MINISTRY OF AGRICULTURE
REGIONAL GOVERNMENT OF AYACUCHO

THE STUDY
ON
THE PROGRAM OF RURAL DEVELOPMENT FOR POOR PEASANTS AND LOCAL CAPACITY STRENGTHENING
IN
CENTRAL HIGHLANDS

REPUBLIC OF PERU

FINAL REPORT

AUGUST 2010

JAPAN INTERNATIONAL COOPERATION AGENCY

NIPPON KOEI CO., LTD.
KRI INTERNATIONAL CORP.
NIPPON KOEI LATIN AMERICA-CARIBBEAN CO., LTD.

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PREFACE

In response to a request from the Government of the Republic of Peru, the Government of Japan decided to conduct a development study on “Program of Rural Development for Poor Peasants and Local Capacity Strengthening in Central Highlands of Peru” and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Hitoshi SHIMAZAKI of NIPPON KOEI Co., Ltd. between March, 2009 and July, 2010.

The team held discussions with the officials concerned of the Government of the Republic of Peru, and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Peru for their close cooperation extended to the study.

August 2010

Izumi TAKASHIMA,
Deputy Vice President,
Japan International Cooperation Agency

August 31, 2010

Mr. Izumi TAKASHIMA
Deputy Vice President
Japan International Cooperation Agency
Tokyo, JAPAN

Dear Sir,

Letter of Transmittal

We are pleased to submit you herewith the Final Report on the Study on the Program of Rural Development for Poor Peasants and Local Capacity Strengthening in Central Highlands in Peru. The Study aimed to (1) formulate the program of the rural development for the poor peasants and the local capacity strengthening in the central highlands with the purpose of linking the poor peasants with local, regional, and national markets to improve their income, activity and life, and (2) carry out capacity development of Peruvian counterpart personnel in the course of the Study so as to manage and coordinate the implementation of the above program, for Ayacucho Region located at Sierra Area lying at central south of Peru. This report presents all the results obtained from the study activities in Peru and Japan over 18 months from March 2009 to August 2010.

Ayacucho Region which is the Study Area, has a higher poverty condition in the Sierra area. The poor people in the region attain 78 % of the total population, out of them 41 % are regarded as extreme poor. In the Sierra area showing natural diversity, the poor peasants are carrying out the agriculture, livestock, inland fishery, etc., but are facing the various problems and constraints such as insufficient production infrastructure, which result in low productivity. Also, they are vulnerable to natural disasters, which is one of reasons of high poverty rate.

Taking into due consideration the above, the Master Plan is formulated under the basic idea of “reflection of regional characteristics and effective use of regional resources”, to attain the “mitigation of vulnerability and improvement of livelihood of poor peasants. The Master Plan proposes 34 projects as the livelihood improvement program by region and 5 projects as the vulnerability mitigation program by region. We hope that Ayacucho Region will become the “successful region (advanced region) on measures to poor peasants” by implementing these projects by 2020, target year of the Master Plan.

We would like to express our deep appreciation and sincere gratitude to the officials of your Agency, the Ministry of Foreign Affairs, the Ministry of Agriculture, Forestry and Fisheries of Government of Japan for the courtesies and cooperation kindly extended to our team. We also wish to express our hearty appreciation and gratitude to the officials concerned of Peru Office of your Agency, the Embassy of Japan in Peru, the Ministry of Agriculture, the Ministry of Economy and Finance and the Regional Government of Ayacucho for their support and valuable advices in the course of the Study in Peru.

Very truly yours

Hitoshi SHIMAZAKI
Team Leader of JICA Study Team
The Study on the Program on
Rural Development for Poor Peasants and
Local Capacity Strengthening in Central in Peru

Study Area (Ayacucho Region)

The Study on The Program of Rural Development
for
Poor Peasants and Local Capacity Strengthening in Central Highland
in
Republic of Peru

Final Report

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Abbreviation

Abbreviation	Español	English	日本語
【A】			
AECI	Agencia Española de Cooperación Internacional	Spanish Agency of International Cooperation	スペイン国際協力庁
AgroRural	Programa de Desarrollo Productivo Agrario Rural	Program of Rural Agrarian Productive Development	農村農業生産開発計画
ALA	Autoridad Local del Agua	Local Water Authority	地方水管理局
ALIADOS	Apoyo a las Alianzas Rurales Productivas en la Sierra	Support to the Productive Rural Alliances in Sierra	山岳部農村生産連携援助
AMPE	Asociación de Municipalidades del Perú	Association of Municipalities in Peru	ペルー地方政府組合
ANA	Autoridad Nacional del Agua	National Water Authority	国家水管理局
APCI	Agencia Peruana de Cooperación Internacional	Peruvian Agency of International Cooperation	ペルー国際協力庁
【B】			
BCRP	Banco Central de Reserva del Perú	Central Reserve Bank of Peru	ペルー中央銀行
BID	Banco Interamericano de Desarrollo	Inter-American Development Bank	米州開発銀行（IDB）
BIRF	Banco Internacional de Reconstrucción y Fomento	International Bank for Reconstruction and Development	国際復興開発銀行（IBRD）
BM	Banco Mundial	World Bank	世界銀行（WB）
【C】			
CAD	Comité de Asistencia para el Desarrollo de la OCDE	Committee of Assistance for Development of the OECD	OECD 開発援助委員会
CAD	Corporación Americana de Desarrollo	Development American Corporation	米国開発団体
CAF	Corporación Andina de Fomento	Andean Development Corporation	アンデス開発公社
CAP	Cuadro de Asignación de Personal	Personnel Assignment Table	職員配属表
CAR	Comisión Ambiental Regional	Regional Environmental Committee	州環境委員会
CCL	Consejo de Coordinación Local	Local Coordination Board	地方政府調整審議会
CCR	Consejo de Coordinación Regional	Regional Coordination Board	州政府調整審議会
CDC	Comité de Defensa Civil	National Institute of Civil Defense	市民生活保護委員会
CE	Comisión Europea	European Commission	欧州委員会（EC）
CENSUR	Consejo Interregional Centro Sur	Center-South Interregional Board	中南部地域州諮問委員会
CIDA	Agencia Canadiense para el Desarrollo Internacional	Canadian International Development Agency	カナダ国際開発庁
CIIU	Clasificación Internacional Industrial Uniforme	International Standard Industrial Classification of All Economic Activities	国際産業標準分類

Abbreviation	Español	English	日本語
CIRA	Certificación de Inexistencia de Restos Arqueológicos	Certification of Inexistence of Archaeological Remains	遺跡不在証明
CND	Consejo Nacional de Descentralización	National Council of Decentralization	国家地方分権化審議会
CNP	Cuadro Normativo de Personal	Personnel Normative Table	職務規定
COFOPRI	Organismo de Formalización de la Propiedad Informal	Formalization Agency for Informal Properties	不法居住承認委員会
CONAM	Consejo Nacional del Ambiente	National Council of Environment	国家環境委員会
CONCADEL	Concertación y Capacitación para el Desarrollo Económico Local	Cooperation and Training for Local Economic Development	経済開発部の調整・能力開発
COSUDE	Agencia Suiza para el Desarrollo y Cooperación	Swiss Agency for Development and Cooperation	スイス開発協力庁
CSE	Programa de Centros de Servicios Empresariales no Financieros en el Corredor Económico Ayacucho-Apurimac-Huancavelica	Program of No Financial Business Services Center in Ayacucho – Apurimac – Huancavelica Economic Corridor	アヤクチョ・アプリマック・ウアンカベリカ経済圏非金融企業サービスセンタープログラム
CTAR	Consejos Transitorios de Administración Regional	Regional Administration Provisional Advices	暫定自治政府評議会
CTB	Cooperación Técnica Belga	Belgian Technical Cooperation	ベルギー技術協力
【D】			
DAP	Diagnóstico Ambiental Preliminar	Preliminary Environmental Evaluation	事前環境評価
DDHH	Derechos Humanos	Human Rights	人権
DGPM	Dirección General de Programación Multianual del Sector Público	General Directorate of Multiannual Programming of Public Sector	公共部門多年度計画総局
DIA	Declaración de Impacto Ambiental	Environmental Impact Declaration	環境影響宣言書
DIGESA	Dirección General de Salud Ambiental	General Department of Environmental Health	環境衛生局（保健省）
DIREPRO	Dirección Regional de la Producción	Regional Department of Production	アヤクチョ州生産局
DNI	Documento Nacional de Identidad	Identification National Document	国民身分証明書
DRA	Dirección Regional Agraria	Regional Department of Agriculture	州農業局
DRAA	Dirección Regional Agraria de Ayacucho	Ayacucho Regional Department of Agriculture	アヤクチョ州農業局
DREM	Dirección Regional de Energía y Minas	Regional Department of Energy and Mining	州エネルギー鉱山局

Abbreviation	Español	English	日本語
DRVCS	Dirección Regional de Vivienda, Construcción y Saneamiento	Regional Department of Housing, Construction and Sanitation.	州住宅建設衛生局
【E】			
EAE	Evaluacuón Ambiental Estratégica	Strategic Environmental Assessment	戦略的環境アセスメント
EAP	Evaluación Ambiental Preliminar	Preliminary Environmental Assessment.	事前環境影響評価
EMP	Estándares de Calidad Ambiental	Environmental Quality Standards	環境基準
E. E.	Estación Experimental	Experimental Station	試験場
E/N	Canje de Notas	Exchange of Notes	交換公文
EIA	Estudios Impacto Ambiental	Environmental Impact Assessment	環境影響評価
EIA-d	EIA-detallado	Detailed EIA	詳細環境影響評価
EIA-sd	EIA-semi detallado	Semi detailed EIA	半詳細環境影響評価
EIP	Establecimiento Industrial Pesquero	Fishery Industrial Facilities	漁業産業施設
ENAHO	Encuesta Nacional de Hogares	National Survey of Housing	全国世帯調査
ENDES	Encuesta Demográfica y de Salud Familiar	Demographic and Family Health Survey	世帯健康・人口統計調査
ERSDAC	Centro de Análisis de Datos Teledetección de Tierra	Earth Remote Sensing Data Analysis Center	財団法人 資源・環境観測解析センター
Essalud	Seguro Social de Salud	Social Security of Health	社会健康保険
【F】			
FAO	Organización de las NN. UU. para la Agricultura y la Alimentación	Food and Agriculture Organization of the United Nations	食料農業機関
FAP	Facilitar, Articular y Promotor	Facilitate, Articulate and Promote	政策の実施促進、関係機関の連携調整、政策の主導
FAP	Fuerza Aérea del Perú	Air Force of Peru	ペルー空軍
FIDA	Fondo Internacional de Compensación y Desarrollo	International Fund for Agricultural Development	国際農業開発基金（IFAD）
Ficha	Ficha	Outline Sheet	概要書
FITEL	Fondo de Inversión en Telecomunicaciones	Investment Fund in Telecommunications	テレコミュニケーション投資基金
FONCODES	Fondo de Cooperación para el Desarrollo Social	Cooperation Fund for Social Development	国家社会開発基金
FONCOMUN	Fondo de Compensación Municipal	Municipal Compensation Fund	地方補填金
FONIPREL	Fondo de Promoción a la Inversión Pública Regional y Local	Promotion Fund to the Regional and Local Public Investment	公共及び地方投資促進基金

Abbreviation	Español	English	日本語
F/S	Estudio de Factibilidad	Feasibility Study	フィージビリティスタディ
【G】			
GLCF	La Cobertura Global de Instalaciones de Tierra	Global Land Cover Facility	全球陸域ファシリティ
GPS	Sistema de Posicionamiento Global	Global Positioning System	全地球測位システム
GL	Gobierno Local	Local Government	地方政府
GLP	Gas Licuado Petróleo	Liquid Petroleum Gas	液化石油ガス
GN	Gobierno Nacional	National Government	中央政府
GRA/GR	Gobierno Regional de Ayacucho	Regional Government of Ayacucho	アヤクチョ州政府
【I】			
IDH	Índice de Desarrollo Humano	Human Development Index	人間開発指数（HDI）
IGN	Instituto Geográfico Nacional	National Geographic Institute	国立地理院
IGV	Impuesto Genera a las Ventas	Value Added Tax	付加価値税
INABIF	Programa Integral Nacional para el Bienestar Familiar	National Family Welfare Institution	国家統合家庭福祉計画
INADE	Instituto Nacional de Desarrollo	National Institute of Development	国家開発庁
INC	Instituto Nacional de Cultura	National Institute of Culture	文化庁
INCAGRO	Innovación y Competitividad para el Agro Peruano	Innovation and Competitiveness for the Peruvian Agro.	ペルー農業革新競争力強化プログラム
INDECI	Instituto Nacional de Defensa Civil	National Institute of Civil Defense	国家市民保護研究所
INEI	Instituto Nacional de Estadística e Informática	National Institute of Statistics and Information	国立統計情報庁
INIA	Instituto Nacional de Innovación Agraria	National Institute of Agrarian Innovation	国立農業研究所
INICAM	El Instituto de Investigación y Capacitación Municipal	Institute of Investigation and Training of Municipality	地方政府行政能力調査・開発協会
INRENA	Instituto Nacional de Recursos Naturales	National Institute of Natural Resources	国立天然資源庁
IRI	Instituto Regional de Infraestructura	Regional Institute of Infrastructure	州インフラ研究所
IVP	Instituto Vial Provincial	Provincial Road Institute	郡道路局
【J】			
JASS	Junta Administradora de Servicios de Saneamiento	Administration Board of Sanitation Services	保健サービス管理組合
JBIC	Banco del Japón para la Cooperación Internacional	Japan Bank for International Cooperation	国際協力銀行
JICA	Agencia de Cooperación Internacional de Japón	Japan International Cooperation Agency	国際協力機構
【L】			
L/A	Convenio de Préstamo	Loan Agreement	借款協定

Abbreviation	Español	English	日本語
LMP	Limites Máximos Permisibles	Maximum Permitted Limits	排出基準
【M】			
M&E	Monitoreo y Evaluación	Monitoring & Evaluation	モニタリング評価
MARENASS	Manejo de Recursos Naturales en la Sierra Sur	Natural Services Management in Sierra Sur	南部山岳天然資源管理計画
MEF	Ministerio de Economía y Finanzas	Ministry of Economy and Finance	経済財務省
MEM	Ministerio de Energía y Minas	Ministry of Energy and Mining	エネルギー鉱山省
MERISS	Mejoramiento de Riego en Sierra y Selva	Irrigation Improvement in Sierra and Selva	シエラ及びセルバ地域灌漑改善
MIMDES	Ministerio de la Mujer y Desarrollo Social	Ministry of Women and Social Development	女性社会開発省
MINAG	Ministerio de Agricultura	Ministry of Agriculture	農業省
MINAM	Ministerio del Ambiente	Ministry of Environment	環境省
MINCETUR	Ministerio de Comercio Exterior y Turismo	Ministry of Foreign Commerce and Tourism	貿易観光省
MINSA	Ministerio de Salud	Ministry of Health	保健省
MMM	Marco Macroeconómico Multianual	Multiannual Macroeconomic Frame	多年度マクロ経済枠組み
MOF	Manual de Organización y Funciones	Operation and Functions Manual	組織機能マニュアル
MTC	Ministerio de Transportes y Comunicaciones	Ministry of Transportation and Communication	運輸通信省
MYPE	Micro y Pequeña Empresa	Micro and Small Enterprise	零細企業
【N】			
NN. UU.	Naciones Unidas	United Nations	国際連合（UN）
【O】			
OCDE	Organización para la Cooperación y el Desarrollo Económico	Organization for Economic Co-operation and Development	経済開発協力機構（OECD）
ODA	Asistencia Oficial para el Desarrollo	Official Development Assistance	政府開発援助
ODEL	Oficina de Desarrollo Económico Local	Local Economy Development Office	経済開発部
ODSL	Oficina de Desarrollo Social Local	Local Society Development Office	社会開発部
OEA	Organización de los Estados Americanos	Organization of American States	米州機構（OAS）
OEFA	Organismo de Evaluacíon y Fiscalización Ambiental	Organization of Environmental Evaluation and Auditing	環境評価検査機関
OGATIER	Oficina de Gestión Ambiental Transectorial, Evaluación e Información de los Recursos Naturales	Information, Transectoral, Assessment and Environmental Management Office of Natural Resources.	自然資源の評価、情報の横断的管理室

Abbreviation	Español	English	日本語
ONG	Organización No Gubernamental	Non Governmental Organization	非政府組織（NGO）
ONU	Organización de las Naciones Unidas	United Nations	国際連合（UN）
OPI	Oficina de Programación de Inversión	Investment Programming Office	投資計画室
ORDE			
OSCE	Organismo Supervisor de las Contrataciones del Estado	Supervisor Organism of Contracting of the State	国家委託事業監視組織
【P】			
PAAC	Plan Anual de Adquisiciones y Contrataciones	Annual Plan of Purchases and Contracts	調達・契約年次計画
PACC	Proyecto de Apoyo a la Comunicación Comunal	Support Project to the Communal Communication	公衆通信援助計画
PAMA	Programa de Adecuación y Manejo Ambiental	Program of Environmental Conformity and Management	適合環境管理計画
PAME	Programa de Apoyo a la Pequeña y Microempresa	Support Program to the Small and Medium-sized Enterprises	零細企業支援計画
PAPT	Programa Agua para Todos	Water for All Program	万人に水を計画
PBI/PIB	Producto Bruto Interno/ Producto Interno Bruto	Gross Domestic Product	国内総生産（GDP）
PCM	Presidencia de Consejo de Ministros	Ministers Council Presidency	首相府
PDRC	Plan de Desarrollo Regional Concertado	Concerted Regional Development Plan	州総合開発計画
PEA	Población Económicamente Activa	Economically Active Population	経済活動人口
PEA	Preliminar Evaluación Ambiental	Preliminary Environmental Assessment	事前環境影響評価（報告書）
PEI	Plan Estratégico Institucional	Institutional Strategic Plan	組織戦略計画
PERC	Proyecto Especial Río Cachi	Cachi River Special Project	カチ川特別事業
Perfil	Perfil	Profile	基本計画書
PESCS	Proyecto Especial Sierra Centro Sur	South Central Sierra Special Project	中南部山岳地帯特別計画
PETT	Proyecto Especial de Titulación de Tierras y Catastro Rural	Special Project of Land Titling and Rural Land Registry	農村土地登記プロジェクト
PIA	Presupuesto Institucional de Apertura	Opening Institutional Budget	当初予算
PID	Documentos de Información del Proyecto	Project Information Documents	プロジェクト情報文書
PIEP	Plan de Infraestructura Económica Provincial	Provincial Economic Facility Plan	郡経済施設計画
PIM	Presupuesto Institucional Modificado	Modified Institutional Budget	実行予算

Abbreviation	Español	English	日本語
PIP	Proyecto de Inversión Publica	Public Investment Project	公共事業
PLATAFORMA	Comisión Multisectorial para el Desarrollo de Capacidades Regionales y Municipalidades	Multi Sectoral Committee for Regional and Municipal Capacities Development	地方自治体能力強化委員会
PNB	Producto Nacional Bruto	Gross National Product	国民総生産（GNP）
PNDC	Plan Nacional de Desarrollo de Capacidades	Capacities Development National Plan	能力開発国家計画
PNUD	Programa de las Naciones Unidas para el Desarrollo	United Nations Development Programme	国連開発計画（UNDP）
POI	Plan Operativo Institucional	Institutional Operative Plan	組織運営計画
PRIDER	Programa Regional de Irrigaciones y Desarrollo Rural Integrado	Irrigation and Integrated Rural Development Regional Program	州灌漑および統合農村開発計画
PROABONOS	Proyecto Especial de Promoción del Aprovechamiento de Abonos provenientes de Aves Marinas	Special Project of Promotion of Manure Use coming from Sea Birds	海鳥産肥料活用促進事業
PRODECO	Proyecto de Mejoramiento de la Competitividad Agropecuaria para Reducir la Pobreza	Agricultural Competitiveness Improvement Project to reduce Poverty	貧困削減のための農牧業競争力強化計画
PRODES	Programa Pro Descentralización	Decentralization Program	地方分権化支援プロジェクト
PRODUCE	Ministerio de la Producción	Ministry of Production	生産省
PRONAA	Programa Nacional De Asistencia Alimentaría	Food Assistance National Program	食糧支援計画
PRONAMA	Programa Nacional de Mobilización por la Alfabetización	National Program of Literacy Mobilization	識字率向上促進計画
PRONAMANCHCS	Programa Nacional de Manejo de Cuencas Hidrográficas y Conservación de Suelos	National Program of Hydrographic Basin Management and Soils Conservation	国家流域管理・土壌保全計画
Pronasar	Programa Nacional de Agua y Saneamiento Rural	National Program of Rural Water and Sanitation	農村地域上下水道整備計画
PROSAAMER	Programa de Servicios de Apoyo para Acceder a los Mercados Rurales	Support Services Program to Access the Rural Markets	農村市場促進援助計画
PSI	Programa Subsectorial de Irrigaciones	Irrigation Sub Sectoral Program	サブ灌漑計画
PVPP	Plan Vial Provincial Participativo	Participative Provincial Road Plan	郡参加型道路計画
【R】			
RESTEC	Centro Tecnológico de Teledetección del Japón	Remote Sensing Technology Center of Japan	日本リモートセンシング技術センター
REMPRE	Red de Municipalidades Rurales del Perú	Rural Municipalities Network of Peru	地方部地方政府網

Abbreviation	Español	English	日本語
RENAMU	Registro Nacional de Municipalidades	Municipalities National Register	地方政府行政調査
RO	Recursos Ordinarios	Ordinary Resources	通常財源
ROF	Reglamento de Organización y Funciones	Functions and Organization Rules	組織機能規定
【S】			
SD	Secretaría de Descentralización	Decentralization Secretary's Office	地方分権化局
SEACE	Sistema Electrónico Adquiciones y Contrataciones del Estado	State Purchases and Contracting Electronic System	公的機関調達・契約電子システム
SEIA	Sistema Nacional de Evaluación de Impacto Ambiental	National System of Evaluation of Environmental Impact	環境影響評価に関する国家システム
SENAMHI	Servicio Nacional de Meteorología e Hidrología	National Service of Meteorology and Hydrology	国立気象水文協会
SENASA	Servicio Nacional de Sanidad Agraria	National Service of Agrarian Health	国家農業衛生サービス
SERNANP	Servicio Nacional de Areas Naturales Protegidas por el Estado	National Service of States' Natural Protected Area	国家自然保護区サービス
SIERRA EXPORTADORA	Sierra Exportadora	Sierra Exporting	シエラ輸出促進計画
SIAF	Sistema Integrado de Administración Financiera	Integrated System of Financial Administration	財政管理統合システム
SIG	Sistema de Información Geográfica	Geographic Information System	地理情報システム（GIS）
SIS	Seguro Integral de Salud	Health Integral Insurance	統合健康保険
SNIP	Sistema Nacional de Inversión Pública	National System of Public Investment	国家公共投資システム
SUNARP	Superintendencia Nacional de Registros Públicos	National Superintendence of Public Register	国家公共登録機構
SUNAT	Superintendencia Nacional de Administración Tributaria	National Superintendence of Tax Management	国税庁
【T】			
TdR	Términos de Referencia	Terms of Reference	委託事項（TOR）
TUPA	Texto Único de Procedimientos Administrativos	Unique Text of Management Procedures	職務遵守規定
【U】			
UE	Unión Europea	European Union	欧州連合（EU）
UE	Unidad Ejecutora	Executing Unit	事業実施機関
UF	Unidad Formuladora	Formulating Unit	投資前調査実施機関
UGP	Unidad de Gestión del Pronasar	PRONASAR Management Unit	Pronasar 管理グループ
UNESCO	Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura	United Nations Educational, Scientific and Cultural Organization	国連教育科学文化機関

Abbreviation	Español	English	日本語
USAID	Agencia de Estados Unidos para el Desarrollo Internacional	United States Agency for International Development	米国国際開発庁
【Z】			
ZEE	Zonificación Ecológica y Económica	Ecological and Economic Zoning	生態的、経済的ゾーニング

Unit

Unit	Español	English	日本語
	Extensión	**Area**	**面積**
km^2	kilómetros cuadrados	square kilometer	平方キロメートル
ha	hectáreas	hectare	ヘクタール
	Volumen	**Volume**	**体積**
m^3	metros cúbicos	cubic meter	立方メートル
MCM	millones de metros cúbicos	million of cubic meter	100 万立方メートル
lit, l	litros	liter	リットル
	Longitud	**Length**	**距離**
mm	milímetros	millimeter	ミリメートル
cm	centímetros	centimeter	センチメートル
m	metros	meter	メートル
km	kilómetros	kilometer	キロメートル
	Peso	**Weight**	**重量**
kg	kilogramos	kilograms	キログラム
ton	toneladas métricas	metric ton	重量トン
	Moneda	**Currency**	**通貨**
US$	Dólares Americanos	American Dollars	米ドル
S/.	Nuevos Soles	Nuevos Soles	新ソル
¥	Yenes Japoneses	Japanese Yen	日本円
Exchange Rate: US$1.0 = ¥ 92.7 = S/.2.84 (as of April 16,2010)			
	Tiempo	**Time**	**時間**
seg.	segundos	seconds	秒
min.	minutos	minutes	分
hr	horas	hours	時間
	Otros	**Others**	**その他**
kW	kilovatios	kilowatt	キロワット
kWh	kilovatios hora	kilowatt hour	キロワット時
MW	megavatios	megawatts	メガワット
MWh	megavatios hora	megawatt hour	メガワット時
m.s.n.m.	metros sobre el nivel del mar	meters above sea level	標高、海抜 (m)

Chapter 1 Introduction

1.1 General

This report relates the Master Plan and the Action Plan on the Study on the Program of Rural Development for Poor Peasants and Local Capacity Strengthening in Central Highlands, in accordance with the Scope of Works exchanged among the Government of Peru (Ministry of Agriculture (*MINAG*), International Cooperation Agency of Peru (*APSI*) and Ayacucho Regional Government (*GRA*)) and Japan International Cooperation Agency (*JICA*) on December 12, 2008.

1.2 Background and Purpose of the Study

Peru is located at the central part of the South America, facing the Pacific Ocean. Its total territorial area is 1,285,000 km^2. It is geographically classified by the Andes mountains lying north and south; costa (seaside desert area: 10% of the total area), sierra (Andes mountains area: 30% of total area), and selva (tropical rain forest area: 60% of total area). Politically, countermeasures to the poverty, especially tackling the poverty problems to inhabitant area of aborigines as well as urban area of Lima, are the most important subjects. The poverty in the urban area tends to increase by the accelerated population inflow from the rural area. It is therefore important to make an improvement of job opportunity, income increase and activation of economy toward settlement of population in the rural area. The population in the urban area has already attained some 70% of total one, so that it is fear that further increase of population in the urban area would bring about the deterioration of security and increase of social expenses. The García Government established in July 2006 came up with the policy focusing on the Sierra Exportadora by holding up the economic growth with job opportunity and poverty alleviation in the rural area, and also has promoted the policy toward rectification of gap among areas and poverty measures in the Sierra area. Following these polices, many donors and international agencies are providing supporting services in the Sierra area.

Ayacucho Region which is the Study Area as mentioned later, has a higher poverty condition in the Sierra area. The poor people in the region attain 78% of the total population, out of them 41% are regarded as extreme poor which indicates in the INEI Census in 2007. Under such a situation, the Government of Peru (*GOP*) requested the Government of Japan (*GOJ*) to execute the Study on the Program of Rural Development for Poor Peasants and Local Capacity Strengthening in Central Highlands (*the Study*). In answer to this request, GOJ carried out the preliminary study in March 2007 and the preparatory study in March 2008, and then discussed with GOP about the contents and extent of the Study. The results of the discussion were complied in the Scope of Work (*S/W*), which was signed and exchanged by GOP and GOJ on December 12, 2008. In accordance with S/W. the Study was commenced on March 19, 2009.

The purposes of the Study are:

(1) To formulate the program of the rural development for the poor peasants and the local capacity strengthening in the central highlands with the purpose of linking the poor peasants with local, regional, and national markets to improve their income, activity and life, and

(2) To carry out capacity development of Peruvian counterpart personnel in the course of the Study so as to manage and coordinate the implementation of the above program.

1.3 The Study Area

The Study Area is the Ayacucho Region consisting of 11 provinces and 111 districts. The name of provinces, number of districts, area, and elevation at center of province are shown in Table 1.3.1.

Table 1.3.1 Provinces, District Number, Population and Elevation at Center of Province in Study Area

Province		Districts (nos.)	Area (km^2)	Elevation at Center of Province (m)
1	Huanta	8	3,879	2,628
2	La Mar	8	4,392	2,661
3	Huamanga	15	2,981	2,761
4	Cangallo	6	1,916	2,556
5	Vilcas Human	8	1,178	3,470
6	Victor Fajardo	12	2,260	3,092
7	Huanca Sancos	4	2,862	3,525
8	Sucre	11	1,786	3,502
9	Lucanas	21	14,495	3,214
10	Parinacochas	8	5,968	3,175
11	Paucar del Sara Sara	10	2,097	2,524
Total		111	43,815	-

Source: Plan Vial Departmental Participativo Ayacucho and Censos Nacionales 2005, INEI

1.4 Study Team and Counterparts

The Study was executed together with the counterpart agencies of MINAG and GRA. The Steering Committee was organized by inviting the representatives of MINAG, Ministry of Economic and Finance (*MEF*), APSI, ARG and JICA Peru Office. Mr. Erick Uriarte Lozada, General Director of Planning and Budget Office, MINAG was assigned as a president committee. Mr. Orlando Chirinos Trujillo, Director of Sector Investment Unit, MINAG was appointed as a coordinator between the committee and the JICA Study Team. In addition, the following experts of GRA were assigned as counterparts based on the assignment schedule of the JICA Study Team staff:

Table 1.4.1 Name, Position and Affiliation of Counterparts

JICA Study Team		Counterparts		
Name	**Position**	**Name**	**Affiliation**	**Position**
Hitoshi SHIMAZAKI	Team Leader/ Rural Area Development	Ing.Ciro Oswaido Calle Pacheco Ing.Cesar Huaman Quispe	GRA PRIDER	Director Director General
Jorge Honores Rubio /Masayuki HONJO and Michinori YOSHINO	Agriculture/ Extension	Mr.Javier Arones Quispe Mr.Wilfredpo del Villar Galvez	GRA GRA	Environmental Officer Environmental Officer
Lechuga Chacón Ramiro Rene	Livestock	Mr. Oscar figueroa Soto	GRA	Deputy Director
Masayuki HONJO	Agricultural Production Distribution /Marketing/Extension	Mr.Dante Guillén Chávez Mr.Roland Alfaro Pacheco	GRA Ayacucho Regional Advice Committee	Agriculture Officer Economic Officer
Nobuo NAGAWARA	Rural Infrastructure/ Irrigation	Ing.Aruturo Gonzalez Huauya	PRIDER	Irrigation Officer
Anggela Mollo/ Fanny Beatriz Eto Chero	Road Improvement	Ing.Rodolfo Tineo Najarro	PRIDER	Civil Officer
Michinori YOSHINO	Vulnerability Assessment 1	Ing.Cristian Castro Pérez	PRIDER	Agriculture Officer

JICA Study Team		Counterparts		
Name	**Position**	**Name**	**Affiliation**	**Position**
Masafumi IKENO	Vulnerability Assessment 2/ Rural Society (Co-team Leader)	Ing.Efrain Jara Huayta Ms.Rosa Vergara Rivera	PDA GRA	Director Education Officer
Masahiko TANIGUCHI Akio YAMASHITA	GIS (1) GIS (2)	Ing.Bentio Alvarado Sánchez Mr.Carlos Narváez López	GRA GRA	GIS Officer Agriculture Officer
Kazuo IIYAMA/ Hideki IMAI	Reforestation/Environmental Conservation	Mr.Victor Calderón Pillaca Mr.Jesús Suárez Cuya	GRA GRA	Agriculture Officer Agriculture Officer
Munetoshi ISHDA	Institutional Building	Conta.Maria Julia Cabrera Santa	PRIDER	Accountant
Yayoi YOSHIOKA	Environmental Consideration	Mr.Jesús Tello Velarde Mr.David Cconislla Ventura	Regional Environmental Committee PRIDER	Chief of Committee Environmental Officer
Milton Guerrero Rodriguez	Project Evaluation	Ing.Teddy Fermando Felices Villar	GRA	SNIP Officer

Source: JICA Study Team

1.5 Work Procedure and Outline

The Study was conducted for 18 months from March 2009 to August 2010 in the following activities.

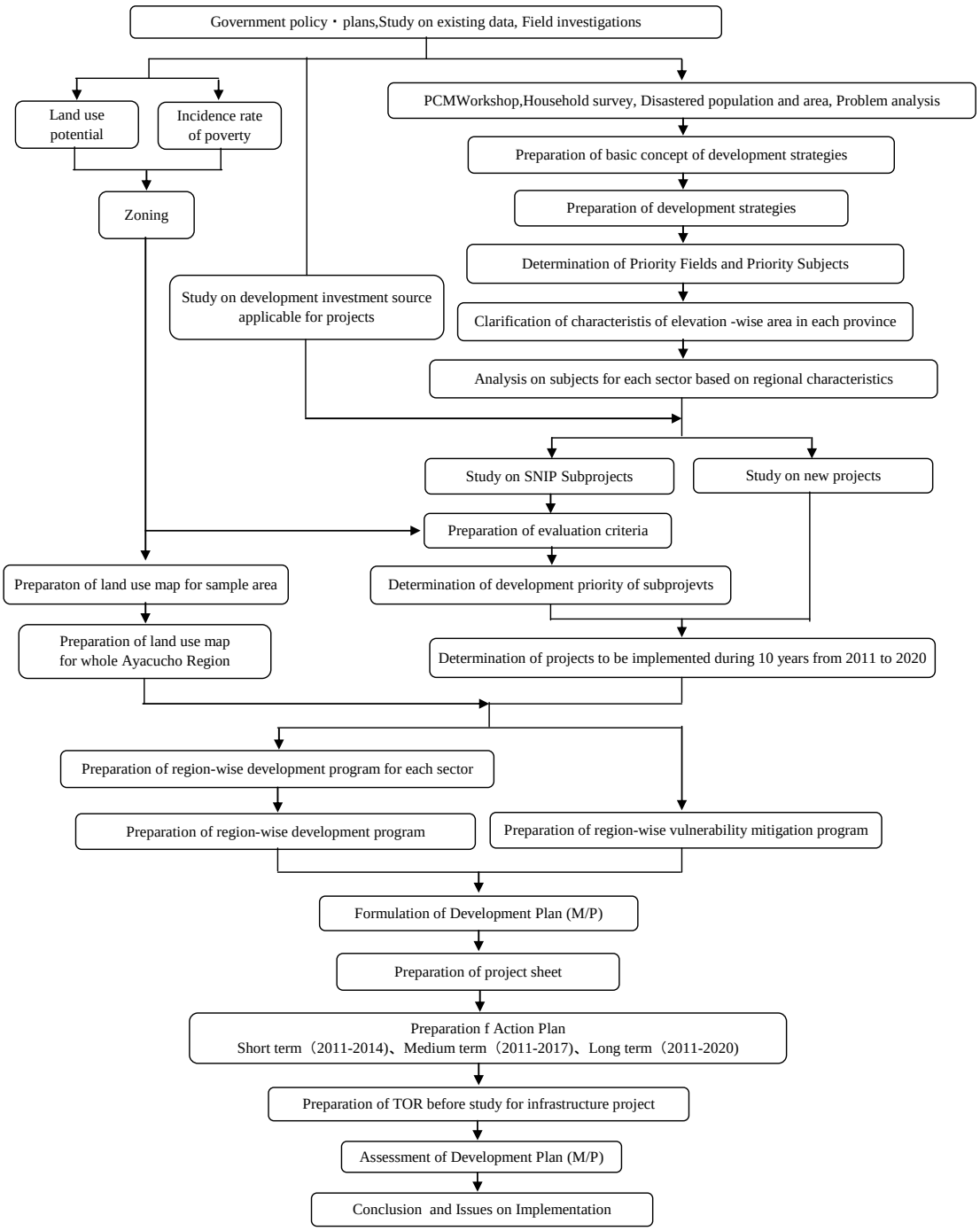
Table 1.5.1 Breakdown of Study Period

1st Year	Phase 1	Preparatory works	March 2009	Advance preparations
		1st Field Work（1）	March 2009～July 2009	Preparation of Basic Concept of Development Strategies
	Phase 2	1st Field Work（2）	July 2009～December 2009	Preparation of Development Strategies Preparation of Action Plan Formulation of Master Plan
		2nd Work in Japan	December 2009	
2nd Year		2nd Field Work	February 2010～May 2010	
		3rd Work in Japan	May 2010～June 2010	
		3rd Field Work	July 2010	
		4th Work in Japan	July 2010～August 2010	

Source ：JICA Study Team

Figure 1.5.1 shows the outline of the Study executed in the study period.

At first, the problems and constraints on poverty reduction in each sector were clarified through analysis on the results of review on super-ordinate policies, plan and existing data, field investigation, household survey and Project Cycle Management (*PCM*) workshop. Based on the analysis results, the basic concept of development strategy indicating the development direction was worked out. In the basic concept of development strategy, the relation among the various sectors related to development was clarified, and also the development approach based on the regional characteristics was used as an axis for preparation of development plan. In the development strategy in line with the basic concept, the direction to development was precise through determination of basic idea, future goal and vision as a measure to effectively realize the improvement of livelihood and mitigation of vulnerability of poor peasants. In addition, the regional subjects were taken up by studying on the characteristics of Ayacucho Region showing the diversity on natural and socioeconomic conditions. Furthermore, the priority development fields and their sub-ordinate priority development subjects were determined. Using these priority development fields and priority development subjects, the relevant sectors to the poverty reduction of poor peasants, which was a main objective of the Study, were narrowed down. Then, the SNIP sub-projects were classified into some projects for respective relevant sectors. The SNIP sub-projects belonging to respective relevant sectors were prioritized based on



Source: JICA Study Team

Figure 1.5.1 Outline of Work

the evaluation criteria. Concurrently, the new projects also were formulated as required.

