☆The chassis provided as per table-2(a) for Auto Rickshaw (passenger) and Table -3 for Loader
i. ☆Carriage / Body (optional)
j. ☆The specification for 4-Stroke, Three wheeler Auto Rickshaw (passenger) should be as specified in Table -2, and the specification for Auto Rickshaw (Loader) should be as specified in Table- 3
k. Distribution of Standards

(5) Standards relating to four wheeled vehicles

General standards were once developed in 2008, and detailed standards are currently under consideration. In fact, they were discussed at AIDC's subcommittee in June 2010. However, when four wheeled vehicles are viewed as a finished product, they are not manufactured according to unified standards, unlike other consumer products. Rather, they are made according to designs and specifications established by respective manufacturers, which are opposite to unified standards. On the other hand, they are subject to safety and pollution control standards that should be validated by national governments according to the UN/ECE's reciprocal approval system. In Pakistan, auto-related standards are apparently considered as industrial standards, but the draft standards covering buses and trucks should be viewed as safety and pollution control standards, albeit not sufficient in terms of content and coverage.

(6) LCV standard (general requirements)

At present, the following outline is being considered.

1) The same scope, definition and distribution of standard are stated.
2) In the division of LCV, requirements are stated for the cabin, the deck and the chassis.
3) As for the suspension, leaf springs, U bolts, and shock absorbers should be according to OEM standard specifications.
4) As for load distribution and stability, front and rear wheel loads should be according to OEM recommended values and NHA standards.
5) Registration should be made using Form F issued by OEM.
6) Manufacturer's certificate

When Form F is received; the certificate should indicate body and engine numbers, color, model, with or without a deck, dealer's name, seller's name, and warranty document.

(7) HVC standard (general requirements)

1) The scope and definition are basically the same, with some differences in detail.
2) As for rigid track types, weight, length, and axle with four- or six-wheeled power are indicated.
3) In main sections of prime movers, the cabin, the chassis, the suspension, the engine, and the transmission are described.
4) Dimensional considerations are made according to market demand.
5) Registration, insurance, safety devices, manufacturer's certificate, and a supplemental table showing maximum axle loading for size class according to National Highway Authority's regulation
6) Emission control and noise should conform to the levels set by the MoE. A sample of an invoice that can be used as the seller's certificate

(8) Standard for exhaust silencer for auto vehicles

1) The introduction, scope, terminology and definition are basically the same, with some differences in detail.
2) Muffler materials include cold and pressure rolled state plates, and content requirements for carbon, silicon, magnesium, and nickel are specified in a table.
3) As for performance requirements, test values for gas and noise under heat are indicated.

4) The method for cleaning upon completion of the test, the method for measurement, marking and storage of specimen, together with the gas leakage test, resistance to rear heat, differential in exhaust, measurement of fuel consumption, and piping layout, and temperature profiles (diagram).

In Pakistan, development of industrial standards and auto-related standards is making better progress than expected. However, there is a major concern that related discussion is made without establishing clear definition or understanding of quality standards, safety standards, and the vehicle examination system, and the homologation system. For the AIDP's programs, no system or institution for program implementation or operation has been built up, not to mention industrial standards and the vehicle examination system. Necessary actions need to be taken in this regard as preparation for development of standards and systems, although budgeting may be difficult.

5.2.3 MoE's emission standards for motor vehicles

In Pakistan, exhaust emissions are regulated since 2007. On May 16, 2009, the Ministry of Environment revised Annex III "National Environmental Quality Standards for Motor Vehicle Exhaust and Noise" to the Pakistan Environmental Protection Act of 1997 (XXXIV of 1997), which was then published in the official gazette dated August 18, 2009, as summarized as follows.

Euro-2 emission standards for new gasoline cars were introduced on July 1, 2009, and those for diesel cars are slated for implementation on July 1, 2012. Maximum noise is set at 85db at a 7.5m distance.

(1) Vehicles in use

Exhaust, nitrogen dioxide, and noise standards (maximum permissible limits) are set at 40%, 6%, and 85db, respectively, while current ways for measurement methods and adaptation were inherited without revision until June 30, 2012.

(2) Emission standards for new diesel cars

1) Exhaust emission standards for passenger cars and LCVs are set at 1.0 and 1.25 for CO, 0.7, 0.9, 1.0, 1.25 and 1.50 for HC + NO_x, and 0.08, 0.10, 0.12, 0.14, 0.17, and 0.20 for PM (tiers are Pak-II by following Euro-2 emission standards). The maximum noise level is set at 85db at a 7.5m distance. These standards, except for noise, will become effective on July 1, 2012.

2) Exhaust emission standards for diesel cars and HCVs are set at 4.0 for CO, 1.1, 7.0 for HC, and 7.0, 1.1 for NO_x, and 0.15 for PM (tiers are Pak-II by following Euro-2 emission standards). The maximum noise level is set at 85db at a 7.5m distance. These standards, except for noise, will become effective on July 1, 2012.

(3) Emission standards for new gasoline cars

Exhaust emission standards for passenger cars, LCVs, motor-powered rickshaws, and motorcycles are set at 2.20, 4.0, 5.0 and 5.5, respectively, for CO, and 0.5, 0.65, 0.08, and 1.5 for HC + NO_x (tiers are Pak-II by following Euro-2 emission standards). The maximum noise level is set at 85db at a 7.5m distance. These standards became effective on July 1, 2009.

As for sulfur control on diesel cars, the maximum permissible limit has been tightened from 1.5ppm (three years ago) to 0.5ppm at present. It will be further raised to 0.05ppm in 2012. The Pakistan Environmental Protection Agency (Pak EPA), under the MoE, has been inspecting vehicles on road about their compliance with emission control. In 2009, around 38,000 vehicles were inspected, of which 4,000 vehicles were found to be non-compliance.

At present, there are two major issues facing the MoE.

- Roadside monitoring after shipment from factories, while MoE depends on PSQCA's test for CM license before production
- Possibility to exclude old cars (20 years or longer in service) from the environmental point of view

The UNDP and the UNEP are currently deploying Clean Air Initiative, Asia (CAI) in Manila, the Philippines, by using a laboratory of the Asian Institute of Technology (AIT) in Thailand. Pakistan tries to follow such move.

5.3 Vehicle Inspection in Pakistan

5.3.1 Government's road traffic management and related laws

5.3.1.1 Central government

In Pakistan, road traffic management is effectively carried out by the four provincial governments, although the Ministry of Communication and the Ministry of Interior (supervising police and provincial governments) are involved to some extent. The division of responsibility between the central and local governments and between the related ministries is not clear.

(1) Ministry of Communication

The MoC is primarily responsible for public administration relating to telecommunications and postal service. It is also in charge of road traffic management via the following four organizations.

1) National Highway Authority: Approx. 1,500 employees
2) National Highway and Motorway Police: Approx. 4,000
3) National Transport Research Center: Approx. 100
4) Construction Technology & Training Institution: Approx. 100
   (Responsible for training of workers engaged in road and other construction works)

As inferred from the names of these organizations, the MoC is responsible for construction and maintenance of national highways (all motorways and inter-provincial highways), regulation and control of vehicles using highways, and training for construction techniques and skills. It therefore does not deal with the issuance of driver's license, registration and inspection of motor vehicles, and construction and maintenance of ordinary roads, which are considered to be taken care of by provincial governments. If there is needs for amendment of the Motor vehicle Ordinance 1965 or Motor Vehicle Rule 1969, MoC will be primarily responsible...

(2) Laws on road traffic

Road traffic in the country is regulated by the Motor Vehicle Act of 1939, Motor Vehicles Ordinance of 1965 and Motor Vehicle Rules of 1969. They constitute the basis of road traffic management and are effectively enforced throughout the country, as confirmed during the field surveys. More recently, National Highway Safety Ordinance of 2000 has also been enacted.

Actual enforcement of traffic laws and ordinances, including road construction and maintenance, traffic regulation by police, and tax collection, is legally the responsibility of the four provincial governments, which empower 116 districts throughout the country to conduct day-to-day activities. By ordinance, specific rules are added to each of the provinces, such as the maximum permissible deadweight (e.g., 5, 5.5, 6, 8 or 10 tons) that is specified for each type of road. In addition to districts, a district council or P.W.D handles matters relating to road traffic management.

In summary, the country's constitution empowers each level of government with the following power and authority in the area of road traffic management.

- Local government: The district is responsible for day-to-day activities ranging from road construction and maintenance to regulation of road traffic.

- Provincial government: PTA will supervise district administration. The four provinces make coordination in inter-city matters within each province.
- Federal government: It is responsible for coordination of inter-provincial matters, e.g., direct management of motorways and parts of highways.

5.3.1.2 Road traffic management by local government

(1) Administration system

As discussed above, each provincial government is primarily responsible for traffic management. Within the provincial government, the following departments are in charge of services that are relating to road traffic management.

1) Communication and Works Department: Road construction and management
2) Provincial Transport Authority: Generally known as PTA, it is responsible for decision making on bus and truck routes in cities and districts, construction, operation and management of bus stops, and management of fitness centers.
3) Home Department: It supervises security police and traffic police, and the latter is responsible for administration of the driving license test and license check on road.
4) Excise and Taxation Department: Collection of the license number registration fee, the driving license renewal fee, and the issuance of the fitness certificate

Within each province, districts and cities carry out most of the above traffic management activities under direction and supervision of the provincial government. On the other hand, the provincial government is responsible for the issuance of permits relating to public transport service, periodical inspection, traffic police, and tax collection.

(2) General outline of road traffic management activities by local government

1) Issuance and renewal of the driving license

The driving license test and the issuance of the license are responsibility of the provincial government. The test is conducted on a specific day of each week according to the type of vehicle (motorcycle, passenger car, LTV and HTV) to check knowledge on traffic signals and driving skills. A successful applicant can receive a license that is valid permanently. However, the holder is required to renew the license each year (the renewal fee is Rs. 300 per year and the amount equivalent to five years' fee can be paid). While the driving license system works well in urban areas, many people in rural areas reportedly drive without a license. At present, the driver's license is issued in a plastic card.

2) Registration and traffic regulation

Motor vehicles are registered with Excise & Taxation Department of each province (or major district). Prior to registration, commercial vehicles (buses, freight trucks, taxi cabs, etc.) are subjected to vehicle fitness examination. Registration is valid until the vehicle becomes out of service. The registered vehicle has the same registration number, regardless of change in ownership.

Road traffic is regulated by city traffic offices, each of which has few hundreds to one thousand traffic police officers, including motorcycle policemen who regulate traffic. While motor vehicles are largely used in urban areas, each city traffic office covers a fair large area, larger than the territory of the security policy office. A traffic accident is usually handled by a team including both traffic and security police officers.

3) Motor vehicle examination

Commercial vehicles (buses, trucks, taxis, and rickshaws) are required to receive periodical examination (see 5.3.1.4 for detail).

4) Road construction and maintenance

As discussed earlier, the federal government constructs and maintains all motorways and some highways. Local governments (Communication and Works Department) are responsible for the rest of highways and ordinary roads within their jurisdiction.

Note that motorways and highways under the federal government's jurisdiction are regulated by National Highway Authority (issuance of bus and truck route permits) and National Highway and Motorway Police.

5) Motor vehicle tax

The motor vehicle tax is assessed on each vehicle annually. Motorcycle owners are required to pay the tax for ten years after purchase (registration), whereas owners of other types of vehicles have to pay it for the entire period of their ownership. The motor vehicle tax on passenger cars varies according to cylinder volume, ranging between Rs. 1,000 and Rs. 3,000 annually. That on buses is determined by the number of years in service, deadweight, and the level of luxury.

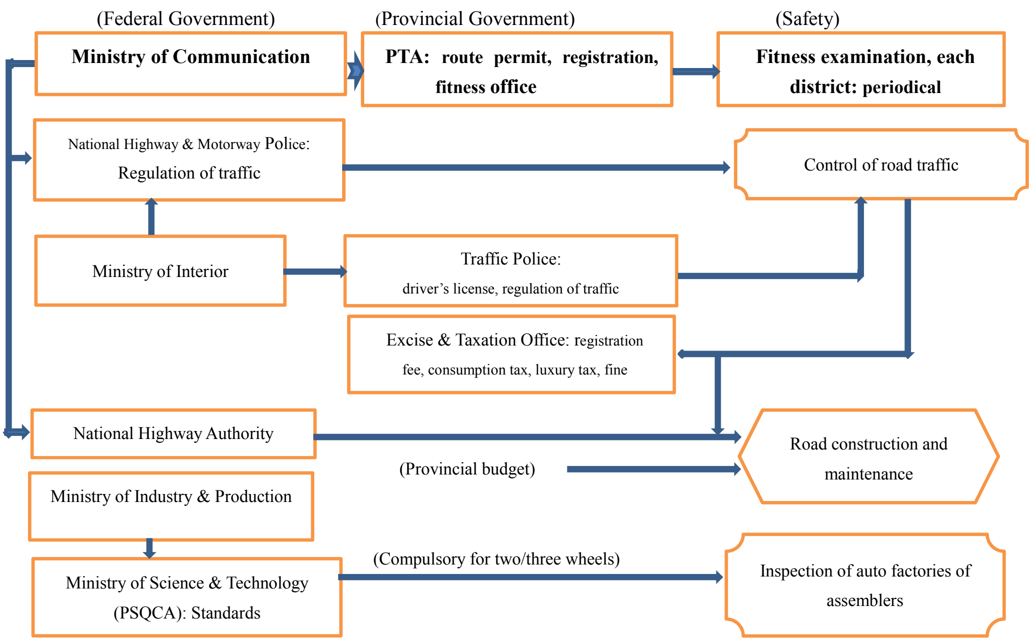


Figure 5-2 Transport Administration in Safety

5.3.1.3 Road traffic management in Punjab

The provincial government has been vigorously engaged in road traffic management. In particular, it strives to improve public transportation by establishing Lahore Transport Company (LTC) (discussed later). As discussed earlier, all the provinces have PTA to handle traffic management tasks. The following is an example in Punjab.

(1) Road construction and maintenance, and route permit

Commercial vehicles that provide passenger transport service, including rickshaws, taxi, mini buses, buses, and trucks, cannot be operated unless their operator obtains a route permit from PTA. In 1972, the route permit was issued in Sindh for public transport service, for the first time in the country. At present, all the provinces have their own PTAs that issue the route permit. However, while all transport management tasks are entrusted to PTA, including fitness certification, the transport police office in other three provinces still holds authority to issue fitness certification. Note that the tax is the revenue for the Ministry of Finance under each local government, which is to be collected through a separate channel.

PTA has DRTA (District Regional Transport Authority) in each district and has been expanding its resources and activities. PTA manages each DRTA under the chairman. DRTA is responsible for transport management services defined in Motor Vehicle Ordinance of 1965 and Motor Vehicle Rules of 1969, except for registration and traffic control that are handled by the traffic police office. In addition to the issuance, renewal and revocation of the route permit, it is responsible for coordination between the province and the district and the action to be taken in relation to a request by the federal government. PTA is building a computer network connecting DRTAs. Once an integrated system is implemented, PTA will be able to deal with illegal acts such as operation with an expired license or permit.

(2) Route permit

A route permit for bus or mini-bus service is requested by an operator who specifies a proposed route. No permit is granted to an operator who has an accident record. An individual can apply for a route permit for service using one vehicle, whereas a company is required to operate 8 - 10 vehicles for a route permit. More than two permits may be issued for the same route, depending on actual traffic volume. A vehicle without the permit cannot provide transport service on road. The validity of the route permit is one year for bus and three years for mini bus and other types of vehicles. The applicant must affix a revenue stamp (purchased at post office) to an application. The application fee is Rs. 550 per vehicle.

In reality, however, 20-25% of buses on road are said to be operated without the permit. The route permit is closely related to the provisions of Motor Vehicle Ordinance of 1965.

(3) Bus stops

Locations of bus stops are decided by PTA. On a route served by two or more operators, bus stops may be placed at different locations and thus indicate the operator's name.

(4) Regulation of fares

Bus fares are set by PTA according to the operating distance, vehicle type, and availability of air-conditioning. They are reviewed and adjusted every few years and were raised by Rs. 1 in October 2009. The fare for a bus without air-conditioning is Rs. 10 up to 5km, Rs. 12 for 5 – 10km, and Rs. 13 for a longer distance. Mini bus fare is Rs. 1 higher than ordinary bus fare, and so is the taxi (800cc). All the fares are fixed by PTA.

(5) Service schedule

The service schedule is set by DRTA (in a respective district) and PTA. Generally, bus service is operated between 5:00 and 24:00.

(6) Insurance

Insurance is defined in Article 93 of Motor Vehicle Act (1939) and the need for insurance against third party risks in Article 94. Article 125 provides for a penalty (three months or longer in prison or fine of Rs. 500) for an uninsured driver who has caused a traffic accident.

Indemnity requirements covered by insurance are set in Schedule 13 of Motor Vehicle Ordinance of 1965, according to the type of damage.

(7) Coordination of inter-district and inter-provincial bus services

PATs are responsible for coordination of inter-district and inter-provincial bus services so that the same number of services is provided for each direction on the same route.

(8) Lahore Transport Company (LTC)

LTC was established on April 9, 2009, on the basis of the Provincial Motor Vehicles Bill of 2009 that was enacted by the provincial government on February 18, 2008, with the primary purpose of improving urban transport. LTC has capital of Rs. 150 million, entirely contributed by the provincial government.

LTC is primarily responsible for the planning and implementation of public transport policy in Lahore city, particularly monitoring and control. To establish traffic rules within the city, LTC is mandated to establish driving schools and public transport routes, to improve the environment relating to transport routes, and to enforce vehicle examination. In addition to investment by the provincial government, LTC has its own revenue sources, including the fee for approval of transport service routes and the road tax. It intends to secure additional revenues, such as operation of driving schools and vehicle examination service.

Having just passed its first anniversary, LTC has around 100 staff members. The majority of them are former police officers capable of performing traffic control and enforcing regulation of buss transportation, and they wear a different uniform from the police. LTC plans to hire additional 250 – 300 persons.

LTC functions as: (1) regulator; and (2) facilitator. Each operator purchases a bus and LTC bears 20% of the purchase price as subsidy, while requiring the purchased bus to comply with the minimum technical specification. The operator is then required to continue bus service within the Lahore city area for seven years. Some companies (7 – 8 existing bus companies and 1 -2 new entrants) have expressed interest. The budget varies with the number of buses to be operated, new or used vehicles, and the scope of infrastructure development (bus terminals, bus stops, road expansion, etc.). Finally, LTC intends to initiate periodical vehicle examination on a BOT basis. The examination interval is one year for new buses and three months for used vehicles.

5.3.1.4 Vehicle examination system in Pakistan

In Pakistan, motor vehicles classified as commercial or public service vehicles (including vans, pickups, rickshaws, taxies, mini buses, buses, mini trucks, and trucks,) are required to go through official examination every six months according to Motor Vehicle Rules of 1969. It can be considered to be equivalent to the vehicle inspection system in Japan. Inspection items are specified in Articles 150 through 215 of Motor Vehicles Rules (see Table 5-3). They are generally referred to as safety standards, different from Pakistan Standard established by PSQCA.

The compulsory vehicle examination is conducted by a vehicle examiner certified by the provincial government. A vehicle is brought to a vacant lot and goes through the following steps.

(1) Acceptance of application documents containing required information, a revenue stamp to pay for the inspection fee, and a copy of an invoice for a new car, including the vehicle production number
(2) Examination of a license plate for a registered vehicle
(3) Examination of the production number
(4) Appearance inspection on a car body (including tires)
(5) Examination of the interior
(6) Examination of the vehicle in operation (engine sound, exhaust, braking lamps, and other lights)
(7) Examination of pedal reserve (clutch, accelerator, brake)
(8) Examination of the emergency exit and safety equipment of the bus

The above examinations are conducted for most types of vehicles. They are entirely conducted visually or manually and no equipment is used. In the case of a new car, therefore, the entire process does not take more than five minutes. The maximum duration is around 15 minutes. A vehicle which has failed the examination must be repaired or otherwise tuned up for reexamination within 15 days after the initial examination. The examination fee varies with vehicle type, i.e., Rs. 250, Rs. 300 and Rs. 400, and an additional fee is charged for a vehicle which has passed six months after the required time limit for examination.

At present, most of vehicles seem to receive the official examination at the time of registration only, while failing to receive a subsequent (continuous) examination, e.g., in Islamabad, only 30% of vehicles do so, and much lower in other areas. Many owners recognize the legal obligation, but knowing that there is no effective system to enforce it, they do not want to spend time and money for continuous examination.

While the possibility to expand the vehicle examination system to passenger cars is being considered, it is important to realize that the present system has problems in the following areas.

- Absence of specifications, despite of a wide range of inspection items
- Need for indication of inspection methods
- Adequate provision of examination resources, including qualified personnel and necessary equipment
- Need for training of examiners when a mechanical inspection method is introduced
- Addition of examination facilities, including the use of garages and dealer's service shops
- A workable system to find violators and to enforce the regulation, including proper punishment
- Improvement of vehicle maintenance techniques and skills
- Improvement of awareness of safety and legal compliance among vehicle owners and drivers

Table 5-3 70 Sections for Safety Standards in the Motor Vehicle Rules 1969

Article	Title
150	(Construction, Equipment and maintenance of Motor Vehicles)
	General
151	Lamps
152	Brakes
153	Reversing
154	Horns
155	Silencers
156	Millor
157	Dangerous projections
158	Noise
159	Safety glass
160	Arrangement & maintenance of glass
161	Wind screen wiper
162	Tyres
163	Emission of smoke vapory of grease
164	Speed meter
165	Springing
166	Steering
167	Overall width
168	Overall length
169	Overall height
170	Overhang
171	Turning circle
172	Direction indicators and stops lights
173	Wings
174	Side-car wheel
175	Communication with driver
176	Marks to be exhibited on vehicles being driven to a place of registration
177	Special marks to be exhibited on a stage carriage when in use a contract carriage
178	(Special rules Application to all public service vehicles)
	General
178-A	Strip around the body of buses
179	painting of public service vehicles
180	Stability
181	Side overhang
182	Seating room
183	Gang way
184	Limit of seating capacity
185	Head-room
186	Driver's seat
187	Driver's seat in a motor cab rickshaw or cycle rickshaw

Article	Title
188	Width of doors
189	Grab rail
190	Steps
191	Cushions
192	Body dimensions and guard rails
193	Protection of passengers from weather
194	Protection of laggages
195	Prohibition on the fitting of mirrors
196	Internal lighting
197	Body constructions
197-A	(Grant of manufacturing/assembling licenses of motor cab rickshaw/motor cycle rickshaw)
197-B	Cancellation of licenses
197-C	Appellate Authority
198	Lighting to by electricity
199	Fuel tanks
200	Carburetion
201	Exhaust pipe
202	Electric wires
203	Fire extingusheries
204	lacking of nuts
205	Floor boards
206	Spare wheel and tools
207	Advertisement and other makings on public service vehicles
208	Route board
209	Protection of goods against weather
209-A	Paining of goods vehicles
210	Exhibition of word "Private"
211	Driver's seat
212	(Special rules applicable to trailers)
	Overall length
213	Brakes
214	(Exemption)
	Exemption of military vehicles
215	Exemption of road plant

Notes: 1) Traffic regulations are identified at Chapter VII Control of Traffic

2) Certificate of Fitness of Transport Vehicles is described at Article 39, Motor Vehicle Ordinance 1965. Transport vehicle is defined in the definition 42 in the ordinance as a public service vehicle, goods vehicles, locomotive or a tractor.

5.3.1.5 Automobile inspection system in Japan

(1) General background

Japan maintains a compulsory automobile inspection system that requires four wheeled automobiles and 250cc or larger motorcycles to receive periodical inspection by the Ministry of Land, Infrastructure, Transport and Tourism in order to check to see if they comply with safety standards. The system also serves as a vehicle registration system to certify ownership. It is officially called the Motor Vehicle Inspection program. Inspections performed under the program are divided into three types, initial inspection, renewal inspection, and structural and other modification inspection. Initial inspection covers new vehicles, but it is exempted for a vehicle that is sold within an effective period of a certificate of completion inspection issued by an automaker. Thus, when the term “vehicle inspection (shaken)” is used in Japan, it generally refers to “renewal inspection” that covers vehicles in service, which is carried out for the purpose of renewing the certificate of inspection issued to them with a specific period of validity.

The inspection program is designed to check roadworthiness of motor vehicles, i.e., to see if they conform to safety-related standards so that they can run on public roads safely. Thus, it does not necessarily intend to inspect a vehicle as to whether it does work or function as equipment, except for some operational characteristics being included as inspection items. This means that passing the inspection does not necessarily guarantee that the vehicle will not break down in use. The inspection program is authorized by the Road Transport Vehicle Law promulgated in 1951. At the time, motor vehicle failure occurred often and periodical inspection and maintenance by a professional mechanics was indispensable. Today, however, motor vehicles have become far more reliable and durable on account of technical advancement, so that the inspection program has been revised to reduce burdens on owners, such as the extension of the effective period and the introduction of a user inspection system.

(2) Inspection method

In addition to periodical inspection under the present program, vehicle owners are required to carry out additional inspection and maintenance on a voluntary basis (its timing is left to discretion of each owner). In practice, such inspection is often entrusted to a dealer or a garage at the time of the periodical inspection. This is called “renewal inspection” to reflect the fact that the two types of inspection (the one to check conformity and the other to check vehicle conditions) are carried out concurrently. Upon completion of the periodical inspection, an inspection mark and a certificate of vehicle inspection are issued. The former bears the validity of certification (expiration date) and must be affixed to the front window of each vehicle (on the license plate in the case of motorcycles and trailers). Continuous inspection is carried out at a district office of the Ministry of Land, Infrastructure, Transport and Tourism or a garage designated by the ministry. On the other hand, initial inspection and structural and other modification inspection are to be carried out at a local vehicle inspection and registration office.

Inspection items are specified in safety standards, with which an inspected car is required to comply at the time of inspection. Major inspection items are as follows.

- Identity factors
  Length, width, height, vehicle weight, seating capacity, etc.
- Prime mover and transmission
  Prime mover (generation of abnormal sound, start-up, color of exhaust), speed control device, NP device, lubricating device, cooling device, fan belts, clutch, chains, sprockets, transmission, propeller shaft, drive shaft, and etc.
- Frame and body
  Frame, body, minimum height above ground, carrier, device to prevent inclusion, coupling device, etc.
- Riding section
  Doors, windows, seats, passage way, emergency exit, room lights, seat belts, head rest, inflammability, etc.
- Safety devices
  Reflector, alarm, travel recorder, emergency signal device, window glass, wiper washer, defroster, rear view mirror, side mirrors, instruments, etc.
- Lights
  Front lights, side lights, etc.
- Braking devices
  Brake pedal, brake lever, hoses, rods, cylinders, air brake, ABS device, etc.
- Steering gear
  Indicator, steering wheel, gear box, power steering device, center shaft, knuckle, etc.
- Shock absorbing device
  Chassis panel, brackets, shackles, struts, air suspension, etc.
- Driving unit
  Wheel discs, wheel bearings, rims, side rings, spindle nuts, clip bolts, wheel vibration, tire, etc.
- Fuel feed system
  Fuel tank, piping, fuel pump, carburetor, fuel injector, LPG fuel feed system, CNG fuel feed device, spacing from compartment
- Electrical system
  Wiring, battery, power generator and charger, ignition device, cords, terminals, etc.

- Noise and exhaust control system

  Silencer, exhaust pipe, exhaust gas dispersion preventer, device to prevent heat damage
- Others

  Internal pressure vessel, auxiliary devices, certificate

5.3.1.6 Vehicle inspection systems in other countries

Table 5-4 compares vehicle inspection systems in selected companies. Note that Japan and the EU require car owners to receive vehicle inspection, although inspection items and frequencies partly vary. On the other hand, the United States does not have compulsory inspection at the federal level, while encouraging it at the state level (now, 26 states require vehicle inspection). In Asia, Thailand and Singapore have made inspection compulsory.

As for inspection standards, many countries (including some states in the U.S.) have established national safety standards and public inspection organizations to conduct unified inspection. Some countries also use the private sector in the form of authorized inspection station. The inspection interval is set at one year or two years for the second and subsequent inspections. Inspection items generally range between 50 and 60, although details vary from country to country. Finally, inspection items relating safety and pollution control are carried out in all the countries.

(Case in Thailand)

The Department of Land Transport (DLT) of Ministry of Transport conducts periodical inspection for larger vehicles (Trucks, buses, trailers) under the land Transport Act 1979. Inspection items are 70, of which 7 are conducted by equipment.

- every 3 years for tracks more than 3.5 tones or buses with more than 20 seats
- every year for tracks up to 3.5 tones
- 6 months for other buses

DLC is implementing periodical inspection of smaller vehicles at 2,500 private inspection centers by Motor Vehicle Act 1979 (MVA). Inspection items are 27, of which 7 are conducted by equipment.

- every year after 7 years since registration for passenger cars or pick-up track
- every year after 5 years since registration for 2 wheels
- every 6 months within 7 years since registration, and every 4 months beyond 7 years for taxi

Table 5-4 Comparison of Vehicle Inspection

Country	Vehicle Inspection (National / Provincial)	Supervisory Authority	Target	Time Span	Periodical Safety Inspection	Periodical Emission Inspection	Testing Center	Remarks
1) Japan	N	Ministry of Land, Infrastructure, Transport and Tourism	1) 2 wheelers (250cc over) 2) Passenger cars 3) Commercial vehicles	2 years 2 years 1 year	○	○	- Testing centers are regulated and licensed by Ministry - Individual testers also have to be trained and certified. - 27,000 testing centers existed	- First Inspection for new cars conducted after 3 years -Annual inspection also required, but penalty for violation no existed
2) Singapore	N	Ministry of Transport	1) 2 wheelers 2) Passenger cars 3) Commercial vehicles	1 year 2 years 1 year	○	○	- Testing centers are regulated and licensed by Ministry - Individual testers also have to be trained and certified.	- First Inspection for new cars conducted after 3 years - 63 items are tested for cars
3) Thailand	N	The Department of Land Transport	1) 2 wheelers 2) Passenger cars 3) Commercial vehicles	1 year 1 year 1 year	○	○	- The DLT has authorized the inspection to private inspection centers - Individual testers also have to be trained and certified. - More than 2,100 testing centers existed	- First Inspection for new cars conducted after 7 years, motorbikes for 5 years - Periodical Vehicle Inspections became mandatory in 1994
4) EU	N	-	1) Passenger cars 2) Commercial vehicles	Up to 2 years 1 year	○	○	-	- First Inspection for new cars conducted no less than 4 years
a) Germany	N	Federal Ministry of Transport, Building and Urban Development	1) Passenger cars 2) Commercial vehicles	2 years 1 year	○	○	- Testing centers are regulated and licensed by Ministry - Individual testers also have to be trained and certified.	- First Inspection for new cars conducted after 3 years - The Council mandates all member states to carry out periodic safety and emission inspections in 1996
b) France	N	Ministry of Transport	1) Passenger cars 2) Commercial vehicles	2 years 1 year	○	○	- Testing centers are regulated and licensed by Ministry - Individual testers also have to be trained and certified. - More than 5,000 testing centers existed	- First Inspection for new cars conducted after 4 years - 6.5 million vehicle inspections carried out each year - Periodical Vehicle Inspections became mandatory in 1992
c) UK	N	Department for Transport	1) 2 wheelers 2) 3 wheelers 3) Passenger cars	1 year 1 year 1 year	○	○	-MOT testing centers are regulated and licensed by the Department and Transport - Individual testers also have to be trained and certified. - 19,600 testing centers existed - 50,000 testers certified	- First Inspection for new cars conducted after 3 years - Periodical Vehicle Inspections became mandatory in 1960
5) USA	P	Federal Government	1) 2 wheelers 2) Passenger cars 3) Commercial vehicles	-	17 States	30 States	- Testing centers are regulated and licensed by Federal Government - Individual testers also have to be trained and certified.	- 13 states are without safety/ emission inspection - Under the Clean Air Act (1990), states are required to implement vehicle emission inspection programs in metropolitan areas.
6) Canada	P	Provincial Government	1) 2 wheelers 2) Passenger cars 3) Commercial vehicles	-	3 provinces	2 provinces	-	- 5 states out of 10 are without safety nor emission inspection
7) Australia	P	Provincial Government	1) 2 wheelers 2) Passenger cars 3) Commercial vehicles	1 year 6 months 6 months	1 State	1 State	- Testing centers are regulated and licensed by Federal Government - Individual testers also have to be trained and certified.	- New South Wales is the only state in Australia that imposes mandatory vehicle inspection
8) China	P	Regulations are established and enforced by province/economic region/city	-	-	-	-	-	- Chinese Rural Vehicle (CRV) operators can be fined if their vehicle emits visible smoke. - New vehicles must pass regulations (Euro spec) in effect on the day of manufacture

Sources: Wikipedia, MOT Website, An Evaluation of the Effectiveness of Private Vehicle Inspection Process in Thailand, Statutory Vehicle Inspection Service (SGS), Survey to Access from Outside to Japan (JETRO)

5.3.2 Strategic direction for improvement of the vehicle examination system

5.3.2.1 Problems

Compulsory inspection on commercial vehicles (buses, trucks, taxis, and rickshaws) in Pakistan has the following problems.

1) Specifications for inspection items are not clearly defined.
2) Inspection is carried out visually and no equipment is used. (Some examiners are said to check documents only and do not inspection vehicles.)
3) Only 30% of vehicle owners receive semi-annual compulsory inspection according to inspectors.
4) Vehicle examination is not required for motorcycles and passenger cars, although all the vehicle types are subject to emission control.
5) Insufficient police trap due to police shortage

While voices are raised to demand expansion of the vehicle examination system to passenger cars, it is recommended to launch drastic reforms for the present system.

5.3.2.2 Direction of improvement

(1) Amendment of related laws

First of all, Motor Vehicle Ordinance 1965, which serves the key element of the legal system relating to traffic management, will be amended in the following respects.

- To specify responsible ministries and agencies of the federal government, e.g., MoC.
- To extend the continuous examination cycle from six months to one year.

Then, Motor Vehicle Ordinance 1969 will be amended in the following areas.

- To update inspection items in Sections 165 through 215 to reflect latest automobile technology and to set forth detailed specifications.
- To add a section to exclude use of old vehicles.

  Although Section 57B of the rule sets forth period of service according to route categories (4 or 6 years), it is rarely complied with. PTA in Punjab limits commercial use of buses in Lahore to ten years. The rule should be amended to establish the maximum period of service for vehicles, although discussion will be needed as to the method to determine the period.
- To establish temporary measures.

  While the homologation system is expected to be formally introduced ten or more years later, provision of testing equipment will take 3 – 5 years. This means that inspection will be limited to visual check for a while. In conjunction with the amendment, therefore, temporary measures should be established to narrow down inspection items to a feasible list. The rule should not include items that cannot be carried out. Experience of Thailand will be worthwhile for Pakistan.

(2) Reform relating to PTA's operation

1) Clear definition of qualification for fitness examiners

In addition to college graduates with an engineering degree, qualification should be expanded to graduates of technical training institutes with DAE degree.

2) Enhancement of the fitness center system

- Firstly, the workforce should be increased. At present, one examiner and three assistants are uniformly assigned to each district, regardless of population. As a result, long waiting time is required in large cities. It is proposed to assign 5-6 examiners and 15-18 assistants each in large cities.
- Then the number of fitness centers should be increased according to city size. In a large city, 3-5 centers may be provided. The center's site area should be larger than 4,000m^2. At present, some centers are accommodated in a small site. A sufficient site area should be secured to include a parking facility for waiting cars and install testing equipment in the future.
- To ensure that PTA can authorize inspection facilities operated by the private sector according to preset standards.
  At present, inspection service is monopolized by PTA or traffic office, but it is proposed to use authorized inspection stations by collecting the fee.
- Also, PTA should be allowed to authorize repairing houses under specific conditions (the manager's qualification and equipment).

(3) Introduction of testing equipment

As progress is made in relation to the improvement of the legal system and the development of the fitness center system, donor organizations will provide support for introduction of testing equipment. It is proposed to have new equipment installed in three places (Islamabad, Karachi and Lahore) in order to create a significant demonstration effect.

(4) PR activity targeting car owners

PR activity should be carried out to raise awareness of car owners about responsibility for car maintenance.

5.4 Application to Quality and Safety Standards to Automobile

As for improvement of quality and safety standards for the automobile industry, efforts need to be made in the following areas (Some parts overlap improvement measures for the vehicle examination system, as discussed 5.3.2).