In parallel with these works, a zoning was carried out using the theme maps on land use potential and poverty conditions of Ayacucho Region. This result was reflected upon the evaluation criteria to be used for prioritization of SNIP sub-projects. A study was conducted for the development financial source investable during 10 years from 2011 to 2020, using the past actual expenditures and the expected growing rate of GDP. Thus, the projects to be implemented during the said period were determined based on this investable development financial source.

Taking into consideration the above mentioned regional characteristics of Ayacucho, the region-wise development

program was worked out for each sector, aiming at improvement of livelihood of poor peasants. On the other hand, the region-wise vulnerability mitigation program was elaborated similarly. As the results of these works, it became obvious that which projects should be implemented for which regions, to attain the objectives effectively. These works were complied in a form of Master Plan. The project sheets for each project were also prepared aiming at further easy clarification of project contents.

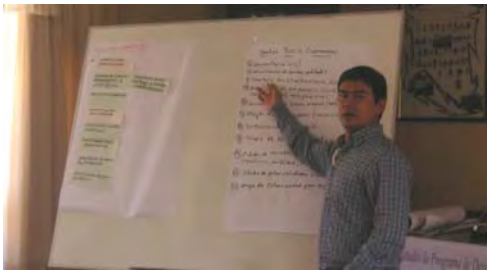
That Action Plan was prepared based on the region-wise development program and the region-wise vulnerability mitigation program. The Action Plan was prepared for the short term (2011-2014), medium term (2011-2017) and long term (2011-2020). In particular, attention was given to the implementation order of the projects so as to occur the combined effect of them.

1.6 Technology Transfer

In the Study, the executed technology transfer was the On-the-Job Training for each sector, workshop and seminar. In the On-the-Job Training, each staff of JICA Study Team conducted the technology transfer for his counterpart through his work. As for workshop, two workshops were held: PCM workshop and traffic workshop. In these workshops, a discussion was made among participants including counterparts for the mitigation of vulnerability, livelihood improvement and strengthening of relevant agencies, to make them know how to collect the necessary data and information. In addition, a Geographic Information System (*GIS*) seminar was held for counterparts on how to prepare the present land use map using GIS and how to apply such map for preparation of development plan. In the GIS seminar, the technology transfer was made for counterparts about preparation of land use map mainly using the satellite images. The counterparts could finally become to prepare the land use map by themselves as the results of cooperative works with them for all procedures from how to use satellite images, how to make field investigation until how to prepare the land use map. Through this experience, it seemed that they felt the value of high resolution satellite images enabling to prepare and execute the more accurate and detailed plans and to increase the reliability of statistic data. Besides, the following GIS seminar was held in December 2009, to explain the results of preparation of land use map for the sample area and to discuss with counterparts about how to use it in future.

Table 1.6.1 Outline of GIS Seminar

Purpose of Seminar	1) To deepen the understanding on use of GIS and remote sensing in the Study 2) To deepen the knowledge of beginner on GIS and remote sensing 3) To discuss about how to use them for development in Ayacucho in future
Time and Date	09:30 – 13:00 on December 8, 2009
Venue	Santa Rosa Hotel in Ayacucho
Attendants	24 persons in total（Regional office, Agriculture department, Production Department、Cachi office, etc.）
Contents	
09:30-09:40	Opening address by regional office staff
09:40-10:30	1st Session（lecture by JICA Study Team） - How to use GIS in the Study - What is remote sensing? - Preparation f land use map using satellite images and Analysis method
10:30-10:45	Coffee break
10:45-12:10	2nd Session（lecture by JICA Study Team） - Introduction of use example of GIS in other foreign countries Case 1: Use of Watershed Management in Indonesia Case 2: Use of Community Development in Palestine Case 3: Example of Educational Development Plan in Ethiopia
12:10-13:00	Final session（Group work by attendants） - Discussion on use of GIS and remote sensing for development in Ayacucho GIS - Announcement of results and exchange of opinions - Closing address

Scenes of Seminar		
	Introduction of Use Example in Other Countries	Discussion Scene of Group 1
		
	Discussion Scene of Group 2	Announcement of Results and Exchange of Opinions

Source: JICA Study Team

Through the GIS seminar, thorough discussion was made among the attendants about use of GIS and remote sensing. The seminar was therefore so effective because the attendants came to know that the satellite images could become a tool to confirm the reliability of agricultural statistic data at least as the real regional situation was not clear due to low reliability of statistic data, and also understood that GIS and remote sensing could be used for not only planning, monitoring and assessment of vulnerability measures and livelihood improvement, but also social development fields such as health and education. This Study presented the situation which the regional office staff could have a discussion based on the common information through establishment of GIS database and preparation of land use map. In order to keep the sustainability of the study results, it is necessary for GRA to make further efforts from now on. GRA has set out the preparation of zoning map for its economic development since 2009 and would be activated the activity as more budget will be allocated from 2010. It is highly expected that GRA would promote the information arrangement for whole Ayacucho Region using the experience and technology obtained from the On-the-Job Training and the seminars in the Study.

1.7 Steering Committee Meetings

The following steering committee meetings were held for explanation and discussion on the reports in the study period:

Date and Year	Reports to be Discussed
March 23, 2009	Inception Report
July 8, 2009	Interim Report
September 29, 2009	Progress Report (1)
December 9, 2009	Progress Report (2)
July 13, 2010	Draft Final Report

In these meetings, competent discussions were made among attendants after explanation of reports by JICA Study Team. The contents of discussions were compiled in the minutes of meetings. Those for each Steering Committee Meeting are given in Attachment-2 to -6.

Chapter 2 National Policies for Poverty Reduction and Decentralization

2.1 The Peruvian Economy

2.1.1 Economic Conditions

In the 1980's, Latin-American countries, in general, faced critical issues of external debt, which caused serious problems to their economy. Peru, as well, had serious difficulties to face the payment of its external debt, accumulated from loans granted to execute public investment projects. Thereby, the dept grew bigger and bigger and its payment became an obstacle for the overall operation of the economy in the country. The financial deficit, the increase of inflation, and the lack of employment caused a decrease in production and, by the end of the decade, the Peruvian economy was chaotic.

In 1990, the beginning of the Fujimori's Government, the liberalization of commerce and economy took place in Peru. Price control, established by the previous administration, was abolished, as well as the protectionist policies and the limited entrance of foreign capitals into the country. Moreover, diverse reforms were implemented to promote the privatization of public companies and the liberalization of international trade. As the result of the liberalization of the economy and the structural reforms established, competitiveness was strengthen due to the entrance of foreign capitals and this allowed the stabilization of economy[1].

Table 2.1.1 Trends of Main Economic Indicators in Peru (2000-2008)

Items	2000	2001	2002	2003	2004	2005	2006	2007	2008
GDP (thousands of Nuevos soles) *	186.1	189.2	199.7	213.4	237.9	261.7	302.2	335.7	373.0
GDP per capita (US$) *	2,115	2,107	2,184	2,324	2,600	2,917	3,340	3,806	4,453
GDP growth rate (%)*	3.0	0.2	5.2	3.9	5.2	6.4	7.6	9.0	9.8
Inflation rate (%) (Note 1)*	3.8	2.0	0.2	2.3	3.7	1.6	2.0	1.8	5.8
Export amount (FOB, millions of US$)*	6,955	7,026	7,714	9,091	12,809	17,368	23,830	27,882	31,529
Import amount (FOB, millions of US$)*	7,358	7,204	7,393	8,205	9,805	12,082	14,844	19,595	28,439
External debt balance (millions US$)**	27,981	27,195	27,872	29,587	31,244	28,657	28,395	32,566	---
Current account balance (thousand million US$)*	-1.50	-1.14	-1.06	-0.95	0.02	1.15	2.76	1.51	-4.18
Rate of Current Account Balance/GDP (%)*	-2.81	-2.12	s-1.87	-1.55	0.03	1.45	2.99	1.46	-3.28

Source: consumer's price index (IPC) average of monthly rate

Note: BCRP Estadísticas Económicas, Perú en Números, 2008

The Toledo's Government (2001-2006) and the current administration of President Garcia (2006-) have followed the policies implemented by the Fujimori's Government in regard to the macroeconomic policy stability, continuing with the same economic policies and structural reforms with monetary austerity. Since 2002, the international prices of minerals have been rising, which, jointly with the consolidation of the domestic consumption market, resulted in an average annual economic growth of 6.2% during the 2002-2007 period. Furthermore, in 2008, the growth reached 9.8%, the highest growth rate in Ayacucho Region.

MEF projected a growth of 3.5% for 2009, a reduction of 6% points compared to the previous year,[2] as the result of the world-wide economic crisis. Peru signed free trade agreements with China in December of 2008 and with the United States in February of 2009, promoting the liberalization of its economy.

[1] *Since the year 1998, due to external factors, such as the world external crisis and the El Niño Phenomenon, the economy entered a period of "stagnation". However, during the 10 years of the Fujimori Administration it was possible to reform and liberalized the economy, leaving behind the "lost decade" and re-establishing the economy. During the period between 1993 and 1997 the GIP had an average growth of 7.4%,*

[2] *The growth estimation for the 2010-2012 period is 5.6 (Marco Macroeconomic Multi-annual 2010-2012).*

2.1.2 Economic Structure

Peruvian Economy is traditionally structured in 5 basic sectors; i.e. agriculture, fishery, mining, industry and services. Table 2.1.2 shows the participation of the sectors in GDP since year 2000. The services and commerce sectors are responsible for over 50 % of GDP and mining and industry sectors for almost 20 %.

Table 2.1.2 Participation of Sectors in GDP (2000-2008) (Unit: %)

Items	2000	2001	2002	2003	2004	2005	2006	2007	2008
Agriculture, livestock, forestry	8.9	8.9	9.0	8.8	8.5	8.4	8.3	7.9	7.6
Fishery	0.6	0.5	0.5	0.4	0.6	0.5	0.5	0.5	0.5
Mining, petroleum	5.5	6.0	6.4	6.5	6.5	6.6	6.1	5.8	5.7
Industry	14.9	14.9	15.0	14.9	15.3	15.3	15.1	15.6	15.5
Energy, water	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0
Construction	5.0	4.7	4.8	4.8	4.8	4.9	5.2	5.6	5.9
Commerce	14.3	14.4	14.2	14.0	14.1	14.0	14.5	14.6	15.0
Other services	39.2	38.9	38.5	38.7	38.5	38.4	38.5	38.3	38.0

Source: Prepared from BCRP: "Producto Bruto Interno Por Sectores Productivos 1950-2008"
(http://www.bcrp.gob.pe/docs/Estadísticas/Cuadros-Anuales/ACuadro_07.xls)

Another characteristic of Peruvian economy is the great differences among the regions within its territory. By observing statistical data from 2006, it is noted that 5 regions (i.e. Lima, Ancash, Arequipa, Piura and La Libertad) are responsible for 68.5% of the country's production[3].

2.1.3 Financial-economic Policy

The Peruvian Government developed the Multi-annual Macro-economic Framework (*MMM: Marco Macroeconomico Multianual*), which is a plan of economic and financial policies, considering short-term macro-economic previsions as well as the economic, financial and social objectives of the government. In the 2010-2012 MMM, prepared in May of 2009, the analysis emphasizes the strengthening of the domestic market and, at the same time, cautiously considers the current unfavorable prospect of world economy.

2.2 National Policies

2.2.1 Toledo Government

The Toledo's Government prepared the 2002-2006 National Strategic Plan (*Plan Estratégico Nacional*) with the following goals: (i) Employment generation, (ii) Guaranteeing access to health, education and culture, and (iii) Promoting the modernization of the State, paying special attention to the reform policies aimed to the reduction of poverty and decentralization. The government policies developed in 2002 under the model of citizen participation had poverty reduction as their main topic. Subsequently, the 2004-2006 National Plan for Poverty Reduction (*Plan Nacional para la Superación de la Pobreza*) was developed.

2.2.2 Garcia Government

The current government has not prepared a formal strategic plan. However, in the presidential speech of July 28th, 2006, the pillars of the administration were announced as the promotion of decentralization and the simplification of administrative procedures, as well as the generation of employment and the reform and strengthening of the government social programs[4]. As a result, the projects of poverty reduction implemented by the Toledo's

[3] *The Region of Lima including the total production of the Constitutional Province of Callao and Metropolitan Lima) is responsible for 48.4% of the total production, while the Region of Ayacucho is responsible for 0.9% of the national production ((INEI, Compendio Estadístico 2007-2008).*
[4] *During year 2007 there were 82 social programs but at the present (may of 2009), many have been unified and there are currently only 26 programs (website of the PCM).*

Government have been continued, as well as the process of decentralization. Table 2.2.1 shows the main plans prepared during the Governments of Toledo and Garcia.

Table 2.2.1 Main National Plans Prepared by Toledo and Garcia Governments

Toledo Government (2001.7-2006.7)	Main Plan	**National Strategic Plan 2002-2006** 4 main topics ・ Employment generation ・ Poverty reduction ・ Decentralization Process ・ Modernization of the State **31 policies agreed in the National Agreement (*Acuerdo Nacional*) (2002)**
	Economic Policies	**MMM 2001-2003 / MMM 2005-2007**
	Poverty reduction and social development policies	**2004-2006 National Plan for Poverty Reduction** ・ Development of human capacities ad fundamental rights (access to public health, nourishment, education, sanitation and civil security). ・ Promotion of economic opportunities and capacities (development of techniques, rural development, basic housing, electrification, rural roads, communications). ・ Establishment of a network of social protection (social capital, protection measures for the most vulnerable populations)
	Administrative reform/ Decentralization	Implementation of the Program of Modernization and Decentralization of the State and the Act of Decentralization (July of 2002) and issuing of the pertinent laws.
García Government (2006.7-)	Main Plan	**Presidential Speech (July 28th of 2008)** ・ Reform of the social programs ・ Reduction of the population living in poverty ・ Improvement of children nourishment ・ Measures for decentralization, among others
	Economic Policies	**MMM 2006-2008/MMM 2010-2012**
	Poverty reduction and social development policies	**CRECER Program** **Programa Sierra Exportadora (*Program for the promotion of exportations in the highlands region*)** **2009 – 2011 Multi-annual Social Framework (*Marco Social Multianual 2009-2011*)**
	Administrative reform/ Decentralization	**20 strategies for the promotion of decentralization (October, 2006)**

Source: Prepared by the Study Team based on the web sites of PCM, MEF, Website of the Peruvian State (http://www.peru.gob.pe/gobierno/gobierno.asp)

2.3 Poverty Reduction and Social Development Policies

For the current administration of President Garcia, the fight against poverty is a very important matter and many programs have been launched with that purpose; e.g. Exporting Sierra Program, Water for All Program, Rural Development, Social Development. The CRECER Program has been introduced by this administration so that the individual sectoral programs may be implemented in a more efficient and effective manner.

The CRECER Program is based on 31 policies established within the National Agreement (*Acuerdo nacional*) and in the National Plan for Poverty Reduction, as well; which support the 3 main objectives[5] of the poverty reduction and social development programs. These objectives seek for accomplishing the "vertical adjustments" (adjustment of the role of the governments in the on-going process of decentralization) and the "horizontal adjustments" (adjustments in the diverse programs for poverty reduction and social development conducted by different sectors). The regional development policies shall also be developed based on these guidelines.[6]

[5] *The three objectives are the Development of Human Capacities and Respect of Basic Rights, the Promotion of Economic Opportunities and Capacities, and the Establishment of a Network of Social Protection.*

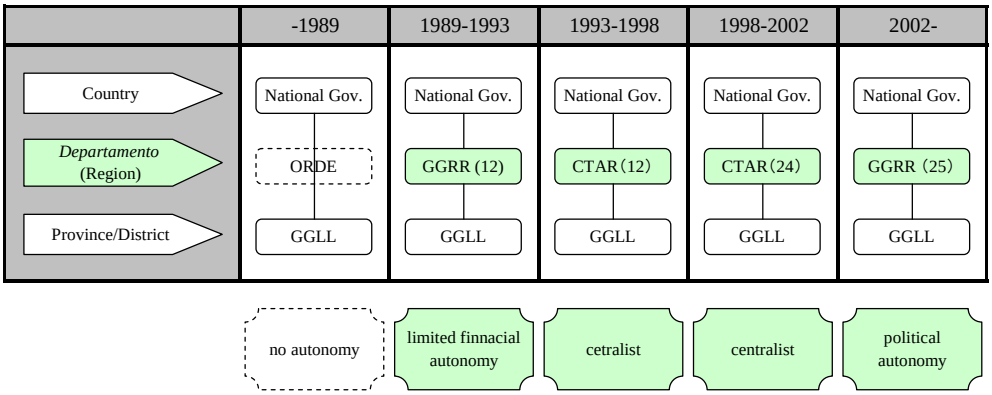
[6] *In the region of Ayacucho, the vertical and horizontal adjustments have been considered within the CRECER WARI Plan. The Social Development Department of the Regional Government of Ayacucho is responsible for this plan, which allows the permeability of the policies of the CECER WARI Plan within the regional government. The creation and strengthening of management capacities for social development within the provincial and district municipalities, as well as the creation*

2.4 Decentralization and Sub-central Government

2.4.1 Decentralization Process Retrospective

For many years the regional policy of Peru was managed within a centralist vision. The Constitution of 1979 considered the decentralization reform; however, it did not prosper and it was not until 2002 that the reforms started to be effectively implemented.[7]

In 1989, during the first Government of Garcia, 12 regions were created and the regional administrative system was introduced for the first time in Peru. However, in practice, these regions depended on the resources allocated by the central government; Therefore, the relation of dependence to the central government was still maintained. In 1993, during the Fujimori Government, the distribution of resources to these regional administrations was suspended and, instead, the Transitory Regional Administration Councils were created.[8] The regional presidents were designated by the central government, under the Ministry of Presidency. In such a way, their position was closer to being representatives of the central government in the regions.



Source: JICA Study Team

Note: GGRR (Regional Governments), GGLL (Local Governments)

Figure 2.4.1 Decentralization Reform in Peru

In July of 2002, the Decentralization Basis Act (*Ley de Bases de Descentralización*) was enacted, starting the current decentralization process. In November of the same year, the Regional Governments Organic Act was also enacted, enabling a real regional government system with the celebration of elections for regional governments.[9].

2.4.2 Administrative Structure of Peru and Regional System

The Political Constitution of Peru establishes three administrative levels: Regions (*Departamentos*), Provinces and districts.[10] The regional system was first implemented in 1989. Previously, there were not governments at the regional level and the central government handled the regional policies through its representatives. Due to this fact, the local governments (provincial and district municipalities) worked directly with the central government or its regional representatives, providing administrative services under the provincial level. The implemented process of

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of the District Council for the Fight Against Poverty and Chile Malnutrition, and the elaboration of regional development plans based on the CRECER's fundamentals are all concrete results of the promotion of CRECER policies. .

[7] *In reality, since the restoration of the civil government, many administrations have shown willingness to implement the decentralization process. Therefore, the current decentralized system was established after an alternation of centralization and decentralization.*

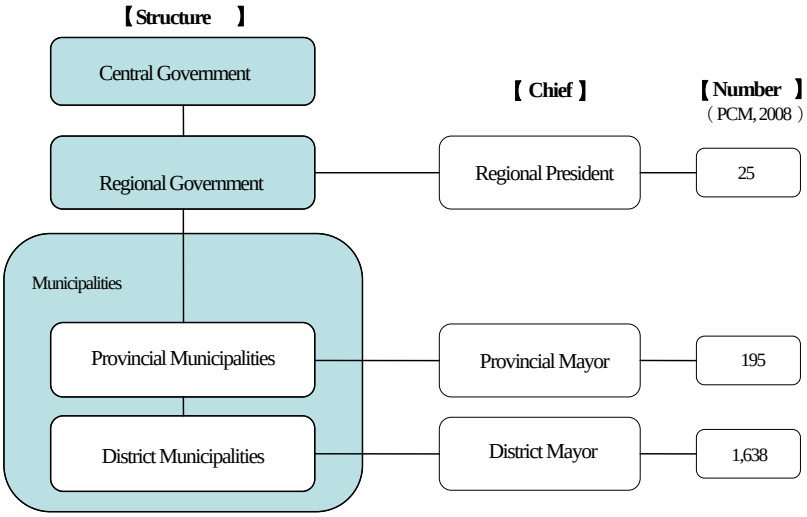
[8] *The establishment of regional governments was included in the Constitution of 1993 but this did not take place in reality. In the Act of Decentralization Framework of 1993, on the contrary, the continuity of CTARs was determined, under the responsibility of the Ministry of Presidency.*

[9] *In this occasion the elections for the regional presidents of the 24 regions and the Constitutional Province of Callao, acknowledged as a region, were celebrated. Metropolitan Lima was included within the Region of Lima; instead, it was considered a special case, as the Metropolitan Region of Lima.*

[10] *In accordance with Article 189 of the Constitution of Peru.*

decentralization and regionalization aims at the formation of regions larger than the current 'departamentos'. However, the merger of 'departamentos' has not yet taken place and, therefore, each 'departamento' currently has one regional government.

The current sub-central government has two levels: the regional government and the local government. The local government is composed of provincial municipalities which are divided in district municipalities. A chart of the current government structure is shown in Figure 2.4.2.



Source: JICA Study Team

Figure 2.4.2 Government System in Peru

2.4.3 Status of Decentralization Process

In sum, this process is gradually progressing but some matters have not yet been defined. The process of decentralization is slow and it cannot occur overnight. The laws for transference of functions have indeed been established; however, the legal framework does not establish a demarcation of responsibilities in a concrete manner. In face of such situation, the Garcia Government is to consolidate the process that started with the Toledo Government and, with such purpose, it is implementing several measures.

After the change of governments, the National Decentralization Council (*CND: Consejo Nacional de Descentralización*), which had been conducting the coordination pertaining to the decentralization process, was transferred to the Department of Decentralization (*SD: Secretaría de Descentralización*), under the Ministers Council Presidency (*PCM*). In October of 2006, the 20 measures of decentralization were announced[11], demarcating, in a clearer manner, the route to follow in the decentralization process.

Since 2004, the transference of functions to the regional governments is being implemented in accordance with the 185 functions established in the Regional Governments Organic Act. According to the "Report on the Decentralization Process in Peru" (*Informe del Proceso de Descentralización en el Perú*) prepared by PCM in October of 2008, of the 4,500 concrete functions that were to be transferred to the local governments by the end of

[11] *In October of 2006, the Garcia Administration announced "the 20 measures for Decentralization", renewing the commitment of the government to the process of decentralization. These measures considered that by December of 2007, the 185 functions referred to health, agriculture, housing services - regarding the transference of rights, personnel and resources; and primary education and health care shall have been transferred. The finalization of the transference of institutions such as FONCODES INABIF, Wawa Wasi to the regional governments was also estimated for the end of 2007.*

2008, at the time, 88% had been successfully transferred.[12]

As steps to follow for the transference of functions, it is necessary that the regional governments prepare a functions transference plan based on the laws pertaining to the government decentralization, as well as a report on the preparation of the system to assume the transference of functions related to the 11 ministries. This report shall be submitted to those ministries[13] and, as well as the plan for the transference reception system, it shall be evaluated by a third institution, which will verify if there are appropriate conditions for the transference before it may proceed. In this occasion, the 11 ministries shall prepare a plan of functions transference[14] every year and it shall be authorized by PCM.

2.4.4 Topics of Decentralization Process

The main topics and perspectives of the decentralization process are summarized in the following 3 points:

(1) Development of Capacities of Regional and Local Governments

As the process of decentralization progresses gradually, the regional and local governments shall take on a more and more important role. It is, therefore, necessary that their capacities are developed so that they may fulfill their responsibilities.

The 11 ministries previously described shall prepare, with the plan of functions transference, a support plan for the development of capacities in the local governments.[15] Furthermore, PCM, jointly with the Multi-sectoral Committee for the Development of Public Management Capacities of Regional and Local Governments, created in 2008, has been preparing a general plan for the capacity development.[16]

(2) Decentralization of Resources and Inequity of Resources

The transference of financial resources is also a very important factor for decentralization. As shown in Figure 2.4.3, as the decentralization process progresses, the regional and local resources start having a more important role.[17] During 2005, the public investment expenditure of the central government represented 45% of the total public investment but in 2008 this percentage decreased to 28%. The following topics are important with regard to the decentralization process and the regional resources.

The first is the problem of own resources of the sub-central governments. Due to the fiscal structure of the Peruvian government, the percentage of taxes for regional and local governments represent a very small part; in consequence, the sub-central government still depends to a great extend on the transferences from the central government. The mining royalty represents a strong source of resources for the regional governments; however, there are great inequities in the distribution of such fee, generating inequalities in the availability of resources among regional governments and municipalities[18]. Currently, in the process of decentralization, the management of the local

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[12] The transference of functions does not include the metropolitan region of Lima. It is estimated that the total amount transferred during the process of decentralization reaches 664 millions of Nuevos Soles (Report on the Decentralization Process in Peru/Informe de Proceso: Descentralización en el Perú).

[13] Ministry of Agriculture, Ministry of Environment, Ministry of Foreign Trade and Tourism, Ministry of Education, Ministry of Energy and Mining, Ministry of Women and Social Development, Ministry of Transportation and Communications, Ministry of Production, Ministry of Health, Ministry of Work and Employment Promotion, Ministry of Housing, Construction and Sanitation.

[14] The Ministry of Agriculture prepared the Annual Plan of Pectoral Transference for 2009, Public Agrarian Sector, in February of 2009.

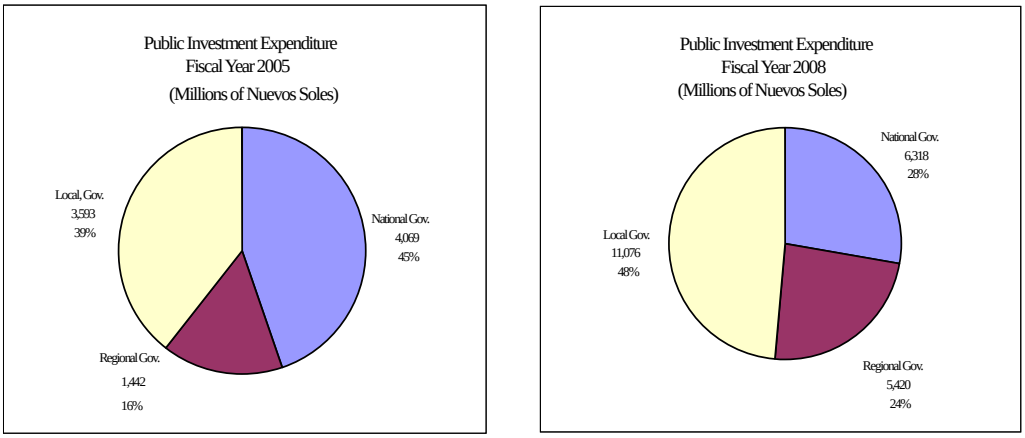
[15] The Ministry of Agriculture presented its Plan of Capacity Development in the Public Agrarian Sector for the Regional and Local Governments in January of 2009.

[16] In 2008, the Multi-sectoral Committee for the Development of Public Management Capacities in the Regional and Local Government (PLATAFORMA) was created. This committee, jointly with the PCM, is developing the National Plan of Development Public Management Capacities for the 2008-2011 period.

[17] According to some statistics, in 1993 the budget of FONCODES was considerable higher than the budgets of all the regional governments. Since 2002, however, when the process of decentralization started, the situation of the resources has changed significantly.

[18] The Garcia administration has implemented the Fund of Promotion of the Regional and Local Public Investment (FONIPREL), with the purpose of reducing the difference of resources among the regions.

governments, that is to say, the budgetary requirements, is increasing drastically, and, therefore, the restriction of institutions is necessary so that the distribution of resources may be appropriately readjusted according to the new situation.



Source: PCM: Process Report: Decentralization in Peru (PCM: Informe de Proceso: Descentralización en el Perú

Figure 2.4.3 Percentage Distribution of Investments by Government Level

(3) Plans for Macro-regions

The Decentralization Basis Act (*Ley de Base de Descentralización*) and the Regional Governments Organic Act of 2002 (*Ley Orgánica de Gobiernos Regionales*) had the objective of creating macro-regions. In compliance with the Decentralizations Basis Act, in October of 2005, a referendum on the conformation of the macro regions was conducted, but the proposal was mostly rejected by the population.[19] Nonetheless, in order to make the decentralization process more effective, the creation of macro regions is currently being planned, and support is being provided to facilitate the adjustments among the regions.[20]

The Amazonas-San Martín Pilot Region and the creation of the Inter-regional Coordination Boards (*JCIs*), through the cooperation of PNUD, are concrete examples of the effort towards the creation of macro regions.

2.4.5 National System of Public Investment and Decentralization

The National System of Public Investment (*SNIP*)[21] was implemented in January of 2007 and, currently, all the regional public investment plans are to be evaluated and declared viable by the Investment Programming Office (*OPI*) of the respective Regional Government.[22] In June of 2009, 789 local governments[23] officially had their respective OPIs.

However, the creation of OPIs is recent, especially at the level of local governments, and the low capacity level for evaluating projects is a problem to be solved. Therefore, MEF and PCM are promoting the development of

[19] *Of the 16 regions consulted in the referendum, only in Arequipa the proposal obtain the majority of the votes, being rejected in all the other regions. Consequently, the conformation of macro regions was not fulfilled. According to the Decentralization Basis Act a new referendum is planned for 2009, and there is a proposal for the conformation of macro regions but the realization of a new referendum is still uncertain (PCM-SD)*

[20] *In the present, there are 19 municipal associations in 10 regions. In the Region of Ayacucho there are 4 municipal associations, such as 'Los Wari'. In order to promote the formation of municipal associations, MEF has been working through FONIPREL.*

[21] *Act No. 27293 (Published on June 28th of 2000), establishes the system of public investment.*

[22] *At the moment, the General Directorate of Multi-annual Programming of the Public Sector (DGPM: Dirección General de Programación Multianual) of MEF only evaluates loan projects and with government guarantee.*

[23] *In the Region of Ayacucho, 10 provincial municipalities and 48 district municipalities have and OPI (the provincial municipality of Huamanga also carries out the administrative functions of the Municipality of Huamanga; therefore, there are, actually, only 47 municipality).*

assessment capacities with the support of USAID.[24]

2.5 Development Plan of Agriculture Sector

2.5.1 Position of Agriculture Sector in Peruvian Economy

Presently, closed to 1/3 of the Peruvian population works in the agriculture sector and half of the income in the rural area are generated by agricultural activities. According to the data of 2006, 28.5% of the working population was involved in agriculture, which corresponded to 8.4% of GDP and represented close to 7% of the total exportations. Consequently, the sector has an important role in Peruvian economy.[25]

2.5.2 Agriculture Multi-annual Sectoral Strategic Plan

In June of 2008, the Agriculture Sector announced the 2007-2011 Agriculture Multi-annual Sectoral Strategic Plan, presenting the perspectives, functions, 3 main objectives and 6 strategies of the sector. In accordance with these basic strategies, 40 concrete objectives were established for the target year of 2011. The following table is a summary of such plan.

Table 2.5.1 Summary of 2007-2011 Agriculture Multi-annual Sectoral Strategic Plan

Vision of the Agrarian Sector	Peru, leader country in the agrarian production of the Pacific Cost of South America by 2015
Mission of Ministry of Agriculture	Conduct the agrarian development, promoting the sustainable use of natural resources, competitiveness and equity, in the framework of the modernization and decentralization of the State, with the purpose of contributing to rural development and the improvement of the life quality of the population.
General Strategic Objectives	1) Evaluate the level of competitiveness of the Agrarian activity 2) Accomplish the sustainable use of Natural Resources and Biodiversity. 3) Accomplish the access of the small agrarian producer to basic and productive services.
Basic Strategies	1) Increase the efficiency in water management and sustainable use of the water resources. 2) Develop domestic and foreign markets for the agricultural, livestock, forest and agro-industrial production. 3) Develop a system of agrarian information that covers a wide range of users and is useful in decision-making for the agricultural and livestock producers. 4) Promote the development of Financial Services and insurance for small and middle-size farmers. 5) Promote the development of innovation, investigation and technology transference. 6) Focus the investment of the Agriculture Sector in the Sierra (Highlands) and Selva (Forest)

Source : 2007-2011 Agriculture Multi-annual Sectoral Strategic Plan

2.6 Organizations of Producers and Their Relations with Government

2.6.1 Organizations of Producers and their Relations with Government

Within a community, in general, there are two types of community organizations: Producer Association and Social Base Organization. The district municipalities are the direct interlocutors of these organizations. In addition, the Offices of Local Economic Development (*ODEL*) have a list of the producer associations and the Offices of Local Social Development have a list of the social base organization. The relations between the community organizations and the local governments, regarding the agrarian sector, are shown in general terms in Figure 2.6.1.

Publishing of a project executed by the economic development dept. of the Provincial Municipality of Cangallo
(Obs: This municipality is also the district municipality of Cangallo)

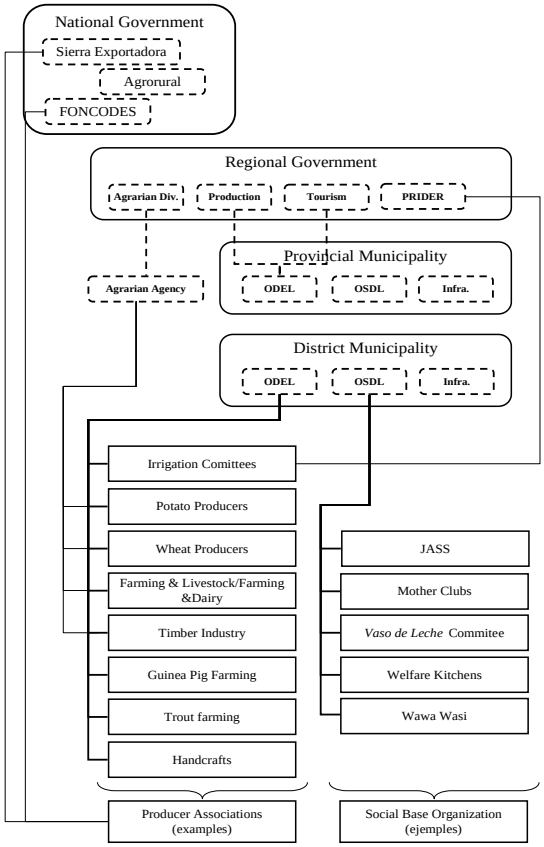
Furthermore, the government agencies with which the producer

[24] *The support program of USAID is the Pro decentralization Program (PRODES), which started in March of 2007. (Website: http://www.mef.gob.pe/DGPM/capacitacion.php).*
[25] *2007-2011 Agriculture Multi-annual Sectoral Strategic Plan*

associations keep contact are not limited to the provincial and district municipalities.

The agriculture department of the regional government has offices in all the provinces and conducts technical-support actions in benefit of the agrarian sector and the producer associations

The National Programs, such as Sierra Exportadora also provide technical capacity building directly to the producer associations, in order to support the increase of productivity and facilitate the access of the producer to the domestic and international markets. The picture below shows the execution of a capacity-building session in water management in the production of purple corn for producer associations within the Sierra Exportadora Program, in the district of Socos, Province of Huamanga.



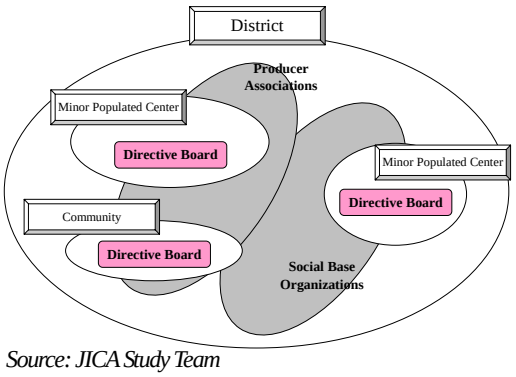
Source: JICA Study Team

Figure 2.6.1 Community Organizations and their relation to the Government

Agrarian Agency of GRA in the Province of Cangallo, District of Los Morocuchos

Capacity-building activity for a producer association within the Sierra Exportadora Program, Huamanga, Socos

The Populated Centers or communities have not only producer associations and social base organizations, but also committees or boards, whose the role is to organize the development needs in an integral manner for each locality. The Director of board in a minor populated center is called Minor Mayor and in other localities he or she is called president. The relation between the minor administrative division, which is the district and the populated centers and directive boards, is shown in Figure 2.6.2.



Source: JICA Study Team

Figure 2.6.2 Relation between the Directive Board and the Populated Center

2.6.2 Study on Existing Plan of Institutional Strengthening

(1) Institutional Strengthening by Central Government

The Department of Decentralization under PCM, in cooperation with the Multi-sectoral Committee for the Development of Public Management Capacities in the Regional and Local Governments (*PLATAFORMA*), prepared in 2008 the National Plan of Capacity Development (*PNDC*); the central government, however, has not made this plan on the basis of a national program of regional capacity development. The preparation and implementation of the capacity development plans is in charge of the regional and local governments. The Ministries that are in an advanced stage of the decentralization process are implementing the strengthening of capacities in the local and regional governments based on the function-transference plans.

(2) Individual Initiatives for Strengthening of Capacities within Regional and Local Governments

During the preparation of the Institutional Operations Plans, some regional and local governments carry out an institutional analysis using the SWOT analysis tool, but very few conduct analysis of the needs related to analysis on the strengthening of capacities and the development of human resources in a strategic manner. This is more clearly evidenced when analyzing the projects registered in SNIP, where very few are related to capacity strengthening and formation of human resources.

(3) Institutional Strengthening through Projects Executed with Support of Other Donors

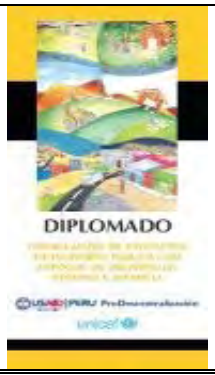
In the mist of the situation described above, some donors are executing support projects for the strengthening of regional capacities. A big part of these activities is implemented according to the needs of the projects of each sector. For instance, the Swiss Cooperation (*COSUDE*) carries out projects in the sanitation sector in the region of Cusco and is implementing the development of capacities related to the management, operation and maintenance of sanitation facilities and the formulation o policies for the sanitation sector. Two horizontal projects executed by donor related to the development of capacities are described below.

(a) USAID-PRODES

The American Development Agency (*USAID*) has supported the process of decentralization in Peru through a Pro Decentralization Program (*USAID-PRODES*) since 2003, for the development of capacities in the local governments in a practical manner. The first stage (2003 - 2007) was implemented in 7 regions; for the second phase 4 regions have been selected as pilot areas. Ayacucho Region has been included in both stages of the Program. Table 2.6.1 shows the main actions for capacity development implemented by the Program in Ayacucho Region.

Table 2.6.1 Examples of Programs of Capacity Development Implemented by PRODES

Topic	"Development of the Capacitates of the Members of the Regional Council"	"Formulation and evaluation of investment projects centralized in human development"	"Preparation of participatory development projects"
Subject	Members of the Regional Council	Regional Government and UF; OPIs from the local governments	Local and Regional Government
Content	・ Organization of norms and legislation ・ Formulation of participatory development projects ・ Administrative Control	・ Human development ・ Methodology for the implementation of pre investment studies ・ Formulation and evaluation of projects	・ Advantages of participatory development ・ Citizen Participation

Material			
topic	"Preparation of a Budgetary Plan based on results"	"Manual for the formation of municipal associations"	"Procurement and Contracting"
Subject	Divisions of budget planning of the regional and local governments and other related entities.	Personnel form local governments	Regional and local governments
Content	・ Development Process of a Result-based Budgetary Plan	・ Pilot Project for the formation of municipality associations ・ Use of the FONIPREL Fund	・ Application Method for the System of Public Procurement
Material			

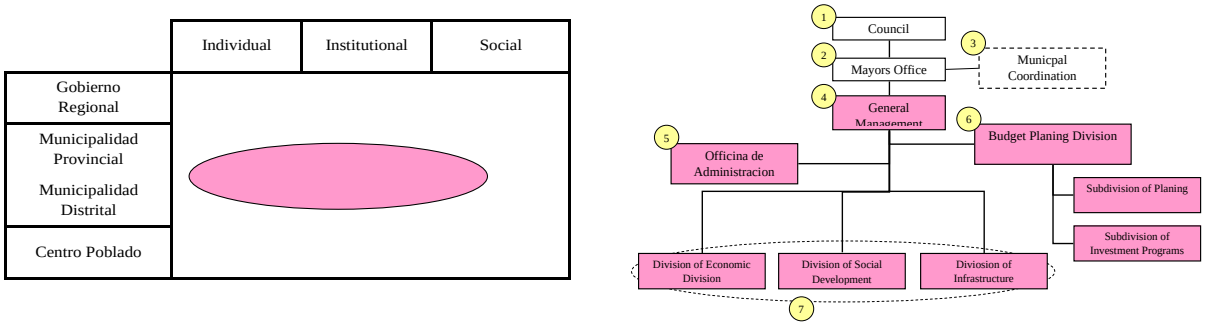
Source: JICA Study Team

(b) CSE from Belgian Cooperation

CTB has been implementing since 2008 the Program of Non-financial Business Services Centers in the Ayacucho-Apurimac-Huancavelica Economic Corridor, aimed at the local governments. Specifically, it conducts the following support activities.

- Support for the creation of ODELs
- Strengthening of the operation of the economic development policies of the local governments (income increase, employment generation, support to producer associations, etc.)

CTB-CSE only supports the creation of ODELs and the strengthening of the capacities of ODEL staff. It is implementing the integral development of capacities in matters of regional economic development and the formulation and application institutional policies of regional economic development. Considering the support of CTB in the analysis frame, it becomes as follows:



Source: JICA Study Team

Figure 2.6.3 Diagram of CTB-CSE Cooperation Project

2.6.3 Needs Assessment

2.6.3.1 Sources of Information for Needs Assesment

The sources of information used for the needs assessment are shown in Table 2.6.2.

Table 2.6.2 Table of Sources of Information for Needs Assessment

	Bibliography/ Web page	Survey	Interviews/ Workshops	Remarks
Government Institution	PNDC2008-2011			・ The National Program for the Development of Capacities (*PNDC*) 2008-2011 was launched by the Secretary of Decentralization of the PCM, in cooperation with PLATAFORMA during the decentralization process, in order to strengthen the capacities of the governments in the region.
	INEI-RENAMU			・ The National Registry of Municipalities (*RENAMU*) is a research study yearly performed by the PCM along with INEI regarding the Management level in local governments.
			Sierra Exportadora	・ The Ayacucho branch performs programs to strengthen technical capacities for producers associations for potatoes and blue corn.
			FONCODES	・ For each Project financed by FONCODES, a Performing Nucleus is established, which will perform the development of capacities.
			Workshop of June of 2009	・ Workshop promoted by the Study Team along with the Regional Government's presence, as well as entities related to the agricultural sector.
	Wari Plan			・ Development Plan for the Ayacucho region in the long term. Contains topics such as institutional strengthening and related.
		Regional Government		・ Survey to investigate the needs regarding training and technical assistance in the regional government. For results, check the report.
			Provincial Municipalities Staff	・ Provincial Municipality of Huamanga, provincial municipality of Cangallo and others.
			District Municipalities Staff	・ District municipality of Morochucos in the province of Cangallo and District Municipality of Vinchos in the province of Huamanga, among others.
Villagers association			Producers Associations	・ Cattle Raiders associations of the district of Los Morochucos, Cangallo; Trout Breeders Association in the district of Vinchos, Huamanga, among others.
Private Institution			CAD/UMSM	・ The American Development Association (*CAD*), in collaboration with the Universidad Nacional Mayor de San Marcos is implementing training and development of capacities of the city hall workers, even in the department of Ayacucho
			KAIZEN Peru	・ Private Consulting Company in Ayacucho, which also performs training activities and technical assistance activities such as the CAD performs for the municipalities workers.

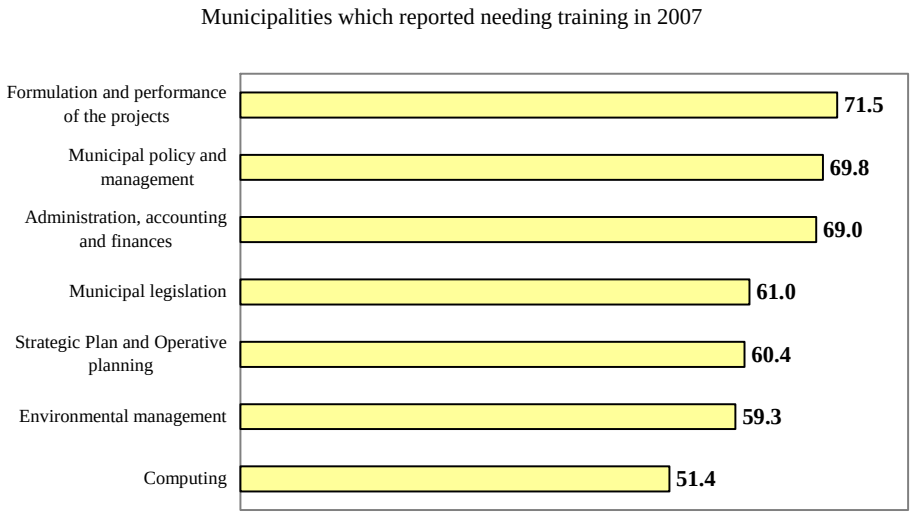
	Bibliography/ Web page	Survey	Interviews/ Workshops	Remarks
Donors	USAID Report		USAID-PRODES	・ The Pro Decentralization Program (*USAID-PRODES*) with the support of USAID, promotes actions to strengthen the capacities in regional and local governments, in order to support the decentralization process in Peru. The Ayacucho Region has been included in stages 1 and 2 of the program.
				・ In the USAID (*Pro Decentralization 2008*) an assessment on the needs was made in order to strengthen the capacities of the local governments.
			CTB	・ The Belgian Technical Cooperation (*BTC*) supports the local governments regarding economical development topics and performs supporting actions in the Ayacucho region implementing economic development offices in the provincial and district municipalities.
Others	AMPE			・ The ´Peruvian Municipalities Association (*AMPE*) Asociación de Municipalidades del Perú (*AMPE*) has experience in municipal administration and has very important information. Is a non-profit entity which supports municipal management, performing several activities towards training and technical assistance for local governments.
	REMPURE			・ The Rural Municipalities Network of Peru (*La Red de Municipalidades Rurales del Perú: REMPURE*) is an institution created in 2000 with the goal of supporting the municipal administration of local governments. It performs activities to develop the capacity of the municipal workers and performs studies to assess their capacities.
	INICAM			・ The Institute of Investigation and Municipal Training (*El Instituto de Investigación y Capacitación Municipal: INICAM*) is a non-profit institution created in 1983 which goal is to implement the strengthening of capacities of local governments performing different workshops for the local and regional governments staff.
	Municipality updated Projects with SNIP registry			・ The City Hall web page was created to strengthen the capacities of the local governments and villagers' associations administered by the Peruvian Studies Institute (*IEP*). ・ Relation of projects registered at the Bank of Projects of the Regional Government of Ayacucho up to April of 2008.

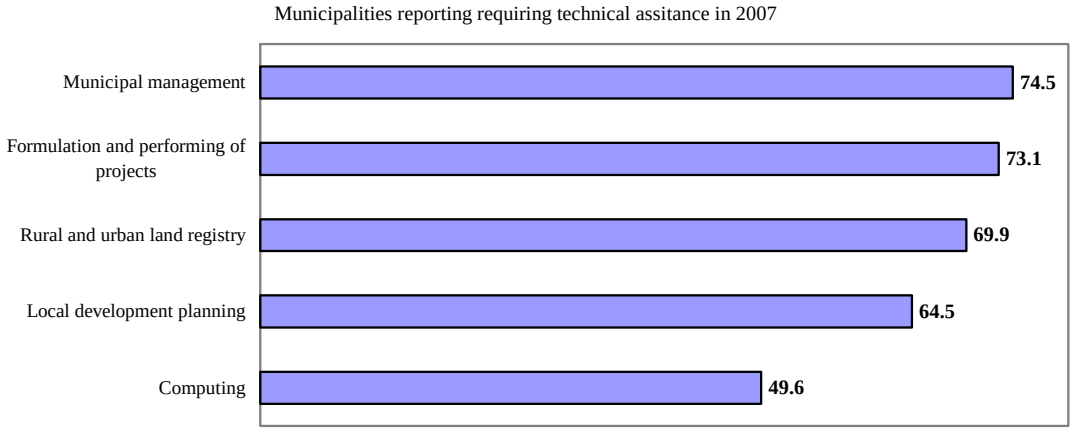
Source: JICA Study Team

2.6.3.2 Results of Needs Assessment

(1) RENAMU2007

The Study for the National Registry for Municipalities (*RENAMU*) poses questions regarding the needs of developing capacities for the local governments. The results from the RENAMU 2007 are as follows:





Source: INEI-RENAMU

Figure 2.6.4 Results of RENAMU2007

(2) Questionnaire

The result of the questionnaire for the Regional Government regarding the needs of capacity development is shown in Table 2.6.3. Valid responses were collected from 18 divisions. Each division chooses 2 priority themes.

As a result, the themes which scored highest were: "Formulation and Performing of Projects", "Operative Planning/Institutional Development", "Monitoring and ex-post Evaluation of Projects", "Planning of Concerted Development".

Table 2.6.3 Results of Questionnaire for GRA

Planning of the Concerted Development	5
Operative Planning/Institutional Development	6
Human Resources Management	2
Financing Management (i.e. using SEACE)	0
Hiring and Acquisitions	2
Formulating and Performing Projects	9
Projects Evaluation (pre-investment)	4
Monitoring and ex-post Porjects Evaluation	5
Statistics	1
Elaborating Administrative Instruments (i.e. TUPA)	1
Computing	0
Inter institutions Relationships and networking	1

Source: JICA Study Team

(3) Hearings from Local Governments

The needs of capacity development identified by the provincial and district municipalities are as follows:

- Capacity of basic municipal administration, such as formulation of development projects based on participative approach
- Evaluation of investment projects and SNIP regulations
- Elaboration and use of administration manuals (Manual for the use of the Text of Administrative Procedures (*TUPA*), Electronic System of Contracts and Procurement (*SEACE*), Integrated System of Financing Administration (*SIAF*), etc.)
- Use of Computers as well as basic computing programs

(4) Hearings from Private Consulting Firms

The private consulting firms offer courses for the development of capacities of the municipal workers from fee-based services. For that end most of them recognize the market demand through their extensive market analysis. This Study interviewed two firms operating in Ayacucho Region, that is, American Corporation for Development (*CAD*) and KAIZEN Peru. Based on the interviews it was clear that the topics such as "formulation and evaluation of public investment projects under SNIP" and "result-based budgeting" were in high demand.

(5) "Decentralization Process 2008"

This is a report prepared by USAID-PRODES. Table 2.6.4 shows the size of the budgets during 2006 and 2008 that were not implemented under the regional and local governments. "Decentralization Process 2008" concludes that the main reason for it is the lack of capacity to formulate and evaluate projects under the SNIP requirements.

Table 2.6.4 Percentage of Budgets implemented in the Local and Regional Governments (2006-2008)

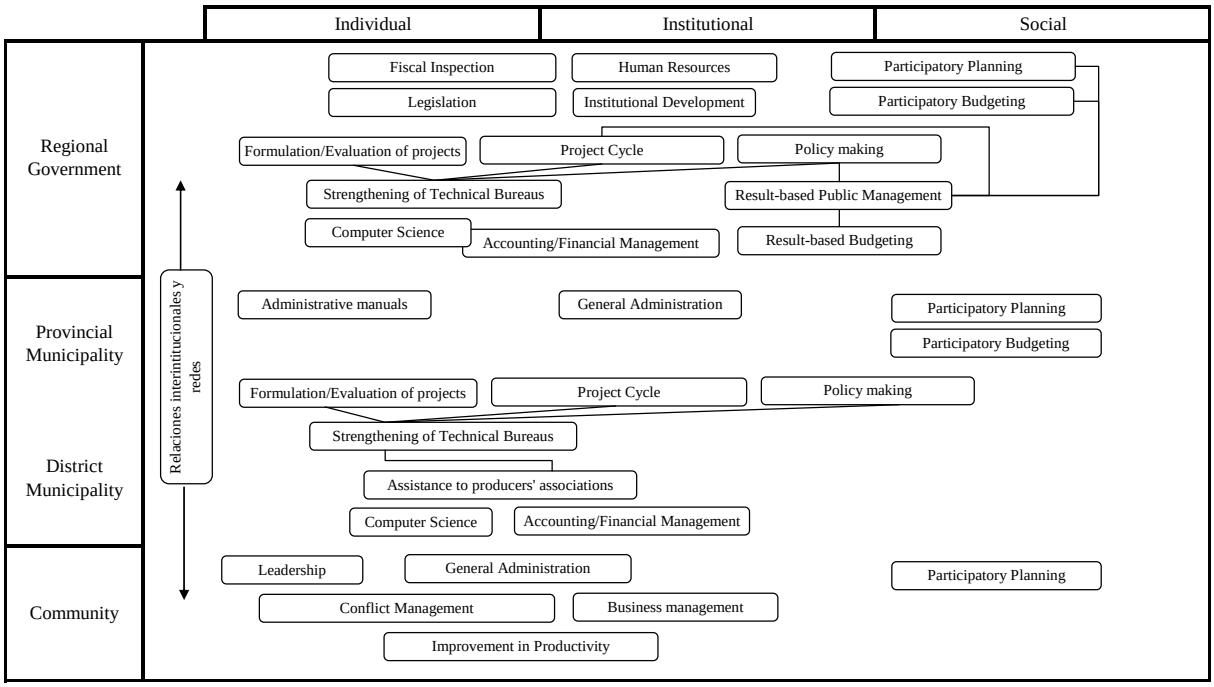
Government Level	Performed/Budget Modified Investment 2006	Performed/Budget Modified Investment 2007	Performed/Budget Modified Investment 2007
Regional Governments	55.67%	50.44%	49.35%
Local / I Governments	69.74%	46.20%	No available information

Source: Proceso de Descentralización 2008: Balance y Recomendaciones

2.6.3.3 Summary of Needs Assessment

Based upon the aforementioned analysis, the diagram below shows the general situation of the needs for capacity development of regional and local governments. The majority of stakeholders expressed their concern with "lack of capacity in the regional governments", "lack of capacity in the local governments", "lack of coordination between relevant institutions". Capacity development in other topics, such as preparation of administration manuals, is also indispensable for the efficient administration of governments and smooth implementation of development projects. It has been also revealed that in order to utilize the limited resources more efficiently and to implement development projects in a concerted manner within the region, it is necessary that the local and regional governments involve themselves in a close coordination in about every aspect of their administration.

As mentioned earlier, donors promote the development of capacities for regional and local governments in terms of preparation of administration manuals, elaboration of participatory development plans, and accountancy and financial management. Moreover, For OPI of the regional government, MEF and other ministries have conducted the capacity development on SNIP evaluation.



Source: JICA Study Team

Figure 2.6.5 Summary of Needs Assessment

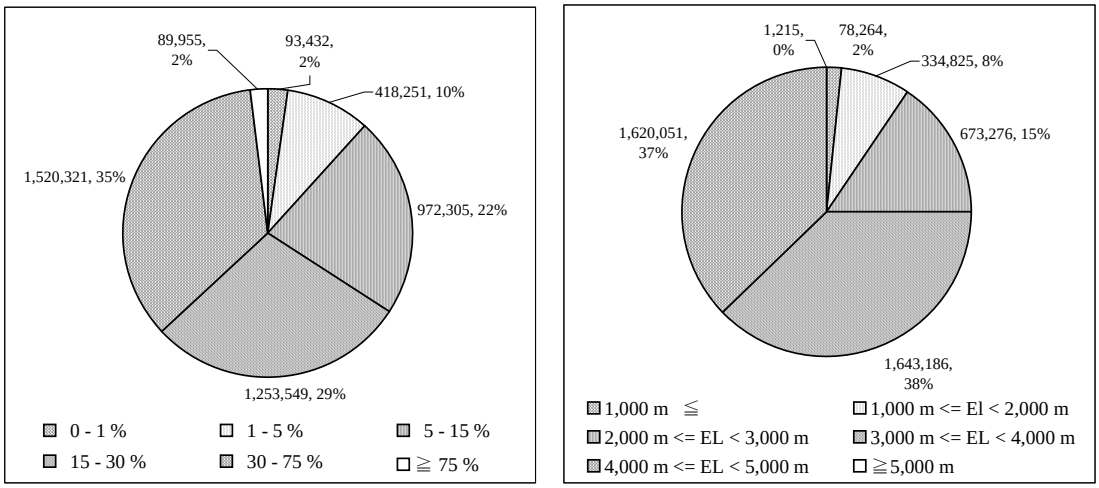
Chapter 3 General Conditions of Ayacucho Region and Development Plans

3.1 General Conditions

3.1.1 Natural Conditions

(1) Topography, Hydrology and Meteorology

Ayacucho Region is located at the foot of the Andes Mountains. As shown below, 75% of the region is located at high land more than 3,000 m in elevation, and 65% of the region belongs to the steeply sloped area with more 15%.



Source: GIS data, GRA

Remark: Assumed values obtained from GIS data

Figure 3.1.1 Area of Ayacucho Region in Elevation and Slope (ha)

In Ayacucho Region, there are various climates depending on elevation. The climatic classification in Ayacucho Region is divided into the following 6 types.

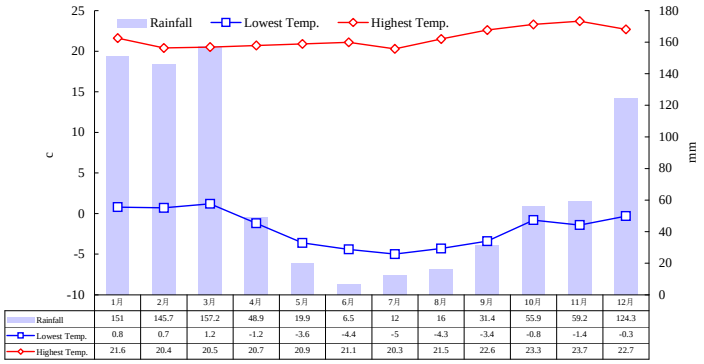
Table 3.1.1 Climatic Classification of Ayacucho Region

Climatic Classification		Elevation (m)	Characteristics
1	Steppe Climate	2,000 - 3,000	Annual Rainfall: 50 - 250 mm Average temperature in summer: 15ºC Winter season (Apr.-Sept.) is cold and sunny, but summer season is cloudy.
2	Boreal Climate with a Dry Winter	3,000 - 4,000	Rainfall in summer season ranges 200 – 400 mm, and winter season is dry. Average annual temperature is 7ºC - 11ºC with severe cold. It is seen at eastern sloped and western sloped areas of the Andes Mountains.
3	Highland Climate	Andes Highlands 4,000 - 5,000	Annual rainfall: 400 – 900 mm。 Average annual temperature is less than 7ºC. Due to highland dry climate, daytime has high insolation and the maximum temperature is 18ºC. In winter season, there are often severe cold.
4	Highland Ice and Snow Climate	5,000	In this area, rain water is stored in rainy season, and water by thawing of snow flows into river. This is important source for irrigation and domestic water.
5	Temperate Climate with a Dry Winter	2,000 - 3,000	Rainfall in summer season ranges from 300 to 1,000 mm, and that in winter season is less. Average annual temperature is 9ºC - 18ºC. This climate occurs at ravine of eastern side of the Andes Mountains.
6	Savannah Climate	Apurimac river ravine	Rainfall in summer season is beyond 1,200 mm, and that in winter season is less. Average annual temperature is 18ºC - 24ºC.

Source: Plan Vial Departmental Participativo Ayacucho

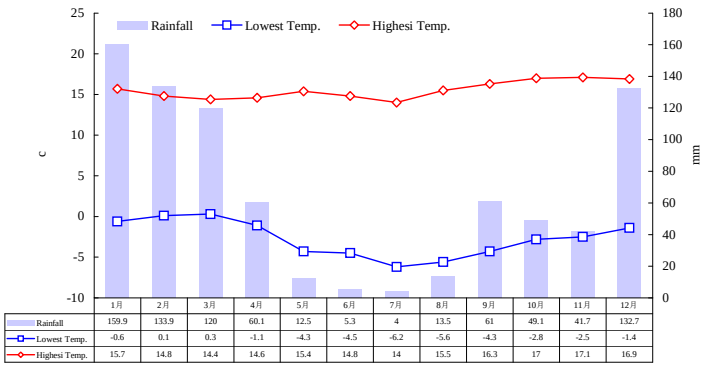
Most of areas except the Apurimac river basin located at northwest of La Mar and Huanta Provinces, are characterized by dry climate less than 1,000 mm of annual rainfall. Figure 3.1.2 shows the annual rainfall and temperature at elevation of 3,500 m and 4,000 m. There do not find much difference between these 2 observation stations in minimum temperature and amount and pattern of rainfall, but about 5ºC difference in maximum temperature. Such less rainfall and low temperature due to high elevation become constraints for agricultural development in Ayacucho Region.

Estacion Chiara Observation Station (Elevation : 3,550 m)



	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月
Rainfall	151	145.7	157.2	48.9	19.9	6.5	12	16	31.4	55.9	59.2	124.3
Lowest Temp.	0.8	0.7	1.2	-1.2	-3.6	-4.4	-5	-4.3	-3.4	-0.8	-1.4	-0.3
Highest Temp.	21.6	20.4	20.5	20.7	20.9	21.1	20.3	21.5	22.6	23.3	23.7	22.7

Estasion Paras Observation Station (Elevation : 4,150 m)



	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月
Rainfall	159.9	133.9	120	60.1	12.5	5.3	4	13.5	61	49.1	41.7	132.7
Lowest Temp.	-0.6	0.1	0.3	-1.1	-4.3	-4.5	-6.2	-5.6	-4.3	-2.8	-2.5	-1.4
Highesi Temp.	15.7	14.8	14.4	14.6	15.4	14.8	14	15.5	16.3	17	17.1	16.9

Source: Project Cachi, Gobiero Regional de Ayacucho

Figure 3.1.2 Annual Rainfall and Temperature in Ayacucho Region

(2) Soils and Vegetation

(a) Soils

Natural Resources Institute (*INRENA: Institute de Recursos Naturales*) prepared the soil classification map covering the whole country in 1996. According to the map, soils in Pure are classified into 35 types, and 10 types out of them are seen in Ayacucho Region. Table 3.1.2 shows the distribution and characteristics of soils in Ayacucho Region.

Table 3.1.2 Distribution and Characteristics of Soils in Ayacucho Region

Province	Distribution Area of Soil (km^2)										
	Cambisol dítrico - Andisol hulico	Leptosol dítrico - Afloramiento Lítico	Leptosol dítrico - Andosol Virico	Leptosol dítrico - Andosol Hubrico - Afloramiento Lítico	Leptosol dítrico - Regosol dítrico - Afloramiento litico	Leptosol lico - Afloramiento litico	Leptosol Litrico - Kastanozem hulico - Afloramiento litico	Leptosol trico - Regosol Dutrico - Afloramiento lico	Regosol dítrico - Afloramiento Lítico	Regosol Dutrico - Cambisol Dutrico	Total
Code	CMd-Alh	LPd-ANu-R	LPd-ANz	LPd-R	LPd-RGd-R	LPe-Ksh-R	LPe-RGe-R	LPq-R	RGd-R	RGe-CMe	
Huanta	5.7				1,360.2		821.1	1,538.6		133.7	3,859.4
La Mar					1,326.7			2,507.0		468.6	4,302.3
Huamanga							1,680.4	1,049.7	227.9		2,958.0
Cangallo							29.9	1,151.1	690.4		1,871.4
Vilcas Huaman								1,205.3			1,205.3
Victor Fajardo				778.1				1,485.9			2,264.0
Huanca Sancos				2,422.2				413.7			2,835.9
Sucre			828.8	155.7				801.9			1,786.4
Lucanas		5,233.4	6.9	6,652.3		1,825.1		741.9			14,459.7
Parinacochas		1,184.7		4,359.1		340.2					5,883.9
Paucar Del Sara Sara				1,237.8		844.2					2,082.0
Total	5.7	6,418.1	835.7	15,605.1	2,686.9	3,009.4	2,531.4	10,895.2	918.3	602.2	43,508.2

Source: National Resources Institute (Institute de Recursos Naturales: INRENA), Soil Distribution Map, 1996
Remark: Area is estimated using existing GIS data prepared by Ayacucho Regional Government. The high productivity soils are expressed in bold face.

Table 3.1.3 Characteristics of Major Soils for Agriculture in Ayacucho Region

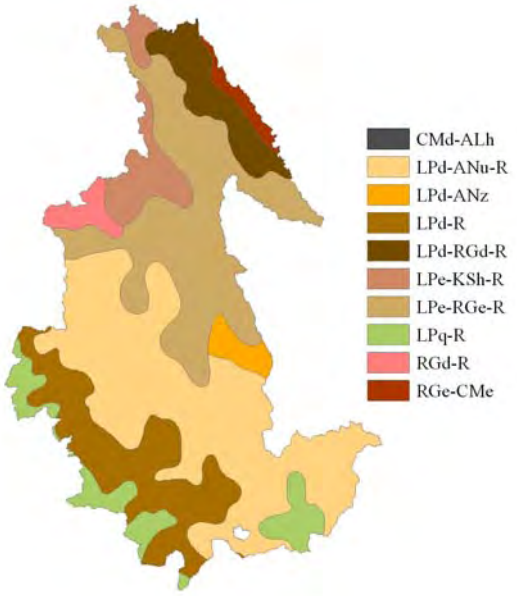
Soil Classification	Characteristics of Soils for Agriculture
Leptosol	・ Low agricultural production potential ・ Wide distribution in severely eroded area like mountainous region ・ Use for pasturage and forestry mainly in rainy season because of no suitable for cultivation
Andosol	・ High agricultural production potential ・ Need of inputs of lime, organic fertilizer and phosphatic fertilizer for stable agricultural production due to high absorption of phosphoric acid. ・ Wide use of agricultural production such as upland crops, penchant crops and paddy cultivation due to high water preservability ・ Use of forestry is suitable for steep sloped area.
Regosol	・ Low agricultural production potential ・ Need of irrigation for agricultural production of the region with less annual rainfall from of 500-1,000 mm ・ Need of high frequency of irrigation due to low water preservability
Kastanozem	・ High agricultural production potential ・ Need of high frequent irrigation to obtain high production due to low water preservability ・ Need of careful attention upon salt accumulation by irrigation and soil erosion by rain water and wind
Cambisol	・ High agricultural production potential ・ Possession of so high production potential under mild climate ・ Use of forestry is suitable for steep sloped area.
Afloramiento Litico	・ Low agricultural production potential ・ Rock outcropped area is not suitable for agricultural production.

Source: World reference base for soil resources 2006, FAO, International Union of Soil Science

Leptosol and rocky areas where are low agricultural production, are main soils prevailing in Ayacucho Region. Cambisol, Kastanozem, and Andosol which have high agricultural production are distributed in 4 provinces of Huamanga, Huanca Sancos, Lucanas and Parinacochas. Most of these soils coexist with Leptosol. Use of forestry is suitable even for soils with high agricultural production potential if these have high risk of erosion due to steep slope. In addition, it is necessary to provide measures against erosion to ensure stable agricultural production.

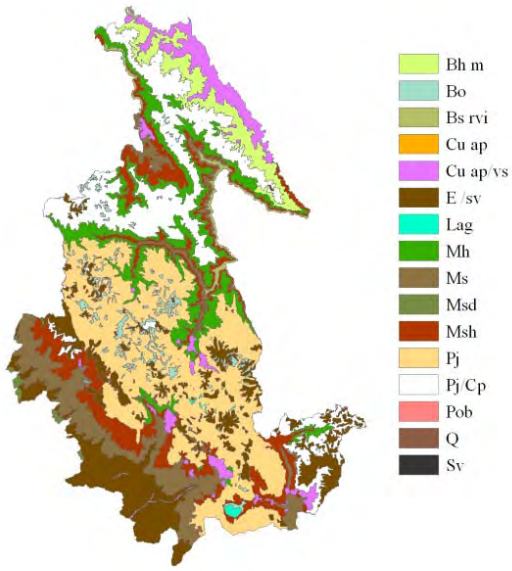
(b) Vegetation

Figures 3.1.3 and 3.1.4 show the vegetation distribution in Ayacucho Region. The vegetation in Ayacucho Region which is affected by less rainfall and high elevation is sparse. About 73% of the region are bush land, grassland and bare land. Land of forestry and agriculture occupies only 6% and 5% of the region, respectively. In the northeneast region of Huanta and La Mar Provinces, the Apurimac river which is one of sources of the Amazone River, flows. This is the selva region surrounded by rich forest due to much rainfall, which is seen only here in Ayacucho Region.



Source: GIS Data, Ayacucho Regional Office

Figure 3.1.3 Soil Classification in Ayacucho Region



Source: GIS Data, Ayacucho Regional Office

Figure 3.1.4 Vegetation Distribution in Ayacucho Region

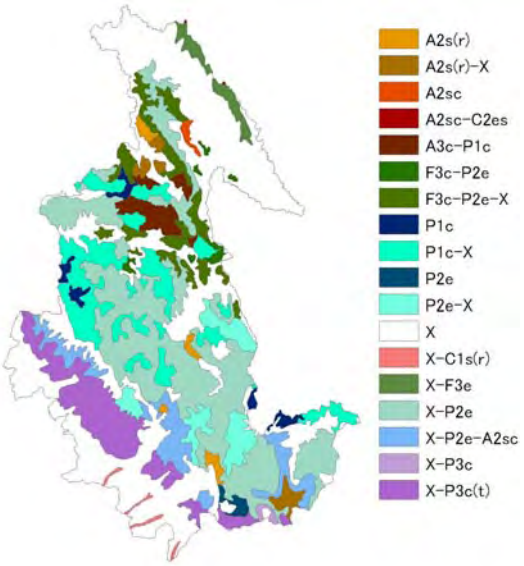
(3) Natural Conditions and Production Potential

GRA prepared the production potential map based on the natural conditions. The potential is assessed using 3 indicators of soil characteristics, slope and elevation, so that the region is divided into 18 areas. In the Study, these 18 areas are re-classified into 8 areas based on the study results as follows:

Table 3.1.4 Land Use Potential

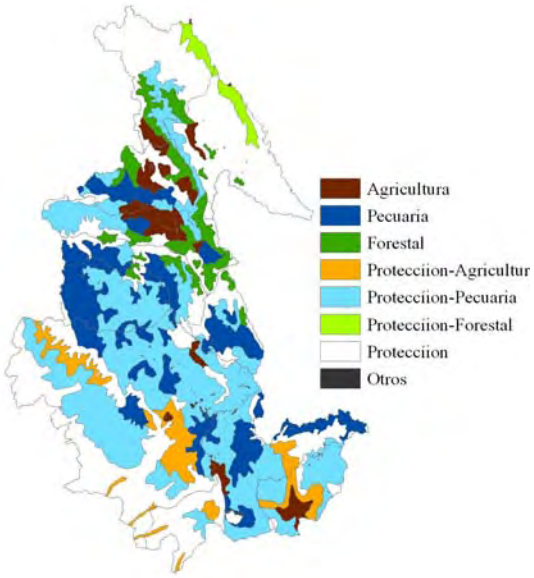
Province	Area (km^2)								
				Protection					
	Cultivation Area	Grazing Area	Production Forest Area	Cultivation Area	Grazing Area	Production Forest Area	Protection area	Others	Total
Huanta	161	0	461	0	461	260	2,515	2	3,859
La Mar	119	0	136	0	254	345	3,447	2	4,302
Huamanga	714	625	574	0	483	0	558	4	2,958
Cangallo	304	140	202	0	750	0	475	0	1,871
Vilcas Huaman	124	148	540	0	110	0	284	0	1,205
Victor Fajardo	0	801	271	0	455	0	736	0	2,264
Huanca Sancos	0	1,320	55	0	1,299	0	159	3	2,836
Sucre	0	727	104	0	359	0	596	1	1,786
Lucanas	145	1,414	0	1,421	6,277	0	5,169	35	14,460
Parinacochas	119	1,374	0	402	2,043	0	1,922	23	5,884
Paucar del Sara Sara	274	0	0	409	1,216	0	181	2	2,082
Total	1,960	6,550	2,343	2,232	13,705	605	16,041	72	43,508

Source: GIS Data, Ayacucho Regional Office



Source: GIS Data, Ayacucho Regional Office

Figure 3.1.5 Land Use Potential in Ayacucho Region (18 Classes)



Source: GIS Data, Ayacucho Regional Office

Figure 3.1.6 Land Use Potential in Ayacucho Region (8 Classes)

As the results of analysis mentioned above, the area which has a high potential for agriculture is estimated at 1,960 km^2, and even if including the area for "protection use and agriculture use", it is estimated at 4,192 km^2 only, equivalent to 9.6% of the region. By provincial, Huamanga and Lucanas have a high potential for agriculture, while 3 provinces of Victor Fajardo, Huanca Sancos, Sucre have a low potential for agriculture, but a high potential for livestock.

Figure 3.1.7 indicates a comparison of farming area (actual) at 1994 with farming area (potential). The farming area at 1994 is 168,141 ha, and almost coincides with the high potential area of agriculture. In Huamanga, Paucar del Sara Sara and Cangallo Provinces, the farming area is more than the potential one. Meanwhile, in Huanta, La Mar and Lucanas Provinces, the potential area exceeds the actual farming area, however the large increase of farming area has not been seen since 1990s.

3.1.2 Economic Situation

GDP of Ayacucho Region at 2007 is estimated at S/.1,457 million at 1994 constant price, which is equivalent to 0.84% of national GDP. The average annual growth rate of the country from 2005 to 2007 is 8.3%, but that of Ayacucho Region is 13.6% at the same duration. This high growth rate is caused with three sectors of mining (108.5%), construction (13.2%), and agriculture (11.5%). Also, the service sector is equivalent to 54.8 % of GDP of Ayacucho Region and largely contributes to its regional economy.

The agriculture sector occupies 25.3 % of the regional GDP, and plays an important role on regional economy, following the service sector. The production and growth rate of GDP for each sector shows below.

Table 3.1.5 Production and Growth Rate in GDP (2005 -2007)

Sector	GDP (Production : million S/.)				GDP(Growth Rate : %)			
	2005		2006		2007		2007/2005	
	Whole Peru	Ayacucho	Whole Peru	Ayacucho	Whole Peru	Ayacucho	Whole Peru	Ayacucho
Total	148,640	1,130	160,145	1,375	174,329	1,457	8.30	13.55
Agriculture	12,259	297	13,286	379	13.723	369	5.80	11.46

Sector	GDP (Production : million S/.)				GDP(Growth Rate : %)			
	2005		2006		2007		2007/2005	
	Whole Peru	Ayacucho	Whole Peru	Ayacucho	Whole Peru	Ayacucho	Whole Peru	Ayacucho
Fishery	804	0	823	0	879	0	4.56	0.00
Mining	9,790	23	9,926	90	10,195	100	2.05	108.51
Industry	22,887	10	24,607	11	27,265	12	9.15	9.54
Construction	7,276	139	8,350	129	9,737	178	15.68	13.16
Services	95,624	661	103,154	766	112,530	798	8.48	9.88

Source: Perú Números 2008.Instituto CuantoS A.