5.4.1 Common recognition among related parties with regard to the development of quality and safety standards

In Pakistan, the development of industrial standards, including those relating to automobiles, appears to make steady and impressive progress. At the same time, however, discussion is made without a clear consensus or mutual recognition on a basic idea (concept, definition, etc.) about quality and safety standards as well as the vehicle examination and homologation systems. For example, a clear objective or goal is not defined for automobile related standards that have established so far. As mentioned before, a quality standard for the auto-parts venders means the design and specification which is given by OEMs. Those specifications by OEMs are differing from the national standard. Instead, national standards should be developed by defining their objective, benefits, expected role, and organization. Also, participation of private enterprises and experts in the standards development process is indispensable to allow developed standards and systems to be effectively used by industry and in the marketplace. Previously, priority has been given to the implementation of the development process by following the formal procedures. It should be instead given to the sharing of recognition and policy direction in the context of cooperation between industry and government. Finally, PAMA and PAAPAM are expected to assume a stronger leadership in the process by assuming the role of the initiator for the automobile industry.

EDB does not use the PAMA and PAAPAM for daily work, except gathering to Islamabad at budget season, take-care for AIDC. EDB stay at a position to contact with individual companies. EDB shall use these associations to share information among the automobile industries to have a meeting on emission gas regulation, incentives for tax reduction or finance, new technology, new policies etc.

5.4.2 Establishment of safety standards

Then, automobile safety standards should be revised to meet the present needs, on the basis of Pakistan Standards covering various vehicle types. Inspection items in Motor Vehicle Rule 1969 do not contain many details and cannot be used as the basis of developing renewed safety standards. In addition, efforts should be made to learn safety and pollution control technologies through the exchange with UN/ECE's WP29 and to reflect them in the buildup of the vehicle examination system in Pakistan. MoC has to start legal amendment for safety standards in cooperation with related federal ministries and PTA in provinces.

When this work is on road, PS by vehicle type will be useless, but PSQCA has to continue the present work till establishment of safety standards.

5.4.3 Improvement of PS mark

After the common perception on standards among related peoples on automobile in Pakistan, they have to discuss the existing standards, amend them and discuss dissemination of the results. Automobile standards were published in 1980s and 1990s aggressively and there are 433 standards now, but nobody uses them at all. PAMA, PAAPAM and individual companies knows inspection at factories two wheels or three wheels, but they do not know part standards which are abnormal. In principle, standards are prepared by industrial associations, and PSQCA finalizes after review it at the committee. There is no such movement in part makers, because they are so busy for responding to the OEM's requests. However large volume of auto parts is shipped to after-market and export. When they recognize in common good quality of parts with PS mark, this will push exports and direct investment from foreign countries. The purpose of standards lies in upgrading of quality, it is worthwhile to be used among part makers.

PSQCA should make efforts to disseminate PS and its content to local industries. In particular, PS is hardly known in the automobile industry partly because individual automakers set their own specifications for parts and components, and partly because a small number of local parts manufacturers export their products. They have to improve the current abnormal situation that parts makers do not know PS marks. PSQCA should promote PR activities of PS mark.

1) They have to review past standards periodically.
2) They have to publish nomination of committee members, and to try to disseminate the results in newspapers.
3) They have to arrange the information on standards for the public to understand them more easily.

5.4.4 Homologation for production license

PSQCA is implementing test for CM license for two and three wheels by SRO, not by a formal law, but this is very poor for safety check of advanced automotives with sophistication and precision due to examination of documents from producers by eyes. They should consider introduction of homologation system with facilities with actual running, test equipment, and capable specialists. Two wheels are rapidly increase production and three wheels are commonly used for taxi, and both are exporting now. Even the frequency of new model of them is low, but it will be the stage to introduce homologation.

5.4.5 Building of implementation system at the planning stage

The lack of the program implementation and management system is not limited to the standards development process and the vehicle examination system and is seen in AIDP's programs. This is due to the independence of policy planning and its implementation. This planning work is meaningless on the reason of a dream without confidence of realization of policies. Implementation is a part of policy planning. They do not clear the concrete implementation and operation besides budget at the planning stage on strategy of standards, institutional rearrangement etc. For instance, the current AIDP do not mention motor vehicle inspection. They have had to include compulsory examination of commercial vehicles, currently in place, which may be carried out efficiently by using dealers' service shops or well-equipped repairing houses operated by private enterprises. Also, the PS mark system covering two- and three-wheelers can obtain public recognition by ensuring strict enforcement, e.g., to make it a requirement for vehicle registration.

EDB, which plays a central role in policymaking, has to coordinate with related federal ministries and provincial government on implementation at the stage of planning. Nobody pays attention to policies without incentives.

5.4.6 Technical support for quality improvement for automotive parts suppliers in Pakistan

In industry development, technology together with finance are very important, however there is no technology research institute in Mop, which left a single hand. In the country, Japanese automakers have been leading efforts to procure locally made parts. In particular, they provide vigorous support for local suppliers. However, most suppliers have still to satisfy quality requirements and their poor product quality adversely affects reputation of automobiles made in Pakistan. There are a variety of reasons for this, not only the lack of technology and knowledge, but the inability to procure adequate equipment and raw materials. In particular, the sheet metal sector (including dies and molds) contributes greatly to a number of problems that need to be tackled with. Furthermore, the lack of desire to compete in the parts industry (estimated to consist of around 1,700 companies) appears to impede the development of the automobile industry, which production volume is still fairly small (less than 150,000 units for four wheel vehicles). Multi-faceted support should be provided to encourage quality improvement efforts by suppliers, including the raising of awareness, technical support, and the establishment and enforcement of quality standards.

Safety inspection on auto-related products can be commissioned to existing research institutes and technical support organizations. Efforts should be made to use available resources as far as possible. MoIP does not utilize PCSIR of MoST, which is a temple for technology development and popularization with excellent scientists and technicians with up-to date equipment. As technology assistance will be an important federal policy for MoIP, EDB should keep good relations with PCSIR, and assist parts vendors for quality improvement.

To support domestic efforts, Technology Upgrading Support Program in the next chapter (Technology Extension Guidance Program, OEM Support Program for Vender Development, Oversea Skill Training Program, and Comprehensive Technology Upgrading Program) will be very important for the parts vendors.

Chapter 6: Proposals and Recommendations for Development of the Pakistani Automotive Industry and Action Plans

Chapter 6 Proposals and Recommendations for Development of the Pakistani Automotive Industry and Action Plans

6.1 Analysis of Issues Facing the Pakistan Automotive Industry

6.1.1 Current state of the industry

Characteristically, the automotive industry in Pakistan has a long history and produces diverse vehicles types, in comparison to other Asian countries. Its production scale, however, is still low, totaling the 130,000 unit level in 2009/10 with the peak level at the 180,000 unit level in 2006/07. Meanwhile, production by major auto producing countries in Asia grew rapidly. For instance, China produced approximately 13,640,000 units in 2009 and surpassed the U.S. to become the world largest producer. India is expected to assemble 2,630,000 units in 2020, a nearly fivefold increase over the present level. Thailand produces nearly 1.5 million units and exports more than half of them. In these countries, automobile production is expected to grow further and aggressive capital investment is made by not only automakers but parts manufacturers as well.

Where does this difference in the development history between Pakistan and the other three countries over the past two decades come from? China, India and Thailand are positioned as emerging economies that experience rapid economic development, accompanied by fast growing household income to make vast population afford to own motor vehicles (emergence of the middle income class). At the same time, their governments undertake aggressive policy to protect their local automobile industries, together with efforts to expand the domestic auto market such as development of motor vehicles targeting low income people and the introduction of the subsidy system. In contrast, government policy in Pakistan undergoes drastic changes from nationalization to privatization and from the Deletion Program to the Tariff-based Program for the automotive parts industry, as well as the easing of used car imports. Clearly, there is the lack of strong, consistent government commitment or leadership to develop the national automotive industry. Similarly, efforts to foster the domestic market, i.e., the auto loan scheme, were short-lived due to the deterioration of the national economy. Overall, Pakistan is much less enthusiastic than China where various demand stimulus programs are carried out on a permanent basis, such as the car purchase subsidy scheme and the program to encourage replacement of old cars. And healthy development of the automotive industry appears to have been hindered by government policy that lacks consistency and continuity in terms of both industry development and market growth.

Nevertheless, there is no reason to abandon development efforts for the automotive industry just because it is overwhelmed by the auto producing countries nearby. At present, annual motorbike production increased rapidly to the 1.3 million unit level in 2009, while the number of motorbike on road is below 6 million units in Pakistan. The industry predicts that motorbike ownership will increase to 25 – 30 million units in the future. Thus, the Pakistani automobile market is still in the infancy stage and will ramp up with further economic development and personal income growth (following expansion of the motorcycle market). At the same time, Pakistan is favorably located in terms of geographic access to Central Asia, the Middle East, and East Africa, in comparison to Thailand and China. Thus, the automotive industry in Pakistan has significant growth potential, while the government needs to provide effective support to improve its fundamentals if the industry is to compete directly with China, Thailand, and India.

6.1.2 Identification and analysis of key issues

The key issues facing the industry, as discussed in Chapter 2 to Chapter 5 of this report, are summarized below.

(1) Development polices, programs, and systems

The major issue relating to automotive industry development polices, programs and systems in Pakistan is the lack of consistency and effectiveness, which is largely attributable to the lack of government leadership. It is typically seen in the AIDP. While the AIDP has been developed by reflecting opinions of the private sector and contains programs that aim to reinforce fundamentals of the automotive parts industry, it has rarely been implemented to produce intended effectiveness. If the government realizes that development of the automotive industry is the key to growth of the national economy, it also has to realize the need for its strong leadership in directing the industry by taking effective actions, such as budget allocation, personnel assignment, and program modification or redesign.

The announcement of the AIDP has prompted many companies to launch new investment projects under the belief that the program will be implemented and produce results as planned. In particular, OEM assemblers have made substantial investment, which cannot be simply abandoned because of the worsening of economic conditions. As seen in the tariff policy relating to automotive parts as well as the encouragement of used car imports, makeshift policy change reactive to economic conditions would cause the private sector to lose confidence in the government. Instead, the government needs to set the overall goal clearly and maintain it, regardless of environmental changes that are in a foreseeable range.

Also, the government's programs seem to lack overall technological perspectives. The government does not understand as to what technologies (elements) are required by the automotive industry, including those needed by supporting industries, and which technologies should be given of priority in terms of development support and equipment modernization. As a result, the current programs are not founded on firm strategy for improving the industry's fundamentals.

(2) Technology and production

At present, Japanese automakers operating in Pakistan purchase 40-70% of parts and components for passenger cars from local sources, 43-65% for buses and trucks, and 85-92% for motorcycles. The very high local-content levels for motorcycles reflect the fact that OEM assemblers make most parts internally. The same can be said about the upper level (70%) for passenger cars. However, it is generally viewed that less than 50% of locally made parts satisfy quality requirements demanded by OEM assemblers. This means that the rise in local content is closely linked to the technological upgrading of automotive parts manufacturers, which is in turn a critical factor for development of the automotive industry as a whole. Furthermore, the industry's international competitiveness cannot be improved without the enhanced capability of parts manufacturers in terms of quality, cost and delivery (QCD).

While the automotive parts industry needs to upgrade technological capability in a variety of areas, the surveys conducted under the Study indicate that the highest priority should be given to sheet metal parts and related processing technology because this sector has the largest number of companies in the industry and OEM assemblers see that sheet metal parts made by local manufacturers are most problematic in terms of quality. Quality problems are relatively simple, such as dimensional errors, burrs, and the inability to increase output, suggesting that press work technology used by local manufacturers is short of the fundamental level. As pointed out earlier, most companies in the sheet metal sector still cling to the reverse engineering approach. At the same time, the situation is associated with a fundamental problem, i.e., die making technology has not been established in Pakistani industry. As die making technology combines a wide variety of knowhow, techniques and skills, the ability to design and manufacture high quality dies represents the country's industrial level. In recognition of this, the Pakistani government has launched public support programs via GTDMC and KTDMC, but they fail to meet the actual needs in terms of content and agility.

Dies (molds) are indispensable in volume production of not only press work but plastics, casting, and forging as well. In this context, setting the upgrading of die making technology as the starting point is an appropriate approach to the development of the parts industry. In particular, press die making technology is considered to be most urgently needed because it is used for manufacture of sheet metal parts and thus has the widest range of impacts on the Pakistani automotive industry.

(3) Management

In the automotive parts industry, there are a large number of family-operated enterprises, regardless of employment size, although some companies have more than several hundred employees. They generally have two characteristics. First of all, their key positions (including plants) are occupied by the owner's families and relatives. This means that they do not delegate power and authority to non-family employees. It is therefore pointed out by not only the government but the parts manufacturers' association (PAAPAM) that overseas training programs should be attended by managers or executives (otherwise, training results would not be reflected in actual management). Secondly, few managers of these companies have conservative capitalist or long-term perspectives. Most of them pursue short-term profits by holding old production equipment (past service life) and purchase second-hand equipment instead of new one. Also, they lack safety awareness relating to production activity. Most of parts manufacturers visited by the study team (relatively large enterprises) do not use uniforms, safety shoes, glasses, and gloves. Probably, these problems are not limited to the automotive parts industry and should be dealt with by the country's industry.

(4) Quality, safety and pollution control standards

One of the major themes for the Study is the development of automobile-related standards. At present, the country lacks common understanding of standards because different persons and organizations have different ideas. As a result, there is confusion among related parties with regard to the difference between quality, safety and environmental standard or the difference between public and internal standards. On the other hand, the development of the vehicle examination system, which was strongly requested by the Pakistan side, should be treated differently from industrial standards. Aside from the development of quality, safety and environmental standards, the system to check conformity with them is undeveloped or insufficient. This includes the lack of facility for technical conformity tests on automobile safety and environmental and for quality tests conducted by parts manufacturers on a voluntary basis.

Generally speaking, standards relating to automobiles (parts) are developed for the purpose of avoiding undue diversity and complexity in relation to automobile manufacturing, while achieving a manageable scale, simplification, and a proper order. This means that automakers design the automobile's construction, devices, and performance from the viewpoint of satisfying the user needs, securing the automobile's safety, and preventing pollution. Then, they issue instructions to parts manufacturers according to standard specifications. In this sense, standards are considered to be manufacturing guidelines for automobiles (parts), and it makes less sense to establish standards enforceable to individual companies. For standards used as guidelines, it is easy to incorporate ISO or JIS for respective products, while meeting international requirements. On the other hand, public standards should cover automobile safety and environment and need to be enforced by ordinance or notification. Based on this understanding, the first step is to determine what standards are required for the Pakistani automotive industry.

6.1.3 Policy recommendations as prerequisite to development of the development of the automotive industry

The JICA Study Team proposes a total of 17 action plans designed for development of the Pakistani automotive industry. Their successful implementation, however, depends entirely on policy coordination and implementation efforts on the government side to develop the environment that allows the proposed plans to achieve their effectiveness, as summarized below.

(1) Establishment of EDB's positioning within the government as the leading agency for development of the automotive industry

At present, public administration relating to the development of the automotive industry is officially led by EDB under the MoIP. EDB has been struggled for many tasks by limited number of stuffs so far. In reality, however, there are differed concerning EDB's activity, even with some criticisms by the private sector. This is partly because EDB has few opportunities to provide direct benefits for the industry by delivering actual support programs. Its only direct contact with the automotive industry occurs when it conducts the audit relating to imported materials and parts under the TBS, on behalf of customs, so that it is rather considered to be onerous. Collaboration between the government and private sectors is essential in fostering any industry, and EDB needs to represent the government sector fully with firm ownership and leadership.

Furthermore, EDB's positioning and role within the government is not very clear, as judged from its relationship with the MoIP and ECC. While it is important to build consensus among related parties in the policymaking process, it should not blur responsibility. Thus, it is imperative to define EDB's positioning in government activity in relation to the development of the automotive industry and to reinforce its function accordingly.

(2) Banning of used car imports

In principle, the government permits used car imports for the benefit of Pakistani living in foreign countries, not as part of commercial trade. As a result, tariff rates on used cars are not as high as emerging countries, which impose 150% - 200% tariff for the purpose of protecting their own automobile industries, especially in consideration of the fact that discount rates are applied according to the age of imported cars. However, this special scheme is abused for the purpose of commercial trade in the past five years. The government has also used it as temporary measures to relieve supply shortage in the domestic auto market. Specifically, it has eased import license requirements in 2007 and 2008, including expansion of eligibility (age of used cars) to five years and the termination of various requirements (vehicle registration and the driver's license), which encourage the reselling of imported used cars to third party on a commercial basis.

Clearly, the increased imports of used cars as a result of the misuse of the government scheme are adversely affecting healthy growth of the domestic auto market, and then the development of the automotive industry. It is a general practice for many countries to impose high tariffs on imports of motor vehicles and parts for a specific period of time in order to foster the national automotive industry. In this sense, Pakistan's policy to ease used car imports is counterproductive to the industry development by eroding the automobile market. It is therefore recommended to ban used car imports in principle, except for special cases, such as when a person who has lived in a foreign country returns to Pakistan and brings his own car back.

(3) Establishment of the strategic tariff policy for automotive parts

The government introduced the Tariff Based System (TAS) for automotive parts in July 2006 to replace previous local content requirements. The TAS aims to increase locally sourced parts over a five-year period, and in its final year (2011/12), tariff rates are set at 50% for parts that are already manufactured locally (up 15 percentage points from 35%) and 32.5% for non-localized parts (down 2.5 percentage points from 35%). These tariff changes clearly reflect intention of OEM assemblers, for many parts can be switched to KD imports when overall cost and quality considerations are made, even if the tariff is paid. The tariff policy therefore does not provide incentive for local sourcing, although OEM assemblers favor local sourcing due to the depreciation of the rupee against the yen, which makes imports from Japan more costly. In Thailand, the tariff rate on KD parts is still set at 80%, despite the fact that locally produced parts have significantly increased in terms of type and volume. If local sourcing is given of priority for both OEM assemblers and parts suppliers, tariff policy should aim to protect local parts manufacturers by using high tariff rates.

For local OEM assemblers, there are cases that procurement of locally made parts (by finding those that barely meet quality requirements) leads to cost increase. On the other hand, it is understandable that a company has to rely on imported parts because it adopts uniform quality standards under its global production system. However, for automakers operating in the country, it is desirable to meet global uniform quality requirements by using local parts, thereby to obtain international competitiveness. This would justify the tariff policy directing toward the fostering of local parts manufacturers, provided that it is limited to a specific period. At the same time, however, parts manufacturers resting on the benefits from the TBS should not be unduly favored. As seen from localization experience in Thailand and India, key success factors are committed efforts by parts suppliers to technological upgrading, consistent support by OEM assemblers, and government programs to back up such efforts made by the industries.

(4) Concerted efforts to explore export markets for automobiles and automotive parts

The motor vehicle market in Pakistan, including motorcycles, is still fairly small. Also, production of 140,000 – 150,000 vehicles per year, including buses and trucks, is far from critical mass for the automotive industry. Clearly, market expansion is the key to the industry's full-fledged development, and exploration of expert markets for automobiles is considered to offer an opportunity. Generally, export policy for assembled cars and parts is usually governed by the parent company's global strategy. In Pakistan, while the same is true for automakers, most parts manufacturers are owned by local investors and are free from outside influence, including those who have foreign partners in the form of licensing or joint venture. Also, Pakistani companies have distribution networks for used cars and automotive parts in the Middle East, East Africa, and Central Asia, where the automobile industry has not emerged.

By leveraging these advantages, the automotive parts industry has good potential to export their products, especially the repair parts market that is easily accessible and fairly large, i.e., 20 – 30 times the domestic automobile market (measured by annual unit production). In particular, the industry can have competitiveness in a wide range of replacement parts, which wear or deteriorate due to use or over time. Furthermore, replacement parts do not require a strict delivery schedule, which is favorable for Pakistani manufacturers. In consideration of these factors, exports of automotive parts from Pakistan are considered as a prospective means of market expansion for the automotive industry. The study team has identified the following parts to have high export potential.

- Wheels (Alloy-wheels), Hubcaps
- Radiators
- Car seats

- Oil filters
- Air filters
- Belts
- Plastic parts
- Batteries
- Rims and Spokes for Two-wheels
- Tires and Tubes for Two-wheels

On the other hand, the automotive industry has potential to export CNG (compressed natural gas) cars in addition to tow-wheels and three-wheel vehicles to Africa and Southwest Asia in consideration of environmental affinity and economics relating to the regions.

(5) Development of the supplier base for industrial materials and securing of stable electricity supply

Raw materials and parts represent major portions of the automobile production cost. In Pakistan, sheet metal parts are made by a large number of manufacturers, as discussed earlier. However, steel plates used to make sheet metal parts are not manufactured in the country and entirely imported, albeit integrated steel plants are operated. Similarly, plastic resins are mostly imported, including polyethylene, ABS resin, and performance resins, because the country makes PVC and polyester products only. The country started commercial production of industrial materials during the nationalization period, but no investment or innovation has been made for product diversification. As the import cost increases steadily, partly due to the depreciation of the local currency, the government should take effective action to increase local supply capacity for industrial materials that are important for the automotive industry.

On the other hand, electricity supply problems are not limited to the automotive industry, but affect all industries as well as people's daily life. Although the government takes various measures, they have still to achieve steady electricity supply. The government should take effective measures swiftly in recognition that electricity is a key industrial infrastructure.

Finally, case studies in Thailand and India are presented below. These countries have rapidly growing automobile industries, which have achieved through government's active industrial support and vigorous technology acquisition by private enterprises.

Development history of the automotive parts industry in India

It is said that the automotive parts industry in India has changed significantly, in terms of both quality and quantity, since the late 1990s when the Indian government launched market opening policy and many foreign automakers started assembly operation in the country. As the government required the industry to achieve a specific level of local content, assembly manufacturers had no choice but maintaining global quality standards by using locally manufactured parts. To do so, they brought suppliers from their home countries or sent engineers to local parts manufacturers in an attempt to upgrade the technological level of the local parts industry. For instance, a Japanese automaker assigned Japanese experts to several suppliers making steering parts to teach production techniques for reducing the rejection rate. As a result, their rejection rates fell from the previous 1,000ppm level to the 50ppm level – the global average for the automaker – while productivity rose by 50%. Meanwhile, leading parts manufacturers (most of them are family operated and relatively small, as seen in Pakistan) were forced to obtain international competitiveness under the wave of globalization engulfing the Indian automobile industry and started to receive technology transfer from Japanese and European companies.

These efforts seem to have worked as a major impetus for driving exports of automotive parts from India. As a result, the automotive parts industry's production in India has been recording an annual average growth rate of more than 20% between 2004 and 2010, except for 2008 when the industry was hit hard by the global recession. At present, as the industry's production capacity does not expand fast enough to catch up with fast growing demand, the country needs to import parts in value that is twice the value of exports and further capital investment is needed in the country.

The Automotive Components Manufacturers' Association (ACMA) had 592 member companies as of 2009, while the actual number is said to be more than ten times as much. ACMA members are mostly classified as Tier 1 suppliers, and Tiers 2 and 3 suppliers are dominated by microenterprises and small enterprises. ACMA member companies are vigorously working with quality improvement and 562 out of 592 companies (96% of the total) have obtained ISO900 certification. They have also implemented a wide range of quality management techniques, including 5S, kaizen, TQM, TPM, and 6 Sigma, and conduct companywide activities at their manufacturing plants.

According to ACMC's data concerning technical cooperation projects between local parts manufacturers and foreign companies, those with Japanese companies account for the largest share, totaling 117. These projects cover not only technical assistance but financial support, indicating that investment by Japanese automakers has prompted local parts manufacturers to make quality improvement efforts under assistance of Japanese companies. Nevertheless, response by local parts manufacturers to globalization is considered to be still insufficient in comparison to counterparts in Thailand where the automobile industry has been growing in close association with the Japanese industry.

Today, the automotive parts industry in India is in a favorable position, for automakers in the world have excess production capacity and attempt to purchase parts at lowest prices. The industry is widely known for its cost competitiveness on the basis of low labor cost.

In addition, India is increasingly viewed as one of the world best procurement bases by parts manufacturers in the world, and in response, the government is moving to lower tax rates, which are currently very high to create a cost disadvantage. In the near future, therefore, production costs for automobiles and automotive parts in India will likely become more competitive.

Development history of the automotive parts industry in Thailand

The automobile industry in Thailand started with SKD production by foreign companies in the early 1960s as part of import substitution strategy. Later, localization of automotive parts accelerated under the protectionist policies (mainly providing incentive for localization), such as the banning of imports of assembled cars and modification of tariff rates. In 1990, domestic production reached the 200,000 unit level. During the three decades, the country's automobile policy has been dominated by use of high tariff rates for protection of the local industry, e.g., over 300% for CBU imports and 112% for CKD imports, which continued until July 1991. The tariff policy allowed the local parts industry to improve competitiveness steadily. Then, the Thai automobile industry underwent rapid expansion in the early 1990s. As a result of dramatic economic development called the Asian miracle, national income rose at an accelerated pace. The domestic automobile market kept pace, and auto production and sales grew strongly partly due to the lifting of restriction on foreign investment in the automobile industry in 1993. In August 1991, the Thai government lowered tariff rates on CKD imports and made policy change toward the improvement of the industry's productivity and international competitiveness. And it attracts foreign investment aggressively under the slogan of building the Asian version of Detroit.

As a result, the country's production reached approximately 560,000 units (including passenger cars and commercial vehicles) in 1996. At that time, there were around 400 parts manufacturers (Tier 1, including motorcycle parts), nearly half of which were joint ventures with foreign companies (mainly Japanese). This resulted in the vigorous rate of technology transfer that upgraded the industry's ability to supply increasingly sophisticated parts.

In July 1997, however, the industry was directly hit by the economic crisis triggered by the sudden fall of the baht. Auto production plummeted to less than 160,000 units in 1998. It had severe repercussions on the parts industry, where many Tier 2 or lower suppliers, largely SMEs, were forced to discontinue their business. In 1999, the domestic car market showed signs of recovery as the government's stimulus measures (such as the lowering of the VAT rate) took effect. Together with export drives by automakers, production came back to the 330,000 unit level, equivalent to 58% of the peak level in 1996. In 2009, as diesel-powered, one-ton pickup trucks gained renewed popularity in response to the skyrocketing crude oil prices, Thai automakers stepped up export drives and production exceeded 410,000 units.

The export promotion initiatives made by domestic assemblers since 1998 have been progressing in two stages. After the economic crisis, they continued production and exports under the market sharing plan instituted by their parent companies in Japan, i.e., they shipped products under the direction of Japanese headquarters to Japan, the Middle East, and South America. This was the emergency measures to keep assembly operation and employment, constituting the first stage of their export drives. At that time, local parts suppliers were not capable of making parts that met export specifications and their competition intensified. Meanwhile, assemblers embarked on the establishment of the production system within the country to meet export specifications by encouraging their captive suppliers to relocate from Japan and by manufacturing dies and molds internally. These efforts, together with accumulation of supporting industries (promoted up until 1995), have caused an increasing number of assemblers to start positioning Thailand as a production center in Asia. In particular, production of one-ton pickup trucks is integrated in the country and exports are ramping up. Clearly, the Thai automotive industry has entered a higher stage where exports are positioned as its strategic focus.

Thus, the automotive parts industry in Thailand has been driven by long-term tariff protection policy and then localization efforts to promote exports. In addition, effective use of alliance with Japanese and other foreign companies has served as an impetus for further growth. Automobile production in Thailand has exceeded the 1 million unit level, whereas international competitiveness, high value added, and human resource development remain to be major issues facing the industry.

6.2 Framework of Development Strategies and Proposals

6.2.1 Overall goal and strategic framework

The overall goal and the strategic framework for the development of the Pakistani automotive industry are established as follows.

Overall goal: To establish Pakistan as a major automobile producing country in Southwest Asia, thereby contributing to job creation and income growth for people, and development of the national economy.

Strategic framework

(1) Strengthen of international competitiveness of the automotive industry in the country
(2) Enhancement of human resource development and equipment modernization for the automotive industry
(3) Reinforcement of EDB's organization and smooth implementation of AIDP
(4) Action for conformance to automobile safety and environmental standards and the development of the inspection and monitoring system for it

Strategy (1) Reinforcement of industrial structure for the automotive industry in the country

Improving international competitiveness of the automotive industry is set forth as a development goal for EDB and is also included in AIDP. However, the study team has analyzed the industry's current state and has concluded that the reinforcement of industrial infrastructure should be taken up as the first strategy. This is based on the notation that the industrial infrastructure is the prerequisite to international comparativeness and should be developed before making efforts to improve the industry competitiveness.

Strategy (2) Enhancement of human resource development and equipment modernization for the automotive industry

Human resource development, equipment modernization, and technological upgrading are taken up as priority programs under AIDP and are believed to be most demanded in relation to the reinforcement of industrial infrastructure. This strategy should be aimed for not only the auto-part venders but also for OEMs, and implemented by using a variety of resources available in and outside the country, including technical support organizations, educational institutes, private enterprises, international donor organizations, foreign governments, and foreign companies.

Strategy (3) Reinforcement of EDB's organization and smooth implementation of AIDP

Many voices are raised to demand EDB's leadership in government policies and programs for development of the automotive industry, including implementation of AIDP. To do so, EDB is expected to reinforce its organization and clearly define its positioning and role in the government's development policy making and implementation. It should also be responsible for overall coordination of action plans relating to the development of the automotive industry.

Strategy (4) Action for conformance to automobile safety and environmental standards and the development of the inspection and monitoring system for it

Finally, improvement of safety and pollution control in the motorized society is proposed as the fourth strategy. Although this is not directly related to the industry's development, it helps pave the way for sustainable development of the automotive industry. Also, standards may be developed relatively easily, it is important to build up and maintain the system to enforce them properly. This should be taken into consideration when the strategy is implemented.

6.2.2 Action plan development framework

The present Study envisages two major themes in the context of development. The one is the development of the automotive industry itself, and the other is the development of a better motorized society. And action plans are proposed to address these themes. The first set of action plans are designed to overcome a variety of issues facing the automobile industry. Then, the second set of action plans are proposed to address the environment surrounding the automotive industry, including the legal and regulatory system (e.g., road traffic law, vehicle safety standards, and the vehicle examination system), the related inspection systems, and the organizational development to enforce related laws and systems.

The most important notice is all of the action plans are proposed as policy recommendation to EDB as well as the Pakistani Government and the automotive industry.

Notably, this report proposes a set of actions to address each theme, rather than presenting a single solution. It also presents policy recommendations that serve as the prerequisite to smooth implementation of each action plan. Action plans and policy recommendations are set forth under the premise that they should be synergistically implemented in order to overcome the issues identified and foster the automotive industry as planned. In particular, it is important to implement each action plan by strategically allocating funds and human resources in alignment with relevant policy direction. Most importantly, each action plan needs to be implemented in accordance with a present plan and schedule, followed by proper progress monitoring and management.

Some of the proposed action plans such as establishment of the EDB Automotive Wing or strengthening of PAAPAM are part of internal organizational and also sensitive matter for those institutions. The Report, however, includes those action plans as proposals by the JICA Study Team and those are formed a part of prerequisite development for developing of the automotive industry.

6.3 Action Plans for of Automotive Industry Development

6.3.1 Organization of action plans

The report proposes 17 action plans, which can be roughly divided into five areas. If they are implemented in conjunction with actions required to improve the legal and other environments for the automotive industry, as recommended above, the two objectives (development of infrastructure for the automotive industry and a better motorized society) will be accomplished (Figure 6-1).

A. Technological Upgrading Support
   - A-1 Technology Extension Guidance Program
   - A-2 OEM Support Program for Vender Development
   - A-3 Oversea Skill Training Program
   - A-4 Comprehensive Technology Upgrading Program

B. Human Resource Development Support
   - B-1 Short-Term Training Program by Japanese Technical Exports
   - B-2 Improvement Program for Vocational Skill Training
   - B-3 Preparation for the Establishment of the Skill Certification System

C. Management Support
   - C-1 New Financial Loan Program for Technology Acquisition Support
   - C-2 Promotion Loan Program for Replacement of Commercial Vehicles
   - C-3 Export Promotion of Automobiles and Automotive Parts

D. Support for Development of Policies, Programs and Systems

D-1 Pakistan Automotive Institute (PAI) Establishment Project

D-2 Establishment of the EDB Automotive Wing

D-3 Project for Strengthening of PAAPAM Organization

D-4 Incentive for Pakistan Basic Car

E. Improvement of Quality, Safety and Environmental Control Standards

E-1 Development of the Automotive Homologation System in Pakistan

E-2 Vehicle Inspection System and Facilities Development Project

E-3 Improvement Project for Testing Procedure of PSQCA

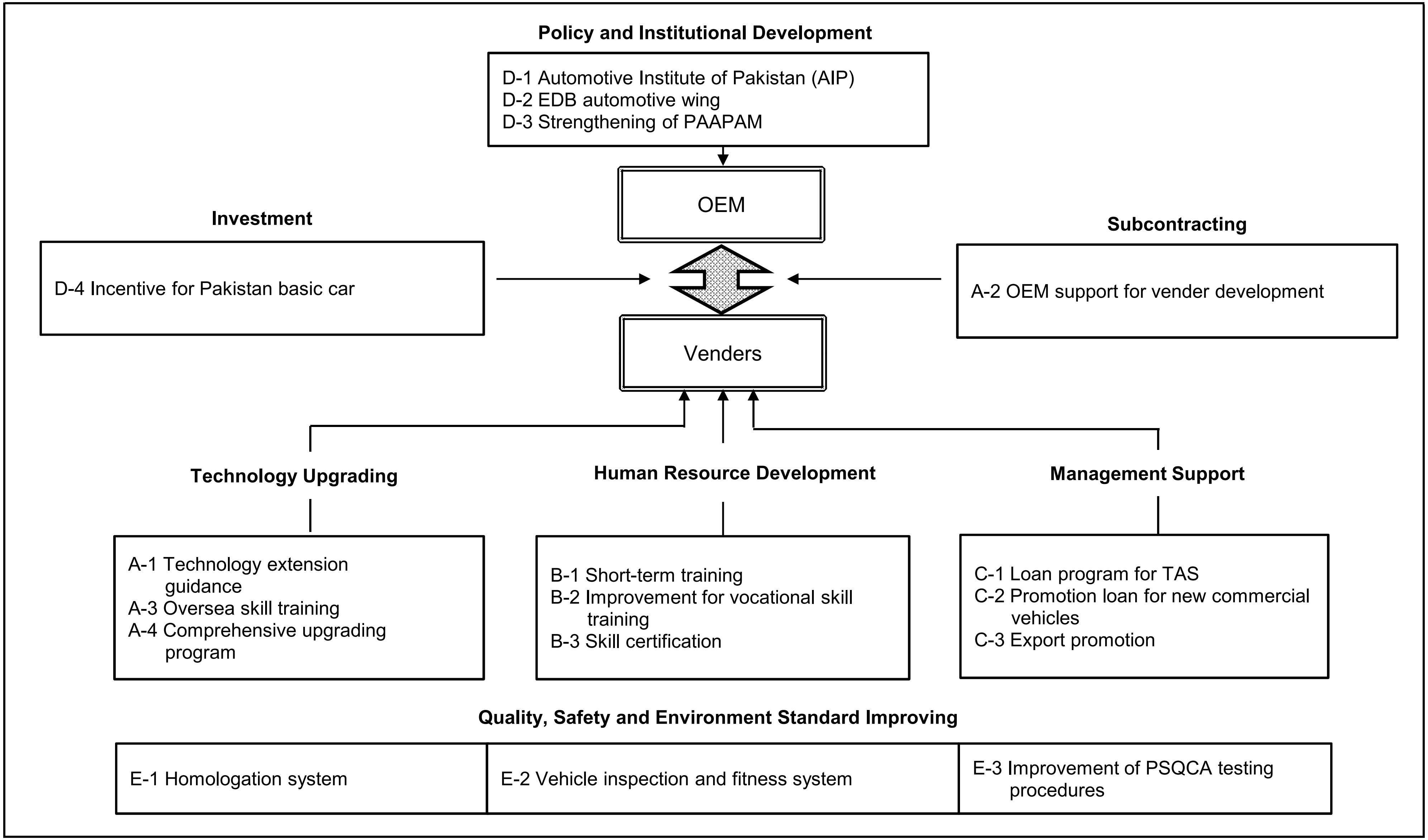


Figure 6-1 Action Plans for Pakistan Automotive Industry Development

6.3.2 Roadmap for development of the Pakistani automotive industry

It is assumed that the action plans will be implemented by government organizations specified in the program proposals. On the other hand, EDB is expected to take leadership in coordination among the overall programs proposed here and related organizations. In this recognition, the overall action plan schedule is designed to start with the reinforcement of EDB7s organization, as shown in Figure 6-2 (prepared in October 2010).

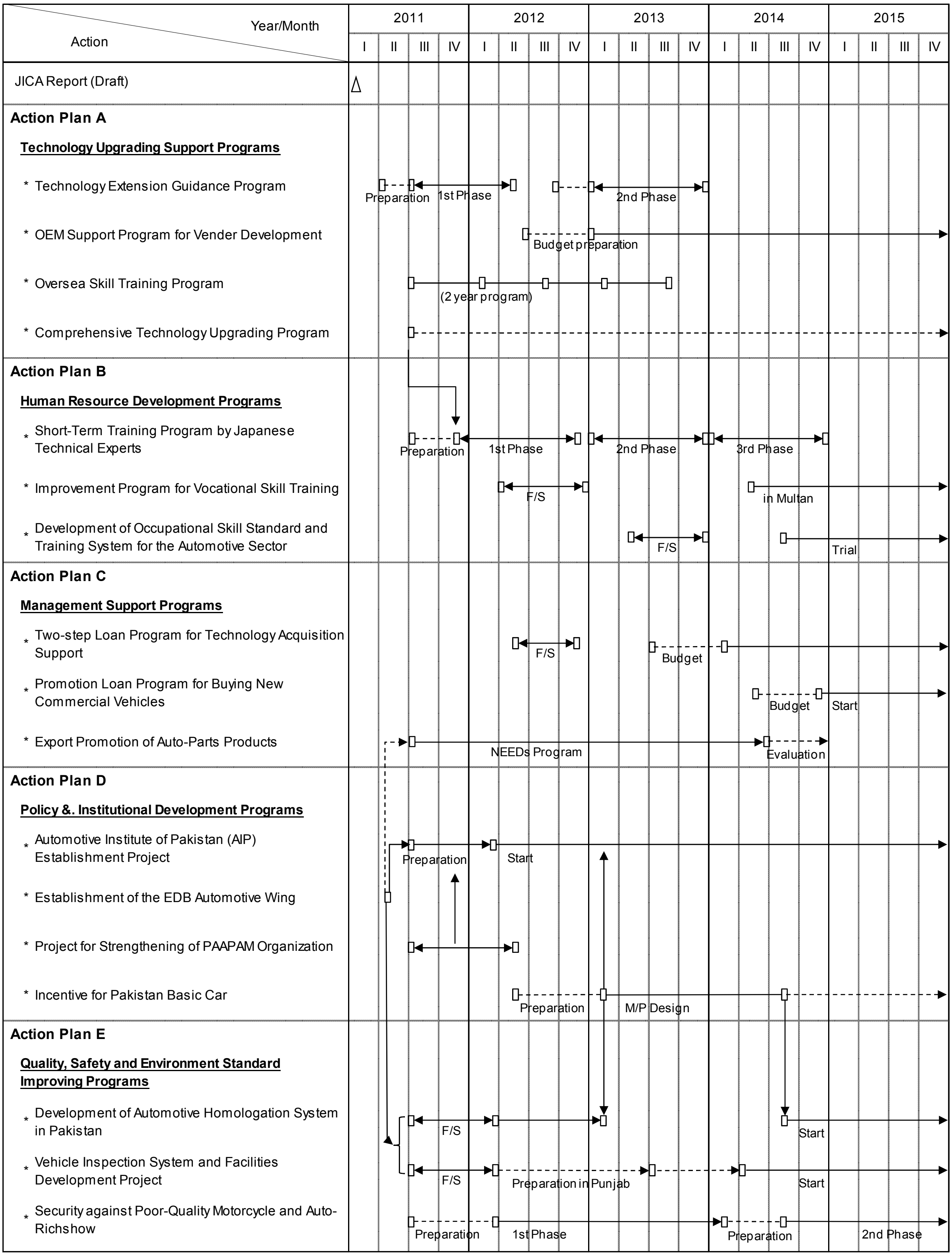


Figure 6-2 Action Plan Schedule

6.3.3 Description of action plans

In the following sections, the 17 action plans proposed under the present Study are described in detail.

List of Action Plans

A. Technology Upgrading Support Programs

A-1 Technology Extension Guidance Program

A-2 OEM Support Program for Vender Development

A-3 Oversea Skill Training Program

A-4 Comprehensive Technology Upgrading Program

B. Human Resource Development Programs

B-1 Short-Team Training Program by Japanese Technical Experts

B-2 Improvement Program for Vocational Skill Training

B-3 Preparation for the Establishment of the Skill Certification System

C. Management Support Programs

C-1 New Financial Loan Program for Technology Acquisition Support

C-2 Promotion Loan Program for Replacement of Commercial Vehicles

C-3 Export Promotion of Automobiles and Auto-Parts Products

D. Policy &. Institutional Development Programs

D-1 Pakistan Automotive Institute (PAI) Establishment Project

D-2 Establishment of the EDB Automotive Wing

D-3 Project for Strengthening of PAAPAM Organization

D-4 Incentive for Pakistan Basic Car

E. Quality, Safety and Environment Standard Improving Programs

E-1 Development of Automotive Homologation System in Pakistan

E-2 Vehicle Inspection System and Facilities Development Project

E-3 Improvement Project for Testing Procedure of PSQCA

Project No.A-1　Technology Extension Guidance Program

1. Rationale:

The automobile industry in Pakistan has 60 years of history, but its production of passenger cars has still to reach 200,000 units annually and appears to remain in the infantry stage. For the automobile industry to make full-fledged growth, assemblers must achieve critical mass and have a well-developed supplier base as well as supporting industries. While it is debatable as to which should come first, in a country like Pakistan where the market is dominated by foreign OEM companies, it is reasonable to start with efforts to upgrade technology levels of parts suppliers and supporting industries through localization of parts. In particular, this can be accomplished by means of import substitution.

Traditionally, efforts to strengthen technology of the parts industry have been largely relying on technical assistance by OEM companies. Their technology transfer covers a variety of fields including technical guidance and kaizen initiatives led by OEM engineers, provision of drawings, documents and data, and financial assistance relating to the die making cost. On the other hand, suppliers have been learning technology and knowledge by participating in training programs and technical seminars conducted by internal donor organizations. In this connection, parts manufacturers should learn from outside aggressively. In fact, some of them have acquired technology that enables exports on their own.

SMEDA in Lahore, which conducts SME support activity, has been providing extension guidance service for SMEs under the name of "Industry Support Program (ISP)" that was stated, jointly with JICA, in 2003. So far, it has completed 227 projects. Under the ISP, a team consisting of a Japanese expert and SMEDA staff visits a company over several months, develops a kaizen program according to the results of corporate diagnosis, and implements it with an aim to upgrade technology. To this date, 15 Japanese experts have participated and more than 10 SMEDA staff members have acquired knowledge and skills and become capable of providing guidance service by themselves. As the ISP has the overall goal of SME promotion, it covers diverse sectors ranging from automotive parts to textile, furniture, food processing, and electrical products. On the basis of SEMDA's ISP experience, the project aims to redesign the program for the automotive parts industry and supporting industries and to rebuild it as a new program.

2. Objective:

To build up an extension guidance system, consisting of corporate visit and diagnosis, designed to upgrade technology levels of the domestic automotive parts industry, and to train Pakistani trainers for the new system.

3. Program Description:

The program is roughly divided into the system buildup stage and the implementation and operation stage. At the same time, as extension guidance service should cover a wide range of areas relating to the automotive parts industry and supporting industries, the program will be designed in multiple steps.

<System buildup stage>

(1) Detailed design of the program

Detailed design will be made after an implementation organization has been selected on the Pakistan side. A program outline is described as follows.

1) Beneficiary companies: Basically companies with 100 or less employees
2) Target area: The entire country
3) Guidance period per company: 3 – 16 weeks (to be decided in consultation with each company), extendable for less than 8 weeks
4) Cost burden: Companies participating in the program will pay a fixed fee per person (expert, including Pakistani) per day.
5) Number of experts to be assigned: An expert may serve two or more companies.
6) Skill areas to be covered by guidance service: To be decided in the detailed design stage. EDB has already requested JICA for guidance service by Japanese experts. The request includes the following areas, for which priority will be given. But the JICA Study Team recommends that guidance service for press die making technology shall be given priority that is one of the biggest technical problems in the automotive industry. (Note: A reason why the team recommends press die making is expressed in detail in Chapter 3 of the main report and action plan B-1).

Areas requested by EDB

Component Manufacturing Skills

- Metal
  - Die-casting (Aluminium & Iron).
  - Sand Casting
  - Non-Ferrous Gravity Casting
  - Forging
  - Machining
  - Sheet Metal
- Plastic Products Production
- Rubber Products Production
- Electrical Parts Production
- Die, mould, jigs and fixtures designing & manufacturing
- Plating of Surfaces
- Die and Equipment Maintenance
- Process / Quality Control
- Supervision

Assembly Shop Floor Skills

- Mig Welding
- Spot Welding
- Painting & Surface Treatment
- Assembly Tool Usage
- Vehicle/ Inspection & Testing Supervision
- Process / Quality Control
- Supervision.

Production Shop Floor

- Work values
- English
- Applied mathematics
- Applied Physics
- I.C. Engine (Level-I)
- Engineering Drawing
- Electronic Controls of Machine
- Heat Treatment
- Welding
- Painting
- Hand & Assy Tools Usage

(2) Request for and negotiation with international donors

Based on the detailed design, request will be made to international donors such as JICA, UNIDO, SES, etc., for sending two or more experts for two years in total (the areas to be selected according to the order of priority determined above).

Within the period, a total of six Japanese experts will be received. In addition to JICA, it is recommended to make a similar request to international donor organizations that provide similar programs.

(3) Establishment of the implementation system on the Pakistan side

A program implementation system including local organizations to manage the program will be built up. The local organizations will be selected by taking into account the following requirements:

1) Having experience in implementing similar programs;
2) Capable of assigning staff members who can serve as the counterpart of Japanese experts as well as the recipient for technology transfer; and
3) Capable of deploying a program on a nationwide basis.

Note that the request to JICA for sending experts will be made via EDB.

(4) Securing of the program implementation budget

The budget elements required for program implementation, except for the cost relating to the sending of Japanese experts, will be provided by the Pakistan side. They include costs and expenses relating to program operation, advertisement and promotional activity.

<Implementation and operation stage>

(1) Selection and service agreement with beneficiary companies

The program implementation and operation organization will announce the program by using various media, including newspapers and seminars, in order to recruit candidate companies and select beneficiary companies that satisfy the above requirements. In this connection, collaboration with PAAPAM and other trade associations will be sought. In selecting beneficiary companies, Japanese experts may express their opinions.

Selected companies will sign an agreement with the program implementation and operation organization and a guidance schedule will be decided. Around 20 companies will be selected per year.

(2) Terminal evaluation on beneficiary companies

The program implementation and operation organization will carry out terminal evaluation on beneficiary companies and report preliminary results to EDB and JICA's Pakistan office.

4. Expected Program Output

(1) Companies in the Pakistani automobile industry will improve their technology levels.
(2) Localization of automotive parts will be promoted.
(3) Exports of automotive parts will be promoted.
(4) The foundation of the automotive parts industry as a whole will be reinforced.

5. Implementing Institutions

- Candidate organizations include EDB, SMEDA, KTDMC, and GTDMC.
- In addition, cooperation of Pakistan Association of Automotive Parts & Accessories Manufacturers (PAAPAM) will be obtained.

6. Financing Sources

The project cost will be estimated on the basis of cost records relating to similar programs, i.e., EDB (receiving GTZ experts relating to the electronics industry) and SMEDA (receiving JICA experts under ISP). The program budget to be borne by the counterpart should be allocated via EDB or the authorities concerned of the implementation organization.

While EDB proposed that the cost will be bear by international donors at 50%, industry at 25% and Government 25% in the form of tax rebates and incentives (to be discussed with FBR).

7. Implementation Schedule

After April 2011, detailed design will developed on the Pakistan side. Based on the detailed program design, preparation activities for the subsequent stage, such as request to JICA (modification of EDB's request in June 2010), will be conducted.

The program is scheduled to start in May 2012.

8. Key Considerations

(1) Program implementation in consideration of learning effect on other companies

The program assumes that its first two-year phase will be jointly conducted by Japanese experts and staff members of the counterpart organization, including technology transfer to the counterpart staff in the course of program implementation. Although it is not clear as to how long Japanese experts will be sent. Basically, they will leave when Pakistani experts have become capable of providing service on their own.

Finally, the number of companies to be accepted by the program is limited so far as the one-to-one service is maintained (e.g., when the three-month guidance period for each company is assumed). Instead, the program will encourage participation by other companies other than a beneficiary company in the guidance service so as to allow observation of the kaizen process and to create learning opportunity.

(2) Securing of Japanese experts through multiple channels including the government and the private sector

At present, the sending of Japanese experts to Pakistan is fairly restricted due to safety consideration. The program is expected to use around three Japanese experts who will stay in the country for a long period of time (under JICA support), rather than to send one or two experts in the short term. For this purpose, it is important to search qualified experts through a variety of sources and routes, including the Ministry of Economy and Industry of Japan (Automobile Division), Japan Automobile Manufacturers Association, Japan Automotive Parts Manufacturers Association, and Japanese OEM companies operating in Pakistan.

Project No.A-2 OEM Support Program for Vender Development

1. Rationale:

Automakers in Pakistan have been actively providing technical support for local parts manufacturers for the purpose of increasing local content, with Pak Suzuki being as the forerunner. In fact, a range of technical support is diverse, ranging from the provision of drawings, production advice, long-term residence support by automakers' engineers, training within automakers, and overseas training using facilities of parent or affiliate companies in Japan or other countries, and technical assistance in the field of die making, including cost sharing. These initiatives were prompted for various reasons, and the Deletion Program launched under government policy served as a strong trigger. Automakers responded to comply with localization policy in order to substitute CKD imports.

After the shift to the TBS program, the upgrading of technology levels of local parts manufacturers continues to be the most import issue for the Pakistani automobile industry, and automakers are actively expanding supplier development activities. In the meantime, some activities go beyond the capacity of a single company. For instance, some automakers conduct a training program for a large number of workers of parts manufacturers by using their own facilities or even production lines, which seems to aim for development of the entire industry, rather than the interest of a single company. Such program is considered to serve public interest. Clearly, these efforts by automakers have produced results. In particular, the training programs using a well-prepared curriculum and teaching materials have brought about large benefits for the auto parts industry. Overseas training at plants seems to be highly appraised.

Nevertheless, these efforts face a problem associated with cost burdens. Traditionally, automakers bear all the cost including the hiring of advisors from other countries such as Japan and Thailand or the sending of workers for overseas training. This raises an issue relating to the cost for technology transfer. As the rapid pace of technology innovation creates the growing need for technology transfer from automakers to suppliers, the cost burden for automakers increases to the extent that they are discouraged from technology transfer, adversely affecting industrial development. To avoid such situation and promote technology transfer, it is proposed to support efforts of automakers.

2. Objective:

To create a public support system to provide financial assistance for automakers in relation to their training and other programs to upgrade technology levels of parts suppliers, by bearing part of the program cost when it meets specific requirements, thereby to promote the strengthening of the local parts industry and localization of automotive parts.

3. Program Description:

(1) Eligibility requirements for training programs to be subsidized

A training program that is eligible for the program should meet the following requirements.

1) Participation of 10 or more trainees per program (more than two suppliers are allowed to send their workers)
2) Duration of each program exceeding 80 hours per trainee (including practical training and lecture)
3) Program implementation at an automaker's facility in or outside the country (including a parent or affiliate company)

(2) Application for subsidy

1) The applicant is an automaker that conducts a training program for workers of parts suppliers (regardless of vehicle type produced)
2) The applicant will submit to EDB, via PAMA, an application and documents including the number of participating in the training program (including the name of the supplier), their names, and the signature of the representative of the supplier, at least 30 days before the start of the program.
3) EDB will examine the application (including the program plan, period, the implementation site, the number of instructors, the number participants, and cost statement) to evaluate its appropriateness and accept or reject the application. It will then notify the decision, via PAMA, to the applicant within 10 days from acceptance of the application.
4) After the end of the program, the applicant will promptly apply for subsidy by submitting a statement signed by the representative of the supplier.
5) EDB will examine the application for subsidy, together with the original application, and after confirming that information provided is correct, it will inform to FBR to provide tax incentives to the applicant.

(3) Corporate tax incentive

As an incentive for OEM to implement this program, EDB and FBR will provide corporation tax reduction.

(4) Program duration

As soon as EDB has secured the program budget, the subsidy program will be carried out for two years.

(5) Other application requirements

1) After the end of the training program, the applicant must submit a program implementation report in a designated form.
2) In the case of any change in information stated in the application during the program implementation period, the applicant must notify it to EDB. If the number of participants decreases to less than 10 persons, EDB may exclude the program from subsidy.
3) Each applicant can apply for subsidy three times per year.

4. Expected Program Output

(1) Automakers will be encouraged to provide training for workers of parts suppliers, allowing them to learn practical knowledge and skills, leading to supply of high quality parts.
(2) The training program will supplement public education and training that does not always teach practical knowledge and skills.
(3) Local automakers and suppliers will develop a close relationship with mutual confidence, thereby to invigorate the automobile industry as a whole.

5. Implementing Institutions

EDB and FBR (Federal Board of Revenue) will be responsible for program implementation in cooperation of PAMA.

6. Financing Sources

The program budget (the amount of tax reduction) is estimated at Rs. 3.6 million per year...
Subsidy on the automaker's training program: Rs. 10,000 per person x 300 = Rs. 3 million
Subsidy on overseas training: Rs. 500 x 40 persons x 30 days = Rs. 600,000

7. Implementation Schedule

As soon as the program budget is secured, the program will start after the four-month notification period.

8. Key Considerations

(1) Compliance with the spirit of the training program

The program is designed to provide cost subsidy for automakers that conduct a training program for workers of suppliers by using their own facilities. Thus, the program aims to foster learning opportunity and trusting relationship between the automaker and the supplier. This means, the training program should not be used as the means to hire workers for the assembly line, unless they work for a short period of time as part of practical training. Automakers are expected to draw a clear line by respecting the spirit of the program.

(2) Appropriateness of subsidy

The subsidy of Rs. 10,000 per participant will be further examined in terms of appropriateness through discussion with PAMA and automakers.

Project No.A-３ Oversea Skill Training Program

1. Rationale:

Since the start of SKD production by GM in 1953, the Pakistani automobile industry has more than half century of history but has been surpassed by late comers in India, Indonesia, and Thailand. A major reason for the industry's lagging state is the government's development policy that insisted on localization and protected local parts manufacturers by imposing high tariff rates, thereby preventing competition among them as well as development of global perspectives. While localization of automotive parts progresses gradually, the low rate of increase in vehicle production within the country discourages parts manufacturers from making aggressive equipment investment. As they continue to use old production equipment that relies on skills of individual workers, they are far from establishing a reliable volume production system. As a result, their products are not accepted by automakers in terms of quality, impeding further localization.

The government's trade policy relating to automotive parts was switched to tariff base from the previous Deletion Program in 2005. In consequence, local automakers are opting for global sourcing to procure parts with stable quality, and their localization seems to slow down. This means that local suppliers must compete with the rest of the world, not to mention the irreversible move toward trade liberalization on a global basis, which fire up competition even more. Under these circumstances, unless the Pakistani automobile industry swiftly fosters the local supplier base capable of providing quality parts and components, it will be demoted to the industry relying on low cost labor force, while importing all the parts they need. Furthermore, existing automakers may even withdraw from the country, which will then be required to import all vehicles. If this happens, the country will lose the industry that would otherwise create high value added for the national economy. In order to promote the development of the Pakistani automobile industry on the basis of the awareness of the need for innovative efforts in terms of both technology and government policy, it is the time to absorb technology, management techniques, and mindset in countries that lead today's automobile production.

In recognition of the challenges facing the Pakistani automobile industry, the project proposes an overseas skill training program for people associated with the industry. Participants representing companies and organizations relating to the automobile industry will visit countries having the world leading automobile industry and learn not only production technologies and management techniques relating to automobile parts, but also each country's systems and institutions to support automobile transport and a highly motorized society (including, but not limited to a type certification system, to pollution control and safety measures, an official vehicle inspection system, a vehicle-related taxation system, and a road transport system), thereby helping them to find ways to rebuild and reinvigorate the automobile industry toward the goal of achieving international competitiveness.

2. Objective:

The primary purpose of the project is to upgrade and reinforce the Pakistani automobile industry from bottom up by learning technology and expertise in countries that have the world-class automobile industry and by creating synergy effects among local manufacturers relating to the automobile industry, with a final goal to build up the country's own automobile production system.

3. Program Description:

The program will be planned and implemented under the leadership of EDB and in cooperation of PAMA and PAAPAM. EDB will use foreign training programs sponsored by other donor organizations, such as JICA and AOTS (Japan), KOIKA (Korea) and GTZ (Germany), and reorganize them as a new program by reflecting the conditions peculiar to Pakistan. Also, a training program using facilities of automakers and their subsidiaries operating in Pakistan will also be planned.

(1) Program outline

Two types of foreign training programs will be planned for different types of participants. One type is intended for company owners/managers and government employees. The other type is designed for skilled workers and field engineers for the purpose of raising the standard of production technology.

1) Training program for company owners/managers and government employees

a) Candidates

- Staff members of EDB, PAAPAM and PAMA, in charge of automobile related policy formulation
- PSQCA staff in charge of certification of the automobile PS mark
- Responsible personnel of KTDMC, GTDMC, TUSDEC, and automobile-related equipment manufacturers
- Owners/managers of automotive parts manufacturers (who have authority to participate in the decision making process)

Final selection of participants (companies and organizations) will be made by EDB in cooperation of PAAPAM and PAMA, while reflecting opinions of experts of SMEDA and JICA.

2) Reporting requirement for participants

Prior to the start of the training program participants will be required to submit reports discussing the objective of their participation and expected results. Also, they have to submit reports in six months after the end of the training program, including proposals for development of the Pakistani automobile industry or application of training results to their own work.

3) Course outline

Each training program will be implemented under participation of around 10 persons.

The program will be carried out twice per year and will last as much as three years, depending upon the use of other donors' training programs.

(2) Training content (scope)

The training content will be determined by finding the further needs of individuals and organizations relating to the Pakistani automobile industry, under the leadership of EDB. EDB already requested the Japanese government for use of JICA training programs in June 2010, including not only technical skills but also the learning of related policies and programs as well as actions to address issues facing the automobile industry. The requested courses and items will be further narrowed down to design a formal training program.

1) A proposed training program in Thailand

The training program is designed to understand the current state of the automobile industry in Thailand. Note that a list of companies to be visited will be finalized in the planning stage.

- Visit to the Thai Auto Exposition … To feel the development of the automobile-driven society
- Visit to certification organizations such as TAI …. To observe the certification system and method
- Visit to automakers …. To feel the difference in assembly lines
- Visit to automotive parts manufacturers …… To feel the difference in operation
- Visit to die manufacturers …. To feel the difference in die making
- Visit to local SMEs ….. To check awareness and attitude of owners/managers

2) A proposed training program in Japan

The program is designed to understand the current state of Japanese society in the context of automobile.

- Visit to government agencies in relation to automobiles (such as METI and MLIT) …. To understand the overall picture of public administration relating to automobiles
- Visit to JIMA …. To understand the overall picture of the Japanese automobile industry
- Visit to JAPIA …… To understand the automotive parts industry
- Visit to JARI …. To understand test items relating to automobile development
- Visit to Japan Automobile Standards Internationalization Center (JASIC) ….To understand automobile standards and certification
- Visit to automakers…. To understand the latest automobile production process
- Visit to parts manufacturers ….. To understand the current state of the parts industry
- Visit to manufacturers of products critical to automobile production (e.g., foundries, steel plants, and robot and machinery manufacturing facilities) …. To understand the basics of manufacturing (to create a quality product)
- Visit to academic research facilities …. To understand the foundation of manufacturing activity

Through discussion at the above companies and organizations to be visited, it is expected that participants will be able to understand difference from Pakistan, thereby helping them to develop automobile policy that is effective and applicable to the country.

(3) Training program for field workers and engineers

1) Candidates

Participants will be selected by EDB on the basis of the following criteria.

The present survey results indicate that priority should be given to sheet metal manufacturers, for which problems have been frequently raised by automakers.

- Potential to lead the future development of the Pakistani automobile industry
- Reference from other companies
- Ready to agree on disclosure of kaizen items identified and implemented during the training program

2) Training techniques

The training program will primarily consist of factory visits, accompanied by opportunities to discuss questions raised from the visits and possible applications to companies of participants, such as on transportation and at a hotel meeting room, thereby to allow participants to share understanding and knowledge.

3) Course outline

Capacity: Around 15 persons

Duration: 2-3 weeks

Program period: 3 years (2011 – 2014), with a detailed schedule to be finalized in consultation with related organizations

4. Expected Program Output

(1) By participating in the foreign training program, participants will be able to exchange information with one another and problems facing individual companies will be reflected in the government's automobile related policy.
(2) Automobile policy elements will be made clear to help establish laws aiming at the motorization society.
(3) Participation of company owners will prompt kaizen actions after their return to Pakistan.
(4) Reporting by participating companies on the training programs in the form of a presentation meeting will provide incentive for other companies to start their own kaizen initiatives.
(5) Information obtained by visiting various companies can lead to the reinforcement of linkage to TA/TC and the networking with foreign companies and organizations.

5. Implementing Institutions

- EDB
- PAMA
- PAAPAM

6. Financing Sources

The Pakistan counterpart and participants of the program will bear travel costs for participants. The transportation and accommodation costs in each country visited, and remunerations to companies, organizations and instructors will be paid by using existing programs by international donor organizations.

7. Implementation Schedule

EDB will recheck and finalize the training program plan.

- Public advertisement to invite participating companies after the finalization of the plan (one month)
- Selection (one month)
- Selection of facilities and organizations to be visited and arrangement for visits (one month)

The target is set to carry out the first training program in May 2012. (A major reason is to allow participants to visit the Thai Motor Show.)

8. Key Considerations

While EDB will have a final say in selection of participants, it is important to do so in cooperation of related organizations.

(1) Consensus within PAAPAM and PAMA is required. Fair selection to avoid conflicts within each company is important.
(2) As the training program will continue for 3-5 years, it is important to show an overall framework. In selecting participants, input from SMEDA and experts in SME support should be taken into account.
(3) It should be made clear that participating companies must report to the Pakistani automobile industry.
(4) Manuals and technical documents obtained from the training program must not be monopolized.
(5) For the automobile industry that undergoes dynamic changes, it is critical to carry out foreign training on a continuous basis. Continuity should be warranted by securing a necessary budget.

Project No.A-4　Comprehensive Technology Upgrading Program

1.　Rationale:

Since 2003, JETRO's Karachi office has been implementing a program to send press die experts to selected local manufacturers. At the same time, managers of parts manufacturers visited Thai companies at their own expense, while AOTS held a training program in Japan for Pakistani trainees in the field of press die making. These activities were well accepted by trainees and participating companies, while contributing greatly to the launching of new models by Japanese automakers operating in Pakistan. Furthermore, visits by experts have provided incentive for manufacturers to upgrade their equipment and redesign dies to composite types according to advice by experts.

For instance, JETRO's Karachi office planned the programs to visit Japanese and Thai companies, while participants paid all the costs, including transportation and accommodation. This indicates that companies pay their price when they can expect to learn technology useful for them. Such cost represents investment and participants are eager to recover their investment by asking questions and collecting information. In the process, they understand the gist of technology and try to apply it to their own companies by taking necessary actions, including kaizen. This is the way to learn technology.

To avoid such situation, we can learn from Rastagar Engineering in Islamabad. The company started to receive technical assistance from Japanese engineers in 1983 and to supply brake drums to PakSuzuki Motor. Then, it won a contract from HinoPak Motor to deliver one of the most important safety parts, hubs. Having built on the record, it now exports hubs to tier-1 suppliers in the U.S. and Europe, which represent more than 50% of its total revenue. In addition, the company supplies steering knuckles – another critical safety part for Toyota Corolla – and contributes greatly to localization and cost reduction at Indus Motor. It hires, at its own cost, European engineers to receive technical support. Also, the owner has participated in AOTS's training program in Japan. Being inspired by the study tour in Japanese factories, he has started to clean toilets by himself and has launched a campaign that workers clean their own workplace. In fact, there is no "sweeper" in this company, unthinkable in Pakistan.

This is the way education and training at manufacturers should be carried out.

When the company faces a problem and cannot find a solution on the basis of its knowledge and experience, it may be able to make breakthrough by finding a good adviser or learning from the study tour in foreign factories.

5S is important. Supply chain management is desirable. At present, however, what is needed most for the Pakistani parts industry is technology relating to design and manufacture of dies used for press work. This is urgently needed. On the other hand, plastics molding technology seems to be at relatively high levels. This proves effectiveness of JETRO’s guidance service by hiring experts. Unfortunately, the insufficient level of press die making has also been proven by knowing the situation facing automakers, which have installed industrial robots in the assembly line and are required to switch locally procured parts to imports because they lack dimensional accuracy and cannot be remade by the robot. Thus, technical guidance should focus on press die making technology for the time being.

It is noteworthy that the MOI has established KTDMC and GTDMC on its own. The idea was conceived by JETRO experts who appealed it to the then Vice Minister of the MOI. They have a wide range of equipment and capability to make dies and molds. However, while they have expertise in making molds for plastics products and casting dies, they cannot design and manufacture press dies due to the low level of technology relating to plastic processing of steel plates. In this connection, technical assistance by Japanese experts is said to be most suitable for technology which is widely accepted with a large room for upgrading. Thus, KTDMC and GTDMC need to focus on the upgrading of press die technology by leveraging expertise of Japanese experts for training of local trainers, so that technology can be disseminated smoothly even after Japanese experts have left.

Another way which already proven fruitful technology transfer is to dispatch Pakistani trainer to Japan for training. In 1980th Suzuki Motor Japan received 3 trainees from Naya Daur Motor of PACO for four years who were educated at PAKSWISS Training Centre for 4 years followed by some years die making experience at the factory, then they achieved to design, cast and machine very sophisticated pressing dies of the bonnet of SUZUKI car and others which were used on the modern pressing machines of existing Paksuzuki factory. Therefore it is much recommendable to dispatch experienced trainers of KTDMC and GTDMC to Japan at least 6 months.

Interestingly, although a large number of Japanese experts have provided technical guidance in Pakistan, few JIS documents are seen at most organizations. While JETRO’s Karachi office and AT&TC, which has received JETRO experts, maintain some JIS handbooks, there is none at other organizations. It is recommended to provide JIS documents immediately.
On this occasion, we asked JETRO Karachi office to offer 10 JIS Handbooks to KTDMC which are not updated as new revisions are already stored in the gallery of JETRO office, then the

Director General of JETRO willingly agreed to offer them. He was telling, if the handbooks help KTDMC that is most welcome. JIS Handbook has been published every year; however, the contents have not been changed so much. Needless to say it is recommendable to put the newest, therefore it is much requested to offer them as continuous service from the Government of Japan on the responsibility of Japan for spread of Japanese Industrial Standard (JIS) in Pakistan.

Many young people reportedly give up the idea of studying in KTDMC's general training course because the monthly tuition of Rs. 2,000 is not affordable. Some of them then go to religious schools (no tuition). This means that Pakistan may lose potential resources useful for industrial development. The government needs to realize that, if it aims to develop Pakistan to an industrialized country, it is critical to provide professional education for young people who are interested in making industrial products. In this sense, it is very timely to establish the scholarship system using the fund provided by the Japanese government (pursuant to the poverty reduction program).

Sending experienced trainers of KTDMC and GTDMC to Japan for more than six months will be expected fruitful results, that is proven in the past experience in 1980 year when Suzuki Motor in Japan received 3 trainees from Naya Daur Motors of PACO who trained how to design, cast and machine big press dies of bonnet, which were used at Pak Suzuki motor just before.

Furthermore, education and training should create a dream for the Pakistani automobile industry, e.g., it develops and designs an original car. Today, automobile engineering is taught at NED University of Engineering and Technology, which is attended by excellent students from all over the country. The program uses an exhaust gas testing system made in Japan (donated by an American company). By attracting top students to the program teaching the latest automobile technology developed in Japan, it is beneficial not only for Japanese automakers that dominate the market, but also for the future of automobiles. To do so, it is recommended to design a program and curriculum that combines lecture and practical training relating to automobile design and production, including a workshop to make a formula car with an aim to participate in the student formula car contest held annually in Japan. (The contest this year was attended by more than 80 schools, including 3 from Thailand.)

Engineering students are expected to form the foundation of the next-generation industry. They can become leaders in the area of automobile production as well as on the R&D front toward development and design of future cars. As cars are equipped with increasingly advanced systems, their development and production requires ever higher levels of technology. Universities are responsible for producing future engineers and technicians who can support the highly demanding production and development environment.

The dream of developing and designing an original car by the Pakistani automobile industry is not far reaching. Japanese automakers operating in Japan and their suppliers have already developed technology that is conducive to such goal.

Universities can play a leadership role in organizing a study group on a specific theme by inviting related companies and organizations. From Japanese experience, the study group can serve as a catalyst for promoting technological advancement by providing a place for discussion and interaction among engineers representing automakers and their suppliers. The key success factor for development of the automobile industry is to fire up broad interchange and cooperation between universities, government and companies.

2. Objective:

- To provide support for technological advancement (To upgrade press die technology as the highest priority) that would lead to the development of the Pakistani automobile industry.
- To create opportunity for young people to receive technical education and training, thereby contributing to poverty reduction.
- To disseminate JIS (considered to be most useful for the industry) by providing JIS documents for organizations engaged in technical support for the Pakistani automobile industry. (Also, catalogs of standard die parts will be provided at related facilities.)

3. Program Description:

- Sending of experts in press die design and manufacturing technology to KTDMC and GTDMC (detailed discussion in a separate section)
- Sending of teachers to NED University of Engineering and Technology for its automobile engineering program
- Scholarship for people studying at KTDMC and GTDMC
- Distribution of JIA documents relating to automobiles to KTDMC, GTDMC, PCSIR, PSQCA and NED, every three years

4. Expected Program Output

- Upgrading of basic technology to support the Pakistani automobile industry
- Upgrading of press die technology that is currently the bottleneck for the Pakistani automobile industry
- Localization of press dies that are currently imported

- Poverty reduction by teaching technology to potential industrial workforce
- Future prospect for development of an original car in the country

5. Implementing Institutions

KTDMC, GTDMC, PCSIR, PSQCA and NED

6. Financing Sources

The financial source relating to the sending of experts to KTDMC and GTDMC is discussed in a separate section (Action Plan B-1).

- Sending of teachers to NED: 40 million yen over two years (as part of ODA for Pakistan)
- Distribution of automobile-related JIS documents: 1 million yen for five sets (as part of ODA for Pakistan)
- Scholarship: 50 million yen as the JICA fund (Care should be taken to the timing of exchange to the rupee as there is a risk of depreciation, especially when the entire amount is exchanged simultaneously.)

7. Implementation Schedule

Teachers will be assigned for the period between September 2011 and August 2013.

JIS documents will be distributed as soon as possible (the cost can be disbursed from the program budget)

The scholarship fund will be provided in April 2012.

8. Key Considerations

In addition to the key points discussed in "1. Rationale," the following factors should be taken into consideration.

First of all, technology transfer to individual companies by experts is fairly limited in terms of width and depth. As it is very difficult to find Japanese experts who wish to work in Pakistan, they should be utilized in an efficient manner. The present study has served as opportunity to make such assessment. For example, practical training at KTDMC and GTDMC to be provided by experts will have to be conducted at various companies because they do not have much press-related equipment. To maximize efficiency, other companies should be invited to participate in the training session. In fact, a parts manufacturer has expressed the intention to invite engineers from other companies at the time of extension guidance service by a Japanese expert. As cooperation of manufacturers in relation to expert advice is unprecedented in Pakistan, it will serve as an impetus for development of the automobile industry.

Similar guidance service was already provided during the previous JETRO program to send experts. Engineers in press work were invited to a press shop of Honda (car production) and participated in a workshop to learn die construction and replacement of press dies. The proposed training program is expected to provide training in the extension of the previous initiative.

JETRO's Karachi office sent Japanese press die experts in 2003 through 2008, twice per year (three weeks each). They provided guidance service to help leading press die manufacturers serving automakers to solve various technical problems. The results have contributed directly to the startup of production of new models by Japanese automakers operating in Pakistan. While there are strong needs for such guidance service, the project was discontinued for the reason relating to JETRO's budget. It is highly regrettable because such service is effective only when it is continued.