Judging from these figures, the agricultural development is an important activity for the regional economy. For the stability and improvement of agricultural production, irrigation is essential. In this meaning, it can be said that investment to irrigation is significant for the agriculture sector. The construction sector is also important sector because it occupies 12.2% of the regional GDP. In whole Peru, as the construction sector occupies only 5.5% of the country GDP, the occupation of construction sector in the regional GDP is so high.

3.1.3 Population

According to the census in 2009, the population of Ayacucho Region is 642,972. The following table shows the transition condition of population of each province from 2000 to 2009.

Table 3.1.6 Population and its Decrease and Increase in Ayacucho Region

Province	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Huanta	79,796	81,443	83,262	85,187	87,149	89,081	90,980	92,896	94,824	96,762
La Mar	79,144	79,736	80,466	81,266	82,069	82,811	83,491	84,154	84,799	85,422
Huamanga	202,700	206,904	211,672	216,662	221,742	226,713	231,584	236,504	241,451	246,417
Cangallo	35,463	35,347	35,288	35,244	35,199	35,139	35,065	34,962	34,850	34,728
Vilcas Human	23,661	23,626	23,630	23,652	23,674	23,676	23,657	23,634	23,604	23,567
Victor Fajardo	27,105	26,838	26,617	26,417	26,218	25,998	25,758	25,514	25,264	25,009
Huanca Sancos	10,744	10,723	10,710	10,699	10,689	10,675	10,657	10,638	10,612	10,581
Sucre	13,019	12,947	12,895	12,854	12,812	12,760	12,698	12,632	12,564	12,492
Lucanas	62,309	62,663	63,123	63,637	64,151	64,614	65,030	65,429	65,813	66,180
Parinacochas	26.897	27,273	27,701	28,158	28,621	29,067	29,497	29,925	30,351	30,775
Paucar del Sara Sara	10,901	10,905	10,926	10,957	10,987	11,008	11,020	11,029	11,035	11,039
Total	571,739	578,465	586,290	594,733	603,311	611,542	619,437	627,317	635,167	642,972

Source : INEI Website

As can be seen in the above table, the population of Ayacucho Region has increased by 1.3% of annual average growth rate for these 10 years. However, the population of 4 provinces of Cangallo, Vilcas Huaman, Victor Fajardo, Huanca Sancos and Sucre has decreased. These provinces are mostly located at the center of Ayacucho Region. Such a population decrease would prove the movement from the rural area to the city area, especially to Lima as explained in Section 1.2.

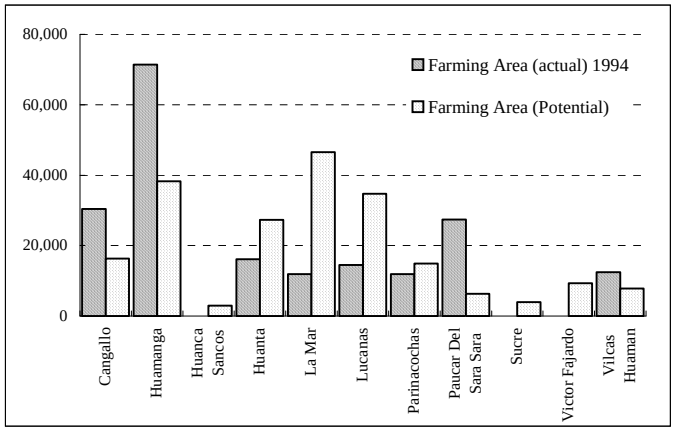
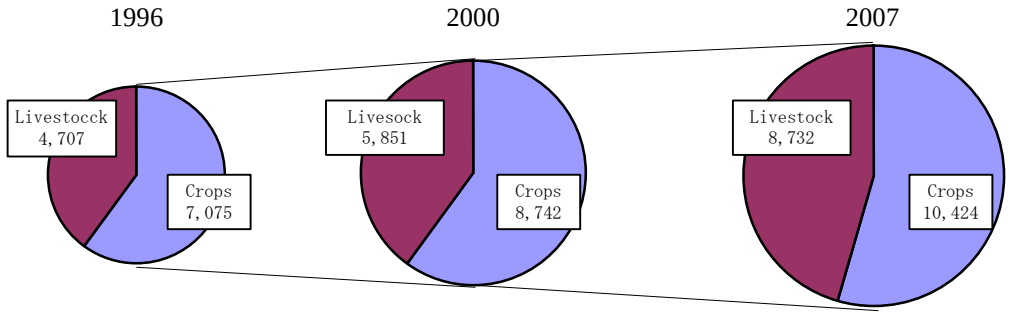


Figure 3.1.7 Comparison of Farming Area (actual) with Farming Area (potential) (ha)

3.1.4 Agriculture

The agriculture in the Ayacucho Region is largely divided into the sub-sectors of crops including forestry, livestock, fishery (inland fishery). According to the statistic data (2007-2008) by National Institute of Statistic and information (*INEI*), however, the annual fishery production in the region is negligible small. Accordingly, the trend of agriculture sector in the region is grasped from the production of crops and livestock. The following table shows the growth rate of crops and livestock from the production data in 1996, 2000 and 2007.



Unit: Million S/. at 1994 constant price
Remark: Production in 2007 is assumed figure 2007
Source: Ayacucho, Compendio Estadistico 2007-2008

Figure 3.1.8 Trend of Agricultural Sector in Ayacucho Region (1996 to 2007)

The above figure shows that the growth rate of agriculture sector from 1996 to 2007 is about 31%. Also it shows that the growth rate of crop field is 47%, but that of livestock field 86%

The total area of Ayacucho Region is 4.35 million ha. According to the land use potential prepared by the National Institute of Natural Resources (*INRENA*), the suitable area for grazing land is 2.03 million ha, equivalent to 47% of the total area, but that for crops 0.42 million ha, equivalent to only 10% of it. The breeding at pasture land and crop type of cultivation at farm land show the different characteristics due to elevation, namely climatic and topographic conditions. At pasture land located at highland area (more than 4,000 m in elevation), vicuna, alpaca and lama are raised, but at the mid-slope area (2,000 m to 3,000 m in elevation), goat, sheep, cow and pig are bred. As for vicuna and alpaca, fur production is specialized and milking is not made. Farmers living at highland, do not frequently kill them as food use, and eat potato and maize as staple food through applying a integrated style of agriculture and livestock.

The crop cultivation as well as livestock, shows the different characteristics depending on elevation. Potato, wheat, barley and broad bean are cultivated at the highland. Maize and Andes fruits are cultivated at the mid-slope land, and cassava, sweet potato, paddy at comparatively lowland. Most of cultivation crops are cultivated in traditional farming, so that crop yield is generally low; potato: 11.0 ton/ha and maize (Maize Amilaceo): 0.9 ton/ha Crop production in Ayacucho Region from 1997 to 2008 is given below:

Table 3.1.7 Production of Major Crops from 2000 to 2008

(Unit: ton)

Crop	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average
Kiwicha	320	432	177	231	278	123	104	136	160	218
Garlic	1,770	2,413	1,512	1,422	642	659	1,530	1,899	1,984	1,537
Cotton	30	17	2	2	10	4	8	2	2	9
Rice	3,841	1,392	901	1,108	1,029	872	1,253	856	912	1,352
Pea (dry)	1,775	1,894	1,391	2,077	2,330	2,467	2,709	2,846	3,561	2,339
Pea (green)	2,264	1,766	980	1,140	1,224	2,287	2,427	2,663	3,227	1,998

Crop	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average
Sweet potato	824	939	504	389	240	180	170	324	392	440
Barely	11,007	11,137	8,871	10,978	9,065	9,792	10,773	10,602	13,580	10,645
Onion	5,390	5,204	2,326	2,565	1,829	2,094	2,758	2,523	2,927	3,068
Kidney bean	1,799	1,307	896	789	797	1,103	935	1,315	1,503	1,160
Broad bean (dry)	2,640	2,870	1,959	3,836	3,257	3,828	4,211	4,039	5,447	3,565
Broad bean (green)	2,328	1,741	1,093	1,503	1,853	1,625	2,259	2,454	3,369	2,025
Maize (duo)	3,328	2,210	1,246	2,123	1,428	1,500	1,706	1,868	1,812	1,913
Maize(amiláceo)	13,905	13,704	10,349	15,621	11,944	13,924	13,758	13,997	16,623	13,758
Giant coarn	6,172	5,767	3,876	6,054	4,249	4,807	5,189	6,400	7,128	5,516
Mashua	5,071	5,436	4,153	4,351	4,141	3,723	3,011	2,642	3,991	4,058
Oca	5,979	5,837	4,791	5,490	5,398	5,395	4,873	3,682	5,737	5,242
Olluo	7,233	7,073	5,331	6,956	8,151	6,662	8,566	6,720	10,788	7,498
Potato	143,770	130,055	100,396	129,497	87,912	131,094	182,261	169,693	247,904	146,954
Quinua	1,444	1,144	752	1,070	963	1,081	1,392	1,234	1,721	1,200
Wheat	10,288	9,426	6,403	8,457	6,766	7,717	9,053	9,422	10,173	8,634
Cassava	18,484	23,692	14,070	7,856	6,559	6,870	8,500	8,496	9,640	11.574
Carrot	2,656	3,168	2,085	2,051	1,732	1,426	1,772	1,862	2,259	2,112
Pumpkin	3,322	3,862	2,023	2,132	1,475	2,058	2,548	1,756	1,891	2,341

Source: Agriculture Department of Ayacucho Regional Government

Inland fishery in Ayacucho Region is mainly the aquaculture of rainbow trout. The operation size is small-scaled and the production is also small. The production attained at the peak of about 87,700 kg in 2007, but thereafter has been changed into decrease trend.

3.2 Development Plan of Ayacucho Region

3.2.1 Comprehensive Development Plan of Ayacucho Region

Due to the decentralization reform, the regional government is required to be the political body to have jurisdiction of fulfillment of budget, plan and policy from preparation of development strategy under its responsibility and discretion, as the local public organization independent from the central government. In other words, the regional government is required to prepare the development plan in a responsible way, based on the cooperation with inhabitants and local governments in the region.

GRA prepared the "Comprehensive Development Plan of Ayacucho Region 2007-2024[1] (*PDRC: Plan de Desarrollo Regional Concertado de Ayacucho*) in November 2007. The previous governments also have prepared the long term plans, but could not effectively implement them.[2] PDRC is different from the previous plans because it clarifies the roles of relevant organizations and procedure of monitoring and evaluation. PDRC is prepared in the following steps:

Step 1	Designation and Analysis on subjects and development possibility
Step 2	Designation of indexes of each subject and development possibility
Step 3	Change to purpose of subjects
Step 4	Setting up of the following details on 4 development fields and future image toward 2024 ・ Regional policies (*Politicas regionales*) ・ Concrete targets (*Metas*) ・ Strategies (*Estrategias*) ・ Program and project (*Programas y Proyectos*)

The 4 development fields mean (i) social development, (ii) economic development/production improvement, (iii) natural resources/environment, and (iv) institutional strengthening/decentralization. In PDRC, the concrete

[1] *Generally called Wari Plan*

[2] *For example, there are Plan de Desarrollo Integral del Departamento de Ayacucho 1984-2000prepared by ORDE Ayacucho and Plan Estratégico de Desarrollo Departamental Ayacucho 2001-2011prepared by CTAR Ayacucho.*

measures (projects and activities) are worked out in line with these 4 development fields. In particular, the subjects and indexes of (ii) economic development and production improvement field closely related to the Study are shown in Table 3.2.1.

Table 3.2.1 Subjects and Indexes of Economic Development/Production Improvement Field in Comprehensive Development Plan of Ayacucho Region (PDRC 2007 - 2024)

Subjects	Index
1. Non-preparation of lifeline (road traffic energy, communication facilities, etc.)	1) Preparation condition of national roads, provincial roads and local roads. 2) Rate of households accessible to communication facilities 3) Number of households accessible to public facilities like electricity
2. Non-development of tourism resources	1) Number of tourist visiting of Ayacucho Region 2) Satisfaction of tourism services
3. Lack of access to high technical jobs and low income level	1) Income per household 2) Number of working labor for each sector 3) Learning of suitable technical level
4. Reverse and spilt farming and livestock activities	1) Area of cultivable land 2) Cultivation area provided with irrigation facilities 3) Annual fund for capacity strengthening of small-scaled landholders
5. Lack of support activities to cottage industry	1) Consumption of energy by cottage industry 2) Job opportunity created by cottage industry

Source: Comprehensive Development Plan of Ayacucho Region(Plan de Desarrollo Regional Concertado de Ayacucho 2007-2024)

3.2.2 Institutional Strategic Plan and Institutional Operative Plan of Ayacucho Regional Government

The present GRA prepared the Institutional Strategic Plan (*PEI: Plan Estratégico Institutional*) 2007-2011 in November 2008, in the framework of PDRC 2007-2024. This Strategic Plan was prepared by the Planning Section of Regional Management of Budget, Planning and Land Preparation of GRA based on the development strategy of PDRC 2007-2024, and shows the budget allocation plan and a list of projects to be implemented for 5 years from 2007 to 2011. In addition, the Institutional Operative Plan (*POI: Plan Operativo Institutional*) was prepared in April 2008, which takes up the subjects of institution clarified through the SWOT analysis[3]。

3.2.3 Development Plans for Provinces and Districts

The development plan for each province and district is prepared mainly by them subject to the participation of inhabitants and relevant agencies. When it was prepared, the consistency with PDRC 2007-2024 and CRECER Policy is ensured. Especially, the dissemination of CRECER Policy is currently executed by GRA under the financial assistance of United States Agency for International Development (*USAID*) and United Nations Children's Fund (*UNICEF*). In this Study, Huamanga Provincial Government and Vinchos District Government were selected as the sample local autonomous entity to study the details on the current situation of local government.

3.3 Local Administration

3.3.1 Ayacucho Regional Office

(1) Structure of Ayacucho Regional Government

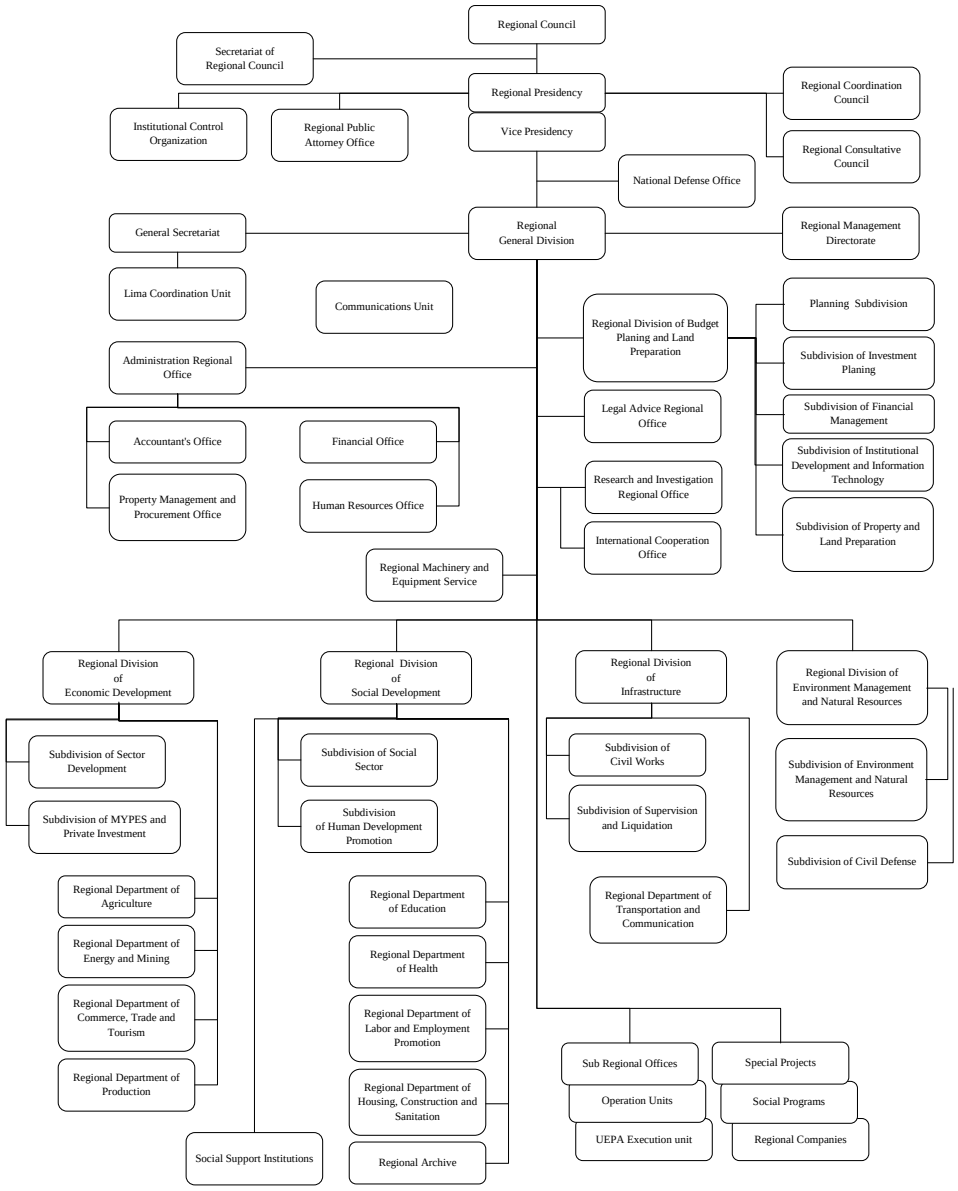
At present, the decentralization reform is on-going and reorganization is made for GRA. The organization structure specified in the latest regulations of functions and organization (*ROF*)[4] is almost as follows. Figure 3.3.1 shows the

[3] *POI is prepared by Management Section of Institutional Development and Information Technology*

[4] *This is one of organization management tools and is officially named the regulations of organization and function (ROF:Reglamento de Organización y Funciones). The latest ROF of GRA was prepared in 2007. In addition to ROF, generally, other administrative organization tools are the Operation and Funcitons Manual (MOF),Personnel Assignment Table (CAP), Personnel Normative Table (CNP), and Unique Text of Management Procedure (TUPA).*

organization chart of GRA.

In the organization of GRA, firstly there is the regional assembly, the legislative organ, where the governor is assigned as the chief of its execution. The governor and assemblymen are selected by public election every 4 years.[5] The regional assembly makes an approval on the regional development plan/policy, budget, investment plan, etc., and the governor is responsible for executing these plans and budget.



Source: GRA

Figure 3.3.1 Organization Chart of GRA

In addition to these decision and executing organ, the consultation organ called the Regional Coordination Board (*CCR: Consejo de Coordinación Regional*)[6] is established separately, which is in charge of deliberating on the important subjects, development plans and budget for the region and offering the reference opinions. The members of CCR are a chief of each province, representatives of citizens' organizations, etc. In progress of decentralization reform, it is stipulated by the law that the preparation of local plan and budget is to be prepared subject to the

[5] *The next election will be made on October 3, 2010.*
[6] *This was established in the Ayacucho Regional Government in 2003 (Informe Anual 2007 sobre el Proceso de Descentralización).*

participation of inhabitants and relevant agencies. Thus, CCR plays an important role.

GRA Building

The technical divisions are largely classified into 4 divisions. These are (i) Economic development division, (ii) Social development division, (iii) Infrastructure preparation division, and (iv) Natural resources and environmental management division. As the results of decentralization reform, the authority, staff[7] and budget are transferred to the regional and local governments from each ministry of the central government. The divisions and departments managing these transferred ones, are required to execute the movable administration, so that they are positioned as the external organs of the above mentioned 4 divisions. (i) Economic development division has 4 departments such as agricultural department, energy/mining department, trade and tourism department and production department, (ii) Social development division has 4 departments consisting of educational department, health department, labor employment promotion department, house construction hygiene department, and (iii) Infrastructure preparation division has transportation communication department.

(2) Staff Number of Ayacucho Regional Government

The staff number of GRA exceeds about nine thousands if including teachers. The regular staff number is shown in Table 3.3.1.

Table 3.3.1 Regular Staff Number of GRA

Description	Appointed (Political Appointment)	Contracted	Sub-total
Division directly under Governor	199 (33)	31	230
District offices of regional government	49 (0)	16	65
Energy and Mining Department	8 (1)	1	9
Production Department	13 (1)	0	13
Trade and Tourism Department	12 (1)	0	12
Housing, Construction and Hygiene Department	7 (1)	2	9
Labour and Employment Promotion Department	10 (1)	1	11
Official Documents Custody Department	8 (0)	2	10
Others	3 (0)	32	35
（Sub-total）	309 (38)	85	394
Agricultural Department	-- (23)	--	269
Educational Department	-- (--)	--	7,923
Health Department	-- (--)	--	571
Transportation and Communication Department	-- (--)	--	155
Grand Total	--	--	9,312

Source: prepared by JICA Study Team based on CAP, CNP and personnel affair office of the regional office

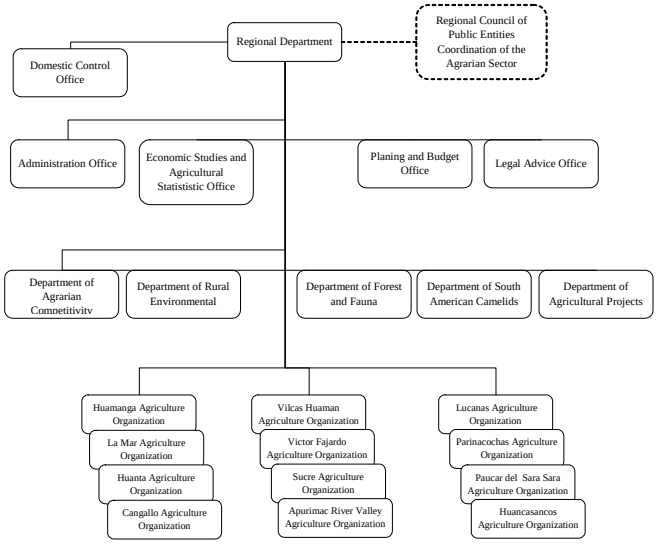
[7] *The staff movement was not physically made to the regional government, but shown in the change of budget and staff number of the regional government.*

(3) Regional Department of Agriculture

Regional Department of Agriculture (*DRAA: Dirección Regional Agraria Ayacucho*) consists of 5 sections of Agriculture Competitive Strengthening Section (*Dirección de Competitividad Agraria*), Rural Area Environment Section (*Dirección de Ambiente Rural*), Forestry Fanuna Flora Section (*Dirección Forestal y Fauna Silvestre*), South America Camelid Section (*Dirección de Camélidos Sudamericanos*), Agricultue Poroject Section (*Dirección de Proyectos Agrarios*).[8] The organization chart of Regional Department of Agriculture is shown in Figure 3.3.2. In addition, Regional Department of Agriculture has local offices (*Agencias Agrarias*) at each province for executing the agricultural policy of the region together.

Regional Department of Agriculture

Due to decentralization reform, MINAG transferred various matters to the regional government, which came down to the facilitator (promotion of policy execution), coordination (connection and adjustment of relevant agencies), and promoter (initiative of policy). The financial situation of regional department of agriculture is shown in Table 3.3.2.



Source: 2009 DRAA ROF

Figure 3.3.2 Organization Chart of Regional Department of Agriculture

3.3.2 Provincial Office (Huamanga Province)

(1) Outline of Huamanga Province

In Huamanga Province, there is Ayacucho city, capital of Ayacucho Region, where about one third of regional population dwell. The Huamanga Province is divided into 15 districts and is composed of about 700 communities.[9]

Table 3.3.2 Annual Revenue of the Region (Budget base) (2007 - 2009)

(Unit: S/.).

2007	2008	2009
11,290,245	15,209,187	16,833,337

Source: Regional Department of Agriculture

[8] *Source is 2009, ROF.*
[9] *These 700 Centros Poblados include、185 Caserio, 219 Anexo, 89 Comunidad Campe, which are classified based on Centros Poblados.*

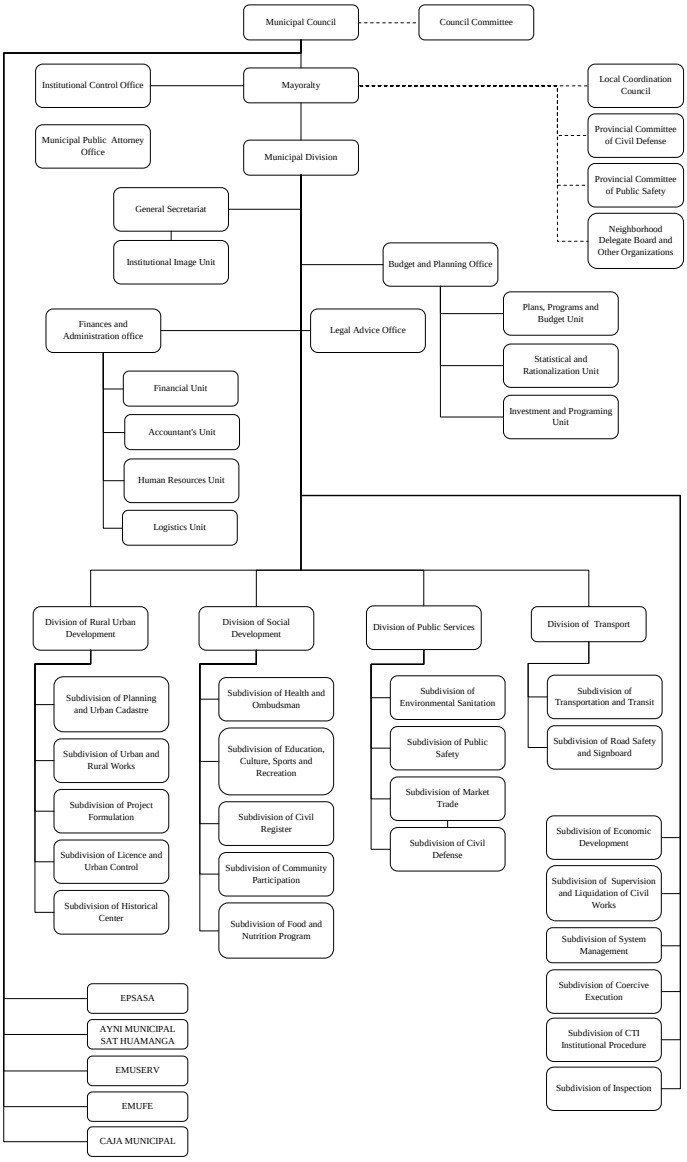
(2) Organization of Huamanga Province

Huamanga Provincial Office

The organization structure of provincial government is almost similar with that of regional government. Basically, the provincial council (*Consejo Municipal*) is set as the decision-making body and a mayor (*Alcalde*) is assigned as a top of executive organ. Besides, in the Local Coordination Board (*CCL: Consejo Coordinación Local*), the important subjects of provincial administration are deliberated, but that of Huamanga Provincial Government has not still functioned. The organization chart of Huamanga Provincial Government is shown in Figure 3.3.3.

The technical part of Huamanga Provincial Government consists of 4 departments and one section. These are Urban and Rural Area Development Department, Social Development Department, Public Service Department, Traffic Department and Economic Development Section (*Subgerencia)*. In the administrative services relevant to agriculture sector, the Urban and Rural Area Department is in charge of facilities, and the Economic Development Department executes the farm income improvement project through technology transfer on the cuy raising.

Most of population in Huamanga Province live in Ayacucho city[10], so that the ratio of urban population is high. In the Huamanga Province, therefore, a priority is placed on the services of environmental conservation/ hygiene [11], transportation/ communication sector, and social development/social welfare, which is obvious from the breakdown of annual expenditure of the Huamanga Provincial Government.



Source: 2009 DRAA ROF

Figure 3.3.3 Organization Chart of Huamanga Provincial Government

[10] *Ayacucho City generally includes Ayacucho District, Jesus Nazareno District, Carmen Alto District and San Juan Bautista District out of 15 Districts in Huamanga Province.*

[11] *The environmental conservation includes preparation of reforestation/ roadside tree and green area facilities (Áreas Verdes) , and the hygiene includes O&M cost of waste matter management service and waste matter management facility (hygiene reclaimed land Relleno Sanitario) and construction of sewage works and other hygiene related facilities (Servicios Higienicos).*

Table 3.3.3 Annual Expenditures of Huamanga Provincial Government (closing accounts base) (2006 - 2008)

Unit : S/.

Items	2006	2007	2008
General affairs secretariat	5,735,540	4,673,396	8,479,042
Agriculture and livestock	79,500	4,500	474,688
Social development and social welfare	3,250,713	4,004,894	4,976,590
Public security	340,472	312,118	291,346
Education	128,272	39,911	299,188
Culture and sports	593,934	349,973	986,057
Tourism promotion	70,687	0	57,165
Inland fishery	0	0	145,500
Environmental conservation	1,139,105	934,519	1,421,922
Hygiene	1,808,745	2,846,815	8,341,609
Health	117,444	105,119	101,625
Road and transportation	3,800,291	8,338,918	6,422,425
Others	2,943,976	3,120,374	3,873,457
Total	20,008,379	24,730,537	35,870,614

Source: JICA Study Team

(3) Development Plan of Huamanga Provincial Government

The Development Plan of Huamanga Province (*Plan de Desarrollo Concertado de la Provincia de Huamanga al 2015*) was prepared in June 2007. The plan sets the following 6 basic policies based on the results of SWOT analysis on 4 fields of (i) economic development/production improvement, (ii) tourism development/environment, (iii) human development/social development, and (iv) institutional development, showing the future concept toward 2015.

- Promotion of inhabitants' health (environment/hygiene)
- Promotion of human development (social development/social welfare)
- Strengthening of access to market and improvement of productivity (agriculture, livestock and production)
- Development of tourism resources with background of nature and historical resources (tourism promotion)
- Training of able leaders with power of creation and activity (education)
- Use of rights and duties for peaceful coexistence and solidarity (enlightment of rights and duties)

In addition, Huamanga Provincial Government is in charge of Ayacucho District out of 15 districts, and prepared the definite development plan of Ayacucho District.

3.3.3 District Office (Vinchos District of Huamanga Province)

(1) Outline of Vinchos Distrct

Vinchos District is located about one and half hours by car far from the center of Huamanga Province, and has population of 16,000 for more than 60 communities. About 1,100 live in the Vinchos community at the center of Vinchos District.

Vinchos Office of Huamanga District

(2) Organization of Vinchos District Office

There is the District Council in the Vinchos District Office and the chief of district is responsible as a top of executive organ. The technical division is divided into 2 sub-divisions. These are the Social Service and Social Development Sub-division (*Subgerencia de Desarrollo Social y Servicios*) and Urban and Community Development Sub-division (*Subgerencia de Desarrollo Urbano y Comunal*). The agriculture sector

services are mainly executed by the Office of Agriculture and Livestock Development and Production Improvement Project (*División de Desarrollo Agropecuario y Proyectos Productivos*).

(3) Development Plan of Vinchos District Office

Definite Development Plan of Vinchos District (*Plan de Desarrollo Concertado del Distrito de Vinchos 2008-2020*) was prepared in November 2008 under support of ADRA-Peru. The plan is composed of 7 parts; Part 1: Outline of Vinchos District, Part 2: History of Vinchos District, Part 3: Analysis of Present Conditions on Economy, Society, Politics and Environment, Part 4: Future Vision of Vinchos District, Part 5: SWOT analysis on Vinchos District, Part 6: Management of Development Plan, and Part 7: Monitoring Evaluation of Development Plan.

The plan shows the future vision toward 2020 and parades the 63 basic policies for 4 fields of (i) social development, (ii) economic development and productivity improvement, (iii) natural resources and environment, and (iv) institutional strengthening and decentralization, taking into consideration the consistency with the national policy[12] and PDRC 2007-2024.

The fields of economic development and productivity improvement are divided into 5 sub-fields of agriculture/ livestock/forestry, inland fishery, tourism, industrial development, and hand craft. The sub-field of agriculture/ livestock/forestry indicates the 8 basic policies like improvement of access to financial service by small-scaled landholders.

3.4 Relevant Agencies to Agriculture Sector

The relevant government agencies and their services contents in the agricultural sector in the Ayacucho Region, are compiled in Table 3.4.1. The National Institute of Natural Resources (*INRENA*) was already absorbed into MINAG in accordance with the regulations13, so that its services are transferred to the General Division of Forestry and Wild Fauna (*Dirección General Forestal de Fauna Silvestre*) of MINAG. On the other hand, as for the Cooperation Fund for Social Development (*FONCODES*), as all of its fund has been already transferred to the district offices, presently the district offices execute the monitoring of projects conducted under FONCONDES and the capacity development of local government and community organizations.

Table 3.4.1 List of Services Contents and Relevant Agencies to Agriculture Sector

	Central Government									Regional Government					
	MINAG						PCM	MVCS	MIMDES						
	AgroRural	INIA	SENASA	ANA	PSI	INRENA	Sierra Exp.	COFOPRI	FONCODES	Department of Agriculture	Department of Production	Department of Transport	PRIDER	Province* M.	District * M.
Hydraulic Infrastructure	○								○	○				○	○
Irrigation Facilities	○				○				○	○			○	○	○
Rural Roads												○			
Other rural Infrastructures	○								○	○				○	○
Agricultural Activation	○						○			○				○	○
Livestock Activation	○									○				○	○
Agro-industry Activation	○									○				○	○
Small Animals Production Improvement									○	○				○	○
Inland Fishery									○		○				
Natural Resources Management	○			○						○				○	○
Reforestatuion/Forest management	○					○				○				○	○
Biological Diversification Conservation	○									○				○	○
Production Distribution Development	○						○			○				○	○
Commercialization/Export Promotion	○						○			○					
Quarantine of Fauna and Flora			○												
Investigation and Research		○													
Technology Transfer and Guidance	○	○			○	○	○		○	○	○		○		
Technology Extension	○	○								○	○			○	○
Agriculture/Livestock Information	○						○			○				○	○
Land Dominium Dispatch								○							

Source: JICA Study Team

[12] *Especially, the consistency with national policies on social development and social welfare (example : Plan Nacional Contra la Violencia Hacia la Mujer 2002-2007and Plan Nacional de Acción por la Infancia y la Adolescencia 2002-2010).*

[13] *Decreto Supremto 014-2008-MG*

3.5 Land Use and Landholding System

3.5.1 Land Use

The land use for Ayacucho Region and the respective provinces is shown below.

Table 3.5.1 Land Use of Ayacucho Region (ha)

Arable Land	Perennial Crops	Mixed Cropping	Natural Pasture	Mountainous land and Grass land	Others	Total
168,141	32,051	8,144	1,234,184	135,942	136,746	1,715,208
9.8%	1.9%	0.5%	72.0%	7.9%	8.0%	100.0%

Source: Agriculture/Livestock Census 1994

Table 3.5.2 Area of Land Use for Each Province

Province	Farm Land Area	Non-farm Land Area			Total	Ratio of Farm Land Area
		Pasture	Mountainous /Grass Lands	Others		
	ha	ha	ha	ha	ha	
Huanta	27,354	36,926	7,001	7,489	78,769	35%
La Mar	46,533	71,427	36,907	34,817	189,683	25%
Huamanga	38,281	100,678	14,173	21,326	174,458	22%
Cangallo	16,336	117,012	7,072	11,237	151,657	11%
Vilcas Huaman	7,763	33,745	16,088	5,794	63,391	12%
Victor Fajardo	9,286	64,650	11,994	4,323	90,252	10%
Huanca Sancos	2,937	80,648	2,645	5,133	91,363	3%
Sucre	3,969	55,886	14,676	22,687	97,217	4%
Lucanas	34,732	521,536	13,034	9,788	579,090	6%
Parinacochas	14,878	131,686	12,044	8,235	166,842	9%
Paucar del Sara Sara	6,268	19,992	309	5,919	32,487	19%
Total	208,336	1,234,184	135,942	136,746	1,715,208	12%
	12%	72%	8%	8%	100%	

Source: Agriculture/Livestock Census 1994

The arable land area in Ayacucho Region is estimated at 168,141 ha, equivalent to 9.8% of the region area. In case of including the perennial crop area and mixed cropping area, it becomes to 208,336 ha, equivalent to 12% of the region area. The main reason of less arable land is due to topographic constraints such as high elevation and steep slope. In other provinces except Huamanga Province, there could not find the new increase of arable land due to topographic constraints mentioned above.

3.5.2 Landholding System

The landholding system in Peru has been changed together with the history of agriculture reform. In 1963, the Belaunde Government firstly enacted the law on agriculture reform, thereafter the Velasco Government launched it in earnest in 1969. The major purposes of agriculture reform are (i) rectification of social unbalance on landholding system like large private farm land, (ii) establishment of agriculture promotion system through farmers organization, (iii) rebuilding of traditional communal agriculture system, and 4) income increase of poor farmers. In addition, the upper limit (150 ha for costa and 15 ~ 55 ha for sierra) and the lower limit (3 ha) of landholding area were decided, and purchase and sale of land was forbidden due to security viewpoint. Furthermore, the large-scaled plantation were re-arranged into agricultural cooperation (*Cooperativa Agraria*), production association (*Associacion de Productores*) , farmers group (*Grupos Campecinas*) , and farmers community (*Comunidades Campecinas*). Thereafter, in 1979, the new law on farmers' community was promulgated and to officially register the community, the farmers' community in selva region formally named the native community and that in sierra region the farmers'

community.

It is deemed that the breaking up of large landholding system by the agriculture reform mentioned above, would bring about certain results from the viewpoint of even distribution of land resources. Meanwhile, it is also pointed out that the shrinkage of farming unit progressed and the production efficiency was largely fallen. According to the Strategic Plan of Agriculture Sector in Ayacucho, there were 657 communities in whole Peru in 2008, which occupy 61% of arable land, 90% of natural grassland and 87% of non-agriculture/livestock land.