JICA has also sent senior volunteers to AT&TC, contributing to the improvement of welding technology of automotive parts manufacturers. However, the project was discontinued due to security problems in Karachi. AT&TC is no longer operational due to the absence of teachers.

As the Japanese government is facing difficulty in securing funds and human resources, efforts should be made to provide effective support, including the sending of human resources. It also should aim to ensure that the counterpart organization can continue the same activity after the end of expert service.

Project No. B-1 Short-Term Training Program by Japanese Technical Exports

1. Rationale:

For the Pakistani automobile industry, a major challenge is to raise local content. In fact, automakers make efforts to upgrade technology of their suppliers in order to promote localization. However, CKD production is a source of learning assembly technology, whereas it is not suitable for transferring design and production technologies relating to individual parts. Localization represents sole opportunity to attain a comprehensive set of automobile production technologies.

Under this setting, some organizations are already making efforts to upgrade technology levels of parts suppliers in the form of a technical seminar or a training program. This project proposes a short-term, intensive training program covering skill areas of the automobile industry, which should deserve the highest priority in relation to the upgrading of technology. In particular, die making technology, which is closely associated with sheet metal working, has been selected as a candidate area, for the following reasons.

According to sources relating to automakers operating in Pakistan, locally manufactured goods account for 80% of all the defective goods, in which sheet metal products consist of approximately 70% of the total. However, the following problems are pointed out in relation to sheet metal products made by local manufacturers: (1) varying quality; (2) inability to form high tensile steel plates; (3) inability to supply high functional parts; (4) inability to develop the process (only making a die); (5) lack of know-how relating to the manufacture of jigs and inspection tools; and (6) inability to press work a large component. Also, basic quality problems, such as dimensional inaccuracy and burrs, are reported. Generally, sheet metal working is carried out in multiple steps in order to form a flat plate into a complex form. The forming process, the first step of learning, consists of complex factors.

In Pakistan, die making is traditionally done by means of reverse engineering, under which a die is made from an actual product. Although the method can produce a product that is seemingly identical to the original one, it is lacks accuracy indicated in an original drawing. On the other hand, in countries having the world class automobile industry, non-compliant sheet metal parts are related to inclusion of dust or damage and often occur in volume production. Thus, sheet metal working in Pakistan relies heavily on reverse engineering because manufacturers do not understand fundamentals of press work. Also, dies are mainly copy machined and over 90% of die manufacturers do not own a CAD/CAM system. Today's automobile production process does not use blueprint drawings. Instead, drawing data are transmitted over the Internet, so that die manufacturers cannot receive data from automakers.

The short-term training program is designed to serve as opportunity to address these issues from the inside of the industry and to transfer knowledge, ideas, and data.

2. Objective:

To enable the manufacture of dies for sheet metal parts within the country, thereby to improve quality of sheet metal products and then overall quality of the automobile industry as a whole, and to help increase localization of automotive parts, which eventually leads to job creation and cost reduction.

3. Program Description:

The short-term training program for die making technology will be conducted at KTDMC and GTDMC.

In the first year, the program will be operated as TOT (teaching of trainers), where Japanese experts will teach Pakistani trainer candidates. In the ensuing two years, Japanese experts and Pakistani instructors will teach courses for field workers of manufacturers by assuming division of responsibilities under the curriculum. In the fourth year, only Pakistani instructors will conduct the courses. This means that the first three years will be used for technology transfer from Japanese experts, and in the fourth year and afterward, the training program will be carried out under the leadership of the Pakistan side (i.e., KTDMC and GTDMC).

A general outline of the training program in the second year and after is described below.

(1) Eligibility

Field workers of the automotive parts and engineering industries

(This program similar to A-4 of Action Programs.)

(2) Course content

The training course aims to teach theoretical knowledge and practical skills in order to train field trainers.

- Each training course will teach maximum 10 persons.
- Trainees are required to have four or longer years of work experience, with recommendation by their companies.
- The curriculum consists of 40% lecture and 60% practical training. All activities will be conducted at facilities of KTDMC and GTDMC, as this is considered to be most desirable at this stage. Nevertheless, these facilities are not fully equipped with necessary training equipment, so that appropriate measures should be taken to ensure that the two organizations select and obtain such equipment, e.g., a mechanical press for sheet metal working (600 tons). The equipment should be identified with the request for sending of experts and will be negotiated with organizations that send them.
- Trainees who have completed the training course will receive a certificate.

(3) Course duration

- Basically, 8 hours/day x 6 days = 42 hours
- Each course last two weeks, three days per week (Tuesday, Thursday, and Saturday)
- The course will be held four times per year.

(4) Instructors

Japanese instructors: Four experts in die making for sheet metal parts (two specialized in press die design and two in die manufacture) will be assigned to KTDMC and GTDMC. While the two organizations have expertise and experience in resin, casting and forging dies and molds, technology relating to sheet metal dies is highly demanded by automakers. Four Japanese experts will stay for three months each time, three times per year, over a three-year period.

In the second year and afterward, field training of Pakistani trainer candidates (to be selected from trainees who have completed the first year program) will be conducted in the form of OJT by teaming up each trainee with a Japanese expert.

(5) Fee

Each trainee will pay a program fee of Rs.1,500 (either individual or company).

(6) Others

- Trainers who have completed the training program will provide technical guidance and advice in the field of sheet metal die making for individual companies upon demand.
- In addition to the training course, seminars to disseminate die making technology to the industry will be held twice annually.

Finally, as automakers plan to launch new models between 2011 and 2013, creating growing demand for dies and molds, the program is considered to be timely and effective in that it provides opportunity to transfer technology covering the entire process from die design to manufacture and prototyping.

4. Expected Program Output

Localization of automotive parts production will be promoted further as local manufacturers obtain press die technology and become capable of making an increasing number of parts locally.

For the Pakistani automobile industry facing various issues and challenges, increasing production of assembled cars is critical to the industry's sustainable growth. At present, automakers operate production systems where manual work still plays an important role, including the remaking of parts with low levels of accuracy. If quality of supplied parts is improved to international levels, automakers will be able to boost output by installing an advanced production line, including industrial robots that are widely seen in countries having the world class automobile industry.

5. Implementing Institutions

KTDMC will serve as the core of a program implementation system, as other candidate organizations (GTDMC, TUSDEC, and Auto Parts Support Center (established by PSIC in Punjab) appear to lack necessary resources, especially human resources.

6. Financing Sources

Major portions of the program operation cost, except for remuneration to Japanese instructors, will be funded under the Pakistani government's budget. In addition, as for the costs relating to the preparation of textbooks and the procurement of training materials, the request for financial assistance will be made to the Japanese government according to the acceptance of Japanese experts. Thus, the Pakistani counterpart is expected to fund labor and other costs relating to training course management by KTDMC and GTDMC.

7. Implementation Schedule

As mentioned earlier, the program's effectiveness can be maximized if it starts in the middle of 2011 so that it can be timed to the launching of new models. To achieve the goal, the Pakistani government needs to make quick decisions in order to ensure the request for JICA experts and preparation activities (including selection of sample parts) in the country in a timely and efficient manner.

8. Key Considerations

(1) As it may be difficult to find qualified Japanese experts, the selection process needs to start up quickly by contacting related organizations. Also, it should be considered to use untapped routes including the Pakistan Japan Business Forum (PJBF).

(2) To maximize the understanding of trainees on die manufacturing, reference materials need to be prepared in English. As content preparation and editing work are required to make documents suitable for the program, a sufficient preparation period should be provided.

(3) The training program should be designed by taking into account the situation that few local manufacturers have CAD/CAM systems and many of them use old machinery and tools.

(4) To ensure success of this type of project, awareness and attitude on the Pakistan side needs to be changed in that direction. This means concerted efforts by the public and private sectors.

Project No.B-2 Improvement Program for Vocational Skill Training

1. Rationale:

In Pakistan, the enrollment rate of the age group of 14-19 years old is 1.5%, far below that in other Asian countries, which range between 6% and 20%. Many of public vocational training and technical education institutes face many issues relating to the shortage of teaching staff, the lack of teaching materials, and poor management. In response, the Pakistan government positioned the restructuring of the technical and vocational education training (TVET) system and established the National Vocational and Technical Education Commission (NAVTEC) in 2006 for the purpose of policy formulation, quality assurance, and financial support at the federal government level. As individual strategies, the government has listed Competency-based Training (CBT), introduction of the National Qualification Framework (NQF), the establishment of Center of Excellence (CoE) in specific fields, and the upgrading of management capability of educational and training institutes.

Among them, the CoE includes the automobile industry. Under the present Punjab TEVTA (Technical Education and Vocational Training Authority) system, there are 55 vocational training institutes and 11 technical training institutes. The vocational training institutes offer courses that are generally divided into 80% for practical training and 20% for theoretical lecture, while technical training institutes 60% for practice and 40% theory. Graduates of the former receive a certificate and those of the latter receive a qualification of diploma called "Diploma of Associate Engineers (DAE)."

There are different figures of employees of auto industry. Among them, EDB estimated that there are 192,000 in auto assemblers excluding parts makers in 2008. Since then, auto industries did not expanded so much, but many people confirmed they are expanding since 2010, which means that there is new demand of employees for assemblers and part makers. If employees increased 1% a year in assemblers, 2,000 new jobs will be created a year. Then economy recovers, several thousand will be newly employed,

At present, JICA carries out the reviewing and modification of training curriculums for mechanical and architecture faculties of GCT Railway, together with the procurement of equipment and materials and the development of teaching materials, under the five-year plan between 2009 and 2013. This constitutes only the first stage of TEVT restructuring. As judged from demand forecast, more training opportunities will be required. In response, the TEVTA in Punjab is planning to create two faculties (Auto & Diesel and Auto & Farm Machinery) at Government

College of Technology in Multan. GCT Multan has the largest site among the TEVTA schools (20.9ha), of which 85% is unused, while it has seven faculties. In Sindh, it is planned to establish the CoE for vocational training at two faculties (Auto & Diesel and Auto & Farm Machinery). If it goes well, the CoE will be extended to technical training, which will be implemented under a different project. The TEVTAs in the two provinces strongly hope to receive international support, in particular from Japan because these projects cover the automobile industry.

While the TEVTA modified the vocational training curriculum in the automobile field in 2005 – 2007, it is already becoming outdated. Because rapid and dynamic innovation progresses in the automobile field, which covers a wide range of techniques and skills, there is the need for updating the curriculum and textbooks constantly, and teachers are required to receive retraining. Furthermore, training equipment will have to be added, replaced or upgraded. On the above background, these projects are proposed as the Center of Excellence for human resource development for the Pakistani automobile industry.

2. Objective:

To establish two automobile engineering faculties at Government College of Technology (GCT), which is recommended by TEVTA and can become the Center of Excellence, and to redesign the training curriculum and provide necessary equipment, thereby to promote reeducation of teachers and to improve quality of automobile-related education and training for the benefit of the automobile industry; and to establish a good model for vocational training in Pakistan.

3. Program Description:

(1) Modification of the training curriculum, development of teaching materials, procurement of equipment and materials, and training of trainers

While the TEVTA modified the vocational training curriculum in the automobile field in 2005 - 2007, it is already becoming outdated. On the other hand, no modification has been made for technical training since 2000. The technical curriculum for the two faculties (Auto & Diesel and Auto & Farm Machinery) was revised four to six years ago. The new curriculum will entail the following activities.

1) Teach materials (teacher’s handbook, textbooks, and training manuals (TLMs))
2) Training equipment (laboratory and workshop)
3) Training of trainers

(2) Retraining facilities

Under the new curriculum, the retraining of teachers will be required. However, there is the shortage of retaining facilities as teaching staff increases due to rapid expansion of vocational training. In response, the TEVT plans to expand facilities of Government Technical Teachers Training College (GTTTC) and to increase teacher training programs from the present four faculties (mechanical, civil, electric, and electronics) to seven (including textile, auto and diesel, and auto and farm machinery). It will build new facilities on a 4.5ha vacant land adjacent to existing training facilities. The needs survey and preliminary design have been completed, waiting for finalization by the Punjab government. As priority is given to the increase in teaching capacity, this item should be placed behind the modification of the curriculum, teaching materials, and equipment, and should be started in the second year.

(3) Institutional buildup for implementation

While there are some uncertainties about the involvement of the federal government, the provincial government will be responsible for major portions of project implementation, other than those to be undertaken by universities. As TEVTA, STEVTA and PVTC have sizable staff and will be able to organize a task force for project implementation. At first, donors have a meeting with TEVTA, STEVTA or PVTC to confirm the contents of the project after specification of college. Rearrangement of curricula needs approval of a Committee of NAVTEC, however there are three cases of no response from NAVTEC to the requests of curricula reviews from TEVTA these three years. It is clear that the provincial government is responsible for education according to the final judgment of the 18th amendment of Constitution by Supreme Court, but it does not describe details by education stage, that is general education, vocational education and pre-school education.

As the future courses after graduation are important for their graduates, the following two shall be implemented.

1) The relations with industries are so important. They have to include followings in their curriculum with discussion with PAMA or PAAPAM, a) the representatives of industries shall deliver their lectures at the institute for 2 times a year, b) the 2nd grade students will visit an assembling factory, repairing house or sales shops two times. c) one month training at factories for 3rd grade students.
2) After the graduation, they will diverse their jobs at factories, reaper works, sales shops, transport administration etc, Each institute will set up job division, they will follow their courses of graduates including change of jobs at least once a year, the list will be sold with some fees.

4. Expected Program Output

While automobile sales have been fluctuating greatly from year to year, the total number of vehicles owned has been growing steadily, reaching 11 million units at present. This creates growing demand for maintenance service. To ensure steady development of the automobile industry, human resource development is as important as technology and funds. Automakers in Pakistan, while providing equipment and materials for vocation training, hire middle and high school graduates and train them in the form of OJT (for instance, a one-year training program (five days per month) for each job type, with new training at the time of job change). On the other hand, parts manufacturers do not have a formal training system and workers usually learn skills by observing their senior in work. Notably, graduates of automobile-related courses at TEVTA and STEVTA do not always work for auto plants. Instead, many find jobs at dealers (repair shop) or roadside garages and some operate repair shops on their own. Others go overseas, such as the Middle East.

Thus, if the project helps improve reputation of vocational training courses relating to the automobile industry, assembly plants will hire more graduates and reduce the international education cost.

Note that the British Council provides assistance for the electronics faculty of GCT Multan.

5. Implementing Institutions

The NAVTEC is under the Prime Minister's Office, responsible for vocational training policy and curriculum. As a result of the 18th constitutional amendment, however, power and authority relating to the training curriculum was transferred to provincial governments. (Note: it is disputed to be unconstitutional and the Supreme Court will make a decision by the end of 2010.) As for other federal government agencies, NISTE (MOE) and NBT (MOL) are responsible for examination of technical and vocation training curriculums and the retaining of teachers.

At local government level, TEVTA in Punjab, STEVTA in Sindh, PVTC in Punjab, and related faculties in other provinces are in charge of vocational training.

Even if NAVTEC is able to maintain the present power and authority as a result of the court decision on the dispute relating to the 18th constitutional amendment, the state government will retain the authority to prepare a draft curriculum. Thus, TEVTA's automobile faculty will continue to play a major role as the CoE.

6. Financing Sources

(1) School construction

TEVTA, STEVTA and PVTC will bear all the costs for construction and repairing of classrooms, laboratory/workshop, faculty office, and dormitory.

(2) Printing of teaching materials

Teaching materials will be developed by experts. While students will pay the printing cost for textbooks and training manuals, TEVTA, STEVTA and PVTC will bear all the costs for teacher's handbooks.

(3) Training of teachers

TEVTA, STEVTA and PVTC will bear all the TOT costs.

(4) Professional Service

According to the example of GCT Railway, the request will be made to JICA for sending long-term experts (chief adviser and experts in Auto & Diesel and Auto & Farm Machinery). The cooperation period is expected to be five years.

(5) Training Equipment

The request for cooperation will be made to JICA by taking the example of GCT Railway, which budget (500 - 600 million yen) is divided into 400 million yen (school construction – architecture) and 200 million yen (equipment and materials). Equipment is not finalized unless the curriculum is developed, and the automobile industry uses a wide variety of machine tools and there is the need for CNC and advanced machines. At the present stage, the total cost to implement the three projects at the same time is estimated at 2 billion yen. In particular, the CoE project (1.2 billion yen) has priority over TOT and PVTC.

1) The CoE project will cost 1.2 billion yen in total, or 300 million yen for technical training and 300 million yen for vocational training multiplied by the two faculties.
2) While TOT appears to be better equipped than training institutes (in the case of NISTE), it is assumed to be same as the CoE, thus amounting to 600 million yen (for the two faculties).
3) For PVTC, 40 million yen per school multiplied by five schools

7. Implementation Schedule

Assuming that the request for cooperation will be made to international donors, after completion of required procedures in Pakistan, it will be submitted via the diplomatic channel. If further research and study is to be conducted for detailed design, it is estimated to take at least two years. At the same time, construction of school facilities will be funded under the government budget, both federal and provincial. In consideration of these factors, donor's support is expected to be obtained after 2013. Under these assumptions, the following actions will be undertaken as the following stage.

1) First year
   - Three experts will station in Multan and will revise the training curriculums, develop teaching materials, and prepare a preliminary list of equipment.
   - To place order on equipment for the first year course
   - Construction of the CoE and TOT schools in Punjab and selected schools in Sindh (i.e., construction of buildings for new faculties of existing schools, and repairing of existing schools in Sindh)

2) Second year
   - Selection and employment of teachers for the first year course and printing of TLM
   - Training of teachers for the first year course and modification of the vocational training curriculum
   - Preparation of the equipment list for TOT in Punjab
   - Selection and enrollment of new students
   - To place order on equipment for the second year course and equipment for TOT in Punjab.

3) Third year

   Resource building and preparation for the third year course will be carried out in a similar manner.

8. Key Considerations

- Vocational training relating to the automobile industry as the means of poverty reduction

PVTC implements short-term (one year and six months) vocational training programs, including automobile-related courses. As PVTC is operated by PPP as the means of poverty reduction, it is worth considering for flood damage recovery measures, as separated from TEVTA.

As part of flood damage recovery measures, PVTC plans to build 27 schools in flood damaged areas in Punjab, while other state has such organization. Teaching materials have been developed by themselves. Support seems to be required in relation to the curriculum and equipment. Once the project is launched, experts will be able to provide consulting service in the third year after the modification of the vocational training curriculum.

Project No.B-3 Preparation for the Establishment of the Skill Certification System

1. Rationale:

The auto industry in Pakistan, which has emerged relatively early in the Asian countries, is now lagged far behind Thailand other competitors due to the lack of the long-term automotive industry development vision, the delay in fostering supporting industries, particularly parts suppliers, and incessant political and social changes. Moreover, the business environment surrounding the industry is characterized by intensive competition caused by the progress of Free Trade Agreement (FTA) and other moves toward trade liberalization, creating pressure to reinforce the industrial base and improve its international competitiveness promptly. In considering the globally competitive environment facing the Pakistani auto industry in the future, it is undoubtedly imperative to further improve products - assembled cars - in terms of quality and cost. To achieve this goal, it is critical to strengthen the ability of suppliers to make competitive parts and components as they account for 60% - 70% of the automobile's production cost. In particular, a substantial improvement of "workers' skills" at the supplier's factory holds the key to the industry's survival in the future competitive environment (Note: To deal with deterioration of production facilities and equipment, a separate action plan is proposed).

In fact, these conditions have been pointed out in Thailand and other Southeast Asian countries, which have more competitive auto industries. The AMEICC's[1] Automobile Working Group meeting in Manila, where representatives of Automobile and related industries in Japan and the ASEAN countries has agreed that the training of highly skilled workers would be essential in improving international competitiveness of the automobile industry. In May 2003, the meeting in Manila concluded that the establishment of the skill certification system designed for the industry would be effective in promoting the goal. In fact, Thailand and the Philippines already started the preparation for the certification system last year, and other ASEAN countries are expected to follow suit. This project is proposed to examine feasibility of establishing the certification system in Pakistan and to devise ways to be prepared for future buildup.

[1] AMEICC – AEM-METI Economic and Industrial Cooperation Committee – is an ad-hoc committee established, under the participation of ASEAN countries and Japan, to discuss economic and industrial cooperation within the ASEAN region.

2. Objective:

To support local parts suppliers in Pakistan, which are mostly SMEs and which are far behind Japanese assembly manufacturers in the area of internal skill training resources and capability, the project is designed to establish standards for key skills relating to the production of automobiles (and their parts) and to design and build a certification system for automobile manufacturing technicians in specific categories, including certification test standards and criteria. In addition, the project envisages the development of an infrastructure to provide necessary education and training that meets such standards and criteria.

3. Program Description:

(1) Types of skills to be certified

Actual types of skills selected for the certification system (with priority) will be finalized on the basis of the results of field survey that will be conducted in the project's initial stage. The following are skills that are considered to receive priority by taking into account the survey results.

① Metal press work
② Plastics molding
③ Casting/Forging
④ Machining ┬ Lathe
　　　　　　└ Milling machine

(2) Description of key contents and outputs

Key content	Output
Establishment of an organization to promote the certification system	- Responsible division of the leading agency (secretariat for promotion of the certification system) - Steering committee participated by representatives of the automobile and related industries - Technical committee on specific skills
Development and design of the certification test	- Skill evaluation standard - Detailed regulation to define the scope of the certification test - Written test problems (highest level only) - Practical test problems (highest level only) - Grading standard (highest level only)

Key content	Output
Planning of the test site and administration system	- Layout of the test site - Test administration manual
Procurement of equipment and tools	- Equipment, jigs and tools, measuring instruments, and materials used for practical test - Equipment and materials generally used for test administration - Continuous procurement channels
Development and design of training courses and textbooks	- Training courses for certification examiners - Preparation courses for the practical test - Preparation courses for the written test - Textbooks and course materials for the above courses - Reference and exercise books for the written test
Development of database	- A database management system for applicants and certified persons

The above tasks will be conducted in collaboration of the leading agency (including the outsourcing to outside contractors.

(3) Project size

In the initial stage, around 20 persons will take the certification test for each type of skill. In particular, those who take the first test should achieve a sufficient level for candidate trainers in the future certification system. The number of persons to be accepted to the training system will be decided according to field survey.

4. Expected Program Output

(1) For management (suppliers)

- Wages can be objectively linked to actual skill levels to optimize labor cost allocation.
- New employees with required skills can be recruited to help find the right man for the right job.
- The improvement of skill levels within the company as a whole leads to increased reliability for customers, followed by more business opportunities.
- The certification system allows the company to obtain skills and production know-how that are not available within the company.

(2) For workers

- A clear path for wage increase according to skill level can be established.
- The worker has an opportunity to improve his employability in a planned manner.
- Incentive for skill improvement can be maintained on a continuous basis.
- The worker's motivation and morale can be raised.

(3) For the automobile industry

- The rise in skill level leads to the improvement of the industry's overall competitiveness in terms of quality, cost and delivery schedule.
- Automakers attach more importance, in their global strategy, to production bases in Pakistan.
- Mobility of human resources and production know-how is encouraged within the industry to reduce the mismatch between the worker's skill and the workplace.
- The industry can avoid duplication of investment in the area of education and training, resulting in more efficient utilization of capital.

5. Implementing Institutions

- Pakistan Automotive Institute (PAI) (if established as planned)
- Pakistan Automotive Manufacturers' Association (PAMA), and
- Pakistan Association of Automotive Parts & Accessories Manufacturers (PAAPAM)

If PAI is established, it will work with the automobile industry to build up the certification system, while PAI will be responsible for execution. In this conjunction, collaboration with government organizations, such as EDB (Engineering Development Board) and TEVTA will be required. If PAI isn't established PAMA and PAAPAM will be main implementation institutions.

6. Financing Sources

(1) Financial resource

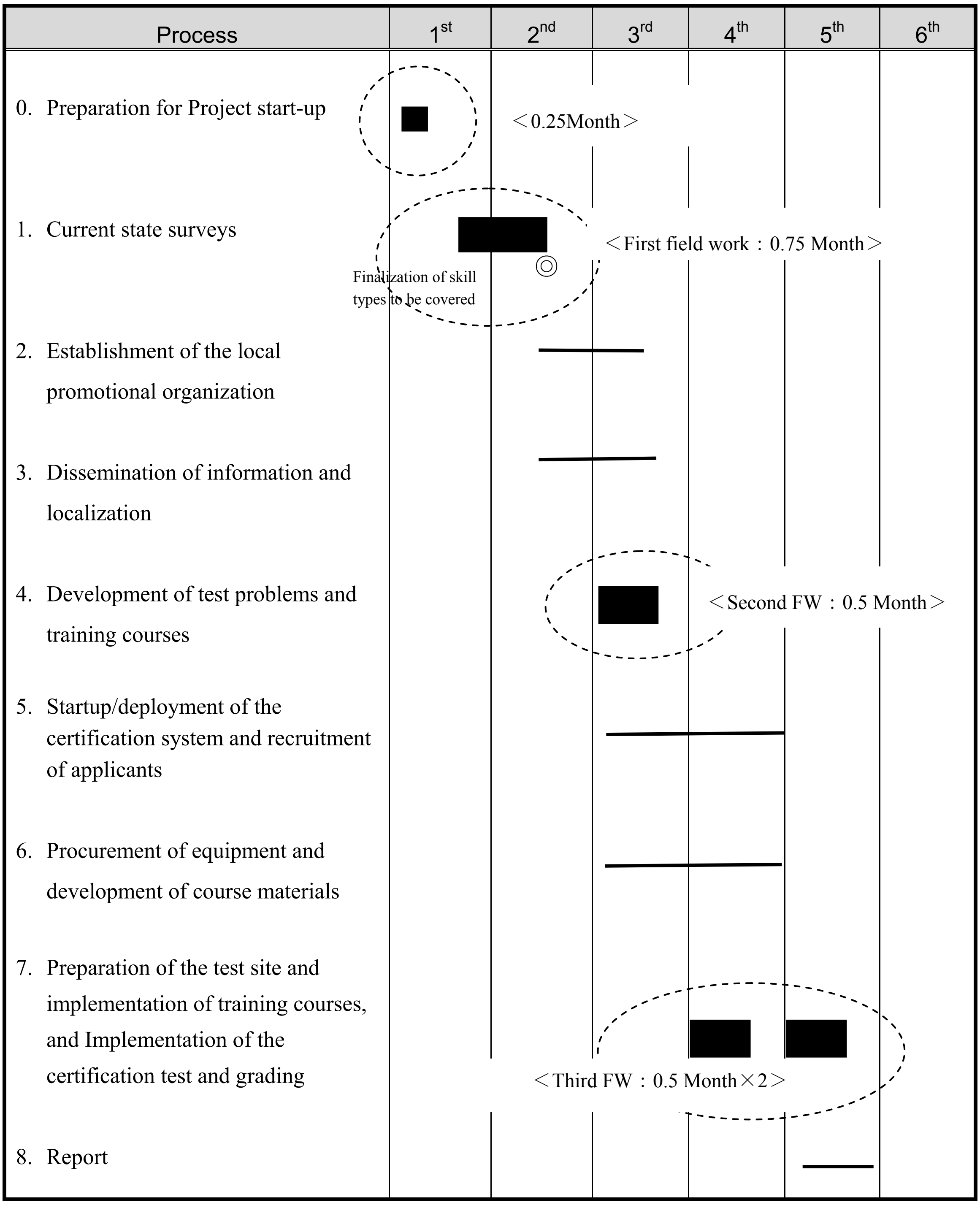
Basically, various revenues to be earned from the project, such as textbooks and books, the test fee, the certification fee, will be used for the project's operation. To finance the cost required for preparation and system buildup, however, donation will be asked from PAMA and PAAPAM.

In addition, efforts will be made to conduct preparatory activities, such as preparation of teaching materials and the training of Pakistani trainers, under the Japanese government's assistance.

7. Implementation Schedule

The work schedule below covers only the first year during which the national certification system will be built up under JICA's assistance (as planned). Each phase takes two months, totaling 12 months.

(■ Denotes direct (local) guidance, and ━ remote counseling from Japan)



8. Key Considerations

To implement the project smoothly and successfully, effective coordination and cooperation among related organizations is indispensable. More specifically, it is important to establish a project implementation system that should be driven by the following key elements.

(1) Formation of industry-wide consensus

It is reasonable to expect that there is a difference among companies and their owners/managers, according to the type of ownership and the company size, as to the understanding of the project and its objective. Because successful operation of the skill certification system requires the active support of interested companies, as seen in the current state of the certification systems in Japan and Thailand, the project's success hinges on how effectively and widely it can mobilize resources of the automobile and related industries. In reality, however, it is difficult to gain consensus on the new system and its operation in the initial stage, and it is therefore proposed to start the project under participation of companies that show interest or are willing to support it. Then, by producing measurable results, the project will be able to attract more participants.

(2) Development of the promotional system within the leading institution

The project, because of its size, is difficult to start up and roll on smoothly by relying solely on the short-term support of foreign organizations/experts. Rather it is imperative to create and maintain a dedicated organization to promote the project, which is led by local personnel. This means, the leading institution, which is the counterpart responsible for project promotion, should be staffed by qualified and experienced personnel. In this connection, active support of the automobile industry is very important.

(3) Buildup of the collaborative system with related government agencies and public organizations

As the project will deal with the policy theme that is normally handled by multiple government agencies including TEVTA, a major challenge is to secure an agreement among them to operate the certification system in a cooperative manner. It should be noted that the project is difficult to implement unless related agencies work together under the unified objective to "build the environment to support human resource development for small- and medium-sized parts manufacturers in the country, which would otherwise be incapable of providing employee education and training on their own." Thus, the understanding of related agencies about the project's intent and their support constitute the project's key successful factors.

(4) Support from the Japan Vocational Ability Development Association (JAVADA)

The project needs to depend much on know-how and experience relating to the Japanese skill certification system, which has been extensively utilized for the establishment of the certification system in Thailand. Thus, the project should start upon the approval of the Minister of Welfare and Labor and the Japan Vocational Ability Development Association (JAVADA) for use of their proprietary information and know-how in relevant fields.

(5) Continuous support from the Pakistan government and the automobile industry

It is important to realize that the establishment of the skill certification system, as proposed under the project, is only the first step toward the ultimate goal of strengthening competitiveness of the Pakistan automobile industry. After JICA's support has completed and the project has started up, permanent and full-fledged support should be maintained by the Pakistan government as well as the automobile industry.

Project No.C-1 New Financial Loan Program for Technology Acquisition Support

1. Rationale:

Technology Acquisition Support Scheme (TASS), planned under the Auto Industry Development Program (AIDP), has been designed to support technology acquisition efforts of auto parts manufactures through matching "grants" for the purpose of enhancing their technology levels and encouraging localization. The scheme was expected to serve a powerful instrument to strengthen the supplier base by providing up to 50% of fund required for technology acquisition by parts manufacturers. Despite of strong needs, however, it has not been implemented due to budget constraint that prohibits the securing of program funds. Under this two-step loan program, the Government of Pakistan will provide "a concessional loan", which source fund is obtained from the Japanese yen loan, for eligible local auto part manufactures to cover up to 70% of the total investment requirement. Note that the maximum loan amount per project is assumed to be 50 million Pakistani Rupees.

Technology acquisition by parts manufacturers can be made in a variety of forms, typically including licensing (involving patents and other intellectual property rights), to technical support and training, and joint venture (J/V). Also, the new program is expected to cover the import of production equipment and systems (which is not covered by TASS). It primarily aims to help parts manufacturers to improve or upgrade products and production systems, achieve better quality control, reduce production costs, and/or improve productivity. As the Pakistan auto industry is not in a position to undertake its own research and development initiatives, the program intends to promote the upgrading of the industry's technology levels by acquiring latest technology and production equipment.

2. Objective:

To ensure availability of funds to promote modernization of parts manufacturers' production equipment and improvement of their technology, thereby to enhance their technology levels and encourage localization.

3. Program Description:

The program will provide funds in the form of a yen-based two-step loan from GOP to commercial banks, then to local auto parts manufactures. Local commercial banks are expected to serve as handling banks and will be selected by the Pakistan government according to the requirements (being a financial institution that respects the objective of the program and is capable of providing the loan in a fair manner). Note that the program is combined with concept of AIDP's TASS and is designed on the basis of TASS. Program outline is summarized below

3.1 Eligible Entities

The entities which fulfill the following criterion will be considered eligible to avail the support under the program.

i) Auto parts manufacturers supplying their products motor vehicle assemblers in and outside the country (including motorcycle manufacturers)
ii) Being registered with a local tax office
iii) Having suitable in-house equipment and capability to manufacture auto parts
iv) Being incorporated as a limited liability company
v) Being capable of making full disclosure on its financial and other status as required

3.2 Eligibility Criterion

Any of the following undertakings is eligible for the program.

i) A joint venture with a foreign corporation (provided that technology to be acquired is not part of equity contribution)
ii) Procurement of technology through licensing.
iii) Technology acquisition in the form of design and engineering service, manufacturing knowhow, technical support, or training.
iv) Transfer or assignment of patents, industrial property rights, or registered designs
v) Procurement of production equipment and materials (not including used ones)

3.3 Examination of Loan Application

(1) Examination procedures

The applicant has to apply to EDB with necessary documents. When the application is found to meet requirements, EDB sends it to a handling bank (named by the applicant) for further examination. Thus, EDB and the handling bank will jointly examine the application. While EDB will check technical matters (program eligibility), the handling bank will look into business viability. Documents to be attached to the application include the business plan and financial statements, as well as documents relating to the intended technology acquisition.

(2) Required documents

i) A detailed business plan (including the nature and purpose of technology acquisition and expected benefits)

ii) A copy of a relevant agreement (such as a licensing agreement or its draft, setting forth the method for payment of license fee, protection of technology and IPR, or equity contribution in the case of a joint venture)

iii) Financial statements in the recent three years (in the case of a startup company, latest operating results)

iv) Production and sales plans for the next three years

v) Other documents requested by the handling bank

3.4 Loan Terms and Conditions

i) Maximum loan amount per project: 75 million rupees (The total value of each project is limited to 100 million rupees, requiring the applicant/recipient to finance the entire amount in excess of the upper limit.)

ii) Interest rate: KIBOR (official inter-bank rate) plus 2%

iii) Repayment period: Seven years at maximum, including the maximum grace period of two years

iv) Collateral requirements: According to the conditions set by the handling bank

4. Expected Program Output

i) Technology acquisition in various forms is invigorated to enable the local auto parts industry improves its technology levels.

ii) As a result, quality of locally made auto parts is improved to promote localization.

iii) The technological base of the Pakistan auto industry is strengthened, allowing it to make increased contribution to the country's GDP and exports.

5. Implementing Institutions

- Engineering Development Board
- Bank of Pakistan
- Local Commercial Banks

6. Financing Sources

(1) Program fund base (3.5 billion Pakistan Rupees)

- Japanese yen loan (3 billion yen) by the Japanese government
- Counter fund by the Pakistan government (500 million rupees)

(2) Disbursement schedule

First year: 800 million rupees (20 projects)

Second year: 1,600 million rupees (40 projects)

Third year: 1,600 million rupees (40 projects)

Note: The average amount of loan per project is assumed to be 40 million rupees, and in the third year, the repaid loans will be used for new loans.

7. Implementation Schedule

The program will start with consensus building within the Pakistan government.

i) April – June 2011: Development of a draft program plan by EDB (or the request to JICA for technical assistance in detailed design)

ii) July – December 2011: Discussion and agreement at ECC

iii) January – April 2012: Detailed design and negotiation with the Japanese government

iv) September 2012: Formal announcement on the program

v) September – December 2012: Selection of local handling banks and development of promotion tools

vi) January 2013: Program launching and acceptance of loan applications

vii) January 2013: promotion and advertisement activities through PAAPAM, SMEDA, and handling banks

8. Key Considerations

i) When the yen loan by the Japanese government becomes available for program implementation, the Pakistan government needs to guarantee the repayment of the yen loan.

ii) As the program is derived from the TASS program providing 50% grant, it should offer favorable terms and conditions to borrowers, so that due consideration should be given to the guarantee of the future exchange rate versus the yen, and loan and collateral conditions.

iii) EDB needs to build up resources required to perform technological assessment.

iv) It is imperative to clearly define "technology acquisition" eligible to the program, including its content and method.

Project No. C-2 Promotion Loan Program for Replacement of Commercial Vehicles

1. Rationale:

This program is proposed as an instrument to give financial relief to users of commercial vehicles, who will be affected by "Vehicle Inspection System and Facilities Development Project" as proposed here, assuming that the project is effectively implemented.

In Pakistan, a large number of illegally remodeled buses and trucks are used as the popular means of public transportation. Also, taxicabs are dominated by cars that are 20 – 30 years old and are barely serviceable. Clearly, these vehicles have large impacts on society in terms of safety and the environment, and it is desirable for both industry and society to improve the situation as early as possible. At present, vehicle fitness examination is formally conducted by provincial governments for commercial vehicles, but it does not service the original purpose due to various unfavorable conditions. Under the Study, "Vehicle Inspection System and Facilities Development Project" is proposed to ensure effective enforcement of the vehicle inspection system. If the project is successfully implemented, however, a large number of vehicles will be excluded from the roads because of noncompliance with safety standards. As many of them are commercial vehicles (buses, trucks and taxicabs), their owners (mainly transport service operators) will likely face difficulty in making a living. This program proposes relief measures for them. At the same time, it serves as incentive for vehicle owners to buy automobiles with better safety and fuel economy and smaller environmental loads.

2. Objective:

To create a low interest rate loan program to encourage owners of commercial vehicles, which do not comply with environmental standards or have been used for an extensive period of time, to purchase new vehicles for the purpose of replacing such vehicles, with the maximum amount of loan being Rs.3 million per vehicle.

3. Program Description:

A general outline of the proposed loan program is summarized as follows.

(1) Eligible vehicles

The loan program will be applied to medium-sized and large buses, trucks (regardless of displacement), and taxicabs (cars and rickshaws), which are used for commercial purposes and have been used for more than 20 years after registration or have not complied with safety and environmental standards at the time of periodical examination conducted by provincial government.

(2) Eligible person

1) Any person who has Pakistan nationality and makes a living by using a commercial vehicle that meets the above requirements;
2) Any person who intends to purchase a new car (not a used car) for the purpose of replacing a car that meets the above requirements;
3) Any person whose age is between 18 and 45 years old and who lives in the same address for more than two years; and
4) Any person who does not have a criminal record or a history of default.

(3) Loan procedures

1) The amount of loan per vehicle is limited to Rs.3 million.
2) The applicant submits an application to EDB via a car dealership, accompanied by a copy of a document proving that his old car has been used for more than 20 years after registration or a cop of an official notice that the car has failed the formal inspection. The applicant also specifies the new car's purchase price and a desired amount of loan.
3) EDB carefully examines the applicant's requirements and the application documents and notifies its decision to the bank handling the application and the applicant. While EDB may request correction for any omission or error found in the documents, it will recommend approval of the loan application to the bank so far as the application meets the requirements.
4) The bank handling the application requests the applicant who has received the recommendation from EDB to submit a statement of credit guarantee signed by the applicant and another person (not asking for collateral).
5) The bank executes the loan as soon as it has received the required documents.

(4) Loan terms and conditions

1) From the total loan value, the amount equivalent to 10% is deducted as the first repayment and the remaining amount is transferred to the account designated by the bank.
2) The interest rate is KIBOR + 1%, with the repayment period of maximum seven years (depending on the loan value) and the grace period of 6 – 12 months.

Note that the ownership of the purchased car belongs to the borrower because of the loan program.

4. Expected Program Output

(1) Replacement of old cars will be encouraged to improve traffic safety and alleviate environmental pollution, thereby contributing to a better society.
(2) Sales of new cars will increase, leading to the invigoration of the automobile industry.
(3) An increasing number of car owners will receive vehicle inspection to increase social recognition and acceptance of the system.

5. Implementing Institutions

- EDB
- NBP

BNP has experience in providing a similar loan program under the campaign to encourage the purchase of new auto-rickshaws, so that it is a primary candidate for the financial institution handling the loan, if conditions are met.

6. Financing Sources

BNP will fund the program budget of Rs.7.5 billion per year (based on the estimate that the average amount of loan is Rs.1.5 million and the number of loans executed per year 5,000 cases).

NBP will manage by establishing a special account.

7. Implementation Schedule

As the prerequisite to the program, the vehicle inspection system must be operated properly. The program should be able to start after that.

Specifically, after the implementation of the vehicle inspection system has been finalized, feasibility study will be conducted for the loan program by checking key factors such as the number of potential users, the service area, the average sales price, and loan conditions.

Based on the results of the feasibility study, a detailed program plan will be formulated. However, a specific time table for these activities is not clear.

8. Key Considerations

Fair and appropriate program operation

Under a similar loan program introduced in the past (NBP Karobar Transport), loans were mistakenly extended to persons who did not meet requirements and some applicants used the loan for other purposes. For the proposed loan program, care should be taken to ensure fair and proper management and prevent misappropriation.

Project No.C-3 Export Promotion of Automobiles and Automotive Parts

1. Rationale:

In 2008/09, exports by the engineering sector, including automobiles and automotive parts, amounted to Rs.812 million, accounting for only 4.6% of the country's total export value of Rs.17,627 million (Note 1). Increasing the sector's export share is considered to a major challenge if the country is to promote balanced industrial development. Within the framework of government industry policy, export promotion policy is mainly managed by two organizations, i.e., Trade Development Authority of Pakistan (TDAP) under the MOC and Federal Bureau of Revenue (FBR) under the MOF. TDAP was created in 2006 with the mission to promote exports of products made in Pakistan. It implements a variety of export promotion programs including the Export Finance, promotion of participation in foreign trade fairs, the sending of study missions, and development and maintenance of a database covering export companies. Traditionally, it has focused on support for the textile industry – the country's largest export sector, while the automobile and automotive parts subsectors were not given of priority, probably because of the lack of international competitiveness in the export market and the shortage of staff members who have expert knowledge on the industry.

Export promotion programs currently implemented or planned to be implemented by TDAP are summarized below.

(1) Exemption and reduction of import tariffs on capital and intermediate goods relating to export products (FRB)
(2) Support for participation in foreign trade fairs and the sending of overseas missions
(3) Export subsidy of US$50 for each two wheeler exported (to be resumed in FY2011)
(4) An export promotion package based on National Engineering Exports Development Strategy (NEEDS), which is currently in the planning stage at EDB. A total of 12 industrial product categories including automobiles and automotive parts have been selected as priority export items, and export promotion measures for each item are being proposed.

Generally, automobile exports by automakers operating in Pakistan are governed by global sales strategies of their parent companies (headquarters). Thus, local automakers may not be in a position to establish their own export strategy. Nevertheless, it is imperative to examine as to whether they are making competitive products, i.e., whether automakers made in Pakistan have international competitiveness in terms of quality, cost and delivery time. While achieving international competitiveness is the primary responsibility of automakers, the government is expected to develop the business environment that facilitates exports.

As for automotive parts, their exports are much more difficult that automobiles. Pakistan's automotive parts industry and their products are not known in the world market. It is therefore important to make their presence known to global automakers and other potential customers. They need to launch marketing activity targeting the global marketplace.

In consideration of these factors, the program proposes export promotion measures for automotive parts, focusing on market development.

2. Objective:

To promote exports of automotive parts from Pakistan by improving the export environment through implementation of export promotion measures that includes synergetic collaboration of the industry.

Note that ongoing export promotion measures for assembled vehicles, including two wheelers, will be continued.

3. Program Description:

(1) Formulation of strategic plans for export promotion of automotive parts

1) Based on NEEDS that is in the planning and examination stage, the strategic plan focusing on the automotive parts industry will be formulated. For the purpose of executing the plan effectively, EDB will establish the Automotive Parts Export Strategy Committee within AIDC.

2) The committee members will include representatives of EDB, the MOI, TDAP, PAAPAM, and consultants and other outside experts.

3) The strategic plan will cover the following items.
- Delineation of potential and priority markets, countries and regions
- Detailed standards and requirements to be met by priority markets and countries
- Export procedures in priority markets, countries and regions
- Priority parts and export targets
- Export promotion support programs

- The export promotion system in the country
- The export promotion plan, schedule, and budget

Aftermarkets for automotive parts used for periodical replacement (especially the Middle East, East Africa and Central Asia) will be set as a priority item. Prospective aftermarket parts are as follows.

- Oil filters
- Air filters
- Radiators
- Car Seats
- Wheels
- Plastic parts products
- Batteries
- Rims and spokes for two-wheels vehicles
- Tires and Tubes for two-wheel vehicles

4) Specific support programs

With reference to 28 export promotion programs proposed in NEEDS, those that should be given of priority in relation to exports of automotive parts are identified and designed in detail. In consideration of the condition facing the automotive parts industry at present, the following programs should be examined for detailed design.

- Market Surveys and Information of Potential Market by TDAP (and consultants)
- Trade Fairs/Exhibitions/Trade Delegation supported by TDAP
- Testing Laboratories and Standard Certification by PSQCA, EDB and Pakistan Automotive Institute (PAI) (if established)
- Trade Diplomacy and Trade Missions Abroad
- Withholding Income Tax on Exports

Other recommended programs are the creation of a Web site to introduce the Pakistani automobile industry by PAAPAM or TDAP, and the planning and organization of joint events with overseas trade promotion organizations (such as JETRO and KOTRA).

(2) Government approval and budgeting for the strategic plan

The strategic plan for export promotion of automotive parts, as formulated above, should be approved by ECC, together with budget allocation by related organizations. Meanwhile, the parts industry needs to launch actions required for export promotion as far as their resources permit, and should not wait for the government budget. To do so, it is important to facilitate information sharing within PAAPAM, starting with the strategic plan formulation stage.

(3) Program implementation

Each organization will implement its own export promotion measures according to the planned schedule.

(4) Evaluation of progress of promotion programs and export plans

Progress of each program will be checked periodically, and any program that is found to produce effect within a specific period will be discontinued and corrective measures will be taken, such as reallocation of its budget to other programs. Note that it is difficult to accurately measure the results produced from program implementation, evaluation should be made by using simple indicators, such as the actual use of the program or the number of inquiries.

4. Expected Program Output

(1) The government will provide official support for export promotion of automotive parts, in place of individual efforts, and exports of automotive parts will increase and the development of the automatable industry will be driven.

(2) Increased exports will provide incentive for the industry to improve quality and cost of their products supplied in the country, thereby to help improve recognition of the Pakistani automobile industry in the global market.

5. Implementing Institutions

- TDAP
- EDB Automotive Wing (if established)
- MOC
- MOF
- PAMA
- PAAPAM

If EDB Automotive Wing is established as planned, it is assumed that TDAP, FBR and the automobile industry will work together in institutional buildup, and TDAP will be responsible for program implementation. Note that cooperation of related ministries, including MOC and MOF, is essential in relation to program implementation. Until EDB Automotive Wing is not established, EDB's Business Development Division will take charge, under support of Policy Division.

6. Financing Sources

Program budgeting

The operating budget for each program will have to be secured by its implementation organization (minister/agency).

As for elements of each program, which can use support or assistance from international donor organizations such as CBI Netherlands, the foreign chamber of industry and commerce, and foreign trade associations, cooperation will be actively sought.

7. Implementation Schedule

The first step is to secure the program budget required for the next year after an agreement within the Pakistan government. Then, the program will be implemented according to the schedule.

8. Key Considerations

Various government organizations will be involved in the program, not only TDAP, but EDB and FBR. As a result, an integrated chain of command and communication channel should be established prior to the start of the program. Also, opinions of trade associations, which are beneficiaries, should be reflected effectively.

Project No.D-1 Pakistan Automotive Institute (PAI) Establishment Project

1. Rationale:

Government service relating to the automobile industry is under jurisdiction of EDB under the MOI. However, its scope of service is limited to promotion of the automobile industry as part of the engineering sector. It is primarily responsible for the industry's development policy formulation and auditing of imported materials (application of preferential tariffs). Meanwhile, automobiles as an industrial product are closely associated with society in terms of safety, the environment, and other areas, not to mention transportation. Also, the industry is linked to a variety of industries and has large impacts on the national economy. Therefore government is expected to take effective actions for healthy development of the automobile industry, including R&D and human resource development. These tasks are beyond EDB's capability, calling for cooperation with related government organizations as well as technical support organizations.

Here, it is proposed to establish an organization specialized in the planning and implementation of activities relating to the development of the automobile industry (in particular, research and study and technical guidance relating to quality improvement, safety inspection and environmental preservation, together with the development of a database covering technical information relating to the automobile industry). Tentatively named "Pakistan Automotive Institute (PAI)," the organization will be established by referring to activity, operation and management of similar organizations in other countries, specialized in research, inspection and education relating to the automobile industry.

In the exchange for the establishment of PAI, it is assumed that AT&TC, which is operated as an inspection organization covering materials and quality of automotive parts, will be closed. Thus, PAI will be established by inheriting assets of AT&TC. Although AT&TC has played a certain role in providing inspection and technical guidance service for automotive parts in Karachi, it is less and less capable of meeting the needs of private enterprises due to the aging of equipment and the operating budget restraint. However, there is still a strong need for inspection and technological guidance service. It is therefore important to review past activities of AT&TC and find ways to operate such organization on a continuous basis.

2. Objective:

To establish a research and technical support organization specialized in quality improvement, safety inspection, environmental preservation relating to automobiles and automotive parts, which can meet the industry's needs, thereby to reinforce the foundation of the Pakistani automobile industry and improve international competitiveness.

3. Program Description:

AIP will be established and operated in the following steps.

(1) A preparatory committee for founding PAI will be established under supervision of EDB.

The committee will be established within AIDC and will consist of representatives of PAMA, PAAPAM, AT&TC, PIDC, and the MOI's Vice Minister Office. The primary purpose of the committee is to formulate detailed plans for the establishment of PAI as well as related bill.

(2) The law for the establishment of PAI will be enacted, covering PAI's location, its organizational structure, scope of activity, and operation and management.

It is proposed that PAI will be responsible for the following activities.

1) Material and product testing
2) Operation of a technical training course, and provision of consultation and automotive-related information
3) Occupational skill certification for the automobile industry
4) Testing for the homologation system
5) Research and study on automotive related topics to make recommendations on policies, strategies and development plans for the industry

To conduct the above activities, PAI will consist of the following four divisions:

- Testing Certification Service Division
- Training and Information Service Division
- Skill Certification Service Division
- Research and Policy Support Division

(3) Closure of AT&TC and transfer of assets to PAI

AT&TC will be closed and its assets will be transferred to PAI. This means that PAI will take over current activities of AT&TC, including testing and inspection service for automotive materials and parts, and human resource development service (such as seminars). While it will take some time to proceed with required legal procedures, the MOI's Vice Minister Office is expected to play a leading role in the transfer process.

(4) Collaboration with EDB, PSQCA, and AT&TC

PAI will collaborate with the three organizations in the following areas.

- EDB: To collaborate with EDB in relation to the establishment of PAI and its activities. In particular, PAI will conduct testing service under the homologation system, as commissioned from EDB.

- PSQCA: Industrial standards and vehicle safety standards (PAI will play the role of AIDC Standard Committee.)

- AT&TC: Basically, AT&TC will be resolved in exchange for the establishment of PAI. Its land and buildings will be primarily transferred to PAI (given of highest priority), together with testing equipment that can be used by PAI.

4. Expected Program Output

(1) PAI will conduct activities relating to automobile industry development, which EDB could not handle, so as to help build up the foundation of the Pakistani automobile industry and to improve its international competitiveness.
(2) The increase in the number of testing organizations will provide better service for the auto parts industry, thereby to accelerate improvement of product quality.
(3) The social environment relating to automobiles in Pakistan will be improved in terms of safety and the environment.

5. Implementing Institutions

- MOI Secretary General Office
- EDB

Support by PAMA and PAAPAM

6. Financing Sources

The cost for the establishment of PAI, including its preparation, will be funded by the Pakistan side. Note that capital contribution will be invited from PIDC, PAMA, PAAPAM and other related organizations, in addition to government.

In addition, support from international donor organizations will be considered as to the provision of a testing facility for homologation and procurement of new testing equipment.

7. Implementation Schedule

In establishing PAI, understanding and support of the automobile industry – the potential user of PAI's service – is indispensable. Consensus building in the industry should be made over time by examining AT&TC's activities in order to determine as to what function PAI should perform and how it should be operated. In the process, discussion should focus on a general framework in order to avoid conflicts that may arise among stakeholders, and EDB will function as the secretariat and propose detailed plans. It is expected to reach a conclusion by December 2011.

Then, preparation for the legislation relating to the establishment of PAI, dissolution of AT&TC, collection of capital contributions, and the recruitment of the general manager and key personnel will be started in early 2012.

It is targeted that PAI will be formally established in April 2013.

8. Key Considerations

In implementing the project, collaboration among related organizations is critical. In particular, a formal implementation system should preferably be developed by taking into account the following needs.

(1) Leadership of the MOI and consensus building within the industry

As pointed out earlier, PAI cannot be established without an agreement by the automobile industry. In this connection, the MOI should announce the need for PAI as part of policy implementation and mobilize the industry stakeholders to build consensus toward the goal.

(2) Sustainability of the new organization

To ensure that PAI will operate on a sustainable basis, its scope of activity should go beyond inspection and technical guidance services currently provided by AT&TC. For instance, TAI of Thailand is a sole public organization to examine safety of motorcycle helmets and glass used for motor vehicles, which warrant a stable stream of revenue. Also, it plans to add revenue sources, such as administration of the skill certification test for the automobile industry, publication of related textbooks, and the organization of seminars. PAI should also seek ways to develop and maintain stable income sources.

Project No.D-2 Re-strengthen the EDB Automotive Wing

1. Rationale:

Government policy for the automobile industry in Pakistan has undergone dynamic changes in the recent two decades, from nationalization to privatization, and from localization policy to tariff regulation (TBS). In 2006 when unit production of assembled cars was about to reach the historic high, EDB formulated a five-year development plan (2007 – 2011) called the Automobile Industry Development Program (AIDP). However, as the Pakistani economy entered high inflation and recession due to the global economic crisis and the rapid rise in crude oil prices in 2008, which were aggravated by the depreciation of the local currency and the rapid rise in interest rates. As a result, automobile sales plummeted and AIDP faced difficulty from its beginning. Nevertheless, some manufacturers in the automobile industry relied on AIDP and made substantial capital investment on the basis of AIDP's target sales in the five years. However, development measures announced in AIDP were not implemented due to financial difficulty and some companies suffered large loss partly because of the recession. In the meantime, sales prices have risen and the government is beginning to shift policy toward the easing of import restriction on used cars. Overall, the automobile industry is dissatisfied with the lack of government's long-term policy for the automobile industry as well as its ad-hoc measures. It thus strongly hopes that EDB will fulfill its expected role.

EDB has 70 staff members (with full strength of 90), but none of them are specialized in the automobile industry. In the Policy Group, Deputy General Director and one staff member mainly deal with the automobile industry. Similarly, none in the Sector Group is fully in charge of the automobile industry. According to EDB, Automotive Wing has already existed due to necessity of auto industry section. It is proposed for a title "Re-strengthen the EDB automotive Wing". While the automobile industry is positioned as a major industry as part of the national industry policy, actual government policy is considered to be insufficient. Under the present project, the JICA study team proposes the implementation of the type certification and car inspection systems and the establishment of the Pakistan Automotive Institute (PAI). In putting these proposals into practice, EDB is expected to play a major role. It is therefore proposed to establish a new division specialized in the automobile industry, tentatively called Automotive Wing, which role, scope of service, and organization are outlined below.

2. Objective:

To establish a division specialized in the automobile industry within EDB for the purpose of establishing unified government service – in addition to traditional policymaking and program formulation – such as the securing of automobile safety and the development of vehicle-related standards, thereby to ensure further development of the Pakistani automobile industry.

3. Program Description:

To re-strengthening Automotive Wing as a new division specialized for the automobile industry, with around 10 staff members. (They may be increased according to expansion of business contents.)

(1) Scope of service of Automotive Wing

1) Formulation of automobile industry policy
2) Collaboration and coordination with related organizations in relation to implementation of automobile industry policy
3) Implementation review of automobile industry policy, and candidates' appraisal to apply tax reduction and special credit.
4) Examination of automobile-related industrial standards, and recommendations (cooperation with PSQCA)
5) Examination of automobile-related safety standards, and recommendations (cooperation with provincial governments)
6) Supervision of the automobile inspection system and licensing of private inspection facilities (cooperation with provincial governments)
7) Operation and management of the type certification system (testing service commissioned to PIA)
8) Promotion of cooperation with the automobile industry (private sector)

(2) Role of Automotive Wing

1) To play the central role, within the Pakistan government, in policy formulation relating to the automobile industry, including tariff policy, and to operationalize the automobile industry-related policy through the ECC.
2) To develop draft industrial standards relating to automobiles as well as safety standards and to operationalize them through consultation with related organizations.
3) To introduce the type certification system and to manage its operation.
4) To monitor the implementation status of the automobile inspection system in cooperation

with the provincial government responsible for its operation, together with inspection and licensing of private inspection facilities.

(3) Organization of Automotive Wing

1) General Director (1)

- Management and supervision of overall activity of Automotive Wing

2) Deputy General Director (1)

- Assistance of GD's work, and overall control of automobile industry policy formulation and appraisal to apply tax reduction and special credit

3) General staff members (8)

- Policy formulation, implementation and review (2)
- Standards (1)
- Type certification system (2)
- Vehicle inspection system (2)
- Secretary and general administration (1)

Among the above activities, EDB is already carrying out policy implementation and the development of standards under support of trade associations. In addition, staff specialized in the type certification system and the vehicle inspection system will be appointed. Note that, the number of persons indicated above is intended for the preparation period, except for policy formulation.

As for factory standards (industrial standards by vehicle type), PSQCA under the Ministry of Science and Technology enforces the PS mark to be affixed to two wheelers and rickshaws. Although they are called industrial standards, they are treated as safety standards to reflect the fact that industrial standards in Pakistan are vaguely positioned because of the absence of the type certification (homologation) system and the vehicle safety standard. It is therefore proposed to establish clear definitions of standards relating to automobiles (including type certification, safety, and industrial standards) and formalize them in consultation with related organizations.

The vehicle inspection system in Pakistan is operated by state governments as the Vehicle Fitness System. It is widely known, however, that it is operated perfunctorily. There are two major issues relating to the present system. First of all, Motor Vehicle Ordinance 1965 and Motor Vehicle Rule 1969 are about to welcome the 45th anniversary but have not been entirely reviewed or amended, except for minor revisions by each provincial government. The ordinance was drafted by the Ministry of Law and Justice, requiring the parliament's approval. The rule can be amended under an agreement between the Ministry of Communication and the Provincial Transport

Authority. It is recommended to extend the inspection period from six months to one year and to modify and update 70 fitness items from Section 155 to 215. These items should be periodically reviewed to reflect technological advancement. EDB needs to assist the MOC and PTA in reviewing the fitness items from technical aspects.

Then, PTA is expected to improve operation of the fitness office significantly. EDB should provide technical support in relation to the institutional setup and implementation of necessary equipment.

As for the homologation system, it is proposed to implement it as a new system. Thus, a system suitable for the country needs to be developed by studying cases in other countries. As the first step, it is recommended to participate in WP 29 under UNECE in order to develop the homologation system in cooperation of outside organizations.

Finally, it is recommended to consider the PTA licensing system for repair shops that are currently operated freely, while letting EDB approve formally repair shops that meet requirements as private inspection facilities.

4. Expected Program Output

EDB is broadly involved in government service relating to the automobile industry, so as to promote unification of policy formulation and system design, thereby to ensure integrated automobile industry development policy.

5. Implementing Institutions

EDB will serve as the implementation organization. The proposed organizational reform will require collaboration with the MOI, and the development of related standards and the introduction of the vehicle certification system will entail cooperation of respective organizations.

When EDB secured necessary staffing and budget, there is a possibility to request donors to send a suitable adviser.

6. Financing Sources

At EDB, some positions are vacant, but the annual budget covers these positions. When Automotive Wing is established, this unused budget should be first used.

On the other hand, the implementation of the type certification and vehicle inspection systems will require large facilities as well as necessary equipment. To finance construction of these facilities and procurement of equipment, a new financial source needs to be secured, including cost sharing among stakeholders.

7. Implementation Schedule

The decision to establish Automotive Wing is dependent upon the decision as to whether the above activities are incorporated into EDB's scope of service. This means, it takes some time to examine these activities and their necessity. Specifically, the examination will have to be made after the submission of this report and before the request for the following year's budget, and EDB will form the conclusion by the end of September 2011. If possible, necessary items will be included in a budget proposal for FY2012/13 (by the end of December), financial sources will be secure, and then Automotive Wing will start up under available staffing and by the end of the fiscal year (May 2013).

8. Key Considerations

At present, the MOIP is formulating a new national industrial policy. If the policy includes the future direction of automobile industry policy and the relevant government system, it will serve as a big push for this project.

Project No.D-3 Project for Strengthening of PAAPAM Organization

1. Rationale:

PAAPAM was established in 1988 for the purpose of fostering mutual friendship among automotive parts manufacturers in Pakistan, raising their place in the national economy, and promoting development of the automotive parts industry. Its major activities include: 1) support for technological upgrading of automotive parts manufacturers; 2) policy recommendations to the government in relation to promotion of localization; and 3) the strengthening of cooperation among automotive parts manufacturers. As of 2010, PAAPAM has 253 member companies.

While PAAPAM is supposed to conduct activities in a variety of fields, it is far from providing effective support for member companies or conducting influential lobbying activities due to various constraints, e.g., the lack of knowhow relating to organizational management and the shortage of financial and human resources. (Its Lahore and Karachi offices are staffed by two persons each.) While parts manufacturers' associations in other countries have similar problems, PAAPAM does not have sufficient resources to provide service for its members. This program therefore makes proposals to strengthen PAAPAM's organization and upgrades its activities.

In particular, program focus is placed on the enhancement of PAAPAM's member service on the basis of requests made by automotive parts manufacturers as well as similar activities by Auto Components Manufacturers Association of India (ACMA) and Japan Auto Parts Industries Association (JAPIA). Major activities of PAAPAM, ACMA, and JAPIA are compared in Table 1.

As seen in Table 1, PAAPAM's major activities do not include research and study on the auto parts industry or collaboration with counterpart associations in other countries, making a sharp contrast to ACMA and JAPIA. On the other hand, PAAPAM conducts activities to promote collaboration among member companies and provide support for technological upgrading, but member companies are not satisfied. Overall, PAAPAM has weakness in sending out information to its members and the outside world.

Table 1 Comparison of PAAPAM and Similar Overseas Associations

	PAAPAM	ACMA	JAPIA
Year of Establishment	1988	1958	1969
Membership (2010)	253	540	445
Qualification	Automotive parts manufactures	Automotive parts manufactures	(Regular Member) Automotive parts manufactures
			(Associate Member) Atumotive parts venders
			(Associate Member) Manufactures and venders of automotive related materials
			(Associate Member) Manufactures and venders of machinery and equipment for improvement of quality and performance
Cooperation with auto parts industry associoations in other countries	None	21 countries and regions including Japan	U.S., EU, APEC, Korea, and India
Major activities	1) Submission of policy reccomendations for promotion of localization of automotive parts	1) Submission of policy reccomendations for promotion of localization of automotive parts	1) Submission of policy reccomendations for promotion of localization of automotive parts
	2) Strengthning of collaboration among member companies	2) Strengthning of collaboration among member companies	2) Strengthning of collaboration among member companies
	3) Support for technological upgrading of auto parts manufactures	3) Support for technological upgrading of auto parts manufactures	3) Support for technological upgrading of auto parts manufactures
	4) Participation in overesea trade fairs	4) Participation in overesea trade fairs	4) Participation in overesea trade fairs
		5) Development and maintenance of the database covering member companies	5) Development and maintenance of the database covering member companies
		6) Research and study relating to automotive parts	6) Research and study relating to automotive parts
		7) International cooperation relating to auto parts and promotion of interaction with organizations in and outside of the country	7) International cooperation relating to auto parts and promotion of interaction with organizations in and outside of the country
			8) Updating of industrial standards relating to automotive parts and international harmonization efforts
			9) Environmental and safety related activities

2. Objective:

To reinforce PAAPAM's organization and upgrade its activities with an aim to improve the business environment for the automotive parts industry and to promote technological upgrading and export promotion, thereby helping raising the industry's place in the global industry and market.

3. Program Description:

Among the functions demanded for the industry association, the project focuses on the enhancement of the following three functions. Basically, it requires committed efforts of PAAPAM because the project purpose deals with its organization itself, outside resources will be used as far as relevant and possible.

(1) Strengthening of organizational management capability
(2) Strengthening of information dissemination capability
(3) Strengthening of technical support service for members

Strategic issue	Project purpose	Output	Action Plan	In Charge
1.Strengthning of organizational management capability	1.1 Strengthning of the fainancial base	- Introduction of a new annual fee rule according to company size (Rs.10,000 at present)	a) Detailed design and fixation of a proposed fee schedule b) Approved by the management board and the extraordinary members' meeting c) Introduction of the new fee schedule	1) PAAPAM Secretariats 2) Management Committee 3) Subcommittee of ・Finance & Taxation ・Members Service ・Special Initiatives
		- Increase in revenue from technical support service (assuming that participating companies will increase as a result of improvement service quality and frequency (including seminars and technical support service)	See "3.1 Strengthening of Technical Support."	1) PAAPAM Secretariats 2) Management Committee 3) Subcommittee of ・Seminar&Training
	1.2 Strengthning of management capability	- Establishment of working groups on specific areas (technology and skills)	a) Examination of classification by work groups (with reference to classification made in this report) b) Approved by the management board and the extraordinary members' meeting c) Holding of the preliminary work group d) Holding of periodical work groups	1) PAAPAM Secretariats 2) Management Committee 3) Subcommittee of ・Finance & Taxation ・Members Service ・Special Initiatives
		- Collaboration with auto parts industry associations in other countries	a) Approved by the extraordinary members' meeting b) Collaboration with JAPIA	1) PAAPAM Secretariats 2) Management Committee 3) Subcommittee of ・Exhibision & Exports
2.Strengthning of information dissemination capability	2.1 Development and publication of the database for member companies	- Development and publication of an on-line member information system	a) Conceptual design of database and cost estimation b) Approved by the management board and the extraordinary members' meeting c) Selection and approval of the company developing the database d) Buildup of the database by an outside contractor e) Publication of the database on the Web site f) Registration with JETRO's Global Link	1) PAAPAM Secretariats 2) Management Committee 3) Subcommittee of ・Information Technology & E-Marketing ・Publication, Commubication, & Media 4) Work group on specific technology/skill
3. Strengthning of technical support service for members	3.1 Strengthning of technical support	- Improvement of satisfaction of companies participating in seminars	a) Research and study on technical support needs among member companies b) Understanding of technical issues facing the auto parts industry through regular meetings with PAMA, and examination of corrective measures c) Detailed design of seminars in collaboration with international organizations, government organizations, and OEMs d) Selection of instructors (including request for international organizations and OEMs) e) Holding of seminars for upgrading industry-specific production technology f) Provision of common facilities for member companies	

4. Expected Program Output

(1) The improvement of the information dissemination capability will lead to the increase in PAAPAM's recognition and the involvement in industrial policy.
(2) Tangible and intangible support for member companies will help reinforce the foundation of member companies and promote the development of the automotive parts industry.
(3) The strengthening of the organization and its capability will facilitate quick response by the industry to various issues.

5. Implementing Institutions

- PAAPAM

The program will be implemented under the leadership of PAAPAM's executive officers and via the secretariat.

Also, efforts will be made to promote the close relationship with JICA and JAPIA and to ask their cooperation and assistance with regard to the strengthening of PAAPAM's organization, investment promotion, technical assistance, and human resource development.

Further, PAAPAM might be able to request dispatch of experts to donor institutions on condition that PAAPAM draw up the action plan, in which specific themes that PAAPAM would conduct in cooperation with member companies are clarified, and secure appropriate human resource and budget.

6. Financing Sources

Program budget

PAAPAM's annual revenue structure will be examined in detail in order to estimate the budget required for its activities. The primary source for the above activities will be the annual fee from member companies, and the fee system may have to be modified to secure the fund to finance required activities. Also, service fees will be charged for support relating to technological upgrading and information dissemination in order to raise additional funds.

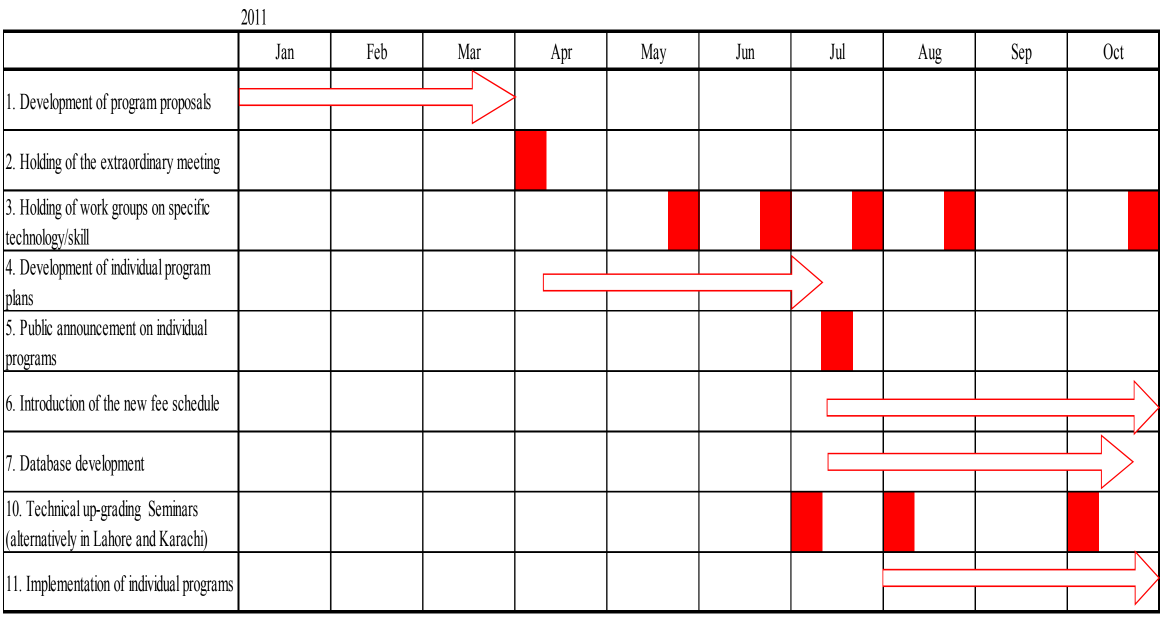
At present, PAAPAM has two offices in Lahore and Karachi. While the two offices are required due to a great distance between them, it is recommended to seek the borrowing of staff from member companies in order to minimize the cost to maintain the two offices and to divert the fund to program implementation. PAAPAM will hire only full-time employee at each office (manager), while other staff members borrowed from member companies will be paid by their own companies.

In addition, request for cooperation may be made to the Japanese government, with regard to some activities including the organizational reform, database development, collaboration with foreign organizations, and education and training of full-time staff.

7. Implementation Schedule

As the prerequisite to the program, an agreement should be made within PAAPAM. PAAPAM holds an annual general meeting for all the member companies at the end of September. To ensure the prompt startup of the program, however, it is imperative to reach an agreement among members as soon as possible. For this reason, it is proposed to hold an extraordinary meeting in March 2011, in Lahore, to discuss and agree on the program. Also, it is important to develop program plan proposals under the leadership of PAAPAM's secretariat and subcommittee prior to the extraordinary meeting. The preliminary schedule is summarized below.

(1) February 2011: Development of program plan proposals by the secretariat, the council, and the subcommittee (or request for technical assistance will be made to JICA with regard to program's detailed design)
(2) March 2011: The extraordinary meeting for member companies to form an agreement on program proposals
(3) March – July 2011: Program's detailed design
(4) July 2011: Public announcement on individual programs
(5) January 2012: Start of collection of the annual fee under the new schedule
(6) After January 2012: Program implementation according to schedule



8. Key Considerations

The following considerations should be given in the course of project implementation.

(1) Securing of understanding and cooperation of member companies

Program implementation, especially the increase in the annual fee, may be opposed by some members. To secure cooperation of all the members, it is important to specify benefits expected from program implementation, especially specific merits for participating companies.

(2) Securing of competent human resources

In relation to the strengthening of PAAPAM's organization, the secretariat managers and staff members are expected to play a central role. To do so, it is important to discover qualified persons who are familiar with the industry, and therefore to start recruiting activity early, especially among persons relating to the automotive parts industry and government. Also, efforts should be made to use resources of member companies, such as the borrowing of their staff, which is often done by industry associations in other countries.

(3) Needs analysis of member companies and formation of action plans

In order to obtain support from the government or an international donor organization, PAAPAM needs to submit action plans based on the needs from PAAPAM member companies. On that purpose, more communication should be taken within PAAPAM organization practicing the above mentioned (1) and (2).