Thereafter, the restriction of landholding and purchase and sale of land were removed due to the new laws in 1993 and 1995. But, as for the landholding and purchase and sale of land by farmers' community and native community, the consent more than 50% of community members in costa region and that more than 2/3 of community members in sierra and selva regions were required, so that the liquidity of land property was not heightened adequately. The below table shows the average landholding size which is obtained from the agriculture and livestock census in 1994 and the household survey executed in the Study.

Table 3.5.3 Farmers Number for Landholding Area and Average Landholding Area

Classification	Area per Landholder	Farmers Number		Total of Landholding Area		
				Total		Average
	(ha)	(nos.)	(%)	(ha)	(%)	(ha)
Petty Farmers	< 3.0	57,368	65.74	67,625	3.94	1.18
Small –scale Farmers	3.0 - 9.9	22,529	25.82	113,312	6.61	5.03
Medium-scale Farmers	10.0 - 49.9	5,960	6.83	105,362	6.14	17.68
Large –scale Farmers	> 50.0	1,406	1.61	1,428,909	83.31	1016.29
Total		87,263	100	1,715,208	100	19.66

Source: Agriculture and Livestock Census in 1994 (Censo Nacional Agropecuario 1994)

Table 3.5.4 Average Landholding and Cultivation Area of Small-scaled Farmers

Province	Number of Farmers Surveyed	Holding	Lease	Rent	Gratuitous Lending	Gratuitous Borrowing	Cultivation Area	Grass Land	Average Landholding Area	Average Cultivation Area
Huamanga	200	487	5	6	1	7	281	84	2.4	1.4
Cangallo	100	110		1	1	2	71	28	1.1	0.7
Vilcas Huaman	100	149		6	3	6	89	25	1.5	0.9
Victor Fajardo	100	132		0	1	4	62	64	1.3	0.6
Huanca Sancos	100	102	2		0	2	69	37	1.0	0.7
Sucre	100	170	2	2	2	7	72	105	1.7	0.7
Lucanas	200	240	5	4	12	46	175	84	1.2	0.9
Parinacochas	100	331	3	2	2	24	94	245	3.3	0.9
Paucar del Sara Sara	100	87	1	9	2	16	66	46	0.9	0.7
Total	1,100	1,807	18	29	25	114	980	718	1.6	0.9

Source: Household Survey by JICA Study Team in 2009

The average landholding area per farmer in the census and household survey is 1.2 ha and 1.6 ha, respectively. The farmers who execute the lending and borrowing of land are extremely less and fractionation and rigidification of lands have not been rectified since amendment of law in 1993

GOP established the National Public Registration Superintendent (*SUNARP: La Superintendencia Nacional de Registros Públicos*) with a purpose of preparation of land register in 1992. Concurrently, MINAG set out the rural area land registration project (*PETT: Proyecto Especial de Titulacion de Tierras y Catastro Rural*). However, according to the agriculture census in 1994, the farm land registered was only 17% of whole cultivation area. It is

pointed out that the delay in registration is due to that farmers themselves and communities themselves do not recognize the lands given by the agriculture reform, in addition to lack of registration fee and understanding of registration procedure by farmers.

3.6 Poverty, Rural Society and Gender

As shown in the national and provincial development plans mentioned above, the poverty reduction is the most important issue for Ayacucho Region. The poverty problem is obviously seen in the rural society and gender mentioned later.

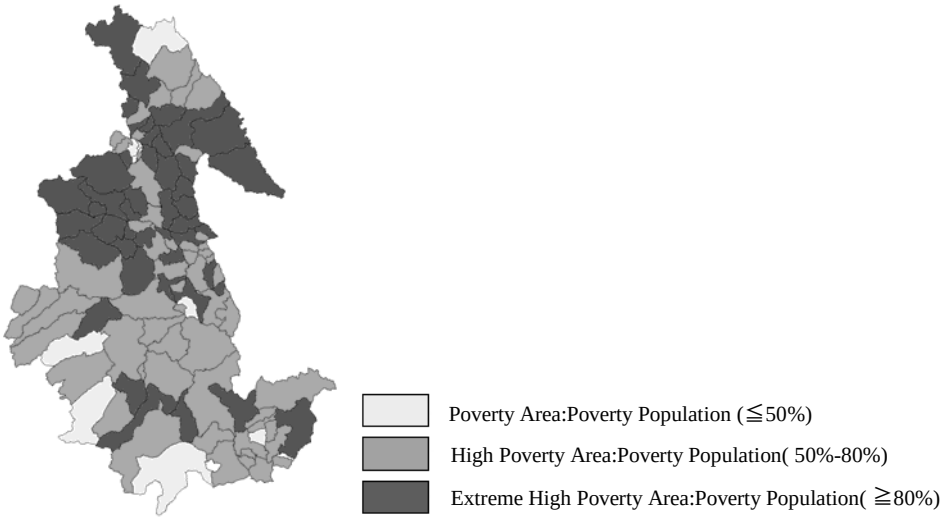
3.6.1 Poverty

According to the 2007 Census in Peru, Ayacucho Region is one of the poorest regions (out of 25 regions, 8 regions belong to the poorest ones). Its poverty ratio attains 78% and the extremely poverty reaches 41%. In the distribution condition of poverty districts for each province, the "district where the poor population is more than half of total population" attains 91% of whole districts in the region. The "district where the poor population is more than 80 % of total population" comes to 41% of whole districts in the region. In particular, Cangallo Province and Huanca Sancos Province are largely occupied by the "district where the poor population is more than 80% of total population".

Table 3.6.1 Number of Poor District in Ayacucho Region (Census in 2007)

Province	Number of District	Poverty Area		High Poverty Area		Extreme Poverty Area	
		Poor Population (≦50%)		Poor Population (50 - 80%)		Poor Population (≧80%)	
		Nos.	%	Nos.	%	Nos.	%
Huanta	8	1	13%	2	25%	5	63%
La Mar	8	0	0%	3	38%	5	63%
Huamanga	15	3	20%	5	33%	7	47%
Cangallo	6	0	0%	1	17%	5	83%
Vilcas Huaman	8	0	0%	3	38%	5	63%
Victor Fajardo	12	0	0%	5	42%	7	58%
Huanca Sancos	4	0	0%	1	25%	3	75%
Sucre	11	1	9%	7	64%	3	27%
Lucanas	21	2	10%	15	71%	4	19%
Parinacochas	8	1	13%	6	75%	1	13%
Paucar del Sara Sara	10	2	20%	7	70%	1	10%
Total	111	10	9%	55	50%	46	41%

Source: prepared by JICA Study Team based on data of INEI



Source : prepared by JICA Study Team based on data of INEI

Figure 3.6.1 Poor Population Map in Ayacucho Region

3.6.2 Rural Society

Such poverty condition, farmers aim at improvement of life at individual level and household level, and also at improvement of rural life through ayni (mutual recompense for labor) and ayllu (blood relation/regional relation group) which are traditional mutual assistance system, and cooperative activities in community organization and farmers organization. However, there is a limitation in poverty measures by community organization and farmers organization, so that it is all that most of farmers and communities only keep and protect the present rural life. The following table shows the present condition of cooperative activities and farmers' needs at community level:

Table 3.6.2 Cooperative Works at Community Level (Preparation of community road)

Q: Answer to "number of cooperative work in a year, participation rate to households in community, women participation rate to households in community (Average)

Province	Nos. of Cooperative Work	Participation Rate to Total Households	Women Participation Rate to Total Households
Huamanga (Average of 4 communities)	2 times/year	80%	18%
Cangallo (Average of one community)	15 times/year	179%	57%
Vilcas Huaman (Average of 2 communities)	1 time/year	55%	24%
Victor Fajardo(Average of one community)	1 time/year	87%	15%
Huanca Sancos (Average of one community)	2 times/year	257%	134%
Sucre (Average of one community)	1 time/year	90%	15%
Lucanas (Average of 2 communities)	1 time/year	148%	25%
Parinacochas (Average of 2 communities)	2 times/year	66%	23%
Paucar del Sara Sara (Average of one community)	1 time/year	100%	21%

Source: Household Survey by JICA Study Team
Remark: except Huanta and La Mar

Table 3.6.3 Community Organization

Q: answer to "activity conditions of each community organization (4 steps selection). Reasons for poor activity"(average)
<So active, Active, Inactive, No active> <Insufficient budget, Less concern, Lack of leaders, Weak cooperative work, Population decrease, Ageing>

Province	Association	Water Users Association	Mothers Club	Reasons of Inactive and No Active Conditions
Huamanga	Active: 3 communities Inactive: 1 community	Active: 3 communities Inactive: 1 community	Active: 4 communities	Association: Lack of leadership Water Users Association : Less concern
Cangallo	Active	Active	Active	
Vilcas Huaman	Active	Not available	Active	
Victor Fajardo	So active	Not available	Not available	
Huanca Sancos	So active	Active	No active	Mothers Club : Less concern
Sucre	So active	Active	Active	
Lucanas	So active	Active	Active	
Parinacochas	So active	Active	So active	
Paucar del Sara Sara	So active	Active	Active	

Source: Household Survey by JICA Study Team
Remark: except Huanta and La Mar

Table 3.6.4 Development Needs of Community

Q: answer to "select 3 fields which are so important for your community"(Average)
<Agriculture/Livestock, Transportation, Health, Education, Reforestation, Water/Hygiene, Tourism, Electricity, Processing of Agriculture Production, Housing, Waste Treatment, New Industry, Others>

Province	1st Priority	2nd Priority	3rd Priority	4th Priority
Huamanga	Agriculture/Livestock: 4 communities	Education : 3 communities	Housing: 2 communities	Water supply and sewage, Health, Transportation : 1 community each
Cangallo	Agriculture/livestock, Water supply and Sewage, Irrigation			
Vilcas Huaman	Agriculture/livestock, Water supply and Sewage : 2 communities each		Irrigation, Education : 1 community each	
Victor Fajardo	Agriculture/livestock, Water supply and Sewage, Irrigation			
Huanca Sancos	Agriculture/livestock, Transportation, Processing of Agriculture Production			
Sucre	Agriculture/livestock, Processing of Agriculture Production, Irrigation			
Lucanas	Water supply and Sewage: 2 communities		Agriculture/livestock, Irrigation, Processing of Agriculture Production, Education : 1 community each	
Parinacochas	Irrigation: 2 communities		Agriculture/livestock, Transportation, Water supply and Sewage, Education: 1 community each	
Paucar del Sara Sara	Transportation, Health, Water supply and Sewage			

Source: Household Survey by JICA Study Team
Remark: except Huanta and La Mar

3.6.3 Gender

Women in rural area in Ayacucho Region, are indispensable for executing the rural area life and agriculture production. Their roles range widely over housework, cooking, education for children, health for family, farm work, taking care of livestock and collection of firewood. However, they are burdened with social, cultural and economic constrains like traditional custom of predominance of men over women called "machismo", so that they still hold down various socio-economic issues for the ground of home, production, and community. As for the difficult problems which woman as an individual could not handle, treatment by group is tried through community organization, especially women group as shown in the following table.

Under the recognition mentioned above, if gazing steadily at the role of women in rural area in Ayacucho Region from the viewpoint of gender and life improvement, the major current situations and issues surrounding women in rural area in the region are shown in the following table and figure:

Table 3.5.5 Participation Condition of Women in Rural Area in Region to Community Organization

Q: " Do you (more than 18 years old) take part in the following community organizations ? "

Province	Association	Water Users Association	Mothers Club	A Cup of Milk Club	Cooperative Cooking Organization for Poor People
Huamanga	4%	2%	38%	36%	26%
Cangallo	1%	0%	4%	41%	1%
Vilcas Huaman	2%	0%	40%	63%	25%
Victor Fajardo	17%	0%	0%	34%	16%
Huanca Sancos	7%	0%	4%	14%	7%
Sucre	8%	3%	2%	21%	9%
Lucanas	9%	5%	15%	19%	21%
Parinacochas	8%	10%	23%	31%	24%
Paucar del Sara Sara	8%	4%	16%	28%	15%
Average in Ayacucho	7%	3%	19%	32%	17%

Source: Household Survey by JICA Study Team

Remark: except Huanta and La Mar

Field	Present Conditions (Major Problems/Constranis)	Subjects
Individual/Human right	· Low literacy rate · Low school rate (Children/young labours, etc.) · Limited private ownership of saving/fortune · Lack of public services to single mothers	Basic needs · Social understanding and permeation like preparation of regulations on right of women/children · Establishement of institution and support organization to gender
Home/Life	<Traditional Gender Discrimination (Machismo)> · Long working hours (Agriculture/livestock, household chores) · Hard work (Collectionof firewood, drawing water.) · Unhealthy life circumstance (Lack of sleep, malnutrition.) · Unplanned fecundity · Lack of dicision making right (Life plan putting men first) · Non-understanding of men to women's roles	Improvement of life · Raising of awareness of women to life improvement · Activity and formation of group on improvement of life · Diffusion and expansion of public support system on existing plan of improvement of life · Improvement of men's understanding on roles and actvities by women
Employment/Production	· Lack of job opportunity · Insufficiency of technical skills · Lack of distribution network and information on agriculture production and handcraft · Insufficient marketting ability · Lack of fund and difficulty in access to financial Procurement · Difficulty in participating production organization (Insufficient time, lack of understanding by husband)	Creation of job and income opportunities · Support to starting small-scale business (agriculture, livestock, food processing, handcrsft, etc) · Activity and formation of group on production and livelihood improvement · Diffusion and Expansion of public support system on existing production activities · Training of technology (technical skill, management/O&M. etc) · Establishment of micro-finace system
Community/Cooperation	· Difficulty in participating dicision-making opportunity in community · Deficit of woman leaders · Lack of understanding and consideration to women's needs · Non-understanding to women's roles	Community Development · Establishment of women participation system to community development · Training and strengthening of women leaders and formation of women group · Improvement of social understanding on women's roles and activities

Source: JICA Study Team

Figure 3.6.2 Current Situations and Issues for Women in Rural Area in Region

Chapter 4 Industrial Structure of Rural Area in Ayacucho

4.1 Agricultural Production

4.1.1 Policy, Institution and Plan (National and Regional Levels)

(1) Central Level

MINAG has formulated Multi-Year Strategic Agricultural Sector Plan for 2007-2011 (*Plan Estrategico Sectorial Mutianual de Agricultura 2007-2011*). The Plan expressed that agricultural sector of Peru is facing technical and institutional constraints in addition to severe natural conditions. Detail of constraints expressed in the Plan is shown in Table 4.1.1.

Table 4.1.1 Constraints of Agricultural Sector Expressed on Multi-Year Strategic Agricultural Sector Plan

Const-raints	Detail	Indicator
Low Agricultural Productivity and Competitiveness	Dispersed and small farming land	70% of total farmers are small scale farmer with less than 5.0 ha of farming land and, total cultivated area by the small scale farmers is only 6% of total cultivated area in Peru.
	Lack of cooperatives	35% of total farmers belong to cooperative. However, most of them belong to cooperative indirectly.
	Loss of agricultural asset	Cooperatives were established by Agricultural Reform. However, efficiency of productivity is not improved well due to cooperative's internal conflict etc.. As a result, many farmers are immigrating to urban area. Moreover, 10,000 units of the tractor existed in 1960s' has decreased to half.
	Low education level	60% of total farmers have received only primary education. Farmers who received higher level education are only 4%.
	Lack of infrastructure for distribution	Development of road infrastructure is delayed comparing with other Latin American countries. Economic loss due to the delay is presumed USD 20,000 million.
	Twist market structure and lack of channel for commercialization	Fair price setting is difficult due to decrease of farmers' ability for price negotiation by provision of informal credit and lack of market information. Moreover, 15-30% of Agricultural GDP has lost due to insufficient marketing structures such as road and storage etc…
	Lack of product quality and value added	Most of products are sold in primary articles due to lack of technology on post harvesting and processing.
	Lack of infrastructure for commercialization	Development of infrastructure for commercialization is drastically delayed. In addition, producers cannot take advantage on commercial negotiations due to lack of cooperative work by internal conflict etc...
	Lack of agricultural information	Agricultural information is not offered sufficiently due to lack of social infrastructures and communication network.
	Limited agricultural extension and examination activities	Most of farmers are in poor condition. Therefore, farmers can not apply new technology due to financial deficit.
	Lack of services on pest and disaster control technology	Ministry of Agriculture provides pest and disaster information through SENASA. However, service converge area is limited.
	Lack of agricultural finance	Farmers and / or agricultural business entity that applied agricultural finance in 2007 is 81,561 equivalents to only 4.6% of 1,745,000 of farmers and / or agricultural business entities.
Unsustainable Use of Natural Resource	Inappropriate forest management	7.17 million ha of forest was felled by 2000. Average annual felled forest between 1990 and 2000 was 0.15 million ha and, most of felling was done by immigrant farmers.
	Insufficient use of water resources	According to survey by INRENA in 2004, canal protected by lining is only 17 % of 36,833 Km of surveyed canal is. As a result, 15-20% of water is lost by sedimentation and perspiration causing damage for 30,000 ha of farming area
	Inappropriate agriculture and livestock	Inappropriate use of agro-chemical in monoculture cause soil deterioration (decrease of fertility) , pests and disaster. Also, inadequate agricultural management causes erosion (6.4% of the Peruvian national territory is facing to serious erosion problem)
	Insufficient measure for natural disaster	Peru is exposed to several natural disasters such as El Niño phenomena and frost. However, preventive measure against such natural disaster is not taken sufficiently.

Const-raints	Detail	Indicator
	Deterioration of living environment	Excessive use of agro-chemicals in irrigated land, improper water use for mining cause contamination of water resources. In addition, the use of brackish water in irrigation and deforestation caused by immigrants causes deterioration of living conditions.
	Limited Activity on Conservation of biodiversity	Bio diversification is deteriorating due to inappropriate control for introduction of foreign species. Currently 221 species are endangered and, decrease of genetic resources is concerned.
	Low Land Registration Rate	Out of 2.0 million ha of farmland, about 1.4 million have not registered. Of those unregistered farmland, one million ha belongs to community (*communidad campesina / farmers' community*).
	Limited License (Lack of Registration) for Use of Water Resource	790 000 users of irrigation water is existed. Most of them are not registered as irrigation water user. In 2007, 245,000 were registered as a result of activity for accelerating registration.
	Insufficient Legal System about Forest Owning and Forest Felling	283 companies are licensed to exploit 178.600 ha of forests felling. Some of the companies is felling the forest without complying condition of contract (plan).
Lack of Agricultural Information to Peasants	Decrease of Support for Non -Agricultural Sector	Crafts, tourism and aquaculture are important secondary income source for peasants. The importance is increasing, however support for these activities are not carried out sufficiently.
	Poor Investment for Mountain and Forest Area	Development of public service of all sectors such as education, health, electrification, roads is delayed in rural area. The rate of chronic malnutrition in rural areas is 33.2% (2004), and, the rate of provision of potable water service is only 33.2%. Such poor investment causes low community capacity to response to climate change etc..
Vulnerable Agencies related to Agriculture	Unstable Agricultural Policy and Planning with Short Term View	National level planning system is inadequate. And long term plan cannot be formulated.
	Lack of Solidarity inside and between concerned agencies	Supporting activity is becoming ineffective Due to lack of collaboration inside and between concerned agencies such as duplication of activity.

Source: National Institute of Natural Resources: INRENA Soil Classification Map 1996

In addition to constraints shown in the above table, the Plan expressed that the agricultural sector has important role for economic development of the country, taking up (i) high peasant population, (ii) high growth rate of agricultural GDP (average annual growth rate of agricultural GDP between 2001 and 2007 was 4.1 % and export amount was increased by 19%). Three important roles of agricultural sector are (i) normalization of market, (ii) reduction of poverty, and (iii) contribution to sustainable use of natural and social environments.

(2) Regional Level

RGA has prepared the "Ayacucho Agricultural Sector Strategic Plan 2009-2015 (*Plan Estrategico del Sector Agrario Ayacucho 2009-2015*) based on national strategy mentioned above. The strategic plan forces on 4 key determinants for the development of the agricultural sector, (i) concentration and, strengthening of solidarity between concerned agencies, (ii) rational and sustainable use of natural and living environments, (iii) strengthening of solidarity, connection to the market, and strengthening of services for improvement of competitiveness, (iv) development of system for innovation of agriculture technology. Table 4.1.2 shows summary of central and regional strategic plan such as the vision, basic strategies and objectives.

Table 4.1.2 Summary of National and Ayacucho Regional Strategic Plan for Agriculture Development

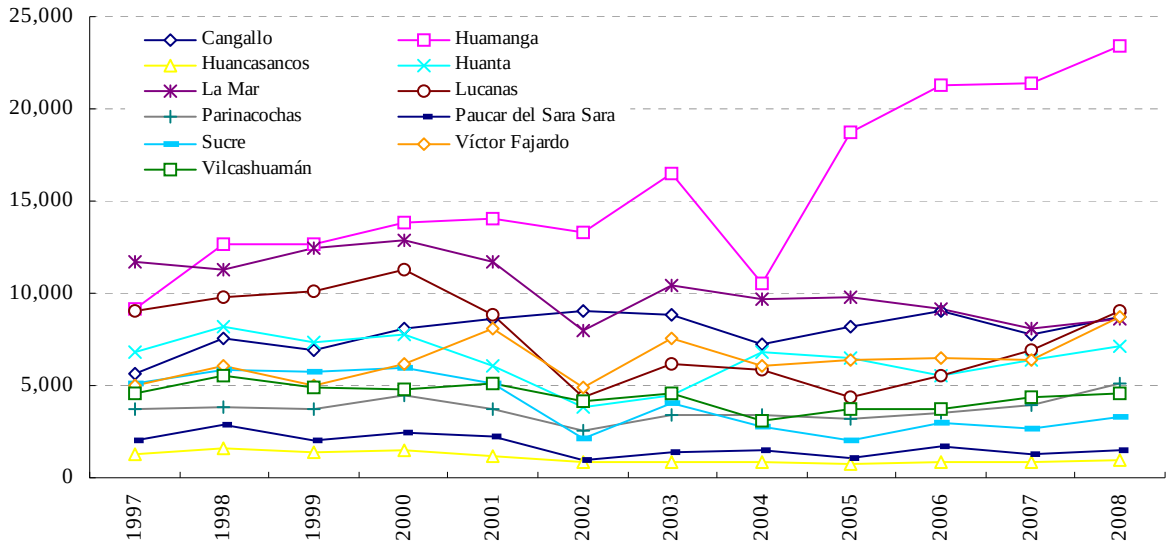
Item	Central (Central Government)	Regional (Ayacucho Regional Government)
Name of Plan	Plan Estrategico Sectorial Mutianual de Agricultura	Plan Estrategico del Sector Agrario Ayacucho
Organization	Planning Department, Ministry of Agriculture	Ayacucho Regional Government
Period	2007-2011	2009 -2015
Vision	Leader of Pacific Region of South America (2015) in Agricultural Production	Leader sector modernized with organized competitive farmers, sustainable use of natural resources and food security (2015)

Item	Central (Central Government)	Regional (Ayacucho Regional Government)
Basic Strategy	・ Strengthening of Competitiveness on Agricultural Production ・ Achievement of Sustainable Use of Natural Resource and Bio-diversification ・ Strengthening of Peasants' Access to Service on Agricultural Production	・ Strengthening of Agricultural Production bringing Economic Corridor into View ・ Strengthening of Solidarity between Public and Private Sectors for Strengthening of Agricultural Sector ・ Acceleration of Sustainable Use and Integrated Management of Natural Resources ・ Improvement of Agricultural Production Technology
Target	Target Year : 2011 Agricultural GDP : US$ 12,000 million Average Growth Rate : 7.0 % Export Amount : US$ 4,500 million Creation of Employment : Direct 400 thousands Indirect 200 thousands	Target Year : 2015 Agricultural GDP : US$ 498 million Average Growth Rate : 1.6 % Export Amount : US$ 44 million Creation of Employment : Direct 215 thousands Indirect 95 thousands
Investment Plan	40 activity plans Total 5,845,823,670 Sol (US$ 1,948 million)	44 activity plans Total 148,935,968 Sol (US$ 49 million)

Source: Plan Estrategico del Sector Agrario Ayacucho 2009-2015

4.1.2 Cultivated Area, Production and Cropping Yield of Major Crops

Agricultural production in Ayacucho Region is the second largest economic sector following service sector. Figure 4.1.1 shows harvested area of 24 major crops from 1998 to 2008.



Source: Agencia Agraris, GRA

Figure 4.1.1 Harvested Area of 24 Major Crops per Province (ha)

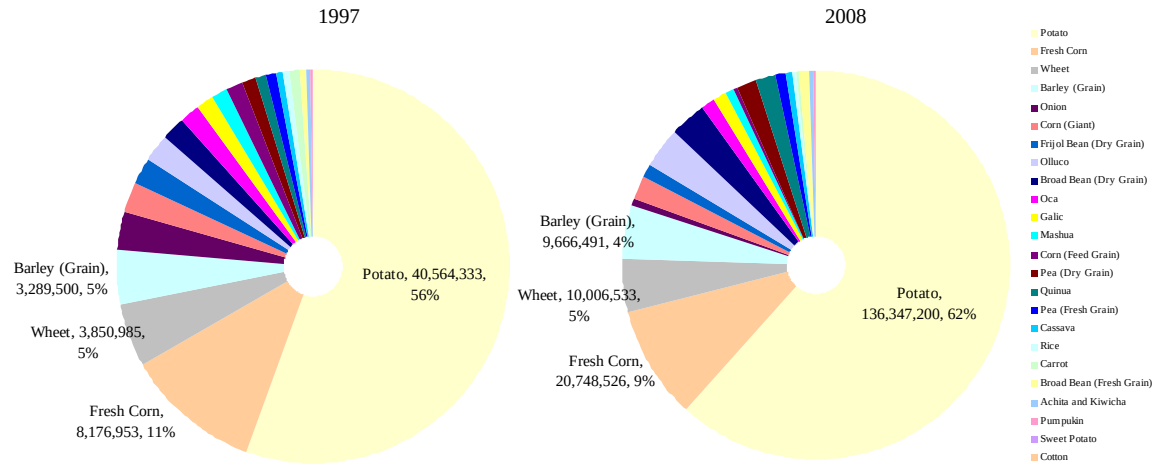
Figure 4.1.2 and 4.1.3 show production value of 24 major crops in 1997 and 2008 and, variation of cropping yield of potato which is most important crop for Ayacucho Region.

The production value has increased considerably from 1997 to 2008, however the cultivated crops has not changed during the same period. Huamanga Province represents 35% of the total value and this trend (high portion of Huamanga Province) has not changed since 1997. The cropping yield as well as the production value in Huamanga Province is remarkable especially for potato. Average cropping yield of potato of Huamanga Province in 2007 is 19

t/ha. In Acocro of Huamanga Province where is large potato production area, cropping yield of potato achieved 24 t/ha (according to information of PROSAAMER).

The production of tropical cash crops like cocoa and coffee and rice is concentrated in Huanta and La Mar Provinces, which are located in northwest region (Apurimac River basin area with low elevation and heavy rain).

As mentioned above, there are big differences between north and south regions of Ayacucho Region in terms of not only productivity, but also crop diversity (or restrictions on the natural condition). However, Agriculture of Ayacucho Region is still overdue in comparison with advanced agricultural area in other regions. For example, cropping yield of potato has reached to 40 t/ha in an advanced area, about 2 times of it of Ayacucho Region. Such trend (difference of cropping yield) is observed in other crops too.

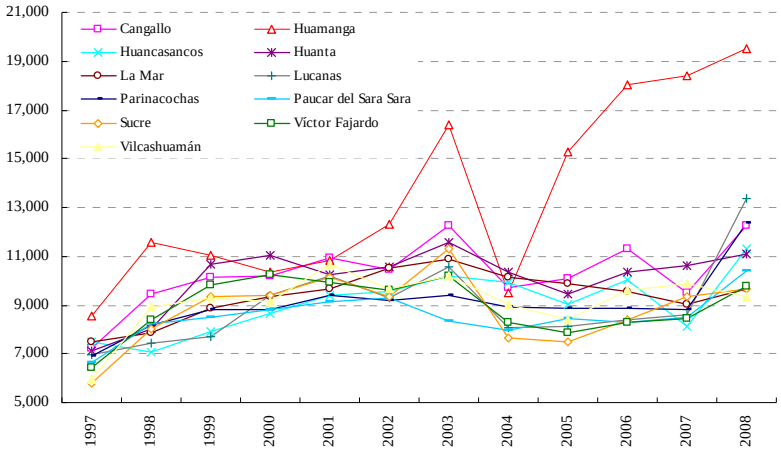


Source: Elaborated based on production amount and average price from "Agencia Agraria, Gobierno Regional Ayacucho"

Figure 4.1.2 Production Value of Major Crops in 1997 and 2008 (Soles)

4.1.3 Characteristics of Agriculture by Altitude

Figure 4.1.7 shows the characteristics of agriculture by altitude. Agriculture in Ayacucho Region is characterized by difference of temperature by altitude. The area over 4,000 m of altitude is used for pasturage, the area between 3.000 m to 4.000 m for tubers and cereals, the area between 2.000 m to 3.000 m is for maize and other cereals, the area between 1,000 m - 2,000 m is for vegetables and fruits and, the area located in 1,000 m (Apurimac basin) is used for production of cocoa, coffee, rice, etc.



Source: Agencia Agraria, Gobierno Regional Ayacucho

Figure 4.1.3 Variation of Potato Cropping Yield per Province

Environment for agricultural production of Ayacucho Region is very hard. Most of the farming land of Ayacucho

Region is located on slopes. In addition, natural disasters such as droughts and frosts occurred frequently. Moreover, farmers faces problem on farming management such as small farming land and deficit of farming budget.

Farmers are taking traditional countermeasures against unstable factors mentioned above. For example, establishment of groups called Ayni, which is a traditional mutual assistant system for cooperative works like harvesting. Farmers also take vertical countermeasure such as "exchange of products between farmers lived in different altitudes", "Distribution of farming land in different altitude to minimize the damage caused by natural disaster", "and also horizontal countermeasure like "mixed cultivation of native varieties which have different characteristics" etc.

These countermeasures are very important for the mitigation of vulnerabilities of the farmers. However, these countermeasures also become causes of low market competitiveness of products on both aspects quantity and quality.

Figure 4.1.4 Plain Farming Land, Pampa Cangallo, Cangallo

Figure 4.1.5 Farming Land at Slope, Pampa Cangallo, Cangallo

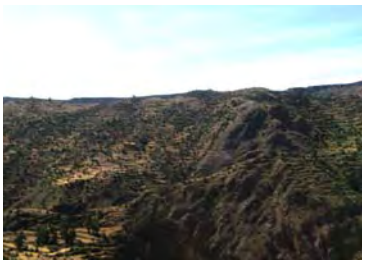


Figure 4.1.6 Farming Land at Rapid Slope, Puquio, Lucanas

Altitude	Area (Ha)	Type of Agriculture	Potato (Papa de Mesa)	Potato (Papa de Amarga)	Corn	Wheet	Barley	Pea	Oca	Olluco	Mashua	Maca	Broad Bean	Sweet potato	Artichoke	Yacon	Achira	Quinua	Achita	Frijol Bean
- 5,000 m	1,215	1 Principally, not adecuated for crop production.																		
		2 Used only for livestock raising																		
		3																		
4,000 - 5,000 m	1,620,051	1 Small scale farmer																		
		2 Principally, Alpacas, Llama and Horse																		
		3 Rainfed																		
3,000 - 4,000 m	1,643,186	1 Small and midium scale farmer																		
		2 Potato, Corn, Pea, Broad Bean, Quinnua	■	■					■	■	■	■						■		
		3 Rainfed and Irrigated	■				■						■							
2,000 - 3,000 m	673,276	1 Small and midium scale farmer																		
		2 Corn, vegitables and fruits			■	■	■	■					■	■	■	■	■		■	■
		3 Rainfed and Irrigated				■	■							■	■					■
1,000 - 2,000 m	334,825	1 Small and midium scale farmer																		
		2 Fruits, legumes and vegitables																		
		3 Rainfed and Irrigated																		
-1,000 m	78,264	1 Small and midium scale farmer																		
		2 Cofee, Cacao and corn																		
		3 Rainfed																		
	4,350,817																			

* 1. Type of Farmer, 2. Principal Crops, 3. Type of Agriculture

Source: JICA Study Team

Figure 4.1.7 Crops and Characteristic of Agriculture by Altitude

4.1.4 Type of Farming Management and Cropping Method

Most of the farmers in Ayacucho Region are peasants with only 1.0-1.5 ha of farming land. Therefore, almost all production is used for self-consumption. Table 4.1.3 shows general cropping method of peasants.

Table 4.1.3 General Cropping Method of Peasants

Purpose of Farming		Mainly for self-consumption. Rate of self-consumption is higher in high altitude area
Cropping Method		Mainly cultivation (or mixed cultivation) of native corn and potato except commercial based production area.
Cropping Method (Detailed)	Land Preparation (Plaw)	Land preparation by cattle in gentle slope area, by manual work in steep slope area. Land preparation by rental hand tractor is very few.
	Pest and Weed Control	Weed control by cattle in gentle slope area, by manual work in steep slope area.
	Harvesting	Harvesting by family labor or collective / cooperative work by Ayni
	Storage	Storage in the house using hemp bags. Freeze treatment to extend storage period is practiced in high area
	Sale	Sale remaining product after securing portion for self consumption in community market and festival or provincial market.
Inputs	Man-power	Family labor. Employment of labor is very few.
	Seed	Use previous harvest or purchase from neighbor peasant
	Chemical Fertilizer	Use of chemical fertilizer is very few.
	Organic Fertilizer	Use of organic fertilizer is very few. Peasant use animal manure directory to farming land.
	Insecticide	Use of insecticide is very few
	Pesticide	Use of pesticide is very few
	Farming Machinery	Use of farming machinery is very few. In some case, farming machinery is used in gentle slope.

Source: JICA Study Team

Table 4.1.4 and Table 4.1.5 show situations of self-consumption and use and purchase of agricultural inputs which are clarified by the Household Survey conducted in the Study.

Table 4.1.4 Rate of Self - Consumption (%)

Province	Number of Sample Farmer	Potato	Vegetables	Oca	Corn	Barley	Olluco	Nabo	Wheet	Peas	Quinua	Kiwicha
Huamanga	200	82	57	100	92	83	100	91	75	83	50	22
Cangallo	100	99	99	100	93	100	100	100	100	100	100	100
Vilcas Huaman	100	98	100	100	94	99	100	97	98	100	100	—
Victor Fajardo	100	99	—	100	99	98	100	100	99	100	100	—
Huanca Sancos	100	96	100	98	99	96	100	98	99	98	95	100
Sucre	100	97	89	99	94	99	99	98	126	100	100	100
Lucanas	200	93	84	95	93	95	100	95	92	96	86	87
Parinacochas	100	95	100	100	92	97	100	99	100	100	99	100
Paucar del Sara Sara	100	93	73	97	95	94	98	96	91	100	99	100
Total / Average	1,100	94	86	99	94	95	100	97	94	92	84	51

Source: JICA Study Team, Household Survey 2009

Table 4.1.5 Use of Agricultural Inputs

Province	Number of Sample Farmers	Chemical Fertilizer		Agri. Chemicals		Purchased Seed	
		Nos.	%	Nos.	%	Nos.	%
Huamanga	200	98	49.0%	96	48.0%	30	15.0%
Cangallo	100	4	4.0%	16	16.0%	32	32.0%
Vilcas Huaman	100	25	25.0%	36	36.0%	17	17.0%
Victor Fajardo	100	1	1.0%	8	8.0%	0	0.0%
Huanca Sancos	100	2	2.0%	29	29.0%	6	6.0%
Sucre	100	3	3.0%	13	13.0%	22	22.0%
Lucanas	200	10	5.0%	22	11.0%	46	23.0%
Parinacochas	100	5	5.0%	12	12.0%	13	13.0%
Paucar del Sara Sara	100	1	1.0%	16	16.0%	15	15.0%
Total	1,100	149	13.5%	248	22.5%	181	16.5%

Source: JICA Study Team, Household Survey 2009

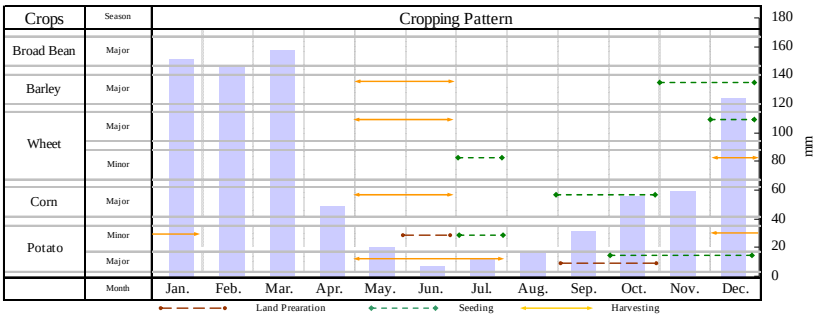
As shown in the table above, most of farmers use the harvested products for self-consumption. Except vegetables and Kiwicha in Huamanga Province, the rate of self-consumption is quite high (over 84%) for all products. On the other hand, the percentage of farmers who apply agricultural inputs such as fertilizers is very low. The main reason of the low application of agricultural inputs is the deficit of farming budget. Some farmers take natural measure to recover soil fertility, such as fallow period per 2-8 years.

4.1.5 Major Crops and Varieties

Many native varieties of potato and corn are existed in Ayacucho Region. In case of Potato, a hundred of native varieties are existed. Most of peasants practice cultivation mixing one or more native varieties to reduce risk of natural disaster. INIA has developed improved varieties with high productivity. The varieties however, are not diffused well to the peasants due to deficit of farming budget to purchase agricultural inputs.

4.1.6 Cropping Pattern of Major Crops

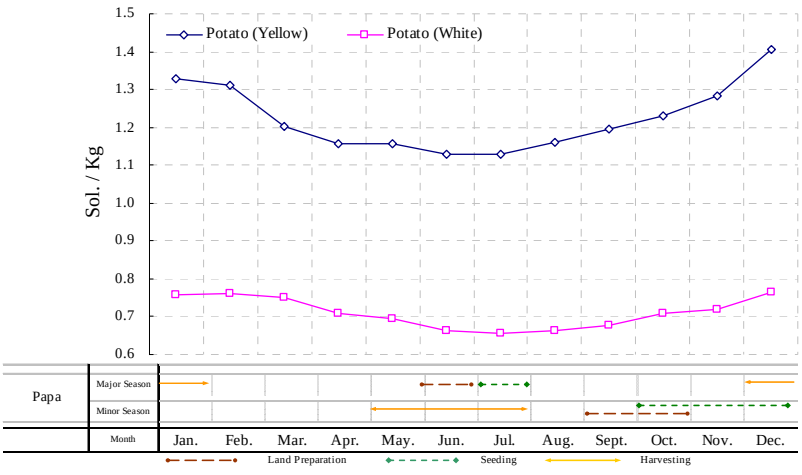
Figure 4.1.8 shows relation between rainfall and cropping pattern of major crops.



Source: JICA Study Team

Figure 4.1.8 Relation between Rainfall and Major Crops

In the Ayacucho region, rainfall is very low and is concentrated during 5 months between November and May. Almost all farmers practice rain-fed agriculture. They start planting in September, just before the start of the rainy season and harvest between May and June. As a result, the price of potato trends to decline between May and June (harvesting period). Figure 4.1.8 shows a comparison of the price fluctuation of two potato varieties and cropping pattern (average price between 2003 and 2007).



Difference between maximum and minimum prices is about 20% for both white and yellow potatoes. Some farmers ship the product in January to December when the price is increased. However, such cropping pattern is practiced only by commercial farmers who have irrigation system.

Source: JICA Study Team

Figure 4.1.9 Cropping Pattern and Price Fluctuation of Potato

4.1.7 Crop Diversification

Potato and maize are still dominants crops in Agricultural production of the Ayacucho Region. In general,

farmers in Ayacucho Region practice diversified agriculture combining major crops like potato and corm and other crops and / or livestock. Situation of crop diversification is mentioned below.

(1) Crops

In 2002, National Institute for Agricultural Innovation (*INIA*) prepared a report of the workshop on priority crops in Ayacucho Region. In this workshop report, 84 major products are selected as important crops for commercialization of agriculture in Ayacucho Region. Moreover, these crops are estimated from the point of views; (i) productivity, adaptability, consumer trends, production technology and (ii) quality, price, market and seasonality for selection of priority crops.

Table 4.1.6 Priority Crops by INIA

Indicator	Priority Crops
productivity, adaptability, consumer trends, production technology	Maize, Corn (Fresh), Broad Beans, Quinua, Tuna, Barley, Wheat, Peas, Frijol Bean, Onion, Avocado, Tara, Pumpkin
quality, price, market and seasonality	Maize (Fresh), Quinua, Tuna, Avocado, Wheat, Potato, Kiwicha, Garlic, Tomato, Pea, Frijol Bean, Citrus, Tara
Total	Maize (Fresh), Quinua, Broad Bean, Wheat, Potato, Avocado, Frijol Bean, Garlic, Onion, Tuna, Pea, Kiwicha, Tomato, Tara

Source: Instituto Nacional de Rennovacion Agricola

Sierra Exportadora as well as INIA selected priority crops as shown in Table 4.1.7.

Table 4.1.7 Priority Crops by Sierra Exportadora

Crops	Others
Whole Project Area : Avocado, Durazo (Peach), Potato, Maca, Kiwicha, Cacao, Broad Bean, Quinua, Oregano, Antichoke, etc. Ayacucho Region : Avocado, Color Maize (Purple Maize), Artichoke	Whole Project Area: Sheep, Rainbow Trout, Textile etc.. Ayacucho Region: Tara

Source: Sierra Exportadora

Table 4.1.9 shows harvested area of the priority crops selected by the INIA, Sierra Exportadora and Agro Rural in 2005. The percentage of harvested area of the priority crops (except corn and potatoes) against total harvested area is 23.1% for all Ayacucho Region, and the percentage is higher in northern area. The reasons of high percentage in northern part would be easy access to Ayacucho City, which is biggest consumer market in Ayacucho Region and favorable climatic conditions such as high rainfall and low elevation.

According to technicians of Agro Rural, Tomato, Sauco, pepper also are potential crops for crop diversification. However, crop diversification (introduction of new crops) is very difficult for farmers due to small landholding size (1.0 - 1.5 ha), use of product as self-consumption, lack of farming budget, high risk of climatic disaster, insufficient access to market etc.

Table 4.1.8 Harvested Area of Priority Crops per Province (2005)

Crops	Huamanga	Cangallo	Sancos	Huanta	La Mar	Lucanas	Parinacochas	Paucar del Sara Sara	Sucre	Victor Fajardo	Vilcas Huaman
Garlic	41	26	0	7	23	28	0	0	0	32	0
Pea (Dry Grain)	911	310	23	423	596	78	0	23	32	246	92
Pea (Fresh Grain)	530	60	0	156	97	48	0	22	0	49	26
Onion	54	3	0	57	77	26	0	0	0	20	0
Palo Frijol Bean (Dry Grain)	0	0	0	44	107	0	0	0	0	0	0
Frijol Bean (Dry Grain)	152	27	0	194	557	68	0	4	38	44	21
Vainita Frijol Bean	12	0	0	0	0	0	0	0	0	0	0
Broad Beans (Dry Grain)	937	545	97	355	632	364	387	134	91	446	262
Broad Beans (Fresh Grain)	195	155	3	85	56	69	30	56	0	54	31
Yellow Corn	20	0	0	319	460	63	120	0	0	0	18
Fresh Corn	2,846	1,799	220	1,869	1,944	1,119	626	289	851	2,105	1,172
Choclo Corn	285	120	0	141	84	47	0	64	0	134	10
Color Corn (Purple Corn)	6	0	0	208	0	21	0	0	0	0	0
Avocado	13	4	0	92	80	14	5	8	2	22	0
Potato	4,517	1,708	156	632	1,448	594	512	121	302	614	688
Quinua	330	173	13	55	99	97	101	37	40	93	169
Tomato	83	0	0	28	15	23	0	0	0	0	0
Wheet	3,012	761	26	655	1,305	516	426	137	256	774	507
Tuna	698	272	55	847	136	95	22	32	101	238	61
Total	14,642	5,963	593	6,167	7,716	3,270	2,229	927	1,713	4,871	3,057
Total (Except Corns and Potato)	6,968	2,336	217	2,998	3,780	1,426	971	453	560	2,018	1,169
3 Principal Provinces											
Total Harvested Area	22,158	12,070	913	12,845	22,679	8,573	4,253	2,788	2,236	6,843	3,841
% of Harvested Area of the Priority Crops	66.1%	49.4%	65.0%	48.0%	34.0%	38.1%	52.4%	33.2%	76.6%	71.2%	79.6%
% of Harvested Area of the Priority Crops except Corns and otato	31.4%	19.4%	23.8%	23.3%	16.7%	16.6%	22.8%	16.2%	25.0%	29.5%	30.4%

Source: Estadistico de Region Ayacucho 2007-2008

(2) Flower

There is flower cultivation in Tambo District, La Mar Province. Cultivated flower is sold mainly in neighboring area and Ayacucho City due to the difficulty of access to markets and limited production volume. Other communities located near Ayacucho City also practice small scale flower cultivation like Tambo. There is no detailed information about flower cultivation. However, demand flower would be limited and seasonal concentrating in "Day of the Dead in November and Christmas etc...

Figure 4.1.10 Sales of Flower near Cemetery (Day for Dead)

(3) Agro Processing

As for the agro-processing, production of cheese and honey is popular in Ayacucho Region. There are many farmers who sell cheese and honey in markets of Ayacucho City and communities. Some communities located near Ayacucho City formulate producers' cooperative intending to produce high quality cheese and cuy.

Sais District of Lucanas located in southern region produce special product named as "Sanky juice" using cactus that grows only in altitudes above 3,000 meters. To improve livelihood of poor peasant, positive support by local governments is required. However, there are still a few examples of producing special product taking regional advantage like Saisa District

4.1.8 Livestock

Most of farmers in Ayacucho Region practice livestock grazing in addition to crop production. Table 4.1.9 shows the results of question regarding the possession of animals by Household Survey conducted of the Study Team.

Table 4.1.9 Number of Farmers who own Livestock per Animal

Province	Nos. of Surveyed Farmer Household	Cattle	Sheep	Chicken	Cuy / Rabbit	Horse	Llama	Alpaca	Pig	Others	Nos. of Farmers Household with Livestock	
											Nos.	%
Huamanga	200	111	51	138	54	40	28			98	138	69%
Cangallo	100	51	27	65	55	25	3	10	18	14	65	65%
Vilcas Huaman	100	53	43	60	38	45	34			68	68	68%
Victor Fajardo	100	74	58	48	5	54	25	13		43	74	74%
Huanca Sancos	100	68	63	28	25	74	5	4	1	7	74	74%
Sucre	100	90	55	61	29	64	12	3	4	17	90	90%
Lucanas	200	152	81	101	97	58	5		3	53	152	76%
Parinacochas	100	81	61	46	50	49	11	2		31	81	81%
Paucar del Sara Sara	100	83	53	46	58	41	7			28	83	83%
Total	1,100	763	492	593	411	450	130	32	26	359	825	75%
		69.4%	44.7%	53.9%	37.4%	40.9%	11.8%	2.9%	2.4%	32.6%		

Source: Household Survey by JICA Study Team

Out of 1,100 surveyed farmers' households, 75% or 825 households own an animal. Livestock have important role for farmers as income source and/or asset for emergency occasions. Many farmers get money by sales of livestock for emergence expenses such as marriage, funeral and ancestral worship etc.

The percentage of farmers who own livestock is higher in south region where the natural pasture land is more concentrated than north region. Sucre Province has the highest percentage with 90%, followed by the province of Paucar del Sara Sara Province with 83% and Parinacochas with 81%.

Table 4.1.10 Number of Owned Livestock per Province and Animals

Province	Cattle	Sheep	Chicken	Cuy Rabbit	Horse	Llama	Alpaca	Pig	Others
Huamanga	4	9	8	54	1	9			2
Cangallo	7	13	9	24	3	10	21	30	2
Vilcas Huaman	3	10	5	9	3	8			2
Victor Fajardo	6	19	3	10	2	5	5		2
Huanca Sancos	8	46	4	28	3	4	45	12	2
Sucre	11	27	6	11	2	8	18	11	2
Lucanas	6	9	5	11	2	17		80	2
Parinacochas	8	9	4	11	2	4	6		1
Paucar del Sara Sara	7	9	5	12	2	11			2
Total	7	17	6	19	2	8	16	32	2

Source: Household Survey by JICA Study Team
Remark: Number is average of farmers who own livestock

Owning number is large for cattle, poultry and sheep. Percentage of farmers who own Andes special livestock like llama and alpaca have a lower rate, only 2.9% and 11.8% respectively. On average, pig is the most numerous in number of heads but, the number of farmers household is only 26. On the other hand, guinea pig (*cuy*) and rabbit have high possession rate especially in the area near Ayacucho City, the biggest consumer center. In Vinchos District located near Ayacucho City, farmers organize producers' cooperative for commercial base guinea pig production. Actually, the cooperative is intending installation of the processing plant

4.1.9 Problems and Constraints for Development

Problems and constraints on agricultural production for improvement of livelihood of farmers are as follows

Table 4.1.11 Problems and Constraints for Development on Agricultural Production

Category	Problems		Constraints for Development		
Problems on Natural Condition	・ Farming land is concentrated in high elevation area with low temperature and few rainfall ・ Frequent occurrence of abnormal weather such as drought and cold ・ Most of farming land and unused land are located in slope of high elevation area	⇒	<u>High Risk of Natural Disaster</u> ・ Agricultural production and productivity are low and unstable due to difficulty on natural condition (temperature and rainfall) ・ Introduction of new varieties and crops is difficult due to severe natural condition ・ Utilization of unused land is difficult (be depend strongly to due to elevation and existence of water source) ・ High difficulty of mechanization	⇒ ⇒ ⇒ ⇒	・ Decrease of efficiency of agricultural production ・ Decrease of efficiency of land utilization
Problems on Environment for Production	・ Environment for production such as irrigation system is not sufficient ・ Road and storage facilities are not developed	⇒	<u>Inefficient Agricultural Production due to Lack of Infrastructure for Production</u> ・ Introduction of new varieties and crops is difficult due to severe natural condition ・ Damages by natural disaster cannot be avoided and/or mitigated ・ Reduction of competiveness of agricultural products on price due to high conveyance loss.	⇒ ⇒ ⇒	・ Decrease of efficiency of agricultural production ・ Decrease of market competitiveness
Problems on Farming Management	・ Very small farming land ・ Deficit of farming budget and lack of access to agricultural credit (lack of access to agencies for agricultural credit and bond) ・ Insufficient cooperative activity	⇒	<u>Reduction of Efficiency of Agricultural Production and Farmers' Income</u> ・ No excess production for sale after securing food for self consumption due to small farming land ・ Low profitability due to lack of fertilizer and agricultural chemical by financial deficit. Furthermore, intensification such as mechanization cannot be proceeded. ・ Peasants cannot take a risk for introducing new varieties and/or crops due to small farming land and financial deficit. ・ Reduction of competiveness on quantity and quality due to individual farming system (lack of cooperative activity)	⇒	・ Decrease of efficiency of agricultural production ・ Decrease of market competitiveness
Problems of Cropping Technology	・ Traditional and extensive cropping technology ・ Low quality seed ・ Lack of technology for agro processing		<u>Low Agricultural productivity due to Low Farming Technology</u> ・ Low productivity and quality. In addition, production amount of same variety cannot be secured ・ Low market value due to raw products (Lack of processing)		・ Decrease of efficiency of agricultural production ・ Decrease of market competitiveness and farmers income

Source: JICA Study Team

4.2 Agricultural Supporting Service

4.2.1 Strategy for Agricultural Supporting Service (National and Regional Levels)

The Multi-Year Strategic Plan of Agriculture Sector 2007-2011 exposes strategic policies based on 6 key

determinants of development of agriculture, such as (i) water, (ii) access to markets, (iii) agricultural information, (iv) agricultural capital, (v) agricultural innovation, and (vi) rural development. Of the strategic policies, the strategies related to agricultural supporting service for farm management and production technology are shown in Table 4.2.1.

Table 4.2.1 National Strategy Related to Agricultural Supporting Service

Key for Policy	Strategy related to Agricultural Supporting Service
Agricultural Information	
Development of reliable and timely agricultural information system to facilitate decision making.	・ Strengthening of agricultural statistical information system (central, regional and local levels). ・ Improvement of quality and sustainability of agricultural information. ・ Connection of central, regional and local level information
Diffusion of timely multi-sartorial agricultural information	・ Improvement of quality and access to extension activity. ・ Improvement of infrastructure, equipment and information technology related to extension activity.
Agricultural Capital	
Development of new financing and insurance services of agricultural sector and improvement of access to the services	・ Support to farmers on financing procedure for new project ・ Strengthening of guarantee funds for agriculture finance. ・ Design and establishment of agricultural insurance to avoid risk. ・ Development of agricultural trading market for promoting commercial agriculture. ・ Activation of actions to related agencies for solving problems and restructuring of agricultural credit
Strengthening of function of AGRO BANCO	・ Facilitation for policy changes and establishment of new funds ・ Facilitation for approbation new agreements to extend share of AGRO BANCO ・ Facilitation for extend internal and foreign financing for AGRO BANCO ・ Strengthening of companies on rural and agricultural sectors
Agricultural Innovation	
Development and introduction of innovated technologies with consideration to global warming effect and domestic / foreign market demands	・ Development of research and programs oriented non-traditional products such as bio ethanol
Creation of market of agricultural service flexible for farmers under decentralization	・ Establishment of federation of related organizations for technology transfer ・ Strengthening of function of agricultural supporting agencies according to demand and activation of classified supporting program ・ Improvement of accessibility to extension service through formulation of farmers organization ・ Design and establishment of financing mechanism for agricultural innovation project for enhancement of farmers' effort
Increase quality and availability of seeds and seedlings	・ Update legislations on quality of seeds and seedlings etc. according to international standards. ・ Strengthening of technical and operational capabilities for certification system of product and inputs ・ Intensive promotion of high quality agricultural input through coordination between concerned agencies ・ Evaluation of seed purity of improved varieties
Rural Development	
Activate participation of public sector for agricultural support in poverty area	・ Activation of public investment and re-structuring of projects of ministry of agriculture for poverty area
Improvement of productivity, equal distribution of opportunity by connecting markets and promotion of gender equality in Andes high area	・ Design and establishment of financing mechanism for agricultural innovation project for enhancement of farmers' effort ・ Connection of producers' organization and market in poverty area ・ Strengthening of capacity of organization and management of agricultural productions with due consideration to gender equity.

Source: JICA Study Team

Ayacucho Region has also prepared strategy for agricultural supporting service within the Regional Agricultural Strategic Plan. Strategies for agricultural supporting service are shown in Table 4.2.2.

Table 4.2.2 Regional Strategy Related to Agricultural Supporting Service

Key for Policy	Strategy related to Agricultural Supporting Service
Strengthening of competitiveness of agriculture considering economic corridor	
Promotion of cooperative activity	・ Formulation and strengthening of producers' organization in participation of local government. ・ Creation of market and agricultural production according to demand
Strengthening of capability of farmers	・ Application of renovated agricultural technology ・ Collaboration of public and private sectors regarding agricultural credit
Strengthening of collaboration between public and private sectors for agricultural development	
Development of regional integrated information system through use of satellite image.	・ Institutionalizing Regional Agricultural Council for formulation of strategic federation between public and private sectors, producers and supporters ・ Implementation of a program for improvement of agricultural information system (cropping and livestock grazing) ・ Diffusion of statistical information using pamphlets etc. ・ Establishment of strategic agricultural information system thorough collaboration of private sector
Strengthening of agricultural technology development	
Strengthening of collaboration between regional agricultural agencies	・ Formulation of program for development of technical capacity ・ Establishment of strategic enterprises federation for strengthening of speciality and secure of budget for training
Strengthening of technology development and transfer, research system in cooperation with food and forest sectors.	・ Collaboration between public and private sectors for research and extension activities ・ Establishment of program to increase productivity of important crops like potato ・ Establishment of public-private funding method for innovation of technology. ・ Strengthening of network between research agencies for acceleration of technical information sharing
Development and introduction of innovated agricultural technology considering internal and foreign demands	・ Formulation of program on seed and cropping technology improvements for priority crops
Strengthening of supporting service for technology innovation by leadership of producers	・ Realization of federation for strategic agricultural supporting service and preparation of capacity development plan
Strengthening of public and private sectors for technology development	・ Formulation and implementation of water and soil conservation project and program utilizing traditional technology
Strengthening of capability of regional agricultural agencies	・ Formulation of program for technical capacity development

Source: JICA Study Team

Many agriculture supporting programs are under implementation in Ayacucho Region such as Agro Rural and INCAGRO. Agro Rural is an integrated supporting program covering environment and watershed conservation, use of organic fertilizer and rural development etc. INCAGRO aims to research, development and diffusion of innovated agricultural technology. Also, the Regional Department of Agriculture and INIA develop regional and provincial level supporting technical activities.

Table 4.2.3 shows summary of SNIP sub-projects related to agricultural technology.

Table 4.2.3 Number of SNIP Sub-projects Related to Agricultural Technology.

Province	Under Implementation		Not Implemented			
			Approved		Under Estimation	
	Nos.	Cost (Soles)	Nos.	Cost (Soles)	Nos.	Cost (Soles)
Huanta	1	270,000	14	11,678,512	11	4,675,684
La Mar	7	11,070,919	26	21,824,032	7	9,803,643
Huamanga	13	31,834,038	19	24,983,665	34	19,272,678
Cangallo	2	6,283,139	4	1,305,481	1	390,547
Vilcas Huaman	0	0	7	3,939,375	1	299,326
Victor Fajardo	1	157,895	4	4,080,613	0	0
Huanca Sancos	0	0	0	0	0	0
Sucre	1	1,997,000	4	1,359,346	3	623,022
Lucanas	1	505,401	7	3,983,300	4	140,704,629
Parinacochas	0	0	0	0	2	5,962,972

Province	Under Implementation		Not Implemented			
			Approved		Under Estimation	
	Nos.	Cost (Soles)	Nos.	Cost (Soles)	Nos.	Cost (Soles)
Paucar del Sara Sara	0	0	0	0	2	71,370
Total	26	52,118,392	85	73,154,324	65	181,803,871

Source: SNIP Inventory Survey by JICA Study Team

A total of 198 registered sub-projects related to agricultural technology. Out of these projects, 19 % or 39 sub-projects have already been implemented. The contents of the projects are varied from the construction of infrastructure for nursery, drying facilities and sales, agricultural mechanization, pest and disaster control etc... Projects are concentrated in Huamanga and La Mar Provinces (northern region) reflecting actual situation of agricultural production (production volume).

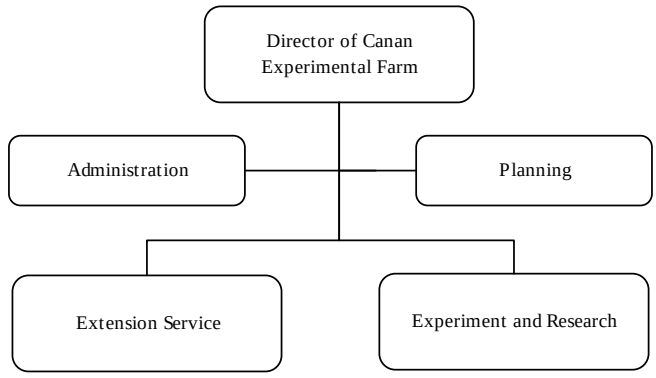
4.2.2 Agricultural Experiment, Research Activities and Technical Extension Service

There are national and regional level agricultural institutions for experiment / research activities and extension service in the Ayacucho Region. Agricultural extension service is basically in charge of Regional Department of Agriculture. Regional Department of Agriculture assigns 255 staffs to all provinces and conducts activities on agricultural technical extension, collection of agricultural information, assistance for formation of farmers' organization, land legislation etc.

On the other hand, agricultural experiment and research is basically conducted by INIA. INIA carries out development and diffusion of agricultural technology through experiment, research, technical extension and training activities. INIA has 12 experimental stations throughout the country including Canaán Agricultural Experimental Station located in Ayacucho Region. Canaan Agricultural Experimental Station has jurisdiction throughout Ayacucho Region, three provinces of Huancavelica Region and two provinces of Apurimac Region for the development of cropping technology of crops and fruits, breed improvement, seed production in line with altitude. In addition, the Canaán Agricultural Experimental Station also conducts particular activities such as conservation of Central Andes native species and technical extension service for small animal raising (*guinea pig: cuy*).

The Canaán Agricultural Experimental Station has 34 staffs including 17 engineers. The station consists of administrative, and planning divisions for general administration, technical extension and experiment / research divisions for technical administration. Organizational structure is shown in Figure 4.2.1.

In addition to experimental farm in Ayacucho City, the Canaán Agricultural Experimental Station has three other stations. Table 4.2.4 and 4.2.5 show outline and budget of four experimental farms.



Source: Plan Operativo 2009, INIA-EEA-Canaán

Figure 4.2.1 Organizational Structure of INIA Canaán Experimental Farm

Figure 4.2.2 INIA Canaan Experimental Farm

Table 4.2.4 Summary of Experimental Farms of Canaán

Name of the Experimental Farm	Location	Area (ha)	Activity
Canaán	Ayacucho District, Huamanga	50.13	Crops, Livestock
Huanchacc	Luricocha District, Huanta	13.14	Crops, Fruits
Iribamba	Luricocha District, Huanta	9.00	Crops
Chumbibamba	Talavera District, Andahuaylas, Aprímac Region	45.00	Crops, Livestock

Source: Plan Operativo 2009, INIA-EEA-Canaán

Table 4.2.5 Budget of Canaán (closing account base)(2000-2008)

Item	2000	2001	2002	2003	2004	2005	2006	2007	2008
Operational and Administrative Cost	239,580	262,080	368,974	349,617	399,020	445,000	481,959	497,860	469,508
Experiment and Research Cost	400,686	266,880	233,651	158,249	219,563	272,306	373,682	450,000	442,879
Technical Extension Cost		262,630	290,296	412,908	417,140	564,790	452,720	1,499,257	880,196
Total	640,266	791,590	892,921	920,774	1,035,723	1,282,096	1,308,361	2,447,117	1,792,583

Source: Plan Operativo 2009, INIA-EEA-Canaán

INIA has role to contribute regional agricultural development through collaboration and cooperation with regional government, local government and other related agencies. Thus, the Canaán Agricultural Experimental Farm has cooperative relationship with various agencies. Actually, the Canaán Agricultural Experimental Farm has cooperative relationship with the Faculty of Agriculture of the San Cristobal de Huamanga National University for agricultural technical research, also with SENASA for pest and disaster control technology development. It is significant that INIA carries out technical training not only for local government, other governmental agencies, but also for NGO staffs intending to technical extension services for end beneficiaries through various concerned agencies.

4.2.3 Producer' Association and Farmers' Organization

There were 116 farmers' associations registered with the Ayacucho Regional Government as of 2007. As shown in Table 4.2.6, most of the associations aim at production of potato and milk.

Table 4.2.6 Register Producers' Organization

Province	Products													Total	
	Potato	Potato and Cereals or Vegetables	Potato and Milk	Milk	Milk and Cuy	Oat	Cereals	Corn	Corn and Oat	Organic Vegetables	Coffee / Cacao	Avocado / Lucuma	Others		
Huanta	0	0		1	0		0	1	1			4	0	7	5.9%
La Mar	7	0		1	0		0	0			1	0	0	9	7.6%
Huamanga	35	2	1	3	0	1	2	1		2		0	1	48	40.7%
Cangallo	4	0		8	0		1	0				1	0	14	11.9%
Vilcas Huaman	1	0		1	0		3	0				0	0	5	4.2%
Victor Fajardo	0	0		1	1		0	2				0	2	6	5.1%
Huanca Sancos	0	0		10	0		0	0				0	0	10	8.5%
Sucre	0	0		1	0		2	0				0	0	3	2.5%
Lucanas	0	0		6	0		0	0				0	0	6	5.1%
Parinacochas	0	0		2	1		0	0				0	0	3	2.5%
Paucar del Sara Sara	0	0		3	2		0	0				0	0	5	4.2%
Total	47	2	1	37	4	1	8	4	1	2	3	5	3	116	
	40.5%	1.7%	0.9%	31.9%	3.4%	0.9%	6.9%	3.4%	0.9%	1.7%	2.6%	4.3%	2.6%		100.0%

Source: Agencia Agraris, Gobierno Regional Ayacucho

Out of 116 registered associations, 87 associations or 75% aim to production of potato and milk. Most of associations target only production and, a few associations target commercialization of agriculture as organic vegetables production.

According to interview with members of the association of potato, wheat, maize and organic vegetables producers in Huamanga Province, all associations has purpose of improvement of effectiveness of agricultural production by organizational activity such as cooperative purchase of agricultural inputs.

Table 4.2.7 Major Agencies of Agricultural Credit Service

Agency
El Banco Agropecuario – AGRO BANCO
La Caja Rural de Ahorro y Crédito Los Libertadores de Ayacucho
Cooperativa de Ahorro y Credito San Cristobal de Huamanga
Cooperativa de Ahorro y Credito Santa Maria Magdalena
Caja Municipal de ICA
Caja Municipa de Arequipa
RAZUHUICA
MYPES EDIFICAR
FINCA PERU
Prisma

Source: JICA Study Team

Associations support their members to access to AGRO BANCO credit, cooperative purchase of seed etc. Such supports however are not enough. Associations point out 3 important problems such as (i) Lack of access to agricultural credit, (ii) lack of technical extension services by the government and (iii) lack of improved seeds.

4.2.4 Agricultural Credit / Micro Finance

According to the Agricultural Sector Strategic Plan of GRA, institutions shown in Table 4.2.7 provide agricultural credit.

The Peruvian Government established Agricultural Bank (*AGRO BANCO*) to finance the agricultural sector. Ayacucho branch office of the Agricultural Bank provides credit to small and middle scale farmers for supporting (i) production budget, (ii) investment in agricultural facilities such as mechanization.

Conditions for credit are presentation of ID and title of land or lease, no debt, at least 2 years of growing experience of subject crop, membership of Association productive etc. The maximum credit is 70% of production cost. The interest rate is 19% for supporting production budget, 12-16% for supporting investment in agricultural facilities. In addition, 3% of the total credit is charged as administrative expenses. Credit repayment period is one year for production budget and 4 years for investment in agricultural facilities. Table 4.2.8 shows status of credits as of May 2009.

Potato, cacao and cattle grazing represent 86% of total number of credit and credit amounts are almost proportional with number.

Delay in repayment is only 4%, however, there are many uncertain factors to increase the rate, such as decrease of agricultural production due to abnormal weather.

Table 4.2.8 Status of Credit in AGRO BANCO at Ayacucho Branch

Products	Nos. of Borrower	Amount (Soles)
Coffee	13	49.39
Avocado	2	34.05
Potato (Yellow)	98	1,098.00
Quinua	1	4.07
Wheat	9	106.57
Cacao	165	985.73
Oat for forraje	32	115.00
Tara	2	23.47
Cattle	113	504.72
Cuy	2	44.00
Total	437	2,965.00

Source: JICA Study Team

La Caja Libertadores also provides agricultural credit. The maximum credit amount is 50% of production cost with 3% of monthly interest rate (1% for grace period). In the 2008-2009 period, 150 requests were made and out of them 82 which present enough bond received credit. Target product is basically same as AGRO BANCO. Potato and

cattle grazing occupy 82% of total number of credit counting 47 credits for potato and 20 for cattle grazing.

Major NGOs such as FINCA PERU and PRISMA also provide agricultural credit (micro finance). FINCA PERU provides credit and training for capacity building principally for poor women community (group). FINCA PERU has 5 types of credit such as community banks (*BBCC*), Rural and Community Banks (*BBCCR*). The normal annual interest rate is 3.5% and 2.52% for good customer. PERU FINCA began operations in Ayacucho Region in 1993, and has provided 4.6 million Soles to 8.788 people until 2007.

PRISMA was established with support from USAID. PRISMA provides credit with 2% of monthly interest rate plus 1% of administrative fee. Table 4.2.9 shows "Financing method of additional budget" surveyed by farmers' household survey of the JICA study team.

Table 4.2.9 Financing Method of Additional Budget

Province	Sales of Agricultural Products	Sales of Large Animal	Sales of Small animal	Bank Deposit	Credit of Agricultural Banks	Borrowing from Family Member	Sales of Land	Sales of Products	Temporal Employment	Barter Exchange	Others	Total
Huamanga	106	29	49	2	30	3	1	4	39	15	4	282
Cangallo	8	1	1						5			15
Vilcas Huaman	14	2	5						8			29
Victor Fajardo	8	6				2			1		1	18
Huanca Sancos	12	6	2						6			26
Sucre	27	13	5			1		1	13	1	5	66
Lucanas	40	20	7						21		2	90
Parinacochas	17	10	8						13			48
Paucar del Sara Sara	15	10	5		3				4		2	39
Total	247	97	82	2	33	6	1	5	110	16	14	613
	40%	16%	13%	0%	5%	1%	0%	1%	18%	3%	2%	100%

Source: Farmers' Household Survey, JICA Study Team

Sales of agricultural products are common method for financing of additional budget representing 70% of respondents. On the other hand, farmers who use a credit are only 33 or 5% of total. As the result of the question regarding borrowing source, use of credit is limited to representing 37% from parents, and then 23% from others, 17% from association 17%, 12% from bank and 8% from friend.

The reasons of low frequency in use of the credit would be (i) no guarantees for most of farmers, (ii) no prospect of repayment due to agriculture for self-consumption, (iii) difficult access to credit due to lack of branches, among others. As for the answer "Other", informal credit can be considered. It is pointed out that informal credit makes capability of farmers for price negotiation down.

4.2.5 Problems and Development Constraints

Problems and constraints on agricultural supporting is shown in Table 4.2.10

Table 4.2.10 Problems and Constraints for Development on Agricultural Supporting

Category	Problems		Constraints for Development		
Problems on Information	・Low accuracy of agricultural information ・Lack of provision of information to farmers	⇒	Reduction of Efficiency of Agricultural Production due to Lack of Agricultural Information ・Problems and demands cannot be recognized well ・Decision making such as selection of crops cannot be made according to market demand and crop character. ・Reduction of capacity for price negotiation	⇒ ⇒	・Decrease of agricultural productivity ・Decrease of market competitiveness and farmers' income
Problem on activities for extension and support	・Lack of number and capacity of staff and difficult access to farming land (sloping land, dispersed location) ・Lack of collaboration between concerned agencies ・Lack of agricultural credit according to farmers' capacity and agricultural character	⇒	Insufficient Extension and Supporting Activity ・Extension activity for wide area cannot be effectively ・Limits resources for extension activity such as extension worker cannot be utilized effectively. ・Low profitability due to lack of fertilizer and agricultural chemical by financial deficit. Furthermore, intensification such as mechanization cannot be proceeded. ・Peasants cannot take a risk for introducing new varieties and/or crops due to small farming land and financial deficit.	⇒ ⇒ ⇒	・Decrease of agricultural productivity ・Decrease of market competitiveness and farmers' income
Problems on experimental, research and inputs production activity	・ ・Lack of staff and facilities for experiment and research ・Insufficient production of agricultural input such as high quality seed	⇒	Insufficient Research, Trial and Production Activity ・Insufficient research and trial activity to meet diversified peasants' demand (farming technology, type of crops) ・Delay of diffusion of high quality agricultural input	⇒ ⇒	・Decrease of agricultural productivity ・Decrease of market competeiveness and farmers' income

Source: JICA Study Team

4.3 Livestock

4.3.1 Policies, Institutional Aspect and Plans at Central and Regional Level

In livestock sector, the general policies, specifically for livestock activity, expect to promote the participation of the public and private sector through the stimulation of organization and technical processes which allow the generation of productive, economical and social improvements in the processes and stakeholders involved in the livestock activity that are shown in Table 4.3.1.

Table 4.3.1 Major Policies in Livestock Sector

1) The formation and strengthening of the organizations' institution and partnership with business vision of the livestock activity, looking for mechanisms which secure its sustainability. The generation of coordination and permanent agreement resorts of the actions for the stimulation of the livestock development and for the solution of disputes.
2) The strengthening of the agricultural public sector management, taking into account the roles of the regional and local government for the promotion of an efficient, effective, modern, decentralized and transparent Government.
3) The implementation of the land-use planning for the suitable usage of resources, according to the geographic zone capacity, and for preservation purposes.
4) The promotion and development of programs of decentralized livestock services, privates and publics, on health, title deed, investigation and technical assistance, information and training.
5) The development and increase of the competitiveness and profitability of livestock producers through the improvement of their products and its sub products quality and correcting the market distortion and the unfair competence.

6) The promotion of development and modernization of the business management of the organization of livestock activity
7) The promotion of technology innovation as the central element for livestock development
8) The generation of more opportunities of the livestock production access to the internal and external markets with fairness.
9) The development and promotion of an efficient commercialization system.
10) The improvement of the current regulations and juridical security on livestock activity in a decentralized way.
11) The expansion and improvement of the financial services for livestock activity.
12) The attraction of private investment coming from the mining taxes (canon) and royal prerogatives resources and the international technical cooperation in order to capitalize the livestock activity through the establishment of favorable conditions under a general development scheme.
13) The promotion of the environment conservation and the sustainable exploitation of the Natural Resources (genetic and biodiversity as national wealth), and a good health condition with an adequate decease control of economic importance.
14 The prevention and mitigation of natural and health threads for the protection of the sector and to decrease the livestock activity risks.
15) The consideration of the characteristics of the different agent groups of the livestock chain of the country within the territorial approach framework for livestock development.
16) The promotion of good quality of the livestock products and the added value generated by the transformation.

Source: National Plan for Livestock Development 2006-2015

(1) Related Institutions

At present, many degrees and regulations on livestock are enacted. These are one law, 3 government decrees, 2 emergency acts, one legislative decree, 34 supreme laws, 21 supreme resolutions, 17 ministry resolutions, 2 ministry agreements, 2 international agreement and 12 head office resolutions. Besides, the national and international quality regulations of the livestock products are also enacted. They have established the requirement for the satisfaction degree of a product shall offer to the consumer during its usage. These regulations have the objective to contribute for the agriculture and livestock development of the country through the protection and conservation of the natural renewable resources which affect within the agriculture and livestock production of the country; and through the control of the agriculture livestock materials and products subjected to legal regulations.

In addition the above, it is necessary to provide the integrated service for the livestock activity, groups the private and public institutions of Central and Regional levels and the immediate entities which are confirmed by the local, regional, multi-regional and regional-national productive chain of the social-productive action through the promotion or facilitation of the management of the technical productive processes, development of capacities and the value chains. They participate in coordinated actions, literally, for synergy production for the best of the local, regional and national development. However, actually, some participations do not satisfy the producers' expectation, consequently, the inter-institutional relationship get weaken with negative impacts for the progress of the livestock activity.