(4) Continuous strengthening of PAAPAM's organization

The initiative to strengthen PAAPAM's organizational capability should be continued after the end of the program. While the JICA project may provide startup support, PAAPAM needs to establish a system to drive continuous efforts.

Project No. D-4 Incentive for Pakistan Basic Car

1. Rationale:

To achieve strong growth of the Pakistani automobile industry, effective measures need to be taken to increase unit production substantially. As exports of assembled vehicles cannot be expected for various reasons, the industry has to produce passenger cars affordable to the middle-income group in the country, if production is to increase from present 150,000 units to the 500,000 unit level over the next five years, with view to aiming at the 1 million unit level. This means considerable expansion of the customer base by offering popular (basic) cars that can attract potential customers who cannot afford to buy passenger cars and ride two wheelers (which three, four, or even six persons ride). At present, passenger cars are mainly purchased by companies including government organizations, suggesting that personal ownership is far from reality in Pakistan.

While passenger cars owned by individuals are not widely seen, two wheelers are the most popular vehicles and auto-rickshaws are operated as taxi. This situation is similar to that in Japan in the 1950s, during which car production was restricted under the occupation by the allied forces after the end of the war in 1945, and most passenger cars on road were used cars imported from the U.S. and were mostly used by government officials and corporate executives. On the other hand, two wheelers were churned out by numerous manufacturers, while three wheelers were used for carrying goods as well as passengers. Due to poor riding comfort, three wheelers were rapidly replaced by four-wheeled cars soon after the start of local production.

Needless to say, it is not practical to chase two wheelers and rickshaw from road traffic as they take root in the country as the popular means of transport. Yet, the Pakistan government should make efforts to provide a safer and reliable means of transport for people.

In Japan, the “people’s car concept” announced by the Ministry of International Trade and Industry in the mid-1950s triggered the hype for production of all-Japanese cars. Many companies seized the opportunity, developed prototypes, and launched commercial models. This appealed to general consumers who did not dream about buying their own cars. The “my car” era came, marking the beginning of motorization.

In India, car production exceeds two million units per year. In particular, the country favors small cars by providing tax incentive. The commodity tax on small cars (4m or less in body length and 1,200cc or smaller for gasoline engine cars and 1,500cc or less for diesel engine cars) is reduced to 10%, in comparison to 22% for larger cars. In Japan, classification of motor vehicles include the "light car" category, which originated in the "people's car concept. Its definition has been revised according to the changes in traffic conditions, such as nationwide construction of expressways, and today, 660cc or smaller cars with 3.8mm or less in length and 1.48m or less in width receive preferential tax treatment, allowing their owners to reduce the annual maintenance cost by half in comparison to medium-sized cars. With the small cost burden and space saving features, light cars account for 35.5% of all the vehicles in Japan and 52% in a province, where road conditions are suitable.

In this recognition, the program proposes development of a people's car (basic car) for Pakistan with view to creating a new popular means of transport, promoting the improvement of quality of life, and stimulating industrial development as a whole. Naturally, the people's car concept conceived in Japan in the 1950s cannot be applied to Pakistan in the 21st century. It is important to develop an original concept by taking into account the global trend in relation to automobiles and the automobile industry.

If successfully developed and commercialized, the basic car will create significant impacts on not only the automobile industry but the national economy as well by improving people's life and providing the much-needed consumer durable at low prices and with uniform quality. Owners of the basic cars will then trade up medium-sized cars as a result of the rise in income, spurring sales of higher grade cars and steady growth of the automobile industry. This growth cycle has been experienced in Japan and many other countries.

2. Objective:

To develop and commercialize the basic car targeting the medium income group in Pakistan in terms of affordable price and maintainability, thereby to foster a safer and more comfortable popular means of transport that meets local conditions and to provide a starting block for the automobile industry to launch full-fledged growth.

3. Program Description:

This program will be implemented in the following steps.

(1) Definition of the basic cars in terms requirements and the development of incentive

Under the leadership of EDB, the basic car concept will be outlined, including preliminary specifications and target prices, and incentives for production and purchase will be conceived.

Preliminary specifications would include engine size (displacement), dimensions (length, width and height), seating capacity, type of fuel used, and safety devices. Based on them, target prices should be established.

Incentives would include investment by licensed manufacturers, import tariffs on components and materials required for production of locally produced parts, and subsidy for the employee training cost. At the same time, tax incentive will be provided for consumers who buy the basic car, as done in India and Japan, including the lowering of an effective interest rate through subsidy for auto loans.

As for rickshaws, emission requirements will be eased for a limited period of time (say 5 years) provided that they are fueled by CNG. On the other hand, the anti-skid brake system (ABS) and body deformation performance at the time of collision should not be required.

(2) Recruitment of manufacturers

Based on the requirements set forth in (1) above, a public contest for designing and prototype production of the basic car will be held by inviting domestic and foreign automakers. While automakers operating in the country are considered to be in an advantageous position, care should be made to ensure an open and fair contest for all eligible and enthusiastic manufacturers, including those who have recently started operation in the country.

(3) Selection and licensing of manufacturers

EDB and the MOI will examine proposals submitted by companies participating in the contest and will select the best three companies under the name of the Minister of Industry. Then, the selected manufacturers will sign an agreement on production of basic cars according to the requirements set forth by the Pakistan government.

(4) Implementation of auto safety campaigns

In parallel to the reorganization of the vehicle inspection system, the series of automobile safety campaigns will be carried out jointly by EDB and PAMA, including law enforcement to reduce illegally remodeled or noncompliance vehicles on road and safety advice on two wheelers and rickshaws.

Finally, the government may have to consider an incentive program to encourage owners of 25 years or older cars to scrap them and buy basic cars.

4. Expected Program Output

(1) Improvement of quality of life as a result of pervasiveness of passenger cars
(2) Improvement of traffic safety
(3) Promotion of the automobile industry in general

5. Implementing Institutions

EDB and the MOI, in cooperation of PAMA

6. Financing Sources

As the project aims to realize the designing and production of the basic car by manufacturers selected through the public contest. Thus, these manufacturers will bear the design and production costs, without the government's financial assistance. Nevertheless, the government should bear related costs, such as the subsidy to supplement the employee training cost, as part of incentive to support development and production of the popular car.

7. Implementation Schedule

The Pakistan government will start preliminary study on the project in June 2011 and will make a final decision by the end of 2011. The study will cover research and study on similar programs in other countries and local user surveys of potential customers.

After a final decision has been made to implement the project, the development of requirements for the basic car and a roadmap up to the licensing of manufacturers will start in January 2012.

8. Key Considerations

(1) The project aims to supply the basic car at a price affordable to the current two wheel owners. Also, consideration should be given to minimize the maintenance cost, which provides an additional incentive for the middle income group.

(2) On the other hand, attention should be paid to emission control, which represents substantial portions of the automobile production cost. As Pakistan is expected to adopt the Euro-2 standards in due course, an additional cost of Rs.150,000 will incur and required parts will mostly depend in import. This means, some of currently localized parts may to be imported due to the inability of local suppliers to make Euro-2 compliant products. Today's automobile engines are computer controlled and local suppliers cannot make most of onboard control systems and components, which appear to take considerable time to develop in the country. Finally, CNG produces less detrimental substances than gasoline does, and the four-cycle CNG auto-rickshaw is exempt from Euro-2 compliance. It may be desirable to give the same treatment to the basic car in the first two years.

Project No. E-1 Development of the Automotive Homologation System in Pakistan

1. Rationale:

The word "homologation" comes from the Greek word "homlogeo," and has been originally used for certification of race cars by public organizations. It now means a government certification system to examine a new car model for the purpose of checking to see if the model can be launched in the market. In Japan, automakers, which plan to manufacture or market a new type of vehicle, make application to the government for technical examination concerning type designation of a new model. In Europe, most countries require homologation. In the U.S., the recall system and product liability suits are used in place of homologation.

In Pakistan, EDB and ENERCON are in the process of reconsidering the vehicle examination system to promote safety and environmental measures relating to automobiles. Also, the recall system may be introduced in future. As a result, a variety of tests need to be conducted, ranging from mechanical performance of automobiles, to safety, pollution control, and energy saving. Though PSQCA is implementing test for CM Licese, however the tests and examinations form the framework of the homologation system, which does not exist in Pakistan. If an original car according to Pakistan standards and specifications is designed, manufactured, and exported in the future, Pakistani automakers cannot rely on homologation by foreign companies and need to have their own system. In this sense, homologation is considered to be a key element of the future automobile industry in the country and serves as an important instrument to win confidence of users in and outside the country.

Technically, homologation requires a strict examination environment, such as strict temperature control and the use of a specified material, far more complex than a relatively simple vehicle fitness certification system in Pakistan, which takes only 10 - 15 minutes. It also takes long hours to complete, e.g., consecutive 50 hours by using machinery or a total of more than one month (in the case of Japan). So far as a car is not structurally changed, it can be deemed to maintain features that have been confirmed in the homologation process. These structural features can be visually checked under the vehicle inspection system to see if the car has not been remodeled, thus allowing the examiner to omit data check. Thus, homologation can help simplify the vehicle inspection process. For these reasons, it is proposed to examine possibility of introducing the homologation system for automobiles and evaluates its viability.

2. Objective:

To examine feasibility to introduce homologation in Pakistan and to make preparation for development of the formal system and provision of facilities and equipment, thereby contributing to the development of the automobile industry

3. Program Description:

To build the homologation system for automobiles, the following elements are required: (1) large land used as the automotive proving ground; (2) buildings and equipment to conduct a large-scale test; and (3) personnel capable of performing scientific examination and judgment. Thus, it is imperative to build up these resources in multiple steps.

(1) Preparation stage

First of all, it is important to investigate the current state of the homologation system in other countries. For this purpose, it is recommended to visit countries where an advanced homologation system is operated and to become a member of WP29 of United Nations-European Economic Committee (UN/ECE) so as to become familiar with mutual certification practice on a global scale.

The homologation system for automobiles is applied to all vehicle types, including passenger cars, two wheelers, buses, and trucks. Preparation should start with understanding of the system's actual mechanism and structure. Then, project design is developed by taking into account the requirements relating to Pakistan.

When basic policy is clearly established (the first stage), a law authorizing implementation of homologation for all vehicle types will be enacted, and an implementation system will be developed for two wheelers and three wheelers as the first phase. Assuming that homologation will be extended to the rest of vehicle types in the near future, two wheelers and three wheelers are selected because they are manufactured by a large number of companies and have export potential. As the first step, specifications for homologation of locally produced two wheelers and three wheels will be established. At the same time, a list of manufacturers and factories will be compiled to identify manufacturers producing 1,000 units per year for homologation. Examination will be made according to specifications submitted by each of the selected manufacturers. In the initial stage, examination will be carried out visually and manually at the manufacturer’s plant, and the examination method will be specified by law.

In the second stage, simple testing equipment will be purchased or made to conduct mechanical and physical tests for checking accuracy of specifications declared by each manufacturer. Using testing equipment will increase the number of repetitions considerably, say from 50 times under a manual test to 10,000, 100,000 or 500,000 times. The mechanized test is expected to take as much as 10 days to complete, and two vehicles will be borrowed from the manufacturer for two weeks and will be brought to the testing facility. In the process, the examination method will be refined and finalized. At the same time, the training of examiners will start at this stage.

In the third stage, the results of the first and second stages over the five-year period will be reviewed and decision will be made as to whether the original system will be operated for additional three years or should be revised, e.g., the updating of examination items, the increase in testing equipment, and/or the increase in vehicle types to be examined. If it is decided to increase the number of vehicle types, plans should be developed for acquisition of an additional proving ground and adequate funding. To perform driving tests, at least 5ha of land is required with a specially designed building that would cost twice as much as an ordinary laboratory building. Testing equipment can cost around Rs. 2-3 billion, depending on examination items. For instance, an exhaust gas examination system capable of testing all vehicle types costs around Rs.2 billion.

(2) Organizational Setup

While examination of two wheelers and rickshaws under the homologation system will not be carried out very frequently, around ten times per year, there will be the need for various administrative tasks, such as the acceptance of applications, notification of test results to applicants, the management of the examination board to accept or reject the application, and the issuance of the permit, as well as attendance at UN/ECE and communication with related parties. It is proposed to hire two persons to perform these tasks. In light of the fact that examination will sometimes take an extensive period of time in comparison to fitness examination, say 20 or 50 hours, it is assumed to hire three examines who should be familiar with automobile technology as well related technology information in other countries. In addition, it is assumed that administrative staff will assist examination work during the busy season. In the second stage, a total of five persons will be required.

On the government side, EDB's Automotive Wing will be in charge of homologation to conduct test at PAI mentioned in D-1. It will consist of ten experts in the field of automobile technology and the related legal system.

4. Expected Program Output

For Pakistan to become a major automobile producing country, understanding homologation is a prerequisite. This project should start at the level required to meet the present needs. Implementing the homologation system up until the second stage will help related parties to adapt themselves to the new system with testing site, while vehicle types are limited. More importantly, homologation is introduced to the Pakistan automobile industry. The project therefore serves as a stepping stone for the industry to go for a higher stage.

5. Implementing Institutions

- PAI (if established)
- EDB
- MoIP

6. Financing Sources

Pakistan side:

1) Salary and other costs relating to five staff members
2) Costs relating to participation in UN/ECE and the study tour to Japan, Malaysia and Thailand
3) Trucks used for business trips
4) Construction of the homologation workshop
5) Maintenance of testing equipment (electricity charge, plus annual calibration service on testing equipment by hiring two foreign experts for 10 days (Rs. 1.6 million))

Donor:

1) To send one short-term (one month) expert relating to legislation (three times per year, totaling two years)
2) To supply the following equipment (two units each) for the purpose of checking lights, brakes and speedometers of two wheelers and rickshaws (15.9 x 2 sets = Rs. 31.8 million):

・Headlight tester:	Rs. 4.8 million
・Side slip tester:	Rs. 0.3 million
・Brake and Speed meter tester:	Rs. 7.5 million
・Transport and packing:	Rs. 1.8 million
・Sea freight:	Rs. 1.5 million
Total	Rs. 15.9 million (the study tour in Thailand, will be required)

3) Exhaust gas test: Rs. 270 million (One testing equipment can examine both two wheelers and rickshaws, while two sets of rollers are required because of difference in tire positions between the two vehicles.)

Expert: One short-term (one month) expert (three times per year, totaling five years)

7. Implementation Schedule

It is assumed to take one year until the law is enacted to establish EDB's Automotive Wing and the budget is allocated.

1) First stage
   - Examination of two wheelers
2) Second stage
   - Mainly the modification of government specifications and physical examination by using simple equipment

8. Key Considerations

To establish homologation system in national policy, EDB's potential shall be enhanced in policy planning ability by increasing staff. They have to study effectiveness and feasibility sufficiently by keeping good relations with international organizations and prepare for that implementation.

Project No.E-2 Vehicle Inspection System and Facilities Development Project

1. Rationale:

In Pakistan, many aged vehicles (more than 20 years old) are seen on the road, regardless of vehicle type. According to EDB's data, the primary cause for traffic accident is poor vehicle maintenance, accounting for 45% of the total. As seen in other countries, Pakistan has a law requiring vehicle fitness certification for the purpose of securing traffic safety and pollution control, and inspection is conducted by provincial governments. In reality, however, the inspection system does not seem to be effective in accomplishing the goal set forth in the law, as certification covers commercial vehicles only (including buses, trucks and taxi cabs) and provincial governments do not maintain vehicle inspection facilities and equipment, and although the motor vehicle examiner (MVE) is formally appointed, inspection mainly relies on visual check. Although the law requires semi-annual inspection, few drivers comply with it. Vehicle fitness certification is meaningful only at the time of new vehicle registration, which requires the certificate issued by the MVE. It does not serve the purpose of ensuing examination of vehicle fitness at periodical intervals. Furthermore, neither Motor Vehicle Ordinance 1965 nor Motor Vehicle Rule 1969 – legal authority for compulsory vehicle inspection – have undergone without any amendment after their enactment[1].

In Pakistan, the ordinance means a law drafted (and revised) by the Ministry of Law & Justice and adopted by the parliament. On the other hand, the rule means a ministerial decree issued (and amended) by the federal or local government without the parliament's approval. As a result of decentralization, both of the ordinance and the rule may be added and revised by each province at its discretion, provided that it is specified at the end of the respective article with the name of the province. Section 46 of Motor Vehicle Ordinance 1965 lists activities undertaken by provincial government in relation to transportation and traffic regulation. Then, Sections 150 – 215 of Motor Vehicle Rule 1969 specify items relating to vehicle fitness. These items have been modified in the 1970s (ten times) and in the 1980s (three times), but no change has been made during the recent two decades, despite rapid advancement of automobile technology over the past 40 years. Also, these modifications have been made by provincial governments and the federal government has taken no part.

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[1] Additional sections by provincial governments

Both Motor Vehicle Ordinance 1965 and Motor Vehicle Rule 1969 are under the jurisdiction of the Ministry of Communication at the federal level and of PTA, Department of Transport at the provincial level. Actual fitness examination is conducted in each district under the supervision of PTA. Likewise, the division of responsibilities in relation to transportation between the federal and provincial governments is very complicated. As for road construction and maintenance, the MoC has the jurisdiction over expressways and sections of highways that straddle over two provinces, while province governments are responsible for construction and maintenance of highway sections in their respective provinces. Local roads and agricultural roads are maintained by provincial governments. The Ministry of Interior takes care of service relating to driver's license, regulation of traffic violation, traffic accidents via traffic police office, which is separated from provincial police office. This complex structure and division of roles is a major factor for preventing the government from enforcing the vehicle fitness certification system strictly and effectively.

In consideration of these circumstances, this program is proposed to develop a vehicle fitness certification system suitable for current conditions in Pakistan by reviewing and revising the system's infrastructure, including the legal system, the public administration system, inspection facilities, and the training examiners.

2. Objective:

To establish a vehicle certification system to ensure that vehicles are examined by a designated government organization (or its agent) according to formal safety standards by MoC and at specified intervals, and to certify vehicle ownership; and also to take necessary actions required to establish the system, including the amendment of laws, provision of related facilities, and human resource development. In relation to implementation, MoC or Provincial government with MoC should revise the Motor vehicle Rule, 1969.

3. Program Description:

At the first step, efforts should be made to develop a detailed plan to establish the vehicle fitness certification system, including research and study on similar systems in other countries. In the planning process, it is effective in inviting experts from countries where the vehicle examination system is effectively operated. The plan should cover the following items.

(1) Development of the legal system relating to vehicle fitness certification (modification and updating of fitness standards specified in Sections 150 – 215 of Motor Vehicle Rule 1969)

As pointed out earlier, these sections have not undergone major amendment in the past 40 years. These sections correspond to 92 items specified in safety standards under the Road Transport Vehicle Law in Japan. To ensure the establishment of fitness standards in detail, the rule made by the MoC/PTA should be limited to broad explanation, while details are specified in the MoC's order, thereby facilitating any change. As for emission standards, the migration to EURO-2 in 2012 has been decided but is not included in Motor Vehicle Rule 1969. Finally, safety standards need to assure an optimum balance between the cost burden on manufacturers and benefits for car owners and society as a whole.

Other items to be considered are the determination of an adequate fitness examination cycle and the establishment of years and mileage of travel for vehicles providing public transport service (especially buses).

(2) Improvement of PTA's fitness examination service

1) Improvement of the fitness examination office

At present, fitness examination is conducted, in a very small office, by one examiner and three staff members. Some offices do not have a sufficient examination space, and car owners park their vehicles near the office or they do not bring any vehicle and receive document check only. Clearly, this is not effective fitness examination. All the offices visited by the study team do not have a parking area or a space for installing testing equipment. It is strongly recommended to have a district's fitness examination office in a convenient location and with a vacant lot of at least 4,000m2 around the building, while increasing the number of examiners from one to five, with at least 15 staff members. In large cities, a few offices should be provided, with 6 – 10 examiners at each office.

2) Provision of vehicle examination facilities

Vehicle examination facilities will be designed on the basis of types of examination required (new and continuation), inspection items (safety, measurement, etc.), required testing equipment and tools, estimated number of vehicles to be examined annually, and the examination system. In the first stage, two facilities will be provided in Karachi and Lahore. Then Islamabad may the next site.

3) Clear definition of examiner qualification

Sections 35, 35A and 35B of Motor Vehicle Rule 1969 deal with the examiner, but qualification is not clearly defined. As fitness examination constitutes public service, the examiner's qualification should be established. In particular, the MoC/PTA should define and put it in the statutory form. The qualification should cover not only college graduates with an engineering degree, but also staff members of TEVTA and STEVTA, who hold DAE in the automobile field.

4) Fitness examination office operated by the private sector

The fitness examination service can be operated as commercial service. In Punjab, Lahore Transport Authority (LTA) and other organizations are making preparation for service launching. The MoC/PTA should promptly set forth standards relating to the licensing of private service providers and incorporate them into Motor Vehicle Rule 1969.

(3) Establishment of safety standards

After reviewing Section 65 - Section 125 in Motor Vehicle Rule 1969 with modern technology, vehicle safety standards should be drawn up promptly. In Pakistan, all types of vehicles are illegally remodeled and often become a cause for accident. Paying attentions to this, temporary rule by law shall be prepared including inspection items and inspection method

(4) Expansion of coverage by fitness examination service

At present, they say that 30-40% of commercial vehicles receive fitness examination, but actually less than 20. Many of them receive it only when their noncompliance has been found on road.

If the rate of examination increases to around 95% as a result of the project, the scope of examination service can then be extended to passenger cars, two wheelers, and vans, which are not obliged to receive periodical examination besides public transport. The examination interval can be set at one year for vehicles used for public transportation service and two years for privately owned passenger vehicles.

4. Expected Program Output

(1) The improvement of the legal system relating to the vehicle fitness examination system as well as its operation will improve safety of drivers, then leading to better safety and pollution control in the increasingly motorized society.

(2) The effective enforcement of the fitness examination system will encourage vehicle owners to start voluntary maintenance.

5. Implementing Institutions

Successful implementation of the vehicle fitness examination system will require involvement of various organizations. First, MoC amended the Motor vehicle Rule 1969. There is some possibility that provincial government shall be responsible to prepare safety standards. PTA will play an important role of amendment of the law. MoC or PTA needs some advices, it can request donors to send an adviser. In execution of laws, many organizations have their own responsibilities. EDB will serve as the overall coordinator among institutions, and after the start of the new system, as a monitoring organization at the federal level. As for examination of imported vehicles, FBR (Federal Bureau of Revenue) will request to examine them at a suitable testing body.

6. Financing Sources

For the preparation of the system development plan and the modification of the legal system, support from outside experts, such as JICA, should be required to assist Pakistani personnel.

In addition to the budget relating to "soft" side development, "hard" side development such as construction of physical facilities needs to be budgeted. Assuming that equipment (manual or automated) will be installed at three facilities, initial investment requirements are estimated as follows.

- Manual systems: Rs. 45 million x 3 lines x 3 places = Rs. 405 million
- Automated systems: Rs. 65 million x 3 lines x 3 places = Rs. 585 million

(The manual system is adaptable to buses, trucks and rickshaws, which vary greatly in shape or performance, in comparison to passenger cars with standard forms.)

In the initial stage, the following equipment will be introduced.

1) Side slip inspection (steering wheel sideslip)
2) Speed meter inspection (speed meter error)
3) Headlight inspection (luminous intensity, photometric axis)
4) Brake inspection (braking force)
5) Exhaust emission inspection (carbon monoxide, hydrocarbons)
6) Inspection from beneath (steering system, buffer system, brake system, engine, power train system-frame, fuel system, body, exhaust emission control system, electric system)
7) Final judge for three lines

7. Implementation Schedule

A work group should be started up promptly under the leadership of EDB. As the project involves various organizations as well as diverse factors in a complicated manner, overall coordination is critical. Thus, the overall schedule is governed by results of coordinating efforts.

8. Key Considerations

(1) As Motor Vehicle Ordinance 1965 and Motor Vehicle Rule 1969 are enforced by local government, the federal government is losing a sense of ownership, as evidenced from the fact that both of them have been left without major modification in the past 40 years, thus failing to incorporate the adoption of EURO-2 for emission standards in 2009. The federal government should realize its role in the area of road transport. The transport administration shall be integrated at federal level and related ministries' responsibility shall be clarified, MoC had better to rename its current Ministry of Communication into Ministry of Transport.

(2) At the same time, the country goes through the decentralization process, which will be further advanced, so that there is a risk of blurring responsibility at the federal level. Thus, at a moment, the responsible body of MoC or PTA should be cleared to modify the legal system relating to the vehicle fitness examination system by the government document.

Project No. E-3 Improvement Project for Testing Procedures of PSQCA

1. Rationale:

In Pakistan, consumers are dissatisfied with poor quality of motorcycles made in China. These motorcycles are based on Honda's CD70 (70cc), which was developed more than 30 years ago and was copied by Chinese manufacturers. Then, it was imported to Pakistan in the form of assembly kit. At present, key components including the engine and the transmission are imported from China and are assemble into final products by incorporating locally made parts, which are supplied for repairing purposes.

To improve quality of motorcycles distributed in the country, the government has established national standards (PS), but they have still to fulfill the original purpose of excluding poor quality products. A major reason is the inability to audit manufacturers properly. Pakistan Standard Quality Control Agency (PSQCA) is required to visit manufacturers periodically and conduct quality audit on randomly selected samples, but actual tests conducted by PSQCA are overly simplified, such as the measurement of noise on road by using a portable noise meter. Small manufacturers do not have testing equipment required for adequate quality assurance and largely depend on visual inspection. In particular, they omit durability check, which is the major source of customer complaints. However, PSQCA issues the PS market so long as required inspection is ostensibly completed. Given a large number of problems and customer complaints being reported, the PS mark system fails to win consumer confidence.

The same is true for auto rickshaws, which are used as a popular means of transport in the country, especially playing an important role in suburban and rural areas. They are mainly assembled by companies that do not have experience in production of motor vehicles by using engines and other working parts imported from China. They do not conduct sufficient inspection on assembled motorcycles, as carried out by Japanese automakers. To improve the situation, a formal system should be established to check manufacturers' production machinery, product inspection equipment, and the quality assurance system before they receive a production license, together with technical guidance.

Today, efforts are being made to promote exports of two wheelers and four-stroke auto-rickshaws (CNG engine) made in Pakistan. However, the lack of quality assurance makes active export promotion difficult. It is therefore proposed to improve PSQCA's inspection system and introduce the recall system in order to develop them to effective tools for quality assurance, without changing PSQCA's mechanism or the framework of the PS mark system.

2. Objective:

To establish national quality standards for two wheelers and auto-rickshaws as the basis of promoting safety and mitigating environmental impacts, which are not far from global standards, thereby to exclude noncompliant, poor quality products and encourage supply of quality products.

3. Program Description:

(1) To establish national quality standards (Ps) for two wheelers and auto-rickshaws

The present standards will be revised so that they serve as minimum safety standards with consideration to pollution control.

(2) To procure required inspection equipment for PSQCA and train its staff members

Although PSQCA has made a list of equipment required for its inspection service, it has still to make purchase due to budget constraint. In consideration of urgency, however, an adequate budget should be allocated as soon as possible. Testing equipment required in the initial stage, together with cost, is summarized below.

List of Auto Vehicle Testing Equipment

1. Engine Test Bench for Two Wheeler	8.00 (Rs. million)
2. Dynamometer with testing accessories	3.00
(1 and 2 are for performance, endurance and emission test)	
3. Oxygen Sensor Tester	0.40
4. Digital tachometer with Calibration Kit	1.10
5. Engine Leakage Tester	0.80
6. Portable Harness Tester	0.30
7. Courting Thickness Meter for painting	0.25
8. Courting Thickness Meter for plating	0.25

A set of the above equipment (one unit each) will be provided for each of two offices (Karachi and Lahore). At the same time, training for examiners (different from PS auditors) will be conducted.

(3) To establish a production license system to secure product liability

The system includes the obligation of the manufacturer to recall defective products found in the market by reporting it to the competent regulatory organization.

1) To specify shipment inspection items for assembled vehicles and require the manufacturer to conduct it.
2) To require the manufacturer to submit the following documents at the time of application for the production license.
   - Major features of the vehicle
   - A data sheet explaining construction
   - A production organization
   - An organization relating to quality assurance
   - After sales service network

3) To ensure one stop service on the government side when it accepts the application
   It is recommended that the Pakistan government will unify road transport service activities.

4. Expected Program Output

(1) A safer means of transport for people in the country will be secured.
(2) Fair competition on the level playing field for manufacturers will help improve vehicle performance and secure adequate pollution control and traffic safety.
(3) The two wheeler market will be reinvigorated.

5. Implementing Institutions

- PSQCA
- EDB

6. Financing Sources

The project will be financed by operating budgets of related organizations of the Pakistan government.

7. Implementation Schedule

A working group will be established as soon as possible on the basis of this proposal, and then a working group will commence reviewing the present system.

8. Key Considerations

(1) In Japan, production and sales of a new car must be reported to the Ministry of Land, Infrastructure, Transport and Tourism, which then conducts the required test and review according to examination standards and issues a permit if the car has passed the test. This is called the type certification system, based on which the introduction of the homologation system is proposed separately in this report.

(2) As pointed out earlier, PSQCA conducts quality audit by visiting manufacturers' facilities, but the audit system is not operated properly. As it is reasonable to expect that industry products have a defect from time to time, in which case the recall system is considered to be an effective means to deal with the problem. Thus it makes sense to establish a mechanism to require manufacturers to recall defective vehicles at their own cost. In the course of reporting production and sales of a new car, manufacturers are not required to submit drawings or documents showing the car's specifications and construction. As a result, PSQCA cannot check, in its quality audit, the difference between the reported specifications and the actual product. It is therefore an urgent matter to obligate manufacturers to submit such drawing and documents covering specifications and the quality assurance system, regardless of implementation of the homologation system.

More precisely, data and information reported by the manufacturer should be checked against the manufactured car at the time of shipment inspection as well as in the course of marketing. Thus, it should be kept by competent government agencies and made known to an organization conducting vehicle inspection in the future.

Annex I: User Survey Report

User Survey Report

1General Outline of User Survey

This survey was conducted to see how auto users evaluate vehicle quality and safety and to understand their needs in order to reflect its results in the formulation of the automobile industry development policy.

(1) User definition

In Pakistan, many auto users hire a driver as they purchase an automobile. For the purpose of this survey, however, auto users are defined as a person who owns and drives an automobile by himself.

(2) Survey methodology

The user survey was conducted for 470 users of passenger cars, LCVs, buses, and/or trucks, followed by analysis of its results.

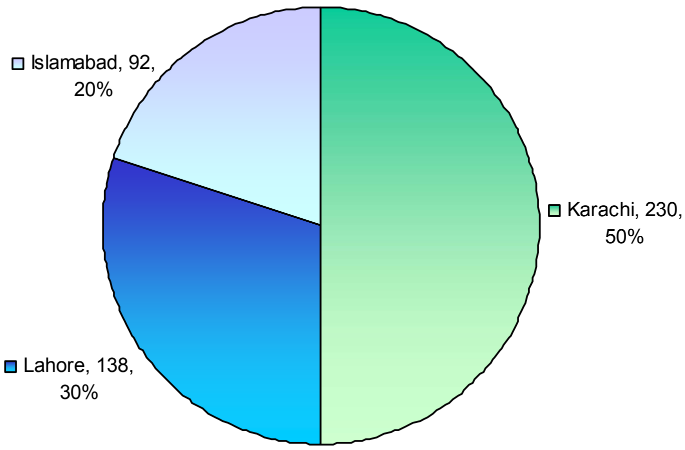
The survey was conducted by using a questionnaire prepared by the study team and lasted 15 to 20 minutes. Then, the study team analyzed the results on the basis of responses made in the questionnaire. The survey was conducted between May and August, 2010.

(3) Selection of the survey population

Users surveyed were selected according to geographical areas and vehicle types owned.

The survey was conducted in three major cities; Karachi, Lahore, and Islamabad. Within these cities, 50% of respondents (230 users) were selected from Karachi, which had a population of 15 million and served as the country's economic center. For the remaining 50%, 30% (138 users) was selected from Lahore and 20% (92 users) from Islamabad. (Figure A-1)

The interview survey was conducted in locations where many vehicles were seen, such as markets and gas stations. Actual survey work was contracted to local firms in consideration of public security.



(JICA Study Team)

Figure A-1 Sampling for User Survey

Vehicle types were divided into passenger cars, LCVs, buses, and trucks, by engine size.

Passenger cars were further divided into small cars (800cc-1,000cc), medium-sized cars (1,000cc-1,300cc), and large cars (1,300cc or above).

As the survey weighed passenger cars that were most distributed in the market, passenger car users represented 72% of the total (330). For other vehicle types, LCVs accounted for 8.7% (40), trucks 11% (50), and 8.7% (40) from buses, according to actual quantity in the market. The survey population by vehicle type is summarized below.

Table A-1 Name& Engine Size of Cars

Brand & MakeCARS	Number of Corporate Cars	Number of Private Cars	Engine Size	Number of Cars	Number of New Cars	Number of Used Cars
Passenger Car						
Suzuki FX	-	9	800cc	9	1	8
Suzuki Mehran	23	31	800cc	54	35	19
Suzuki Bolan	-	6	800cc	6	4	2
Daihatsu Cuore	10	5	800cc	15	12	3
Chevrolet	-	2	800cc	2	2	-
Suzuki Ravi	-	1	800cc	1	1	-
Total 800cc	33	54		87	55	22
Suzuki Alto	21	3	1000cc	24	20	4
Suzuki Khyber	-	7	1000cc	7	-	7
Suzuki Cultus	16	7	1000cc	23	18	5
Suzuki Margalla	-	4	1000cc	4	-	4
Suzuki Swift	-	3	1000cc	3	3	-
Daihatsu Charade	-	5	1000cc	5	-	5
Toyota Starlet	-	2	1000cc	2	-	2
Hyundai Santro	6	5	1000cc	11	11	-
Total 1000cc	40	36		79	52	27
Suzuki Baleno	2	4	1300cc	6	4	2

Brand & MakeCARS	Number of Corporate Cars	Number of Private Cars	Engine Size	Number of Cars	Number of New Cars	Number of Used Cars
Suzuki Liana	4	5	1300cc	9	9	-
Mitsubishi Lancer	1	1	1300cc	2	2	-
Nissan Sunny	-	4	1300cc	4	-	4
Toyota Vitz	-	13	1300cc	13	-	13
Toyota Corolla	32	22	1300cc	54	40	14
Honda City	23	10	1300cc	33	26	7
Volkswagen	-	1	1300cc	1	-	1
Toyota Belta	-	3	1600cc	3	-	3
Honda Civic	9	19	1600cc	28	15	13
Honda Accord	-	1	1800cc	1	1	-
Toyota Probox	-	1	1800cc	1	-	1
Land Cruiser	-	1	2000cc	3	2	1
Toyota Corolla	-	3	2000cc	4	4	-
Mercedes Benz	-	1	2400cc	1	1	-
Toyota Cressida	-	1	3000cc	1	1	-
Total 1300cc+	71	93		164	105	59
Total Passenger Car	144	183		330 (72%)	212	108
LCV						
Toyota Hiace	-	6	-	6	1	5
Toyota Hilux	-	6	-	6	3	3
Shehzore	-	2	-	2	-	2
Suzuki Ravi	-	12	-	12	4	8
Suzuki Pickup	-	13	-	13	5	8
Suzuki APV	-	1	-	1	-	1
Total LCV		40		40 (8.7%)	13	27
Truck						
Nissan	-	12	-	12	8	4
Hino	-	28	-	28	18	10
Mercedes	-	3	-	3	1	2
BLMC	-	1	-	1	-	1
Daewoo	-	1	-	1	1	-
Isuzu	-	2	-	2	1	1
Bedford	-	3	-	3	-	3
Total Trucks		50		50 (11%)	29	21
Bus						
Isuzu	-	3	-	3	1	2
Bedford	-	1	-	1	-	1
Nissan	-	6	-	6	5	1
Hino	-	30	-	30	17	13
Total Bus		40		40 (8.7%)	23	17
Grand Total				460 (100%)	265	195

(JICA Study Team)

2 Survey Results

2.1General Information

(1) Year of purchase

According to the National Traffic Research Center (NTRC), the number of passenger cars on road remained approximately 1,193,000 in 2003/04.

However, the number of passenger cars in the country increased rapidly between 2004/05 and 2007/08, the number of domestic cars as a result of: 1) rapid economic expansion; 2) provision of low-interest auto loans private financial institutions; and 3) the easing of used car import restriction. In 2006/07, it increased by 40% to 1,682,000 units.

In 2008/09, the pace of growth slowed down due to economic downturns but growth still continued and reached 2,076,000 units in 2009/10, up 70% over 2003/04.

The user survey results reflect the rapid increase in the number of vehicles from 2004/05 to 2007/08. More than 80% of passenger cars owned by survey respondents was purchased in or after 2005, and so was more than 50% of LCVs, buses, and trucks. (Figure A-2)

By vehicle type, 61% of small passenger cars, 66% of medium-sized cars, and 54% of large cars (both new and used cars) were purchased in 2005 - 2008[1].

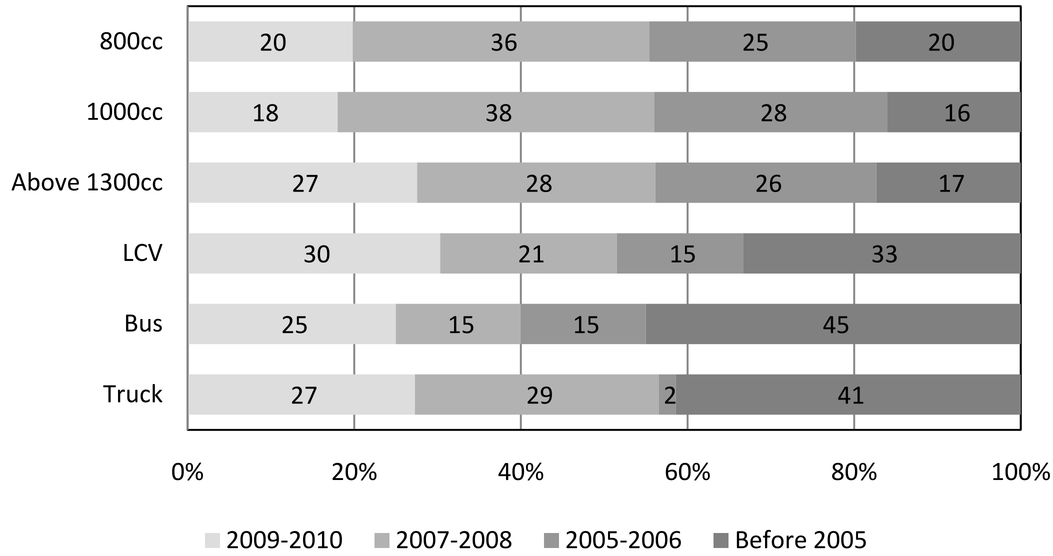
On the other hand, in 2009 and 2010 when the economy declined, 20% of small cars and 18% of medium-sized cars were purchased, much smaller share than other years. On the other hand, large cars purchased in these years accounted for more or less the same percentage (27%). The decrease in purchase of small and medium-sized cars seems to be attributable to the fact that the economic slump largely affected the low- and medium-income groups that were target customers of small and medium-sized cars, whereas large cars targeted for the high-income group were mostly unaffected.

As in the case of large cars, LCVs were targeted for the high-income class and their purchase years were dispersed. As a result, the percentage of users who purchased LCVs in 2009 and 2010 is higher than that in the previous year. On the other hand, the lower percentage in 2005 and 2006 reflects the fact that tariff rates on imported used cars (accounting for major portions of LCVs) was raised in these years.

As for buses and trucks, the percentages share of purchase before 2005 was 45% and 41%, respectively, which were higher than other vehicle types. This is because buses and trucks are used for a longer period on account of higher prices. Finally, the percentage share of purchase in

[1] Equivalent to fiscal 2004/05 to 2008/09 in Pakistan.

2005 and 2006 is lower for both buses and trucks because of the increased tariff rated on used cars, as seen in LCVs.



(JICA Study Team)

Figure A-2 Year of Purchase

(2) Purchasing channels

In Pakistan, there are two channels for purchasing a car, namely through an authorized dealership and via informal channels. Informal channels include the purchase from a friend, direct sales via newspaper ads, and purchase from an unauthorized shop.

When Japanese automakers entered the Pakistan market, they most emphasized the development of a nationwide dealership network. Today, there are more than 150 authorized dealers throughout the country.

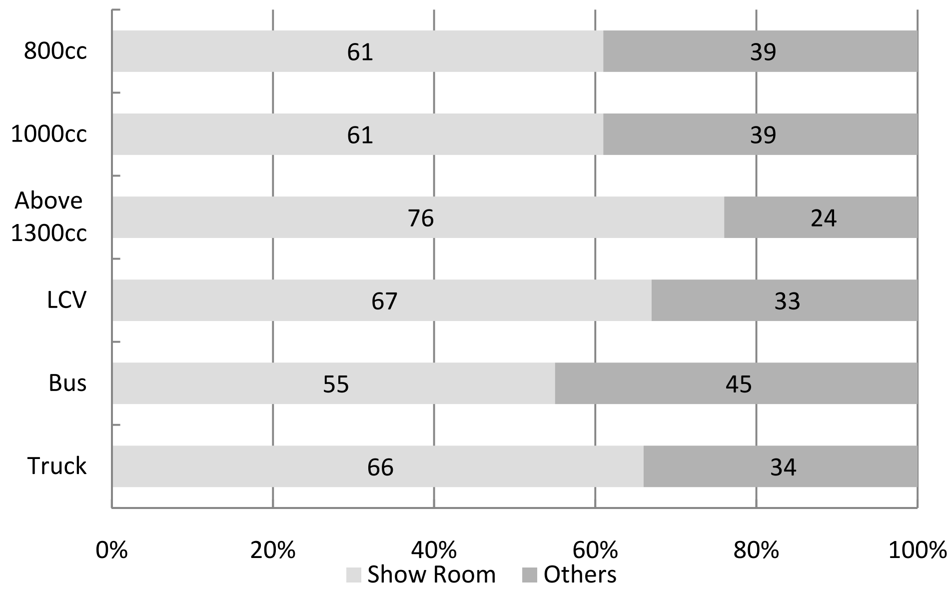
The user survey results confirm the importance of authorized dealerships.

Authorized dealerships were cited by 61% of small and medium-sized passenger car users 76% of large car users[2] (Figure A-3).

Similarly, LCVs (67%), buses (55%), and trucks (66%) were purchased from authorized dealers.

Thus, it can be said that most users purchase cars from authorized dealers, although there are other channels for purchasing cars.

[2] Note than used cars are also purchased at authorized dealers and are not always sold through other channels.



(JICA Study Team)

Figure A-3 Place of Purchase

(3) Mode of payment

There are two payment methods used for purchasing a car, "cash payment" and "loan payment."

Until 2006/07, many users used auto loans. Since 2007/08, however, most purchases have been made in cash[3]. The rapid decrease in loan payment is attributable to various factors, including stricter examination by financial institutions and the rise in interest rate. Up until 2005/06, most financial institutions extended loans to customers without substantial examination as the economy continued to expand.Since 2006/2007 when the economy started to fall, an increasing number of customers became default and financial institutions suffered enormous damages.In response, financial institutions adopted stricter standards for examination on loan applicants and limited loans to customers above a certain income level. The annual loan rate ranged between 7% and 16% between 2002/03 and 2005/06. In 2007/08, it rose further to 18% concurrently with the rise in inflation rate. Thereafter, it continued to rise and reached 22% in 2010.

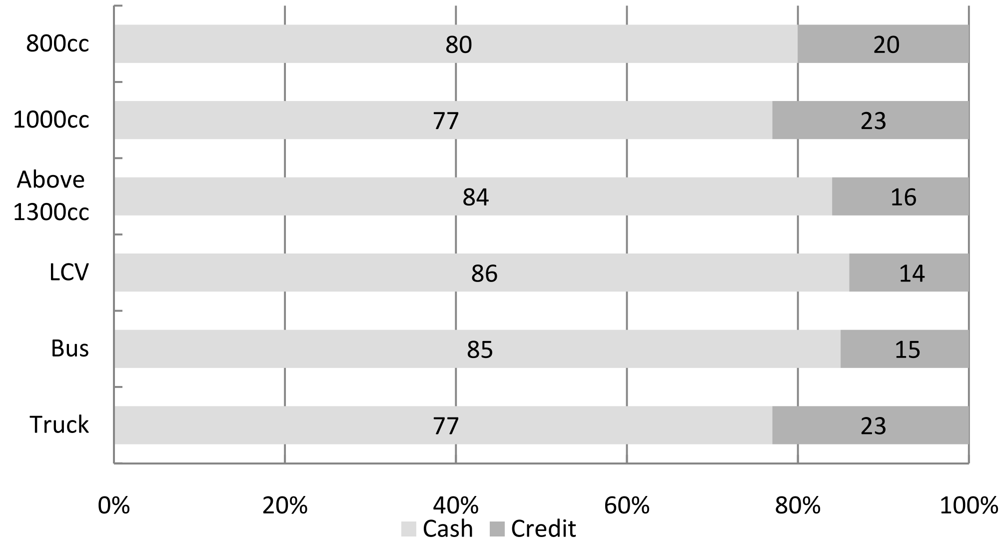
These survey results confirm the shift in payment methods.

As for passenger cars, 80% of small car users, 77% of medium-sized car users, and 84% of large car users made cash payment. Many of users who used auto loans purchased cars before

[3] One reason for the sudden decrease in the number of automobiles sold after 2007/08 is that many customers switched the payment method from loan to cash.

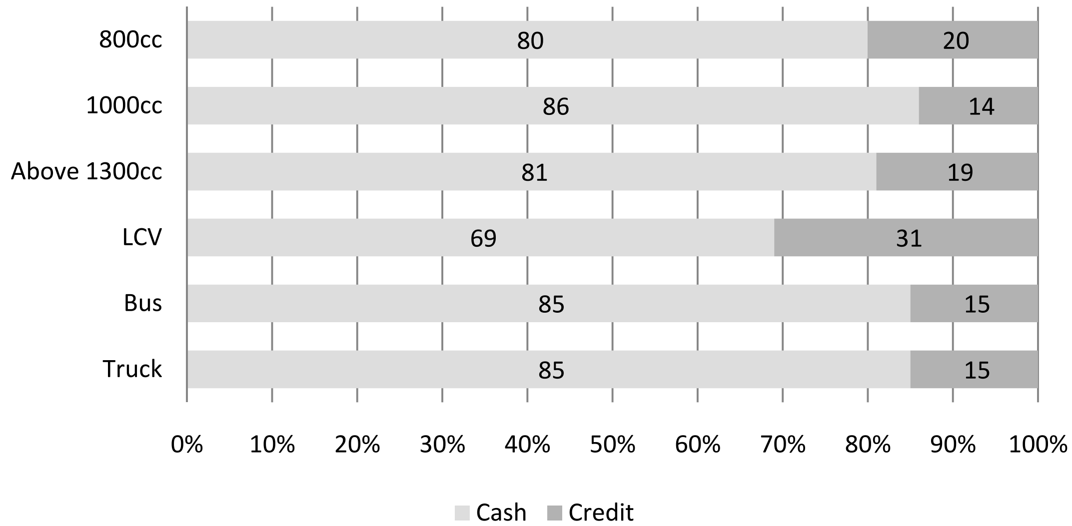
2007. Similarly, cash payment was made by 86% of LCV users, 85% of bus users, and 77% of truck users. All users who used auto loans made purchase before 2007 (Figure A-4).

In response to a question about the future purchase schedule, more users intended to make cash payment than auto loans (Figure A-5).



(JICA Study Team)

Figure A-4 Mode of Payment



(JICA Study Team)

Figure A-5 Mode of Payment for Future Purchase

2.2 Performance Evaluation

This section discusses users' evaluation on vehicle performance in terms of 1) frequency of breakdown, 2) fuel consumption, and 3) riding comfort.

(1) Frequency of breakdown

For the frequency of breakdown of passenger cars, 53% of small car users, 59% of medium-sized car users, and 71% of large car users experience "few" breakdowns. Thus, the majority of users experienced "few" breakdowns and their level of satisfaction rises with the engine size. (Figure A-6)

On the other hand, the percentage of LCV users reporting "few" breakdowns is much lower at 33%, and 48% experienced breakdown "sometimes (once every three months)". The lower percentage for LCVs seems to reflect the fact that nearly 70% of LCVs in the market are imported used cars[4].

As for buses, 44% of users answered "few" and 33% "frequent (almost every month)." The large difference in responses seems to come from the fact that the market is divided into new and used cars[5] and many used cars were manufactured 20 or more years ago.

As in the case of buses, the truck market is equally divided into new and used cars[6]. 33% of users experienced "few" breakdowns and 52% "sometimes." On the other hand, users who answered "frequent" accounted for 14% of the total, which was less than a half of bus users. This is because there are many maintenance shops for trucks in the country[7], which perform maintenance every three months.

Parts subject to breakdown are mostly related to the interior, including the lock (key) and window opening/closing nozzle (see the photos in the next page) in small and medium-sized passenger cars. On the other hand, breakdown of large cars is much less frequent but is largely associated with system components, such as brakes and electronic control.

As for LCVs, buses, and trucks, most breakdowns occurred on imported used cars. Therefore, they were related to wear and tear as well as damage caused by long-term use.

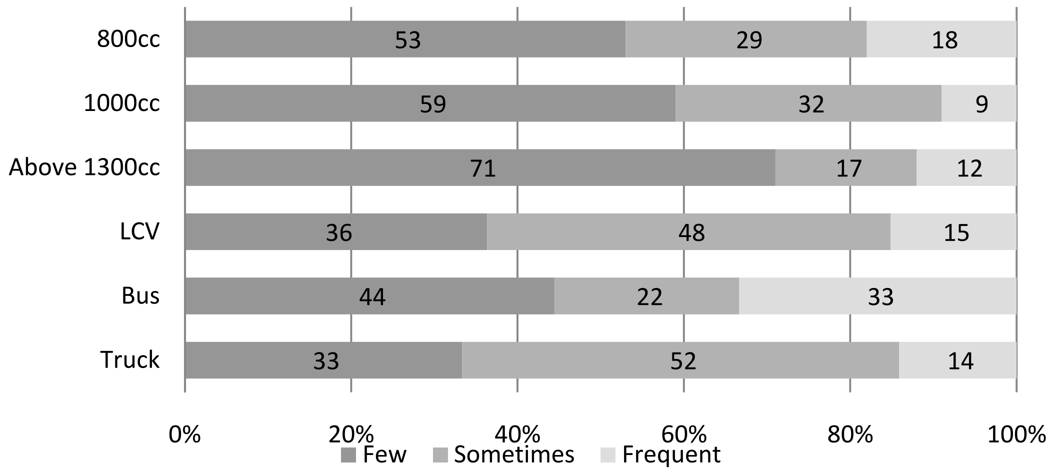
---

[4] Among respondents to the interview survey, used car owners accounted for the highest share of 68% in comparison to other vehicle types.

[5] New car owners represented 57% of the total, and used car owners 43%.

[6] New car owners represented 58% of the total, and used car owners 42%.

[7] Most of them are not authorized by (not associated with) automakers and are small shops.



(JICA Study Team)

Figure A-6 Frequency of Breakdown of Vehicles

<u>Example of breakdown of vehicles</u>



1) Lock Nob Broken 2) Handle Broken 3) Wires Displaced


4) Air Conditioning Nob Broken 5) Ash Tray Broken

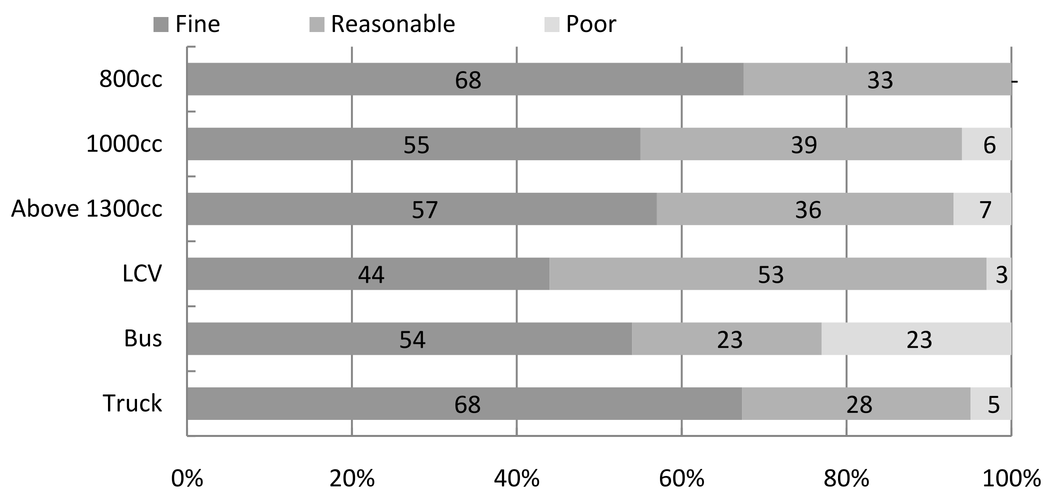
(2) Fuel consumption

With regard to evaluation on fuel consumption of passenger cars, the smaller the engine size becomes, the higher users' evaluation becomes (Figure A-7).

Specifically, 68% of small car users, 55% of medium-sized car users, and 57% of large car users answered "fine." Thus, small cars got the highest rating.

As for LCVs, 44% of respondents selected "fine" and 53% "reasonable." The relatively low percentage of responses citing "fine" reflects the fact that most of them are imported used cars. At the same time, as many users purchased them in recognition of poor fuel consumption, 53% rated "reasonable."

For buses and trucks, the large difference in rating occurred between new cars and used cars, as seen in the case of breakdown. In particular, 23% of bus users (mainly used car users) rated "poor," highest among other vehicle types.



(JICA Study Team)

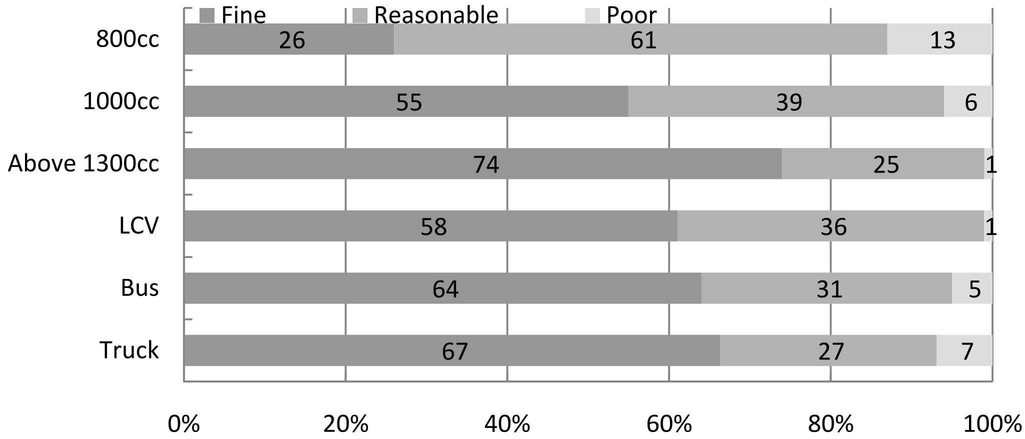
Figure A-7 Fuel Consumption of Vehicles

(3) Riding comfort

With regard to performance of comfort, 26% of small passenger car users rated "fine," whereas 55% of medium-sized car users and 74% of large car users selected "fine." (Figure 3-8)

On the other hand, 58% of LCV users, 64% of bus users, and 67% of truck users rated "fine."

Since the degree of comfort is almost governed by the interior and onboard equipment such as seat softness, power window, and audiovisual systems. Naturally, user satisfaction increases as the price becomes higher and the engine size larger.



(JICA Study Team)

Figure A-8 Performance of Comfort of Vehicles

Overall, more than 50% of passenger car users experienced “few” breakdowns. For fuel consumption and performance of comfort, more than 85% rated “fine” or “reasonable” for all vehicle types. Therefore, passenger car users are generally satisfied with performance of vehicles they own now.

As for LCVs, 48% of users experienced breakdown “sometimes.” On the other hand, 53% rated “reasonable” for fuel consumption and more than 36% “reasonable” for comfort. As pointed out earlier, most LCVs were imported used cars, so that user rating was generally lower than that of passenger cars that were mostly new cars.

On the other hand, 56% of bus users indicated “sometimes” or “frequent” for frequency of breakdown. For fuel consumption, 23% of users rated “poor.” These responses reflect the fact that the bus market was polarized to new cars and used cars, while used cars were manufactured 20 or more years ago and adequate maintenance was not available.

For trucks, 52% of users experienced breakdown “sometimes.” On the other hand, 68% rated “fine” for fuel consumption. While used cars account for major portions of the truck market, there are a large number of garages specialized in truck maintenance and many trucks receive periodic maintenance service (in every three months), so that the higher percentage of users gave higher rating.

2.3 Factors considered important at the time of purchase

This section analyzes factors that users consider to be important when they purchase a car, which are divided as follows: 1) non-price factors; 2) price and quality factors; and 3) comparison between new and used cars.

(1) Non-price factors

Among non-price factors, the highest percentage of users of all vehicle types cited "manufacture," indicating that many users believe that fuel consumption, frequency of breakdown and riding comfort vary greatly among manufacturers. However, this is based on subjective judgment of individual users and does not indicate specific manufacturers and their popularity. Other frequently cited factors are "engine size" and "ease of repair."

By vehicle type, small passenger car uses consider "manufacture" to be most important, accounting for 40% of the total , followed by "ease of repair" (22%) and "engine size." (FigureA-9)

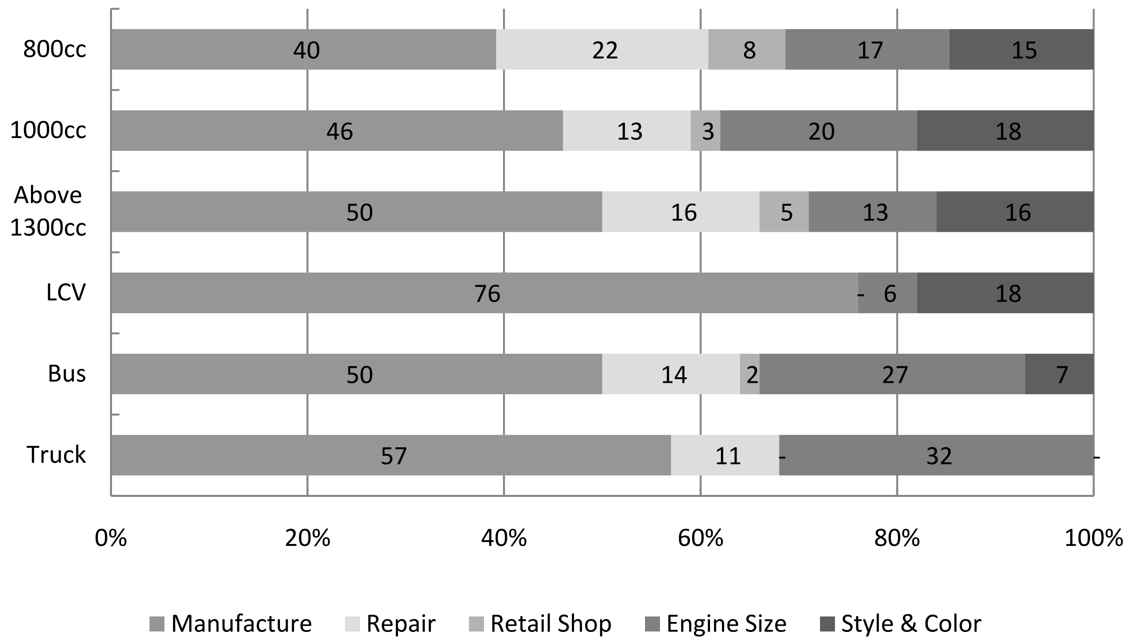
With regard to medium-sized cars, "manufacture" accounted for 46% of the total, followed by "engine size" 20%. In particular, "engine size" is regarded as a priority factor because medium-sized cars used in Pakistan include a large number of box type vehicles, such as Bolan and Cultus, which are largely used for transportation of goods, so that their size is considered to be important.

As seen in small and medium-sized cars, large car users considered "manufacture" to be the most important factor, accounting for 50% of the total. Notably, Toyota Corolla is the most popular model among large cars produced by Suzuki, Honda and Toyota.

Also, large car users attached importance to "style and color," which accounted for 17% of the total, the same percentage share for "ease of repair." This is because the high income group – major customers of large cars – regards appearance as important as performance.

Similarly, as LCVs are largely owned by the high income class, "manufacture" and "style and color" are considered to be important, accounting for 76% and 18%, respectively.

On the other hand, bus and truck users think that "engine size" is the second most important factor, next to "manufacture" because these vehicles are used to transport passengers and goods, representing 27% and 32%, respectively, for the former, and 50% and 57% for the latter. The third most important factor is "ease of repair," although the percentage share for trucks is relatively low at 11% because of many garages specialized in truck maintenance.



(Multiple answers) (JICA Study Team)

FigureA-9 Vehicle Selection Criteria Except Price

(2) Price and quality factors

This section analyzes price and quality factors in order to understand user needs in these areas.

The most important factor for small car users is "fuel efficiency," accounting for 21%, followed by "value of used car" 20%, "function" 20%, and "less repair" 19%. The results indicate that small car users emphasize the maintenance cost (fuel efficiency and durability) and the asset value (as used car). (Figure A-10)

"Function" wanted by small car users is related to basic performance, such as quick startup of the engine, good braking, and smooth gear shift, rather than onboard systems (e.g., power window and audio) or safety features (e.g., ABS and airbag).

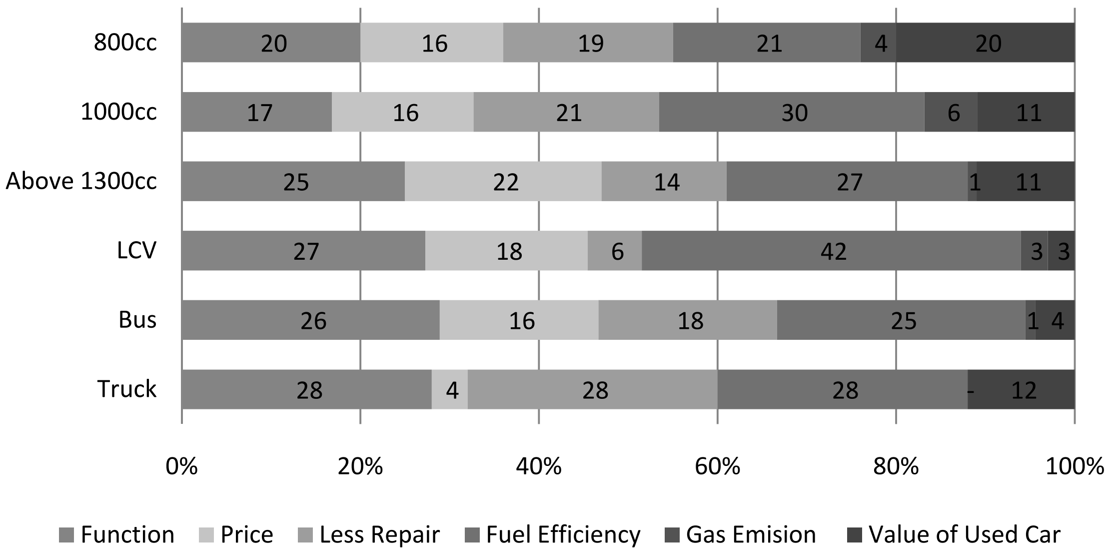
Medium-sized car users cite "fuel efficiency" as most important (30%), followed by "less repair" (21%) and "function" (17%). Similarly, large car and LCV users cited "fuel efficiency" first and "function" second.

Thus, the most important factor for users of high-grade cars is "fuel efficiency" that is directly related to the maintenance cost. As for "function," it is noteworthy that users of medium-sized cars, large cars, and LCVs show interest in safety features such as ABS and airbag, as well as the power steering and air-conditioning systems.

Bus and truck users gave equal importance to "durability," "function" and fuel efficiency, accounting for 28% each, because these factors are critical for buses and trucks that are required to run a long distance. Note that "function" for bus and truck users is related to basic performance, such as quick engine startup and smooth gear shift, as in the case of small cars.

The general trend relating to price and quality factors is that car users in Pakistan consider the maintenance cost factor (fuel efficiency and durability) to be more important than the vehicle price, followed by function. In particular, small car users show strong interest in the value of their cars in the used car market.

Finally, the environmental factor (led by CO2 emission) is considered to be least important for all the vehicle types, so that there is little need among consumers. (FigureA-10)



(Multiple answers) (JICA Study Team)

FigureA-10 Vehicle Selection Criteria (Price & Quality)

(3) Comparison between new and used cars

In Pakistan, it is said that some people believe that used cars imported from Japan have better quality than new cars, together with price advantage[8].

This question asks respondents as to whether they would buy a new car or a used car in order to understand general preference in the market.

Among passenger car users, the percentage of those selecting a used car is 29% for small cars and 14% for medium-sized and large cars. The major reason for preference of a used car is the lack of money, accounting for more than 90% of users who have selected a used car. (FigureA-11)

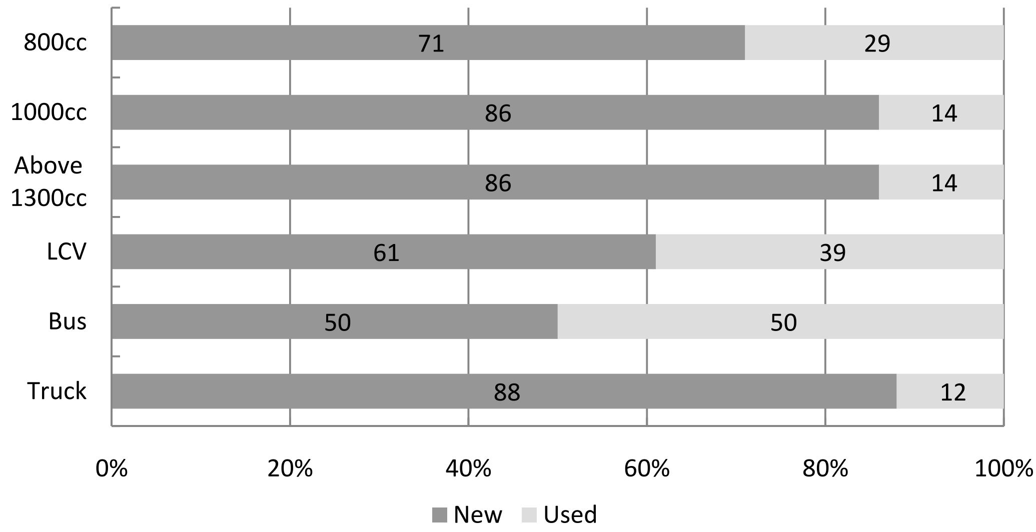
[8] According to interview survey of automobile dealerships..

As for LCVs, a higher percentage of users (39%) prefer a used car because domestic production of LCVs is very limited and most cars sold in the mart are imported used cars.

An even higher percentage of bus users (50%) selected a used vehicle because many of them are personal business operators and cannot afford to buy a new vehicle due to a high price.

Finally, 88% of truck users selected a new car because of good performance because their vehicles are usually overloaded and have to run a very long distance, while many of them operate their own business as seen in the bus market.

For all the vehicle types, the majority of users preferred a new car. On the other hand, users who selected a used car did so because they could not afford to buy a new car. There is no user who preferred a used car because of its high quality.



(JICA Study Team)

FigureA-11 Vehicle Preference: New Car/Used Car

2.4 Requests to Automakers, Dealers and Government

This section analyzes what they expect about automobiles in terms of request to: 1) automakers; 2) dealers; and 3) government.

(1) Request to auto manufacturers

In "3.4.2 Evaluation on Performance," many users are generally satisfied with performance but some of them complaint about frequent breakdown. The request to auto manufacturers made by users confirms dissatisfaction about breakdown.

As for passenger cars, the majority of users want improvement of "durability." (FigureA-12) In particular, small car users want more durable interior components such as door knobs and dashboards. On the other hand, medium-sized and large car users hope the increased durability of brakes and electronic control systems including the engine.

The second largest request is "the decline in sales price," representing 29% of small car users, 28% of medium-sized car users, and 31% of large car users.

A fairly large number of users want price decline because car sales prices have risen sharply since 2008. Over the two year period between March 2008 and March 2010, the price of Mehran (the leading small car model) rose by 31%, Cultus (medium-sized car) by 37%, and Corolla (large car) by 42%.

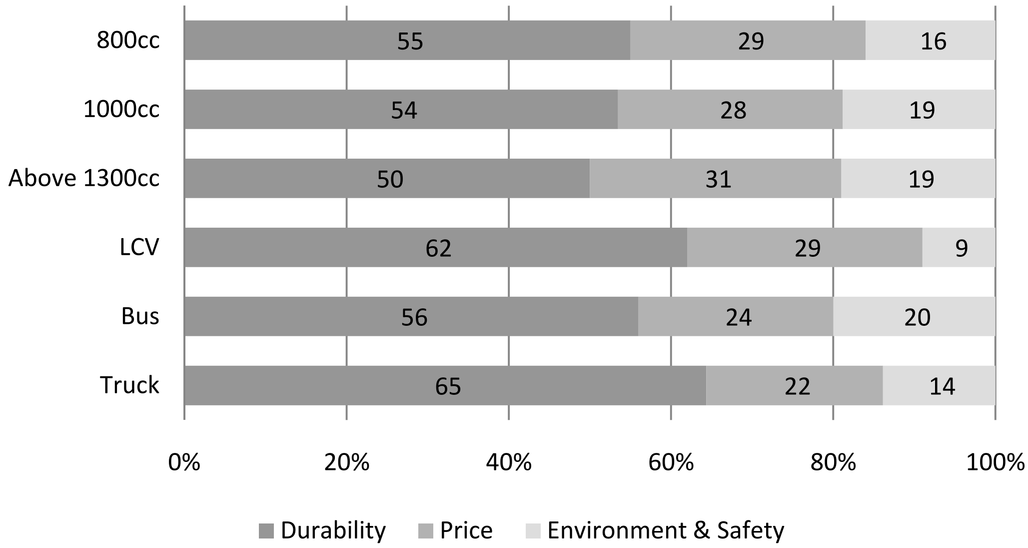
On the other hand, the request relating to pollution control features (emission control) and safety features (airbag and ABS) remains at low levels, 16% of small car users and 19% of medium-sized and large car users.

As for LCVs, "durability" is the largest concern (62%), followed by "price decline" (29%). LCV users want better durability because most LCVs are imported used cars and are deteriorated in comparison to new cars.

The decline in sales price is expected due to the rise in the imported LCV price as a result of the depreciation of the rupee by more than 30% since 2006. Meanwhile, 9% of LCV users made request in relation to "environment and safety."

The similar trend is observed for bus and truck users, who want the improvement of durability most, followed by price decline. On the other hand, users having request relating to environment and safety are limited to 20% for buses and 14% for trucks.

Thus, what users expect from automakers is dominated by the improvement of durability. The decline in sales price is the second largest concern. In contrast, a small number of users make request in relation to safety and environment.



(Multiple Answers) (JICA Study Team)

FigureA-12 Users' Request to Auto Manufacturers

(2) Request to dealers

In Pakistan, there are over 150 authorized dealers that also provide after-sales service including maintenance and repair.

While they provide high quality service, it has been pointed out that their service is far more expensive than that by unauthorized repair shops, more than twice in some cases.

The survey results confirm users' complaint about a high service fee charged by authorized dealers.

The request most frequently made by passenger car users is the improvement of "after-sales service," accounting for 54% of small and mediums-sized car users and 48% of large car users. (FigureA-13) In particular, most request is price related, including the decline in service fee and the extension of the warranty period.

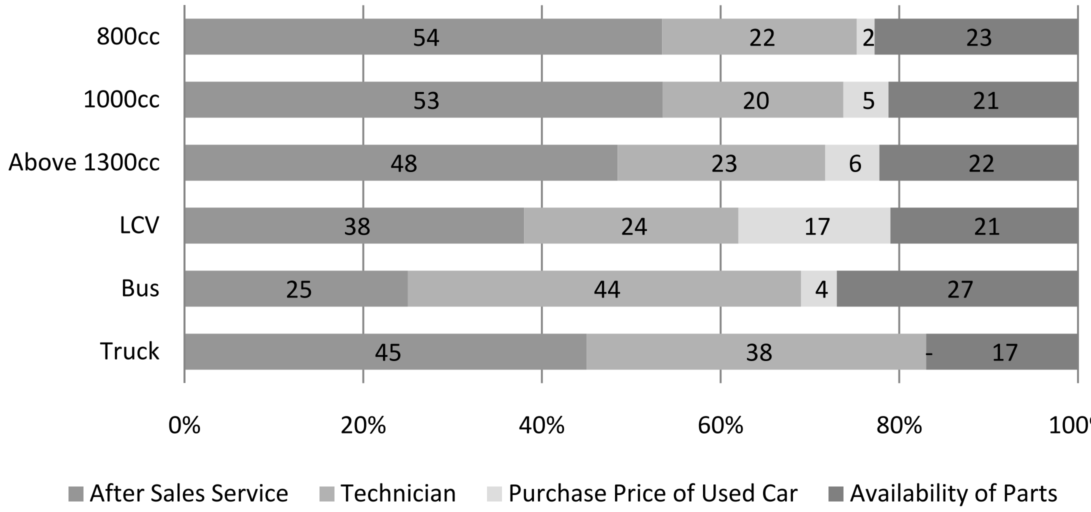
The second largest area is the upgrading of skill level ("technician"). In particular, there are complaints about service at dealers. They hire many technicians but their skills vary greatly, resulting in poor service in some cases[9].