Table 4.3.2 Institutional Presence for Livestock Support in Ayacucho Region

Institution	Action Environment	Services
Agrarian Regional Directorate (Agriculture Ministry)	12 agriculture agencies in 11 provinces and agriculture head office in 111 districts	Agricultural Promotion, Organization of Agricultural Chain, Collection and Diffusion of Agriculture Information, Technical Assistance jointly with the Municipalities and NGO
Agrarian Innovation National Institute– INIA	Regional with head office in Huamanga	Investigation, generation and transfer of agriculture technology
Agrarian Health Department National Service – SENASA	9 provinces except La Mar and Huanca Sancos	Agriculture promotion in health. Animal sanitary protection.
"San Cristobal de Huamanga" National University	Regional with head office in Huamanga	Investigation on livestock, pastures, products processing and others.

Institution	Action Environment	Services
Rio Cachi Special Project	Huamanga y Cangallo	Increase of production and productivity of under irrigated pastures
Peruvian Society of Registered Alpaca – SPAR	Regional with head office in Huamanga	Promotion and development of alpaca breeding
National Council of South American Camels – CONACS	Huamanga, Lucanas	Management of the preservation and development of camels
Pro Milk Ayacucho	Huamanga, Cangallo.	Management and genetic improvement, pasture management, quality of milk, cheese industry and commercialization
Study Center and Promotion of Development DESCO	Paucar del Sara Sara	Supporting for cattle guided to the transformation of dairy
Southern Regional Program of The Holland Service of Development Cooperation (*SNV – Peru*)	Huamanga	Supporting for the validation of participation methodology in the dairy productive chain
Program of Rural Agrarian Productive Development – Agro rural (*ex PRONAMACHCS, PROABONOS, PROSAAMER, MARENASS*)	Regional with head office in Huamanga	Guidance and articulation of the public tools and rural investment (infrastructure and human capital), facilitating the rural public and private cooperation
Association of milk producers – APROLAC	4 micro dairy watersheds of Huamanga and Cangallo.	Promotion of the organization, improvement of the associated life level
Belgian Technical Cooperation (*CTB*)	Huamanga y Cangallo	Supporting for organizations for the enlargement of livestock infrastructure
Huascaran Agriculture Services	Huamanga	Provider of veterinarian products and equipment
Technical Board of Livestock Development (Public and technical institution)	Huamanga and Cangallo	Generation of agreed proposal for livestock development

Source: Ayacucho Livestock Regional Plan 2008-2015

(2) Development Plans at Central and Regional Level

The public institutions of central and regional level have proposed several plans and strategies for the development of dairy activity in Ayacucho Region, fundamentally for the most important domestic species for the rural population economy (cattle, alpaca and vicuna). Table 4.4.3 shows these plans and strategies at central and regional levels.

Table 4.3.3 Plan and Strategies for Central and Regional Livestock Development

Plans at National Level	Objective	Executing Agencies
Central Level Plans		
National Plan for Livestock Development 2006-2015	To achieve fair profitability, sustainability and competitiveness which allow the positioning of its derived products into the global market	Ministry of Agriculture
National Strategic Plan of Science, Technology and Technology Innovation for the Competitiveness and Human Development 2006-2021 – PNCTI	To promote the competitiveness and the social development through the National Program of Science, Technology and Domestic and Wild South American Camel Innovation - PROCAM	National System of Science, Technology and Innovation (SINACYT)
Strategies		
Inter-Institutional Strategy Plan of the Peruvian Society of Registered Alpaca – PEI, period 2005 to 2015. Challenges and Perspectives of the Domestic Camel Producer	To improve the income, capacity of negotiation, fair articulation to the market and to obtain favorable Government policies	Peruvian Society of Registered Alpaca– SPAR
National Strategy of Development. The domestic camel in Peru, 2007– 2015.	To achieve the profitability of the productive chain of domestic camel	National Council of South American Camel of the Ministry of Agriculture – CONACS.
Regional Level Plans		
Ayacucho livestock regional Plan 2008 - 2015	To achieve the profitability and sustainability of the livestock for the economic and social development	Agrarian Regional Directorate of Ayacucho

Plans at National Level	Objective	Executing Agencies
Plan of Conservation and Sustainable Management of Vicuna in Ayacucho Region – 2005	To contribute for the improvement of the life quality of highland breeder societies through the sustainable development of the vicuna system	Regional Government of Ayacucho, General Direction of Natural Resources and Environment Management

Source: National Plan for the Livestock Development 206-2015, National Strategy of Development. The domestic camel in Peru, 2007-2015.

4.3.2 Cattle Quantity

The cattle population of Ayacucho Region had a fluctuating trend for 12 years from 1996 to 2007 due to factors of availability of food for cattle, social changes and market opportunity.

Table 4.3.4 Variation of Cattle Population 1996-2007

Cattle Species	Year											
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Cattle	384,186	346,866	350,589	371,162	418,384	417,623	423,593	424,671	407,412	445,510	402,448	418,853
Sheep	818,061	857,139	946,585	966,329	957,563	887,627	921,189	891,036	859,133	905,080	820,966	846,254
Alpaca	153,627	149,765	160,909	162,225	160,384	165,691	171,950	196,356	192,507	193,467	156,155	166,666
Llama	75,671	76,350	123,555	126,613	122,952	113,039	124,128	128,356	127,097	128,288	119,003	129,320
Goat	337,357	348,576	259,482	255,000	257,123	248,366	268,177	260,646	246,987	245,589	213,196	217,816
Pig	123,711	123,148	144,440	146,208	150,475	139,856	143,148	141,982	152,582	158,020	147,505	156,990
Poultry	957,000	850,000	363,000	891,000	749,000	751,000	698,000	614,000	566,000	591,000	584,000	596,114
Cuy	0	0	0	0	182,929	197,981	199,837	203,523	180,138	203,523	209,452	278,671
Vicuna	0	0	0	0	40,390	0	0	0	0	0	53,509	53,348

Source: INEI, Ayacucho: Statistic Compendium 2007 - 2008

The livestock in Ayacucho Region is classified by social (cooperative works), commercial and road network factors. As for selection of species of livestock, it is important to consider the fitness to the natural environments such as altitude, rainfall, and variety of natural pasture. The livestock population by province in 2007 is shown in 2007.

Table 4.3.5 Livestock Population by Provinces in 2007

Province	Cattle		Sheep		Alpaca		Llama		Goat		Pig		Poultry		Cuy		Vicuna	
	Units	%	Units	%	Units	%	Units	%	Units	%	Units	%	Units	%	Units	%	Units	%
Northern region	128,889	31	196,272	23	16,981	10	8,096	6	84,652	39	75,332	48	347,543	58	158,160	57	137	0
Huanta	25,775	6	38,739	5	0	0	0	0	20,050	9	14,402	9	72,149	12	70,007	25	0	0
La Mar	42,205	10	45,747	5	0	0	0	0	24,788	11	27,938	18	85,824	14	24,954	9	0	0
Huamanga	60,909	15	111,786	13	16,981	10	8,096	6	39,814	18	32,992	21	189,570	32	63,199	23	137	0.3
Central region	160,530	39	472,578	56	71,184	43	61,190	47	79,238	36	60,022	38	179,049	30	50,919	18	8,267	15
Cangallo	40,026	10	125,565	15	41,631	25	36,129	28	8,296	4	18,849	12	72,457	12	13,149	5	1,018	2
Vilcas Huaman	16,037	4	24,692	3	0	0	0	0	12,692	6	10,402	7	20,878	4	8,652	3	0	0
Victor Fajardo	47,747	12	179,647	21	9,897	6	12,621	10	42,456	19	22,469	14	43,250	7	17,571	6	2,060	4
Huanca Sancos	32,922	8	129,138	15	1,469	1	3,088	2	3,102	1	1,131	1	5,468	1	2,802	1	3,832	7
Sucre	23,798	6	13,536	2	18,187	11	9,352	7	12,692	6	7,171	5	36,996	6	8,745	3	1,357	3
Southern region	125,434	30	177,404	21	78,501	47	59,724	46	53,926	25	21,636	14	69,522	12	69,592	25	44,944	84
Lucanas	77,297	19	121,258	14	37,971	23	28,666	22	37,394	17	10,043	6	22,990	4	28,659	10	40,196	75
Parinacochas	32,626	8	44,042	5	34,094	20	25,831	20	14,142	6	6,857	4	32,761	5	13,038	5	3,384	6
Paucar del Sara Sara	15,511	4	12,104	1	6,436	4	5,227	4	2,390	1	4,736	3	13,771	2	27,895	10	1,364	3
Total	414,853	100	846,254	100	166,666	100	129,010	100	217,816	100	156,990	100	596,114	100	278,671	100	53,348	100

Source: INEI, Statistic Compendium 2007-2008

The population of sheep is the biggest, say 846,254, followed by cuy and goat in turn. On the other hand, the livestock contributing to livelihood are cow, sheep, alpaca and vicuna. Most of livestock of which the population is large, are raised for the purpose of self-consumption. There find different characteristics on raising livestock are observed in northern, central and southern regions. In northern region including Ayacucho City, the large consuming area, there is high raising rate of fowl and cuy. In central region, the livestock population is the largest, especially occupied by sheep, llama and alpaca. In southern region, llama, alpaca and vicuna are mainly raised using the wide

natural pasture land.

Livestock raising is concentrated in Cangallo, Victor Fajardo, Huanca Sancos, Vilcas Huaman and Sucre Provinces. Northern region such as Huamanga Province which is a core of agricultural production, has many population of fowl and cuy. In 3,800 m to 4,800 m in elevation in southern region, vicuna is extensively treated.

Table 4.3.6 Population and Shearing of Vicuna by Provinces in 2007

Provinces	Population	Vicuna Sheared	Vicuna Not sheared	Total	Total Fur Kg	Yield Kg/head	Fur Price S/. Kg	VBP S/.
Northern region	137	75	20	95	12	0.164		28,757
Huamanga	137	75	20	95	12	0.164	2,332	28,757
Central region	8,267	391	55	446	66	0.177		154,076
Cangallo	1,018	329	39	368	54	0.165	2,332	126,862
Victor Fajardo	2,060	-	-	-	-			-
Huanca Sancos	3,832							-
Sucre	1,357	62	16	78	12	0.188	2,332	27,214
Southern region	44,944	17,112	26,934	44,046	3,059	0.185		7,133,323
Lucanas	40,196	16,687	26,510	43,197	2,978	0.178	2,332	6,943,713
Parinacochas	3,384	425	424	849	81	0.191	2,332	189,610
Paucar del Sara Sara	1,364	-	-	-	-	-		-
Ayacucho Region	53,348	17,578	27,009	44,587	3,137	0.175		7,316,156

Source: Elaborated from information of the Direction of South American Camel of the Agrarian Regional Directorate of Ayacucho, year 2008.

According to the agriculture and livestock census of year 1996, 1997 and 2000, the population of vicuna living in Ayacucho Region is 32.5% of total one for 1996 and 1997 and 34.1% for 2000. The living population of vicuna in Ayacucho Region in 2007, is 53,348 out of which 40,196, 75% equivalent live in Lucanas Province. The fur of vicuna is superior in quality than alpaca. It is given attention for improvement of livelihood at Andes hilly area, namely contribution to poverty reduction and vulnerability mitigation. It is therefore necessary to take urgent measures against the following constraints on fur production of vicuna.

Table 4.3.7 Constraints on Fur Production of Vicuna

・ National agency CONAC which aims at promotion of production of vicuna, was broken up and merged in regional government. As a result, it is fear that promotion activity of vicuna would be weaken.
・ Access to market is poor because most of productive communities are isolated at hilly areaa..
・ Illegal collection and poaching are conducted.
・ It is difficult to control the number of inhabitant and production quantities.
・ System and arrangement for collection are incomplete.
・ Ninety percent of production are exported in a form of primary commodity due to poor progress of application of high value added.
・ Sheared yield of vicuna is low, say only 0.175 kg/head.
・ Occurrence of disease is problem.

Source: JICA Study Team

4.3.3 Raising Purpose and Feed Production

Most of small-scaled farmers raise livestock for the purpose of emergency expenditures for (i) self-consumption, (ii) ceremonial occasions and (iii) education. While, the medium-scaled farmers do it for (i) self-consumption and (ii) sale. For any cases, raising is conducted using the natural pasture and cultivated one.

(1) Natural Pasture

The natural pasture land in Ayacucho Region is approximately 1,234,178 ha in area, equivalent to 28% of its total area. Most of natural pasture land is located at unsuitable area for agriculture due to steep slope, severe climatic condition and soil characteristics (3,300 m to 4,400 m in elevation). Livestock in Ayacucho Region is mostly

concentrated in this area, where almost all of llama, vicuna and alpaca live. The livestock support capability by land is low; one cow/1 ha/year and one vicuna/7 ha/year. The following table shows the evaluation of support capability of natural pasture land. The evaluation was made the following 2 steps:

(a) Pasture production per ha (dry)

(b) Support capability (head number) = dry pasture production (ton) x 1,000 kg/500 kg x 0.025/365 days

Table 4.3.8 Evaluation of Productivity of Natural Pasture

Provinces	Ayacucho Area	Under Use Prairie		Area and Volume for Present Pasture Condition (%)						Total
				Good		Poor		Very Poor		Pasture
	ha	Area (ha)	% Province	21%	ton MS	64%	ton MS	15%	ton MS	ton MS
				ha	0.18	ha	0.15	ha	0.1	
Huanta	385,942	36,926	10%	7,754	1,396	23,633	3,545	5,539	554	5,495
La Mar	430,227	71,426	17%	14,999	2,700	45,713	6,857	10,714	1,071	10,628
Huamanga	295,801	100,677	34%	21,142	3,806	64,433	9,665	15,102	1,510	14,981
Cangallo	187,136	117,012	63%	24,573	4,423	74,888	11,233	17,552	1,755	17,411
Vilcas Huaman	120,529	33,745	28%	7,086	1,276	21,597	3,240	5,062	506	5,021
Victor Fajardo	226,400	64,649	29%	13,576	2,444	41,375	6,206	9,697	970	9,620
Huanca Sancos	283,587	80,647	28%	16,936	3,048	51,614	7,742	12,097	1,210	12,000
Sucre	178,637	55,885	31%	11,736	2,112	35,766	5,365	8,383	838	8,316
Lucanas	1,445,966	521,535	36%	109,522	19,714	333,782	50,067	78,230	7,823	77,604
Parinacochas	588,391	131,685	22%	27,654	4,978	84,278	12,642	19,753	1,975	19,595
Paucar del Sara Sara		19,991	10%	4,198	756	12,794	1,919	2,999	300	2,975
AYACUCHO REGION		1,234,178	28%	259,177	46,652	789,874	118,481	185,127	18,513	183,646
Distribution prairie/area in Ayacucho				6%		18%		4%		
bearableness: UA of Kg :					10,225		25,968		4,058	40,251

Remarks: Estimation production of natural pastures according the pasture condition, based on Natural Prairies Management Policies, 2nd edition - INTA Argentine and FAO, Chile, 1996. Bearableness: 2.5% of forage in dry matter (MS) by live weight (PV) livestock per year.

Source: Profile South Region, Ayacucho - Huancavelica, SNV, 1998, Taken from III CENAGRO, INEI, 1996.

The environment of natural pasture is deteriorated due to continuity of traditional extensive pasturage and gathered pasturage. As for pasture production per ha, 64% of the natural pasture land is assessed to be “scarce” and 15% is “so scarce”. As compared with pasture production, the rearing capacity of natural pasture land is low as 40,251 heads. The over pasturage which actual livestock population is largely beyond the rearing capacity, brings about the low productivity.

(2) Cultivated Pasture

The cultivation of pasture was started in 1977 under technical cooperation of Switzerland. This technical cooperation provides comprehensive support such as irrigation of pasture, fatting technology, processing technology like cheese and dairy products in addition to introduction of perennial and annual pastures. At present, the regional and provincial governments are continuously executing the small-scaled support toward expansion of pasture land. The following table shows the area of pasture land in Ayacucho Region. The pasture land in Ayacucho Region is 50,064 ha in area and mostly located at northern part of Huamanga Province. The northern part is in a prosperous agricultural production, and dregs after harvesting maize and wheat are used as feed. As for milk cow, perennial pasture is generally used.

Table 4.3.9 Cultivation Area of Pasture by Province and Variety

Cultivated Pasture	Provinces											Total
	Huanta	La Mar	Huamanga	Cangallo	Vilcas Huaman	Victor Fajardo	Huanca Sancos	Sucre	Lucanas	Parinacochas	Paucar del Sara Sara	Ayacucho
Alfalfa	227	108	205	62	17	87	50	43	3,657	1,199	1,750	7,407
Forage oat	25	12	849	1,264	39	29	17	34	10	177	9	2,464
Forage barley	-	23	42	86	3	15	-	-	-	-	-	169
Elephant pasture	7	32	-	-	-	-	-	-	-	-	-	39
Other pastures*	13	12	1,223	803	17	8	6	14	52	19	15	2,183
STUBBLE												
Grain oat	37	2	155	199	26	14	-	111	-	9	-	553
Grain barley	617	670	3,367	1,647	750	1,079	294	686	1,451	938	243	11,742
Hard yellow corn	397	742	47	-	11	-	-	-	98	46	1	1,343
Amylaceous maize	1,398	1,691	2,282	1,770	1,407	2,126	249	1,409	1,418	543	544	14,838
Wheat	588	1,175	2,377	916	671	827	127	481	1,235	672	258	9,327
Total	3,310	4,467	10,547	6,747	2,942	4,185	744	2,778	7,922	3,603	2,820	50,064

Source: INEI, Statistic Compendium 2007-2008

The 4.3.10 shows the rearing capacity of pasture land. Chicken and pigs are generally raised using the dregs of cereals and milling work. Maize, barley, alfalfa and wheat are mostly cultivated, which occupy 70.9% of total cropped area. On the other hand, as for crop yield, alfalfa and elephant pasture show high yield of 22.46 ton/ha and 32.96 ton/ha, respectively. In general, dry weight of pasture is coincided with 30% to 40% of weight of raw pasture. In case of application of this rate, the annual production of dry pasture would come to 228,252 ton, which is equivalent to feed for 50,028 heads of vicuna in dry season. As for the use of dregs of crops and mineral, no data is available but it is deemed that their use is so limited.

Table 4.3.10 Yield and Bearableness of the Cultivated Pasture

Cultivated Pasture	Total	Crop Yield (ton/ha)			Production	Rearing Capacity
	he	ton MV	% MS*	ton MS	ton MS/year	Head/year
Alfalfa	7,407.3	22.46	0.3	6.7	49,904	3,992
Forage oat	2,464.0	12.14	0.3	3.6	8,971	718
Forage barley	168.6	10.60	0.3	3.2	536	43
Elephant pasture	38.8	32.96	0.4	13.2	511	41
Other pastures*	2,182.9	12.52	0.4	5.0	10,931	874
STUBBLE						-
Grain oat	552.5	12.14	0.3	3.6	2,012	161
Grain barley	11,742.4	10.60	0.3	3.2	37,352	2,988
Hard yellow maize	1,342.5	18.20	0.3	5.5	7,332	587
Amylaceous maize	14,837.8	18.20	0.3	5.5	81,032	6,483
Wheat	9,327.4	10.60	0.3	3.2	29,670	2,374
Total	50,064				228,252	18,260

Source: Elaborated from information of the Agrarian Regional Directorate of Ayacucho, DRA 2008. Conversion rate of green matter (MV) to dry matter (MS)/he of harvest waste.

4.3.4 Improvement of Species and Artificial Insemination

The artificial insemination technology was implemented by the Integral Project of Livestock Development in Ayacucho Region– PIDG in 1999 when a plant for the production of liquid nitrogen had set in motion with the objective to keep or improve the productive and reproductive characteristics of the introduced cattle. However, the improvement of species and artificial insemination are used only for a part of successful farmers (large-scaled farmers) and systematic livestock (association). GRA and provincial government are distributing the dissemination materials (leaflet and poster) on improvement of species and artificial insemination technology. Besides, the project of Switzerland technical cooperation (*Proleche*) has a plan to make technology transfer to milk cow producers. According to the interview with Allapachaca dairy production association, the artificial insemination technology has

been improved so that the successful rate of insemination attained around 50% and 60% to 107 inseminations instead of 33% during 2001 to 2002.

4.3.5 Distribution of Livestock Products

The livestock products in Ayacucho Region are divided into self-consumption and sale in use. The rate of self-consumption and sale is shown below. The self-consumption rate for chicken and milk is high, say about 25% of production is used for self-consumption. The products and fur of large-sized livestock like cow are mostly used for sale

Table 4.3.11 Livestock Production

Product	Average	Destination			
	Production (ton)	Self-consumption (%)	Sale (%)	Self-consumption (ton)	Sale (ton)
Milk	20,570	0.25	0.75	5,142.5	15,428
Beef	6,594	0.01	99%	65.9	6,528
Alpaca Meat	389	0.05	95%	19.4	369
Llama Meat	323	0.04	96%	12.9	310
Poultry Meat	744	0.25	75%	186.0	558
Pork Meat	2,012	0.05	95%	100.6	1,911
Sheep Meat	1,553	0.08	92%	124.2	1,428
Goat Meat	494	0.12	88%	59.3	435
Alpaca Fiber	124	0.02	98%	2.5	122
Llama Fiber	85	0.03	97%	2.6	82
Sheep Wool	451	0.01	99%	4.5	446
Vicuna Fiber	2	-	100%	-	2

Source: Agrarian Regional Directorate of Ayacucho - DRAA, Ayacucho, 2007

Livestock products in Ayacucho Region are sold by traders connecting with local markets and/or markets at consumption area. The interview survey was conducted for livestock sale farmers at livestock market in suburbs of Ayacucho City. According to the livestock sale farmers, sale price is S/.600 to 800 for cow with about 200 kg and about S/.1,500 for bull with about 350 kg. Weight of cow/bull is measured with eye at this market and its price is determined through the direct negotiation between sale farmer and trader. Livestock with heavy weight is mainly sent to Costa region and that with light weight within Ayacucho Region. There are 12 slaughterhouses as processing facility in Ayacucho Region.

Livestock Market in Suburbs of Ayacucho City

4.3.6 Dairy Farming

Dairy farming in Ayacucho Region is classified into self-consumption dairy farming, traditional dairy farming and advanced commercial dairy farming. Characteristics of each type are shown below:

Table 4.3.12 Dairy Farming Type and Characteristics

Self-consumption Dairy Farming	Traditional Dairy Farming	Advanced Commercial Dairy Farming
・ No use of irrigation ・ No control on rotation of pasture land ・ Almost use of natural pasture land ・ Shifting pasturage on basis of traditional pasture ・ No prevention of disease ・ No cattle shed facility ・ Breeding by natural mating only ・ No unification on species and class of livestock ・ Production by independent farmers	・ Limited use of irrigation ・ Control on rotation of pasture land ・ Small-scaled cultivation of pasture ・ Raising at farm ・ Use of low productivity hybrid ・ Use of pasture ・ Breeding mainly by natural mating and less artificial insemination ・ Production by independent farmers or association	・ Use of traditional irrigation ・ Control on rotation of pasture land ・ Pasture land using electric wire ・ Cultivation of pasture ・ Use of high quality hybrid ・ Prevention of disease based on calendar ・ Use of cattle shed ・ Use of artificial insemination ・ Production toward export (out of Ayacucho Region)

Source: JICA Study Team

The dairy production is different depending on dairy farming type and size. The dairy production is in 0.50 to 20 liters/production farmer/day for self-consumption farmers, 11 to 40 liters/production farmer/day for traditional dairy farming and more than 41 liters/production farmer/day for advanced dairy farming. Major species are Raza Brown and Simmental and Holstein species are less.

Table 4.3.13 Population and Yield of Dairy Cow

Provinces	Dairy Cow		Production (ton/year)	Yield (Kg/day/cow)	Yield (Kg/day/cow)
	Population	%		litter/cow/day	Kg/cow/year
Huamanga-Cangallo	5,026.0	23.6	8,997.9	3.8	1,790.3
Lucanas	6,534.0	30.7	10,630.6	3.4	1,627.0
Parinacochas	4,546.0	21.4	8,419.1	3.9	1,852.0
Paucar del Sara Sara	1,673.0	7.9	3,483.6	4.4	2,082.3
Huanca Sancos	2,228.0	10.5	2,032.4	1.9	912.2
Sucre	1,254.0	5.9	805.1	1.4	642.0
Total	21,261.0	100.0	34,369.0	4.4	1,616.5

Source: The Regional Livestock Plan of Ayacucho, Agrarian Regional Directorate of Ayacucho, 2008

4.3.7 Livestock Extension Service System

The basic purpose of the Livestock Extension is to increase the productivity of small-scaled livestock farmers of the region through the extension techniques, adequate for the installation and management of pastures, improvement of breeds, forage conservation, water supply and livestock management. However, the Livestock Extension Service of Ayacucho Region is limited. The public entities like INIA is executing the generation and technology transfer, but have less opportunity of technology transfer along the current distribution of livestock products. In addition, the technology transfer is concentrated in the suburbs of Ayacucho City and the irrigated areas. The private sector is also conducting the extension services, but is limited to Huamanga, Cangallo, Lucanas and Parinacochas Provinces where the commerce is dynamic.

Table 4.3.14 Reforms of Livestock Extension Service System in Ayacucho Region

Period	Executing Agencies	System	Priorities	Results
1950s	Public sector	Dissemination and diffusion to general livestock farmers.	Strengthening of training of regional leader	Delay in modernization of small-scaled poor farmers
1960s	Public sector	Dissemination and diffusion mainly to exemplary good farmers	Extension service by coordination of survey and diffusion	Decrease in support to small-scaled producers
1970s	Public sector	Dissemination and diffusion to producers association and communities	Extension service by coordination of survey and diffusion	Decrease in enthusiasms to produce of farmers by increase in support by government
After 1980	Less public sector' contribution and Expansion of private sectors' contribution	Dissemination activities mainly by private sector	Promotion of model project	Decrease in responsibility of public sector on extension services system on agriculture and livestock

Source: Taken from The Reforms of the Extension Systems in Latin America From the Decade 80, Julio A. Berdeque, 2002

The entities related to livestock extension service are providing livestock farmers with production technology, firm management and social consideration through network of technical assistance of INIA. The system starts when exist interest of the producers of the public and private entities, strategic alliances are established with them in order to improve some technology or to introduce new technologies, in that case, a participative diagnosis is carried out in the surrounding of the community of the interested people in order to determine the potentialities and limitations, and then, the project is formulated for the requested side selected by the interested party.

INIA, under CRECER policy, carries out actions of its competence through the Agricultural Extension Service in

order to contribute for the modernization of cultivation and breeding activities of the regional agricultural sector by means of training and transferring of technology guided to the Providers of Technical Assistance (*PAT*), and supporting them on the extension services activities for the improvement of its quality and efficiency.

Extension service strategies and major extension service activities prepared by INIA in 2008 are as follows:

Table 4.3.15 Extension Service Strategies and Major Extension Service Activities prepared by INIA in 2008

Item	Extension Service Strategies and Major Extension Service Activities
Strategies of Participation of the Livestock Extension Services	・ Strategic alliances, agreement and contracts among producers and relevant agencies ・ Prioritization to the investigation and technology transfer considering technology demand of the small- and medium-scaled producers ・ Organization of producers association of livestock farmers ・ Prioritization to cultivation and breeding well fitted to its productive potentiality ・ Application of effective outsourcing ・ Strengthening of coordination of technology support traders ・ Capacity development of livestock farmers by participatory approach ・ Decentralization of extension services at regional level ・ Strengthening of competitive for the agro-industry and export ・ Strengthening of coordination with agriculture and livestock production. ・ Development of experimental and demonstrated agriculture and livestock
Usual Extension Service Methods	・ Day out in the countryside ・ Training and seminars ・ Technology exchange among producers ・ Visiting to advanced areas ・ Technology queries to INA engineers and veterinaries ・ Training of capacity development ・ Publications: instruction manual, brochures, technical and institutional leaflets, information leaflets, folding leaflet and posters ・ Radio broadcasting ・ Audiovisual programs

Source: JICA Study Team

4.3.8 Environmental Contamination

The animal stools and organic wastes, the over pasturing and the prairie burning for the pasture renewal impact the environment contamination and the progressive erosion of pastureland However, These environmental management except trial of organic fertilizer at farmers' level, is not reflected upon the development plans of Ayacucho Region.

Not only the livestock producers, but also the relevant agencies to the waste management, do not record the volume of waste occurring the process from raising of livestock to processing and production of livestock products, the environmental impacts caused by unsuitable treatment, and the environmental contamination surrounding area such as pastureland.

4.3.9 Problems and Constraints for Development

The extensive livestock at natural pastureland under natural condition has low productivity by unstable climatic conditions and increase in population pressure.

The problems in rural area in Ayacucho Region are largely classified into (i) severe production environment, (ii) low production technology/facilities, and (iii) poor processing and sale technology. These problems are tabulated below:

Table 4.3.16 Problems and Constraints for Development on Livestock

Category	Problems		Constraints for Development		
Problems on Natural Environment	・ Unstable climatic conditions such as frequent occurrences of drought and cold damages ・ Severely undulated topography	⇒	High Natural Disaster Risks ・ Increase in mortality of livestock by natural disasters ・ Increase of stress of livestock by excessive shifting, leading to lowering of production efficiency ・ Increase of burden of farmers' labor forces by shifting	⇒ ⇒ ⇒	・ Lowering of livestock productivity and farm income
Problem on Production Technology and Facilities	・ Extensive pasturage by natural pasture without considering sustainability of resources such as excessive pasturage (lack of pasture management technology) ・ Extensive pasturage of mixed groups of cow, sheep and camel family ・ Rough outdoor cattle shed surrounded by stones and wire net. ・ Poor sanitation control technology/facilities such as watering place by spring and manual milking ・ Poor crossbreeding and breeding technology	⇒	Deterioration of Production Environment and Increase in Production Loss ・ Deterioration of natural pasture ・ Deterioration of natural pastureland and decrease of habitat area by competitive of production area (habitat area) ・ Increase of mortality of livestock by natural disaster ・ Increase of mortality of livestock and occurrence of epidemic and lowering of quality of production ・ Lowering of productivity of livestock and quality by inbreeding ・ Delay in introduction of high quality species	⇒ ⇒ ⇒	・ Lowering of livestock productivity and farm income
Problems on Processing and sales	・ Shortage of processing technology such as sale of fur no-washing ・ Incomplete sale system such as setting of price by eye measurement without actual weighting ・ Shortage of access to market such as incomplete road network ・ Shortage of market information ・ Insufficient institutional activities	⇒	Lowering of negotiation capability ・ Sale at low price setting	⇒ ⇒ ⇒	・ Lowering of Farmers' income

Source: JICA Study Team

4.4 Inland Fishery

For the Ayacucho Region, which strongly depends on farming activities, it is important to introduce new activities to solve issues such as poverty alleviation and regional inequalities. The presence of inland fishery in Ayacucho Region is minimal. Nevertheless, it is considered to be an activity which can be developed by peasants in poverty conditions.

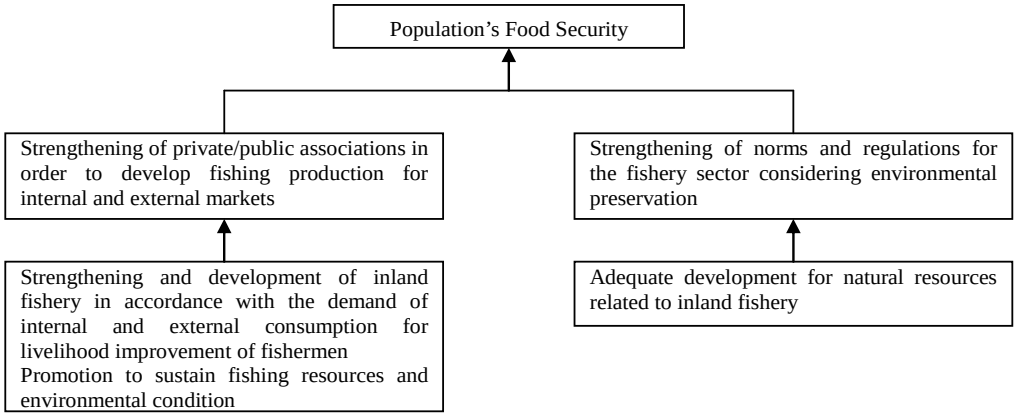
4.4.1 Policy, Organization and Plan

(1) Central government Level

The Ministry of Production (*PRODUCE*) is the responsible entity for the fishery activity on behalf of the central government through the Vice-Minister of Fishery. At present, PRODUCE is outlining a development plan on the short term and medium term for the promotion of fishery activity, which one of the main aims is to tackle with poverty alleviation according to the national policy.

Regarding the activity plan of PRODUCE (2008), basic strategies for promoting fishery in Peru is organizing the

system as shown in the table below. In order to guarantee fish products supply with high nutritious level for local population in poverty conditions in the Sierra area, promotion of inland fishery in Ayacucho Region is to be considered in this plan.



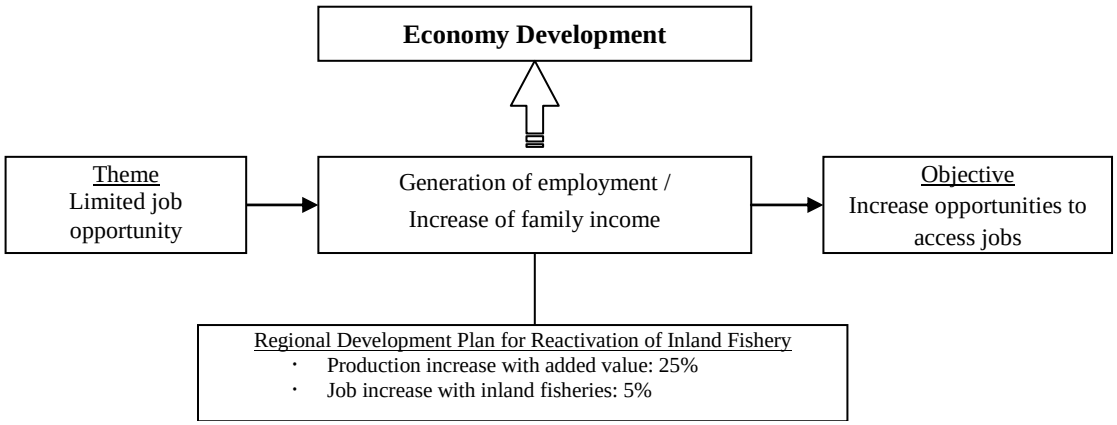
Source : Plan Operativo Institucional 2008, PRODUCE

Figure 4.4.1 Outlines of the Reactivation Strategy for the Fishery Sector of the PRODUCE

(2) Regional Government Level

The fishery sector of the Regional Direction of Production (*DIREPRO*) under GRA is in charge of developing and promoting inland fishery in Ayacucho Region. With decentralization in 2006, almost all of the administration and control of the fishponds and fish farms handled by PRODUCE were transferred to the fishery sector of DIREPRO.

At present, a development plan for inland fishery has not been established. According to PDRC 2007-2024, GRA has considered inland fishery as an important activity for economic development. As shown in the table below main purpose for developing fishery sector is to generate job opportunities as well as to increase small-scale farmers' income.



Source: ¨Plan Wari 2004-2014

Figure 4.4.2 Promotion Plan of Inland Fishery in PDRC 2007 - 2024

Trout Experimental Center of Fishery Section of DIREPRO (Vinchos Dictrict)

(3) Priority Development Areas

According to the fishery sector of DIREPRO, inland fishery in Ayacucho Region is to be done with high priority in the provinces of La Mar, Lucanas and Parinacochas Provinces, where there are large-scale farms and fishermen' associations in comparison to other provinces.

In accordance with the policies of PRODUCE, the fishery section of DIREPRO considers that lagoons with more than 100 hectares are a high priority for inland fishery and currently evaluate their potential of development in Ayacucho. So far, the following lagoons are a high priority in line with their development potential.

Table 4.4.1 Lagoons with Development Potential for Inland Fishery in Ayacucho Region

Lagoon	Location	Province	Observation
Yaurnuiri	Puquio	Lucanas	Potential of development evaluation – finished
Ancascocha	Cora Cora	Parinacochas	Potential of development evaluation – finished

Source: DIREPRO-Ayacucho

4.4.2 Current Situation of Inland Fishery

(1) Current Situation in Ayacucho Region

In Peru, Puno and Junin are famous regions for inland fishery and dominant 78% of the national production. Ayacucho Region is in the fourth place after Moquegua, and its production is 1.5% of the national production.

Table 4.4.2 Inland Fishery Production by Department (ton)

Regions / year	2002	2003	2004	2005	2006	2007
Ayacucho	103	80	94	105	123	110
Apurímac	121	99	79	65	77	54
Junín	1,219	1,337	1,982	2,119	1,652	1,758
Moquegua	165	196	198	86	173	130
Puno	1,206	1,376	2,130	2,339	3,070	4,007
Perú	3,361	3,579	5,155	5,836	6,145	7,366

Source: Statistical System of the department of Ayacucho: Statistical Compendium 2007-2008, INEI

(2) Current Situation in Ayacucho

Main product of inland fishery is rainbow trout in Ayacucho Region which latitudes go from 3,200 m until 4,100 m. In 2007, 47 producers associations were registered in the fishery section of DIREPRO. There are basically four kinds of administration: family business, cooperatives constituted by neighbors of one area, community management - with participation of the whole community-, and non-profit enterprises. There has been an increase in fish farms as well as in producers associations, especially in La Mar Province.

Fish Farms of Rainbpw Trout (Vinchos District)

Lagoons for Rainbow Trout breeding (Pampa Cangallo)

The volume of the production increases as presented in the table below, except DIREPRO's fish farm which reduces its production strategically. This is especially notorious in La Mar, Huamanga, Vilcas Huamán and Lucanas Provinces.