[9] PCPC, consumer protection organization in Lahore, received 74 complaints about dealers from users between 2007 and 2009. Most of them are concerned about faulty service due to poor skill.

Likewise, the highest percentage of LCV and truck users wants the improvement of after-sales service, followed by the upgrading of skill level.

On the other hand, the largest number of bus users cites the upgrading of skill level, accounting for 44% of the total, reflecting a small number of technicians and the lack of vocational training.

The second largest item is the "availability of parts," accounting for 27% of the total. The shortage of parts comes from the fact that major portions of buses sold or used in the country are used cars imported from other countries, and their spare parts are no longer manufactured in many cases.



(Multiple Answers) (JICA Study Team)

FigureA-13 Users' Request to Dealers

(3) Request to government

This question is designed to collect users' view on government policy relating to automobile safety, price, and road, in order to understand the actual needs.

As for automobile safety policy, there is the highest need (for all the vehicle types) for "credible testing laboratory," followed by "technology improvement for factory and repair house," "testing laboratory by parts" and "law for certified mark." (FigureA-14)

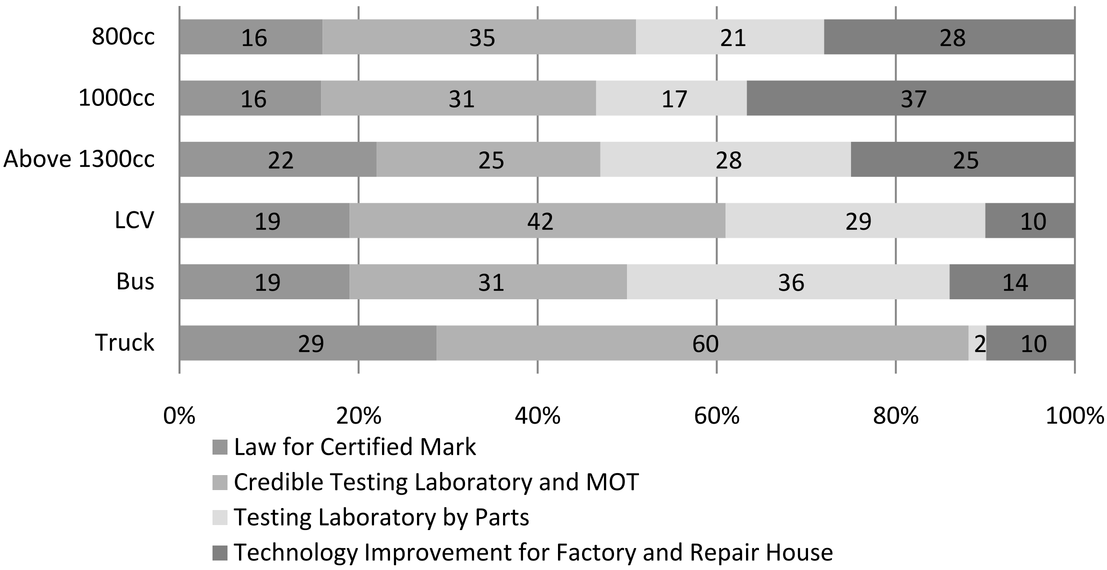
By vehicle type, passenger car users show certain levels of needs for all the four areas, while responses by LCV and bus users are concentrated on "credible testing laboratory" and "testing laboratory by parts," and those by truck users "credible testing laboratory."

In the area of automobile price, the highest percentage of users in all the vehicle types cites "tax decrease." They want the decrease in the following three taxes that are currently imposed in relation to automobiles: 1) import duty (tariff rates vary among parts); 2) sales tax (17% of the vehicle price); and special excise duty (1% of the vehicle price).

Secondly, many users want the decline in gasoline price and more competition among automakers. In particular, many users believe that the rise in car price in recent years is caused by the lack of competition in the market, and that sales price will decline by attracting more automakers to enter the market, thus spurring competition. (FigureA-15)

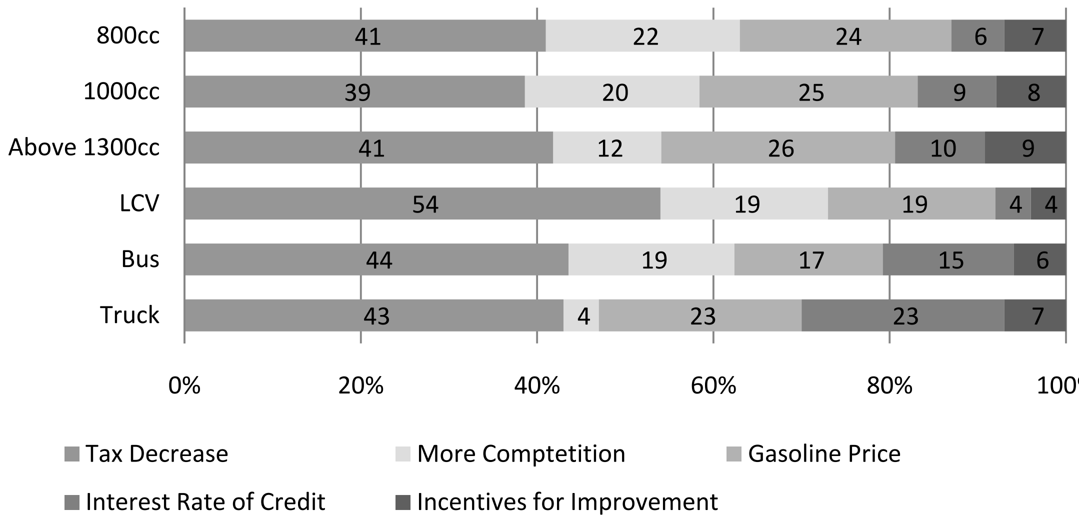
Finally, in the area of road-related policy, "construction and repair of roads" is requested by the highest percentage of users. They want it to mitigate traffic congestion throughout the country, especially in urban area, which is caused by the rapid increase in the number of motor vehicles since 2000. For the same reason, some users want "more public parking area." (FigureA-16)

At the same time, a large number of users want "strict punishment to violation" in response to the increase in the number of traffic accidents.



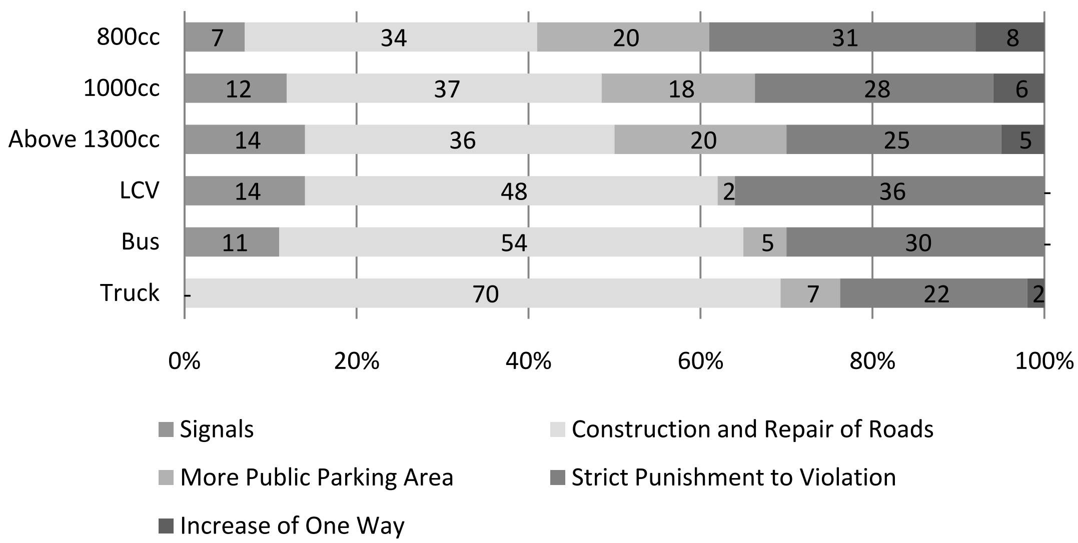
(Multiple Answers) (JICA Study Team)

Figure A-14 Users' Request to Government for Safety



(Multiple Answers) (JICA Study Team)

Figure A-15 Users' Request to Government for Vehicle Price



(Multiple Answers) (JICA Study Team)

Figure A-16 Users' Request to Government for Road Condition

2.5 Periodical Maintenance

This section intends to understand users' awareness and attitude relating to vehicle inspection by asking the following four questions: 1) frequency of maintenance; 2) place of maintenance; 3) price of maintenance; and 4) evaluation of maintenance service.

First of all, the majority of passenger car users have vehicle maintenance conducted "monthly" or "every three months," accounting for a combined total of over 65%. (FigureA-17)

As for LCVs, buses and trucks that are required to run a longer distance than passenger cars, maintenance is generally conducted according to mileage, rather than period. Most users received inspection after "2,000km" and "3,000km," representing a total of over 80%.

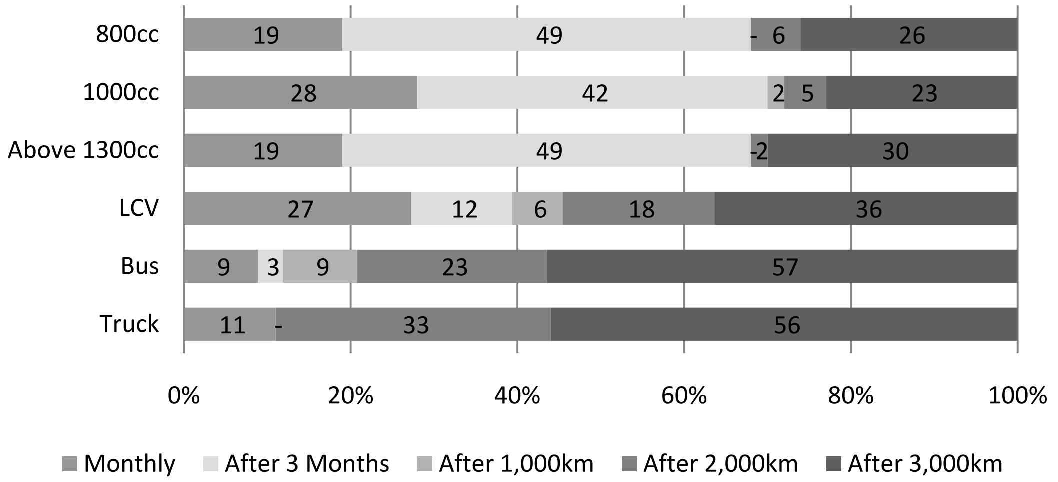
As for the place of maintenance, "service stations (of authorized dealers)" are used by around 60% of passenger car users, whereas "garages" by the remaining 40%. Respondents using garages were asked to specify the type of service they received. It was revealed that they used garages for simple service, such as oil exchange and filter cleaning, while they relied on service stations for more sophisticated service.

On the other hand, many LCV, bus and truck users (around 80%) used "garages" because of a small number of authorized dealers. (FigureA-18)

The maintenance fee is Rs. 5,000 or less for most passenger cars, i.e., 100% of small car users, 97% of medium-sized cars, and 92% of large cars. Major maintenance items cited are: 1) car washing; 2) oil exchange; 3) oil filter exchange; and 4) air filter exchange.

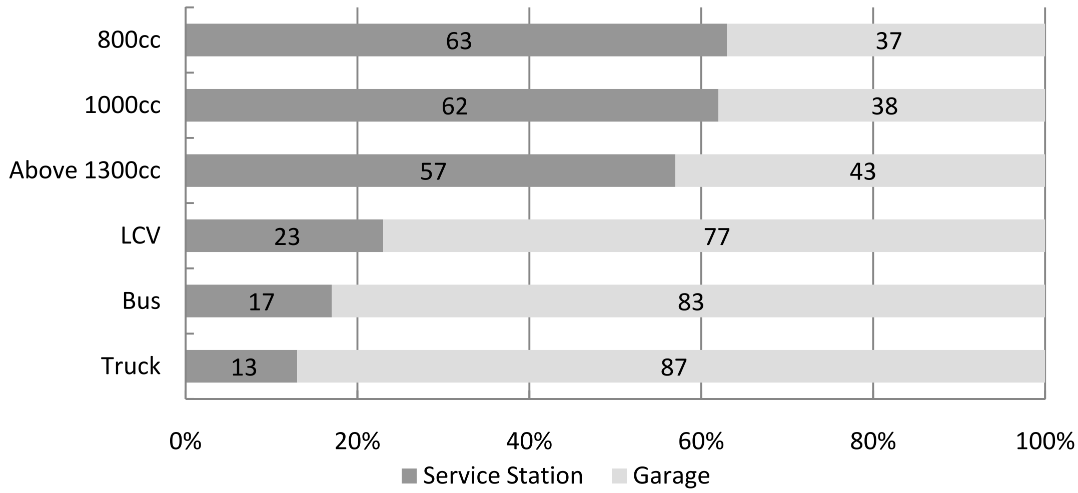
As for buses and trucks, "less than Rs.3000" accounts for the smallest percentage, 11% and 3% respectively. The remaining share is equally divided by "Rs.3,000 – 5,000," "Rs.5,000 – 7,000" and "Rs.7,000 or over." (FigureA-19)

At present, only commercial vehicles (buses, trucks and taxis) are required to receive vehicle examination (once in every six months). Passenger car and LCV users were asked as to whether they would agree with introduction of the compulsory vehicle examination system. More than 70% of passenger car users and 66% of LCV users expressed agreement probably because the increase in the number of traffic accidents in recent years. (FigureA-20)



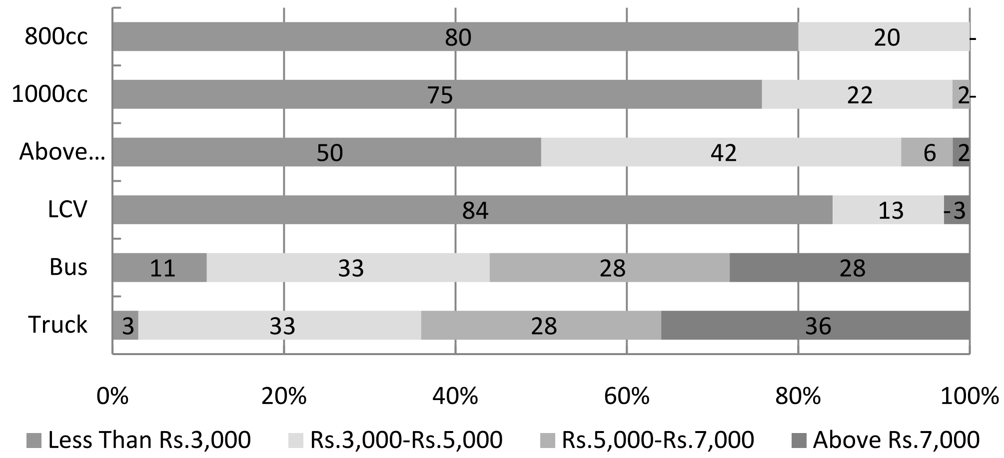
(Multiple Answers) (JICA Study Team)

Figure A-17 Vehicle Maintenance Period



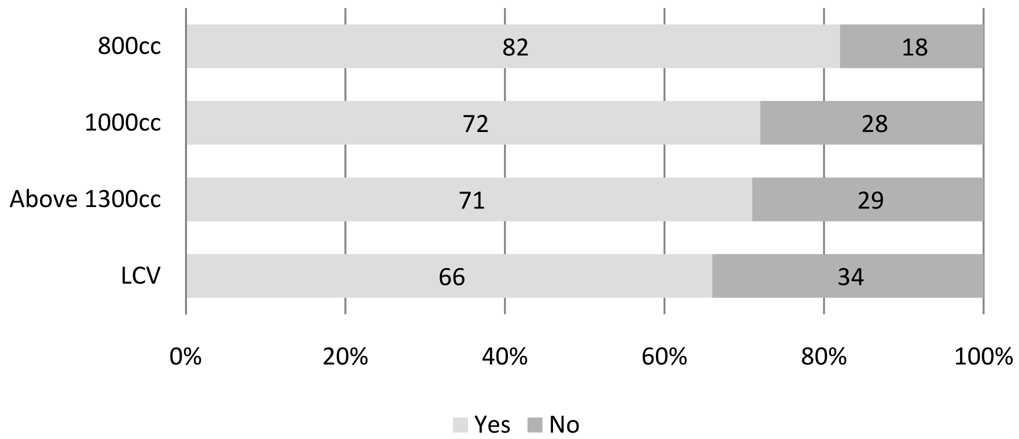
(Multiple Answers) (JICA Study Team)

Figure A-18 Place of Vehicle Maintenance



(Multiple Answers) (JICA Study Team)

Figure A-19 Price of Each Maintenance



(Multiple Answers) (JICA Study Team)

Figure A-20 Introduction of Periodic Inspection System for Private Vehicles

Annex II: Questionnaire for Parts Venders

QUESTIONNAIRE TO PARTS/COMPONENTS SUPPLIER

List No. : ____________________

Interviewee : Name ____________________ Position ______________________________

Interviewer : Name ____________________ Signature ______________________________

Month Day Time

A. Company Profile

A.1 General

1) Name of Company ______________________________

2) Address ______________________________

3) Telephone No. ____________________

4) E-mail Address ____________________

A.2 Status of the company

1) Established in the year of ________

2) Number of employees ________ of which, families ________

3) Paid-up capital

Amount __________ Rupee

of which, domestic _____% foreign _____% (Countries:)

A.3 Sales for year 2008-09

1. ☐ Less than 5 million Rupee 2. ☐ 5 to 10 million Rupee

3. ☐ 10 to 20 million Rupee 4. ☐ 20 to 100 million Rupee

5. ☐ 100 to 200 million Rupee 6. ☐ More than 200 million Rupee

A.4 Membership of your company

Write the names of membership such as industrial associations, clubs and/or groups that you participate, e.g. PAAPAM.

1. ____________________ 2. ____________________

3. ____________________ 4. ____________________

A.5 What cetification of ISO do you have ?

	Yes	No	
1.	☐	☐	ISO 9000
2.	☐	☐	ISO 14001
3.	☐	☐	Other (QS 9000 / TS 16949)

B. Your Products and Raw Materials

Write five(5) of your products in order of sales amount for the last year . To each product, clarify (B1) the main processing method and (B2) for what the product is used, using a symbol of the following classification:

	Name of products	B.1 (A - K) Processing Method	B.2 (1 - 10) Components/parts of:
1			
2			
3			
4			
5			

B.1 (Processing method)
A. Casting B. Forging C. Press/stamping work
D. Plastic moulding E Rubber moulding F. Machining
G. Heat treatment H. Surface treatment/Electro plating
I. Glass working J. Sheet work/welding
K. Assembling of parts/components L. Others (specify in the column)

B.2 (The product is a part/component of:-)
1. Passenger cars/Vans 2. Pick-up trucks/Mini buses 3. Big trucks
4. Big buses 5. Motorcycles 6. Electrical parts
17, Others (specify in the column)

B.3 (The product is a system portion of:-)
1. Engine 2. Power train and axle 3. Steering
4. Brake 5. Body 6. Accessories
17. Others (specify)

B.4 How do you evaluate competitiveness of your raw materials that you are purchasing?
If you don't use the following raw materials, no need to answer.

	Satisfied	Fair	Not satisfied
(Sheet metal)			
1. Quality	☐	☐	☐
2. Cost	☐	☐	☐
3. Delivery	☐	☐	☐
4. Others (specify)	☐	☐	☐
(Resin, Chemicals)			
1. Quality	☐	☐	☐
2. Cost	☐	☐	☐
3. Delivery	☐	☐	☐
4. Others (specify)	☐	☐	☐

C. Your Customers and Market

C.1 Your market in 2008-09.

1) Your customers

1. Subcontracting business (OEM) : (   )% of total sales
2. General market or after-market : (   )% of total sales

100 %

2) Your market

1. Domestic market : (   )% of total sales
2. Direct export : (   )% of total sales (Countries :   )
3. Indirect export : (   )% of total sales

100 %

C.2 Information on your customers

1) Write the name of the top three (3) customers in order of the sales amount in 2008-09.

Name of Customers	Share to Total Sales	No. of Years of Business with Your Company
1.	( )%	
2.	( )%	
3.	( )%	

2) Total number of your customers in 2008-09: __________ Companies

D. Machinery & Equipment (M & E)

D.1 Write the critical M & E in your factory in order of importance on the production line.

Name	Capacity	Year to Make
1. Press (Press Mechanical) (Marking)	800 tons～, 500 tons～, 300 tons ～, 150 tons～ press Hydraulic, power press	
2. Shearing machine		
3. Moulding		
4. Machining center		
5. Welding		
6. Measuring machine		
7. CAD/CAM		
8. Lathe		
9. Milling		
10.		

D.2 How do you evaluate the modernization level of your M & E when compared with the international level.

1. ☐ Modernized enough   2. ☐ Medium level   3. ☐ Still low

D.3 Is your existing production capacity good enough to cope with market demand?

1. ☐ Over capacity   2. ☐ Appropriate   3. ☐ Short capacity

D.4 Do you have a plan to modernize your existing M & E and/or expand the existing capacity by introducing new M & E (Machinery and Equipment)

1. ☐ No plan so far.
2. ☐ Yes, we do.

If yes, please answer the following question of 1) and 2).

1) Names of M & E you desire to buy.

	Name	Capacity	Country/Brand	Price
1.				
2.				
3.				

2) When you buy new and modern M & E, what kind of problems do you face? Choose two (2) answers applicable.

1. ☐ Difficulty to get financing sources.
2. ☐ High interest rates of loans.
3. ☐ Too expensive to buy the M & E.
4. ☐ Insufficient market size for installation of the modern M & E.
5. ☐ Insufficient information such as catalogues on modern M & E.
6. ☐ Lack of capability and knowledge to operate the modern M & E.
7. ☐ Others (Specify:)

D.5 Do you have interest in buying reconditioned, used or second-hand M & E?

1. ☐ Yes 2. ☐ No

E. Production Technology

E.1 What is the most serious or frequent complaints that your customers raise to you? Choose two (2) answers applicable.

1. ☐ Quality (low or uneven)
2. ☐ Pricing (high)
3. ☐ Delivery (delay or inconsistent)
4. ☐ Production capacity (not enough to meet the demand)
5. ☐ Technological capabilities of Development (insufficient)
6. ☐ Others (Specify:)

E.2 At present, do you have any technical assistance from foreign based companies or a foreign consultant(s)? And, what kind of technical assistance do you desire in the near future? Choose one or more answers from following:

(Note) The "Foreign based companies" include companies in overseas joint-venture companies in Pakistan and companies in Pakistan owned by foreign investors.

	Present	Future		Country
1.	☐	☐	Production license	( )
2.	☐	☐	Training in Pakistan	( )

3. ☐ ☐ Training in Overseas ( )
4. ☐ ☐ In-house advisory services ( )
5. ☐ ☐ Extension advisory services ( )
6. ☐ ☐ Advisory services as required ( )
7. ☐ ☐ Others(Specify:) ( )
8. ☐ ☐ None

E.3 If you anticipate such technical assistance/cooperation from overseas in the future, what kind of relation with the foreign investors do you desire?

1. ☐ Joint-Venture
2. ☐ An onerous contract (Licensing with Royalty, Training, etc)
3. ☐ Others (Specify:)

E.4 In order to compete in the international market and with imported goods, continuous efforts to modernize your production technology are indispensable. To this end, the advanced technologies shall be efficiently transferred to your company from overseas. What kind of measures or supports do you desire for the technology transfer from overseas. Choose three (3) answers applicable from the following forgetting your cost burden required for those services.

1. ☐ Seminar for introduction of new/modern technologies
2. ☐ Workshops for production technologies easily applicable to your factory
3. ☐ Training of key personnel in Overseas.
4. ☐ Training of key personnel in training centers of Pakistan
5. ☐ Extension advisory services by a foreign consultant(s) periodically visiting your factory as per a schedule for 1 to 2 years.
6. ☐ Permanent advisory services by a foreign consultant(s) being stationed at your factory for 1 to 2 years.
7. ☐ Acquiring of license with a training program.
8. ☐ Technological information supply by publications
9. ☐ Strengthening of various technical institutions and centers e.g. MIDI, TISI,, laboratories and universities.

10☐ Others (Specify:

E. 8 Do you desire the governmental or public support for the above technology transfer (E.5) in terms of financing and/or institutional set-up.

1. ☐ Yes 2. ☐ No

F. Quality / Safety Control and Standard

F.1 With which of the following is your factory equipped for quality control. Choose all answers applicable to your company.

1. ☐ Organizational establishment by a department/division specialized for inspection and/or QC.
2. ☐ Employment of a full-time inspector(s).
3. ☐ Inspection by operators/workers themselves on the production line.
4. ☐ Finished goods inspection system.
5. ☐ Semi-finished goods inspection system between a process and another.
6. ☐ Introduction of a QC circle(s).
7. ☐ Proposal system or movement for employees to improve the production management. (such as Kaizen, Teian)

F.2 What kind of quality <u>standards</u> do you usually use? Choose all answers applicable to your company.

1. ☐ Pakistan standards
2. ☐ Foreign standards (Specify:)
3. ☐ OEM Standards (Specify:)
4. ☐ Customer's standards
5. ☐ Your own company's standards
6. ☐ None
7. ☐ Others (Specify:)

F.3 How do you think to meet customer's standards for your company ?

1. ☐ Difficult
2. ☐ Somehow, can be managed
3. ☐ Easy

F.4 Which institutions do you usually use for products testing?

1. ☐ Pakistan Government testing laboratory (Specify)
2. ☐ Foreign testing laboratory (Specify:)
3. ☐ Customer's testing laboratory
4. ☐ Your own company's laboratory
5. ☐ None
6. ☐ Others (Specify:)

F.5 What is requred to keep the national standards on quality and safety for auto-parts and materials for Pakistan automobile industry ?

1. ☐ Legislation of the national standards by law
2. ☐ Financing support to modernize production facilities
3. ☐ Technical support

F.6 The government is intending to strengthen emission control. What is your opinion ?

1. ☐ Yes, they should start it immediately. We will follow to the regulation.
2. ☐ Yes, but step by step according to capability of parts makers.
3. ☐ No, they have to publish the implementation schedule first.
4. ☐ No, my company cannot survive any more.

F.7 The government is intending to introduce national standard on automobile parts base or on factory base in order to improve the quality for safety and to strengthen international competitiveness. What is your opinion ?

1. ☐ Yes, I agree
2. ☐ Yes, but conditions (Specify______________________________)
3. ☐ No, it is too early. (Specify reasons:)
4. ☐ No, there is recall system, but the government has to prepare testing facilities.

F.8 If you agree to the national standard, what is suitable ?

1. ☐ The government shall create the national standard, reffering to Japanese JIS.
2. ☐ The government shall authorize suitable specifications of assemblers.
3. ☐ The government enforces insurance companies to prepare own standard.

F.9 What the government should apply the standard to ?

1. ☐ To individual part of automobile
2. ☐ To factory for a unit of all products

F.10 Who will inspect whether parts fit to the standard or not ?

1. ☐ The government laboratory
2. ☐ The laboratory of assembler's factory
3. ☐ Private or unversity laboratory which the government will specify.

F.11 Do you agree to periodical inspection of automobiles by the government for the safety of riders ?

	Yes	No	
1.	☐	☐	Cars
2.	☐	☐	Trucks
3.	☐	☐	Buses
4.	☐	☐	CVLs
5.	☐	☐	Motorcycles

G. Manpower

G.1 What is the educational background of your employees by grade of education? Write in the number of personnel.

		Technical	Non-technical	Total
1	University			
2	More than 4 years vocational college			
3	Diploma & above			
4	High school & Vocational certificate			
5	Primary & Lower secondary			
	Total			

G.2 How long is the average stay of workers in your factory? _______ years

G.3 How old is the average age of workers in your factory? _______ years old

G.4 What is the problems faced by your company in manpower recruitment and management? Choose two (2) answers applicable to your company?

1. ☐ Difficulty to recruit highly educated persons, namely diploma and above.
2. ☐ Difficulty in training and education in the company.
3. ☐ Lack of discipline and moral for their jobs.
4. ☐ Job-hopping (They tend to easily move to another company.)
5. ☐ Labour dispute or strikes.
6. ☐ Increase in salaries and wages.
7. ☐ Others (Specify:)

G.5 How do you train or educate your employees? Choose all items applicable to your company.

1. ☐ On-the-job training in your factory or customer's factories.

2. ☐ By participation to <u>seminars and workshops.</u>
3. ☐ By a scheduled training course in <u>schools and centers.</u>
4. ☐ <u>Dispatch to overseas.</u>
5. ☐ Others (Specify:)

G.6 In training of your engineers, what you want for training institutes ?

1. ☐ Night class at training centers
2. ☐ Money support for companies burden, for example tuition, transport, wage
3. ☐ State-of-arts machine and excellent trainers

G.7 Have you participate yourself or sent your employees to overseas training ?

1. ☐ AOTS (Japan)
2. ☐ JETRO (Japan)
3. ☐ Others (Specify

G.8 Have you utilised any seminar or short training ?

1. ☐ AOTS (Japan)
2. ☐ JETRO (Japan)
3. ☐ AT&TC (Pakistan)
4. ☐ Others (Specify such as KTDMC, PAKSWISS)

G.9 Job hopping happens fequently. Do you want to keep your engineers ?

1. ☐ Yes, we will keep our engineers in any chances.
2. ☐ Yes, but select the training course and persons by period, location, cost, trainers, skill level, loyalities etc.
3. ☐ No, we will not.

G.10 What kind of problems do you have faced in using such institutions? Choose two (2) answers applicable to you.

1. ☐ Lack of information about the services & functions they provide.
2. ☐ Complicated procedures for application
3. ☐ Time consuming for the services (Not available modern technology & machine)
4. ☐ Those institutions are far in location
5. ☐ Obsolete equipment and technologies in the institutions
6. ☐ Expensive in service charges
7. ☐ Others (Specify:

H. Financing

H.1 What is your <u>financing sources and a use</u> of them?

Name of financiers	a) Type	b) S/L	c) Rate	d) Use
1.			%	
2.			%	
3.			%	
4.			%	

Use the following symbols for filling columns a) to d).

a) Type (A) State banks
(B) Commercial banks
(C) Non-bank financial corporations
(D) Special institutional credit line provided by the government
(E) Informal financing (family, friends, relatives, groups for credit)
(F) From overseas (off shore)
(G) Others (specify in the column)

b) S/L S : Short-term loan (repay within on year)
L : Long-term loan (repay within more than one year)

c) Rate Write the interest rate per year.

d) Use WC: Use for working capital (purchasing raw materials, bridge loan etc.)
FX: Use for purchasing fixed assets including machinery, equipment land and factory buildings.
Others : Specify in the column.

H.2 At present, do you need loans or credits?

1. ☐ Yes 2. ☐ No

If yes, answer the following:

Approx. amount :__________________ Rupee

For what do you use them? Choose all applicable to you.

1. ☐ Working capital
2. ☐ Purchase of machinery and equipment
3. ☐ Purchase of inspection/measuring equipment
4. ☐ Land acquisition
5. ☐ Factory building construction
6. ☐ Expenditure for R & D
7. ☐ Relocation of the factory site
8. ☐ Purchase of waste treatment facilities
9. ☐ Others (Specify:)

H.3 What are your difficulties or problems do you face in borrowing loans from banks or corporations? Choose two(2) answers from the following.

1. ☐ Insufficient mortgage or collateral to meet your loan requirement
2. ☐ The complicated procedure, the requirements for documentation and long time requirement for evaluation of you application
3. ☐ Lack of official credit guarantee system to compliment the insufficient mortgage
4. ☐ Banks' passive attitude to finance small- and medium-scale enterprises
5. ☐ Banks don't finance the full amount of loan requirements, for example 80% of total requirements is a limit of the loan.
6. ☐ Others (Specify:)

I. Linkage and Subcontracting

I.1 At present, what kind of assistance/cooperation do you get from your customers? What do you anticipate in the future? Choose all items applicable to your company.

Present	Future	Items
1. ☐	11. ☐	1) Technical assistance * Licensing * Advisory services * Drawings/Design * R & D
2. ☐	12. ☐	2) Financial support * Equity participation * Credit
3. ☐	13. ☐	3) Managerial assistance * Advisory services * Dispatch of management
4. ☐	14. ☐	4) Training * Training in Pakistan * Training in overseas
5. ☐	15. ☐	5) Supplies * Materials/parts * Die & mould * Facilities * Consignment contract
6. ☐	16. ☐	6) Others Specify: ____________________ ____________________

I.2 Do you want to expand or penetrate the subcontract business for selling your products?

1. ☐ Yes   2. ☐ No interest   3. ☐ Sufficient so far

I.3 What are the difficulties you face in expanding or penetrating the subcontracting business as a supplier? Choose two (2) answers most applicable to your company from the following.

1. ☐ Lack of companies' information on potential customers.
2. ☐ They have already established a business group so that penetration is not easy.
3. ☐ Lack of competitiveness of our products in terms of quality, cost and delivery.
4. ☐ Insufficient production capacity to cope with big amount of order.
5. ☐ We don't know how to contact with the potential customers.
6. ☐ Lack of capability in sales activities.
7. ☐ Others (Specify:)

I.4 Are you looking for a Joint-venture partner(s)?

1. ☐ Yes (Country: ____________________ Product: ______________)
2. ☐ No

J. Export Promotion of Your Products

J.1 If you are exporting your products, what export incentives provided by government are you using? e.g. export finance, refund of duties, investment incentive, etc..

Specify:(

J.2 Do you desire to begin or expand direct exports?

1. ☐ No idea, so far.
2. ☐ Yes.

If yes, answer the following:

Destination (Countries): ______________________
Anticipated Amount: (   ) % of total sales

J.3 What are your difficulties in promotion of exportation?
Choose all answers applicable to you.

1. ☐ Marketing (Market info., How to get inquiries)
2. ☐ Procedures for the external trade (Correspondence, Documentation, Shipping)
3. ☐ Contract (Legal matters, Guarantee)
4. ☐ Severe requirements of buyers in quality, cost and delivery.
5. ☐ Insufficient production capacity to meet lots of orders
6. ☐ Unstable order (spot-order)
7. ☐ Financial problem (Lack of working capital for exportation)
8. ☐ Intangible barriers in language and business custom, etc.
9. ☐ Others (Specify:)

J.4 The government of Pakistan has a policy to promote exports of parts/components as CKD. What support do you request to the government?
Specify your request taking into account referring to J.3 too.

____

K. Auto Policy

K.1 Do you know the Auto Industry Dvelopment Programme (AIDP) by The Ministry of Industry, Janaurry 2008 ?

1. ☐ Yes, quite well
2. ☐ Yes, but not so much.
3. ☐ No, I do not.

K.2 What benefits did you get from AIDP ?

1. ☐ Tariff plan
2. ☐ Man power training
3. ☐ Asset investment insentive
4. ☐ Technology acqusition support
5. ☐ Cluster development
6. ☐ Investment policy
7. ☐ Auto industry development committee(AIDC)
8. ☐ Not at all

K.3 What you need government support ? Please chose 3 items.

1. ☐ Technical support
2. ☐ Visiting support periodically by technician
3. ☐ Access support to foregn possible investors or technologies such as patents
4. ☐ Education
5. ☐ Training of your engineers
6. ☐ Standard, inspection facilities
7. ☐ Market development
8. ☐ Useful information
9. ☐ Leadership of the EDB and PAM/PAAPAM
10. ☐ Promotion of SMEs
11. ☐ Tariff
12. ☐ Tax reduction
13. ☐ Finance (collateral, amount, interest rate)
14. ☐ Donors contribution
15. ☐ Others (Specify

K.4 Freely describe your requests to the government of Pakistan.

Comments by Interviewer

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