Table 4.4.3 Number of fish farms/producers' associations and Production in Ayacucho

Province		2002	2003	2004	2005	2006	2007
Huanta	Fish farms / Producers' associations	4	4	3	6	8	8
	Total Production (kg)	1,550	225	685	2,615	15,400	12,547
La Mar	Fish farms / Producers' associations	0	1	5	4	11	11
	Total Production (kg)	0	5,463	9,801	4,610	23,735	24,891
Huamanga	Fish farms / Producers' associations	4	8	12	11	16	15
	Total Production (kg)	850	2,802	4,444	7,450	9,924	10,640
DIREPRO * (Huamanga)	Fish farms / Producers' associations	3	3	3	3	2	2
	Total Production (kg)	87,746	61,987	56,078	55,750	46,270	39,947
Cangallo	Fish farms / Producers' associations	4	4	5	4	3	2
	Total Production (kg)	5,000	540	1,150	1,155	1,165	135
Vilcas Huaman	Fish farms / Producers' associations	0	1	2	1	2	3
	Total Production (kg)	0	225	645	400	890	2,120
Victor Fajardo	Fish farms / Producers' associations	3	4	4	3	3	3
	Total Production (kg)	4,700	4,430	3,280	4,610	5,110	5,015
Huanca Sancos	Fish farms / Producers' associations	0	3	0	0	0	0
	Total Production (kg)	0	4,180	0	0	0	0
Lucanas	Fish farms / Producers' associations	3	0	4	3	4	3
	Total Production (kg)	3,200	0	4,905	4,320	7,230	7,740
Subtotal without DIREPRO	Fish farms / Producers' associations	18	25	35	32	47	45
	Total Production (kg)	15,300	17,865	24,910	25,160	63,454	63,088
Total	Fish farms / Producers' associations	21	28	38	35	49	47
	Total Production (kg)	103,046	79,852	80,988	80,910	109,724	103,035

Source: DIREPRO

Note: The production of DIREPRO fish farm in the last few years is being reduced due to the governmental policy.

In Ayacucho Region, besides the hatcheries, natural trout fishing is practiced in all provinces. In 2005, the fishery in rivers and lagoons represented 13% of the total production.

In the jungle area of Huanta and La Mar Provinces, fishery of tropical species is also practiced.

Table 4.4.4 Fishery in rivers and lagoons in Ayacucho Region

Province	Species	2004	2005
Cangallo	Rainbow Trout	2.482 kg	2,480 kg
Victor Fajardo	Rainbow Trout	3,080 kg	1,835 kg
Huanca Sancos	Rainbow Trout	5,200 kg	2,480 kg
Sucre	Rainbow Trout	1,500 kg	2,480 kg
Lucanas	Rainbow Trout	2,500 kg	1,735 kg
Other provinces	Rainbow Trout	800 kg	1,165 kg
(Subtotal)	Rainbow Trout	15,562 kg	12,175 kg
Huanta	Tropical fish	-	3,840 kg
La Mar	Tropical fish	-	4,960 kg
(Subtotal)		-	8,800 kg
Total	Trout + Tropical fish	-	20,975 kg

Source: DIREPRO

Note: May and September the fishing of trout is banned, in rivers as well as in lagoons.

(2) Fish Farms and Producers' Associations

According to the definition of the production size in Peru, there is no large-scale fish farm and producers' association which production reaches more than 50 tons in Ayacucho Region. Around 38% of them are middle-scale which production reaches 2 to 50 tons. Thus, most of them produce no more than 2 tons, which can make them to be considered as small-scale enterprises.

The size of fish farms and producers' association in the province of Lucanas is relatively higher than that in other provinces. On the other hand, the sizes in the provinces of Huamanga, Cangallo and Vilcas Huamán Provinces are quite small.

Table 4.4.5 Production Size of Fish Farm/Producers' Associations in Ayacucho Region(2007)

Province	Production area of fish farms/producers' associations (m^2)	Annual Production	
		0-2 ton	2-50 ton
Huanta	2,237	4	3
La Mar	1,117	9	3
Huamanga	78	11	6
Cangallo	95	2	1
Vilcas Huaman	60	2	1
Victor Fajardo	188	2	1
Lucanas	11,721	1	4
Total	(average: 373)	31	19

Source : DIREPRO-Ayacucho

Note : Includes non registered enterprises in GRA

Table 4.4.6 Sales Price of trout in Ayacucho Region

Year	2002	2003	2004	2005	2006	2007
Sales price (S/kg)	8.0	8.0	8.0	8.0	8.0	9.0

Source : DIREPRO-Ayacucho

Most of the fish farms and producers' associations are small-scale.

Sales price of trout are kept a steady price of S/.8–9/kg. Nevertheless, the operation costs increase in such a way that the small-sale fish farms and producers' associations are facing serious administrative problems. A great problem to keep this business running is obtaining investment capital to get food from Lima and Arequipa. It is necessary to permanently replace rainbow trout eggs and breed, which are generally obtained from DIREPRO fish farms, located at the districts of Vinchos and Paras; or, sometimes –risking quality - are obtained from other private providers from Lima – who import this product from North America.

4.4.3 Promotion plan for inland fishery

There are two prior projects related with the promotion of inland fishery in Ayacucho Region as follows.

(1) SNIP Proposal

As the result of the inventory survey carried out in this Study, there are 41 registered projects in Ayacucho Region related to inland fishery. There are some projects that are considered to promote inland fishery in the regional level such as construction of breeding centers and refrigeration centers. On the other hand, most of the projects are construction of fish farm which aims to benefit community population directly. These projects have been approved by SNIP, but have not received financing yet, therefore cannot be implemented. The current situation of the SNIP sub-projects is shown in the following table:

Table 4.4.7 SNIP Sub-projects related to Inland Fishery in Ayacucho Region

Province	On-going		Approved Profile		Profile under Evaluation	
	No. of Sub-projects	Investment Amount (S/.)	No. of Sub-projects	Investment Amount (S/.)	No. of Sub-projects	Investment Amount (S/.)
Huanta	0	0	4	1,804,078	1	175,474
La Mar	1	100,000	2	271,885	1	134,607
Huamanga	0	0	0		1	1,696,700
Cangallo	1	511,648	1	5,874,585	2	602,871
Vilcas Huaman	0	0	2	271,755	0	0
Victor Fajardo	0	0	1	697,460	1	290,790
Huanca Sancos	0	0	0		0	0
Sucre	0	0	4	665,898	0	0
Lucanas	0	0	5	1,611,246	1	3,948,092
Parinacochas	0	0	9	2,314,442	0	0
Paucar del Sara Sara	0	0	4	1,113,000	0	0
	2	611,648	32	14,624,349	7	6,848,534

Source : Inventory, JICA Study Team

(2) PDRC 2007 – 2024

Within PDRC 2007-2024, the following projects are considered with high priority to tackle with increase of job opportunities and cash income for small-scale farmers in Ayacucho Region.

These projects are not targeted for the priority areas, but a proposal of which the purpose is the promotion of inland fishery in the regional level as a whole.

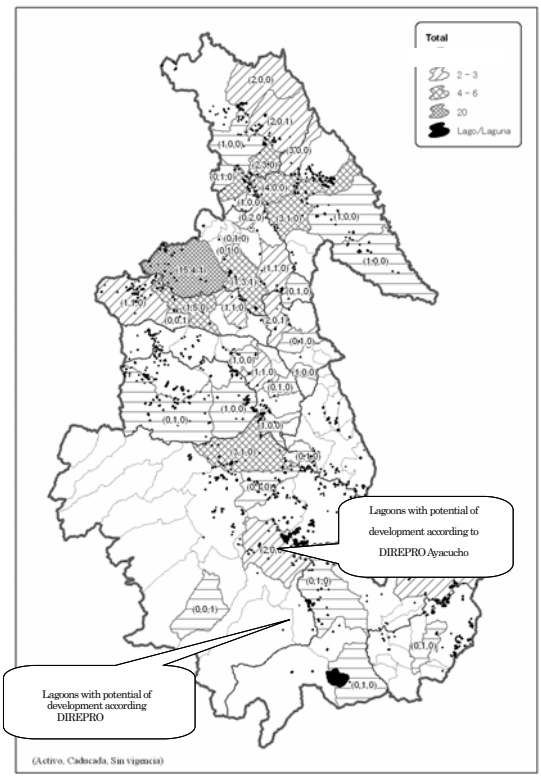


Figure 4.4.3 Location of SNIP Sub-projects for Inland Fishery and Lagoons in Ayacucho Region

Table 4.4.8 Priority plans for inland fishery in the comprehensive development plan in Ayacucho Region

Name of Priority Plan	Budget (S/.)
Strengthening of production and businesses regarding rainbow trout breeding by means of professional training	500,000
Strengthening of aquaculture facilities rehabilitation in the 11 districts	2,300,000
Total	2,800,000

Source: PDRC 2007 - 2024

4.4.4 Problems and Constrains for Development

Despite installation of new fish farms and strengthening of associations, not a few associations stop working in Ayacucho. In a five year period between 2003 and 2007, 36 associations have closed or have ceased performing their activities after an average of 1.7 years of operation.

Table 4.4.9 Associations Closed or Ceased Their Activities in Ayacucho Region

Province	Associations that are closed or have ceased their activities after 2003	Operating year until they ceased their activities (average)
Huanta	4	2.5 year
La Mar	1	1 year
Huamanga	13	1.77 year
Cangallo	7	1.57 year
Vilcas Huaman	1	2 year
Victor Fajardo	2	2 year
Huanca Sancos	1	1 year
Lucanas	3	2.67 year
Parinacochas	3	1 year
Paucar del Sara Sara	1	1 year
Total	36	1.7 year

Source: DIREPRO-Ayacucho

As shown in the figure below, the problems and constrains for the promotion of inland fishery in Ayacucho Region were identified as a result of the analysis in this Study.

Table 4.4.10 Problems and Constraints for Development on Inland Fishery

Problems		Constraints（Caused Phenomenon）		
Shortage of Basic and Latest Aquaculture Technology Development of only Food Processing Technology based on Needs of Consumers Shortage of Project Management Capability Considering Profitability Lack of Opportunity of Capacity Building of Newcomers of Aquaculture Lack of Technology exchanges among Producers Association	⇒	Unstable Productivity/Insufficient Quality Control ・ Difficulty in Financial Arrangement for Construction and O&M for Aquaculture Ponds ・ Extensive Aquaculture/Operation (Difficulty in Insurance of Profitability） ・ Shortage of Production and Supply Facilities of Young Fish(Difficulty in Ensuring of High Quality of Young Fish） ・ Lack of Feed Production Supply Facility (Difficulty in Ensuring of Cheap feed) ・ Lack of Distribution System of Cold chain ・ Lack of Sanitary and Safety Control System Insufficient Market Development ・ Low Degree of Recognition in Region as Production Area ・ Low Degree of Recognition and Difficulty in Financial Arrangement for Marketing Activities ・ No Development Strategy and Plan for Marketing ・ Insufficient Marketing Activities to Large Consumable areas like Lima ・ Lack of Coordination and Activities of Local Producers Associations ・ Constant Lack of Market Information System	⇒	Inactivity of Inland Fishery ・ Shortage of Experience and Know-How on Promotion of Aquaculture Industry ・ Shortage of Coordination between Production Areas and Relevant Agencies to Inland Fishery ・ Difficulty in Financial Participation by People Living in Development Potential Area ・ Poor Ability on Management and Institutional Strengthening by Producers Associations ・ Lack of Regional Medium and Long Term Promotion Plan focusing on Aquaculture

Source: JICA Study Team

4.5 Reforestation/Environmental Conservation

4.5.1 Policies, Institutions, Plans

(1) Policies, Institutions, Regal Imperatives related to Reforestation/Environmental Conservation Sector

Table 4.5.1 shows the major regal imperatives and policies related to the reforestation/environmental conservation. The regal imperatives related to the forest and wildlife have been established initially in Peru. Recently the laws/regulations, which stipulate the sustainable and effective use of forests and natural resources, were constituted additionally. Seven types of parks and conservation areas by the law of natural conservation areas and 6 (six) types of forest types by the law of forest and wildlife in Table 4.5.1 are set up and the usage of them are stipulated.

Table 4.5.1 Laws, Regulations on Reforestation and Environmental Conservation

Laws/regulations (in Spanish)	Date in Start	Outline	Laws/regulations (in English)
Ley Forestal y de Fauna Silvestre (*Ley No 27308*) y Reglamento de la Ley Forestal y de Fauna Silvestre y su modificatoria (*Decreto Supremo 014-2001-AG,etc*)	2000/06/15	The purpose is to stipulate and manage the conservation and sustainable usage of the forest resources and wildlife in Peru. This law is in accordance with (i) effective use of forest environmental service, (ii) social/economical/environmental national benefit, and (iii) rules and stipulations of environmental/natural resources use. These points are stipulated by Article 66&67 of Constitution of the Republic of Peru, Legislative decree 613, and Law No.26821. The subsidiary rules of the above law stipulate the details of forest/natural resources management. The subsidiary rules also stipulate transfer control of national functions to local government.	Subsidiary rules and amendments of the Law of forest and wildlife
Crean Bosque de Production Pernanente dentro del Patrimonio Forestal de los departamentos de San Martín, Huanuco, Pasco, Junin, Ayacucho, Cusco y Puno Resolución Ministerial (*Nº 0549-2002-AG*)	2002/05/31	This Ministerial (agrarian) decree agrees creation of 146,298 ha of productive forest (permanent forest) in national forest areas in Ayacucho Region	Ministerial Decree of productive forest creations in the national forest areas of San Martín, Huanuco, Pasco, Junin, Ayacucho, Cusco and Puno Region
Reglamento de Clasificacion de Tierras (*Decreto Supremo Nº 0062/75 AG*)		This supreme decree stipulates the rule of land classification for 3 (three) major objectives below. (i) Establishment of the national system which corresponds the ecological characteristics being in accord with natural biodiversity in Peru, (ii) Expansion of permanent/rational land use which enables economical/social benefits in maximum, and (iii) Prevention of soil destruction and degradation which influence the natural resources.	The detailed regulations of land classification (*Supreme Decree No. 0062/75 AG*)
Ley de Áreas Naturales Protegidas (*Ley No26834*) y su modificación (*Decreto Supremo N°015-2007AG*)	1997/05/04	This law stipulates conservation areas in Peru. The conservation areas include not only natural resources but cultural/historical resources. There are 7 types of conservation area as: (i) National park, (ii) National sanctuary, (iii) landscape conservation area, (iv) Wildlife conservation area, (v) Village conservation areas, (vi) Forest conservation area, and (vii) Hunting game conservation area	Supreme decree related to natural conservation area and its amendments
Ley Orgánica para el Aprovechamiento Sostenible de los Recursos Naturales (*Ley Nº 26821 del 26.05.97*).	1997/05/26	This law stipulates effective use of natural resources. Its purpose is implementation of sustainable use of natural resource.	Law of sustainable use of natural resources (*Law No. 26821*)

Laws/regulations (in Spanish)	Date in Start	Outline	Laws/regulations (in English)
Decreto Supremo que constituye la Comisión Nacional para el Ordenamiento Territorial Ambiental (*Decreto Supremo Nº 045-2001-PCM del 27.04.2001*).	2001/04/26	The supreme decree related to establishment of (i) the national commission of environment and land creation and (ii) the advisory board instituted by the representatives of the sectors (Ministries, Regional and Provincial Governments).	The supreme decree related to establishment of the national commissions of environmental land creation
Reglamento de Zonificación Ecológica y Económica –ZEE. (*Decreto Supremo Nº 87-2004-PCM del 23.12.04*)	2004	This supreme decree stipulates ecological/economical zoning of the national land based on Law No. 26821 and others. The major purposes are 6 points below. (i) Harmonization between public benefit of natural assets of the Nation and Natural resources, (ii) Preparation of policies for sustainable use of natural resource/national lands (nation-wise, sector-wise, region-wise, local government-wise), (iii) Technical assistance to the Nation/Regions/local governments on the issues of land readjustment and development planning, (iv) Capacity development of the officials of management organizations, (v) Provision of the technical/administrative information for public works and private investments, and (vi) Coordination between the related participants for land use	Subsidiary rules of the ecological/economical zoning of national lands

(2) Plan (Central and Region Levels)

(a) National Reforestation Plan

Peru has turned, from the previous forest policy to the positive reforestation policy based on the readjustment. The National Reforestation Plan (*Plan Nacional de Reforestacion:2005, MINAG*) was prepared. It is the reforestation plan for 20 years (2005 to 2024). It was recognized that 73,880 km^2 is the cleared forests areas according to the forest statistics in 2000. The planed reforestation areas are 8,645 km^2 in total and the target areas are classified into Costa, Sierra and Selva. The reforestation areas become 1,045 km^2 in a year. The reforestation plan does not stipulate actual project plans. Thus, it can be deemed as the National target, does not include the detailed plans. The national plan recognizes that there are 980 km^2 cleared forest areas and 736 km^2 of them are categorized as no used land.

(b) Reforestation and Environment Conservation Plans in Ayacucho Region

The major plans related to reforestation and environmental conservation are shown in Table 4.5.2.

Table 4.5.2 Major Plans related to Reforestation and Environmental Conservation in Ayacucho Region

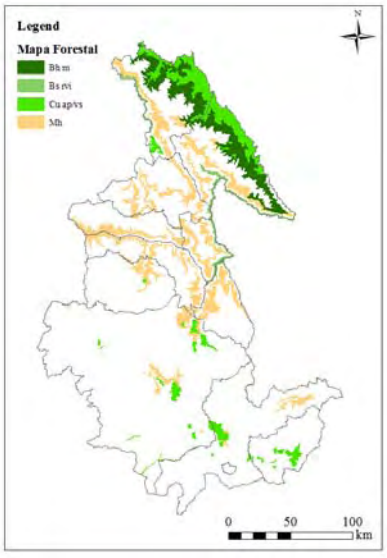
Plan	Date for Preparation	Outline	Title in English
Plan Base de Ordenamiento Territorial Del Departamento de Ayacucho	2005	Land improvement plan in Ayacucho Region based on the Law No.26821	The basic land improvement plan in Ayacucho Region
Plan de Reforestacion del Departamento de Ayacucho, Programa Nacional del Manejo de Cuencas Hidrograficas y Conservación de Suelos.	September, 2007	The PRONAMACHCS is the integrated project plan composed by three programs. It planned reforestation areas (8,429 ha of productive forests, 12,667 ha of watershed conservation forests). Besides, PRONAMACHC has been replaced to AGRORURAL. AGRORURAL implements the 4 projects as below. 1) Natural resources management program (*MARENASS*) 2) Special program of improvement of usage of marine birds compost (*PROABONOS*) 3) National watershed management and soil conservation program (*PRONAMACHCS*) 4) Supporting program for access to the market from remote areas (*PROSAAMER*)	Reforestation Plan of AGRORURAL in Ayacucho Region (2006-2011)

Plan	Date for Preparation	Outline	Title in English
Plan Wari: Plan de Desarrollo Regional Concertado Ayacucho de 2007-2024	November, 2007	Wari Plan is an long term plan with consensus based on a workshop which was held by the leaders of 111 districts in Ayacucho, and other related organizations. The target period of this plan is from 2007 to 2024. The plan includes three points related to reforestation/environmental conservation as below. 1) Set up target value of carbon dioxide gas emission 2) Reforestation to recover decreased forest areas 3) Increasing the conservation areas *2): In accordance with the data in 2000, 13,375.05 ha of forest area was decreased. Wari Plan adverts to increasing the area by reforestation.* *3): There are two designated conservation areas (6,500 ha as a national conservation area and 300 ha as a national sanctuary conservation area). The plan adverts to increase the conservation areas.*	Comprehensive Development Plan of Ayacucho Region 2007-2024 (*Wari Plan*)
Plan Estrategico Regional Del Sector Agrario Ayacucho 2009-2015	February, 2008	It is a strategic plan for the agricultural sector in Ayacucho Region for the period of 2009 to 2015. It adverts two programs related to reforestation/environmental conservation as below. The programs aim implementation of integrated/sustainable natural resource use. 1) Integrated program for natural resources, water, air and afforestation (by grasses and trees) 2) Reforestation program of 10,608 ha reforestation (by grasses and trees) and 3,270 ha reforestation (by trees). This is based on the program 1) above. It also plans 4 plans of rural area development, 12 species of wildlife/flora registration, genetic bank establishment for 3 major ecologic systems. These plans were established to implement the protection/conservation/recovery of biodiversity in Ayacucho Region until year of 2015.	Ayacucho Region Agricultural Strategic Plan

4.5.2 Forest Conditions and Land-use Potential

(1) Forest Area and Distribution

The forest areas have been studied in 1996 by INRENA. INRENA established GIS data of whole country by landsat/laser graphics analysis. However, the study results have been never updated after the study. The forest distribution map (*Mapa Forestal*) was prepared by the INRENA's study above and it was preliminarily compared with the satellite images which were procured under this Study. As a result, the recognized classifications are: (i) closed forest in Amazon (*Bhm*), (ii) shrub community forests (*Bs rvi, Mh and Cu ap/vs*), and (iii) coastal forests (*Msd*). In accordance with the previous forest data, these classification areas were 21% of the total area in Ayacucho Region. The forests types except shrub forest are: (i) Amazon closed forest (*Bhm*) and (ii) Agricultural/pasture fields + Amazon secondary forest (*Cu ap/vs*). These were 9.5% of the total area, which was distributed in the northern parts of the Region intensively. The shrub type forests were distributed along the major rivers and highland areas in the middle to the northern parts of the Region. However, there were only a few forests in the southern area.



Source: GRA GIS Data

Figure 4.5.1 Forest Distribution Map in 1996 (abstracting recognized forest only)

It is not possible to estimate the forest decreasing area numerically, because the study of forest area/distribution has

not been carried out since 1996. However, the forest areas are decreased from the data shown in Table 4.5.3, because (i) Ayacucho Region is under very hard natural conditions, (ii) the demand of firewood is high (most of farmers out of city areas use firewood for cooking), and (iii) the reforestation area seems not same as decreased areas. Therefore, the current status of the forest area is estimated less than the areas in Table 4.5.3. Besides, the forest inventory study (forest compartment classification, forest area position, species, standing volume, forest function, land-ownership, etc.) has not carried out in Ayacucho Region including the study in 1996.

Table 4.5.3 Forest Area by District in 1995

(Unit: km^2)

No.	Province	A*	Shrub Forest			B*	Subtotal (Forest)	Others	Total
		Bh m	Bs rvi	Mh	Cu ap/vs	Msd			
1	Huanta	950.142	118.647	514.125	849.726	-	2,432.640	1,401.526	3,834.166
2	La Mar	1,037.122	183.416	619.677	627.035	-	2,467.250	1,816.223	4,283.473
3	Huamanga	-	22.083	631.207	-	-	653.290	2,302.182	2,955.472
4	Cangallo	-	-	403.476	-	-	403.476	1,467.701	1,871.177
5	Vilcashuaman	-	93.404	422.145	-	-	515.549	689.457	1,205.006
6	Victor Fajardo	-	1.741	585.803	-	-	587.544	1,676.460	2,264.004
7	Huancasancos	-	-	228.150	7.775	-	235.925	2,599.922	2,835.847
8	Sucre	-	42.885	454.971	-	-	497.856	1,288.496	1,786.352
9	Lucanas	-	-	397.401	329.959	138.399	865.759	13,591.461	14,457.220
10	Parinacochas	-	-	163.729	160.859	-	324.588	5,551.235	5,875.823
11	Paucar del Sara	-	-	-	165.774	-	165.774	1,914.520	2,080.294
Subtotal		1,987.264	462.176	4,420.684	2,141.128	138.399	9,149.651	34,299.183	43,448.834
	Ratio(%)	4.6	1.1	10.2	4.9	0.3			
	Subtotal	1,987.264			7,023.988	138.399			
	Ratio(%)	4.6			16.2	0.3			
A*: Amazon Dense Forest						Total	9,149.651	34,299.183	43,448.834
B*: Coastal Forest						Ration(%)	21.1	78.9	100.0

Source: GRA

(2) Land Use potential

The land use potential was determined by GIS data analysis as described in Chapter 8. In accordance with the results of the analysis, most of the ratio of the suitable land areas for forest (= forest potential area) is about 19% of total area in each district except Vilcas Huaman (45% of total area). Meanwhile, the ratio of the conservation potential area, where conservation is required, is so high in every district (33% to 94%). It means that not only the forest potential area but also the suitable land areas for agriculture/pasture are less in Ayacucho Region.

Table 4.5.4 Ratio of the Classified Land Areas by District

District	(A) (%)	(C) (%)	(P) (%)	(F) (%)	(X) (%)	Total (%)
Huanta	4.2	-	-	11.9	83.9	100.0
La Mar	2.8	-	-	3.2	94.1	100.0
Huamanga	24.3	-	21.1	19.4	35.2	100.0
Cangallo	16.2	-	7.5	10.8	65.5	100.0
Vilcas Huaman	10.3	-	12.3	44.8	32.7	100.0
Victor Fajardo	-	-	35.4	12.0	52.6	100.0
Huanca Sancos	-	-	46.6	1.9	51.4	100.0
Sucre	-	-	40.8	5.8	53.4	100.0
Lucanas	1.0	-	9.8	-	89.2	100.0
Parinacochas	2.0	-	23.6	-	74.4	100.0
Paucar del Sara Sara	13.2	-	-	-	86.8	100.0
Total	4.5	-	15.1	5.4	75.0	100.0

(A): Suitable land for agriculture, (C): Suitable land for secular crops, (P): Suitable land for pasture, (F): Suitable land for forest,(X): land required conservation treatments (Detailed definitions of (A) to (X) are described in Chapter 2)

Source: GRA GIS Data

4.5.3 Production and Usage of Timbers/non-Timber Forest Products

(1) Timber Products

It is required to obtain the permission for cutting timbers or harvesting forest products in Peru. INRENA was an organization to control the system in May 2009 (The Ayacucho branch office of former INRENA is planned to be merged to the Regional Government Office hereafter). In accordance with the records of Ayacucho branch office of former INRENA, 90% or more of the timber products in Ayacucho Region is Eucalyptus (*Eucalyptus globles*). The major markets of the timber products are mining in the near Regions such as, Ica, Huancavelica. They mostly use the small diameter timbers as poles for excavation tunnel. Table 4.5.5 shows approximate timber product amount in 2007 and 2008. The data of Table was delivered from logging records of the branch office.

Table 4.5.5 Timber Products Amount in Ayacucho Region

District	Timber products amount in 2007 (m^3)	Timber products amount in 2008 (m^3)
Huanta	32	130
La Mar	46	70
Huamanga	2,929	4,602
Cangallo	5	228
Vilcas Huaman	597	356
Victor Fajardo	-	-
Huanca Sancos	-	-
Sucre	-	-
Lucanas	-	-
Parinacochas	-	-
Paucar del Sara Sara	-	-
Total	3,600	5,386

Source: Ayacucho branch office of INRENA

(2) Non-Timber Forest Products

In accordance with the statistics data in 2007, Table 4.5.6 shows the export amount of non-timber forest products from Peru. The amount of dye products shows high fraction of the total export amount.

Table 4.5.6 Amount of Export of Non-Timber Forest Products from Peru (2007)

Name of non-timber forest products	Export Value (US$)	Export weight (kg)
Cochineal (*Dactylopius coccus Costa*)	2,307,763.54	144,918.05
Walnut, sweet chestnut	18,144,961.46	4,153,513.82
Seeds, Fruits	9,592,093.01	1,447,053.79
Rubber, Resin, Juice, vegetable extracts	11,380,864.00	2,091,480.28
Bamboo handiworks	1,018.32	1,778.66
Palm tree shoots	4,275,842.65	1,666,307.36
Tara (dye or material for tanning)	16,863,375.83	13,603,995.72
Dye from animals	18,936,932.95	416,796.45
Natural rubber	161,769.24	67,079.72
Wisteria, Willow, Bamboo furniture	68,683.51	14,110.79
Basketworks	599,514.92	410,036.86
Total	82,332,819.43	24,017,071.50

Export value is free-on-board price(FOB)

Source: Peru Forestal en Numeros Año 2007, INRENA en base de Superintendencia Nacional de Administracion Tributaria-SUNAT

In accordance with the records of the Branch office of former INRENA, the major exports from Ayacucho Region are Cochineal (*Dactylopius coccus Costa*) which is used as dye material, Tara (used as dye/tanning material: *Cæsalpinia spinosa*), and Barbasco (used as material of insect killer: *Lonchocarpus urucu*). The annual report of

export amount by INRENA shows the two Regions of Ayacucho and Apurimac stand out from all the others. The export amount of Cochineal in Ayacucho Region was about 27 ton which is equivalent to 17% of total export amount of Peru. According to the records of INRENA, the product amount of Tara was about 6,000 ton and Babasco was 2,000 ton in 2007. About 14,000 ton of Barbasco was produced from La Mar Province, and about 5,000 ton of Tara was produced centering on Huamanga and Huanta Province.

(3) Captive Consumption of Firewood

The household survey was carried out as a part of this Study and sampling survey was conducted for 1,100 households in 9 Provinces except Huanta and La Mar. The questionnaire included a question of fuel type for cooking. As shown in Table 4.5.7, 1,070 households (or 97% of total number of the respondents) answered as firewood. The amount of usage of firewood is unknown, but it could be judged that the firewood is commodity essential to life for the most of farmers.

Table 4.5.7 Fuel Type for Cooking

No.	Province	Animal dung	Gas	Firewood	Total
1	Huanta	-	-	-	-
2	La Mar	-	-	-	-
3	Huamanga	0	3	197	200
4	Cangallo	0	2	98	100
5	Vilcashuaman	0	4	95	99
6	Victor Fajardo	4	0	96	100
7	Huancasancos	1	2	97	100
8	Sucre	0	2	98	100
9	Lucanas	3	2	195	200
10	Parinacochas	0	1	99	100
11	Paucar del Sara	0	5	95	100
	Total (No.)	8	21	1070	1099
	Total (%)	0.7	1.9	97.4	100.0

Source: Household Survey executed by JICA Study Team

Figure 4.5.2 Firewood Piled at Farmer House

Figure 4.5.3 Firewood Piled at Restaurant

4.5.4 Achievements of Reforestation and Environmental Conservation Sector

(1) PRONAMACHCS (National Soil Conservation Plan: AGRORURAL)

The one of projects related to reforestation and environmental conservation sector is the National Soil Conservation Plan (*PRONAMACHCS: it was replaced to Agro Rural now.*). As shown in the following table, PRONAMACHCS includes two projects: (i) Small Watershed Conservation Project for Acceleration of Reforestation (budgeted by JBIC-III, for 4 provinces of Huanca Sancos, Parinacochas, Paucar del Sara Sara, and Sucre), and (ii) Reforestation and Watershed Management Project for Soil Conservation (budgeted by GOP, for 7

Provinces; Cangallo, Huamanga, Huanta, La Mar, Lucanas, Victor Fajardo, and Vilcas Huaman).

Table 4.5.8 Projects by PRONAMACHCS

Project achievement	Unit	Total 1981-2007
Irrigation facilities		
Nos. of Projects		495
Canal	km	389
Irrigation Area	ha	76,246
Beneficial Households	HHs	65,242
Reforestation		
No. of produced seedling		61,047,947
Reforestation area	ha	36,114
Beneficial Households	HHs	*/
Soil Conservation		
Improved agricultural field area (by terraced field (Andenes) and terrace)	ha	24,781
Improved pasture field areas (by ditch)	ha	12,023
Ditch	No.	396
Beneficial Households	HHs	*/

Project achievement	Unit	Total 1981-2007
Support to agriculture/pasture		
Crops introducing	ha	13,301
Management of pasture introducing	ha	1,706
Seed storage	Set	244
Cattle houses construction	Set	728
Beneficial Households	HHs	*/
Improving land productivity and life in remote areas		
No. of Projects		15
Beneficial Households	HHs	4,017
Investment amount	S/.	5,806,843

Source: Reforestation Achievements by PRONAMACHS (http://www.pronamachcs.gob.pe/)

The major activities of PRONAMACHCS were (i) establishment of watershed commission and consensus building, (ii) establishment of active commission, (iii) organization of active commission, (iv) plan of participatory planning, and (v) diffusion of small watershed active commission. PRONAMACHCS manages the projects with participatory method through workshops. The areas of PRONAMACHCS project are reported as Table 4.5.9. in approx. 500 communities of 64 watersheds area. However, no projects in remained 232 watershed areas.

Table 4.5.9 Achievements of PRONAMACHCS and Watershed

Province	Nos. of watershed	Nos. of watershed implemented projects by PRONAMACHCS
Huanta	35	6
La Mar	30	3
Huamanga	21	6
Cangallo	12	3
Vilcas Huaman	6	6 (1)
Victor Fajardo	12	6
Huanca Sancos	25	7
Sucre	9	7
Lucanas	80	9
Parinacochas	50	6
Paucar del Sara Sara	16	5
Total	296	64

Notes: Based on PRONAMACHCS map, watersheds among more than 2 provinces were included into bigger province

Source: PRONAMACHCS small watershed map (Gutierrez O., Cayo(2006). "PRONAMACHCS gerencia Departamental Ayacucho" (JICA Study team prepared based on Presentation (DRA)

Figure 4.5.4 Reforestation at Upper Stream of Irrigation Area (Reforestation for Watershed Conservation)

Figure 4.5.5 Reforestation for Protection of Pastoral Fields from Low Temperature

(2) Achievement by the Agrarian Regional Directorate (*DRA*) of Ayacucho Region

Agrarian Regional Directorate (*DRA*) of Ayacucho Region has been conducting 10,244 ha of reforestation (13 projects) by the end of 2009. The total reforestation area during last three years (from 2007 to 2009) is approx. 4,600 ha (Table 4.5.10)

Table 4.5.10 Reforestation Achievements by DRA

Province	Total Target		2007		2008		2009		Total Achievement		Surplus		No. of Beneficial HHs
	Area (ha)	No. of seedling*1	Area (ha)	No. of seedling*1	Area (ha)	No. of seedling*1	Area (ha)	No. of seedling*1	Area (ha)	No. of seedling*1	Area (ha)	No. of seedling*1	
Huanta	900	556	40	25	82	59	200	189	322	273	578	283	8,512
	832	1,090	30	33	87	94	200	220	317	348	515	742	1,747
	450	500	200	222	363	182			563	404	(113)	96	3,750
Subtotal	2,182	2,146	270	281	532	335	400	409	1,202	1,024	980	1,121	14,009
La Mar	832	1,112	28	35	68	76	200	212	296	324	536	788	2,043
Huamanga	832	1,065	32	41	96	109	450	495	578	645	254	420	2,424
Cangallo	840	1,067	26	34	120	134	225	250	371	418	469	649	38,624
Vilcas Huaman	832	875	35	44	106	118	225	250	366	412	466	463	8,073
Victor Fajardo	832	1,017	32	36	73	81	225	250	330	366	502	650	2,923
Huanca Sancos	586	518	35	44	63	71	225	250	323	364	263	154	12,120
Sucre	832	1,106	30	33	66	73	225	250	321	356	511	750	2,205
Lucanas	812	1,065	33	36	86	93	225	250	344	379	468	686	4,193
Parinacochas	832	1,086	32	35	52	58	150	170	234	263	598	823	1,424
Paucar del Sara Sara	832	1,065	32	40	53	59	148	165	233	264	599	801	1,342
Total	10,244	12,121	585	659	1,315	1,206	2,698	2,951	4,598	4,816	5,646	7,305	89,380

Source: DRA internal documents

Figure 4.5.6 Reforestation for Bare Land

Figure 4.5.7 Reforestation Protecting Farming Land from Cold Damage

After DRA and PRONAMACHCS obtain the approval by SNIP and give the budget. the following process is taken according to interview with DRA, C/P and Vilcas Huaman:

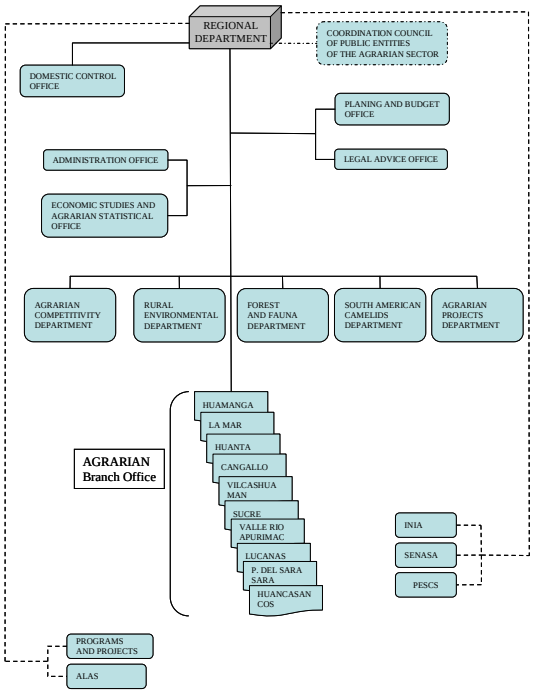
1) DRA explains the contents of the project to some communes, -> 2) the communes which desire reforestation will discuss with DRA and determine the reforestation conditions (number of planting seedlings, tree species, reforestation areas, etc.), -> 3) DRA will supply the seedlings, -> 4) the communes (farmers) will plant the seedlings.

Generally, the results of discussion, the second process 2) above, the seedlings and equipment (such as scopes) are supplied by DRA, but no payment for plantation works. The planted seedlings will become the communes' assets. When the commune people will sell the logs, 20% of benefits will be paid to DRA with agreement. However, it is not always paid.

The agreement between DRA and the communes is prepared, but DRA does not supervise the plantation works usually. The plantation work is carried out by the communes by themselves in most cases. Therefore, DRA does not know the planted areas/places. And the monitoring is also not implemented Therefore, DRA does not precisely grasp the ratio of alive of planted seedling and the survival ratio of planted trees. It is considered that the reasons of the problems above are (i) shortage of the staff members of DRA, (ii) difficulty of transportation of DRA officials (vehicles/fuels), (iii) shortage of acknowledge and capacity of DRA officials for reforestation, and (iv) shortage of education of meanings of reforestation and to the communes.

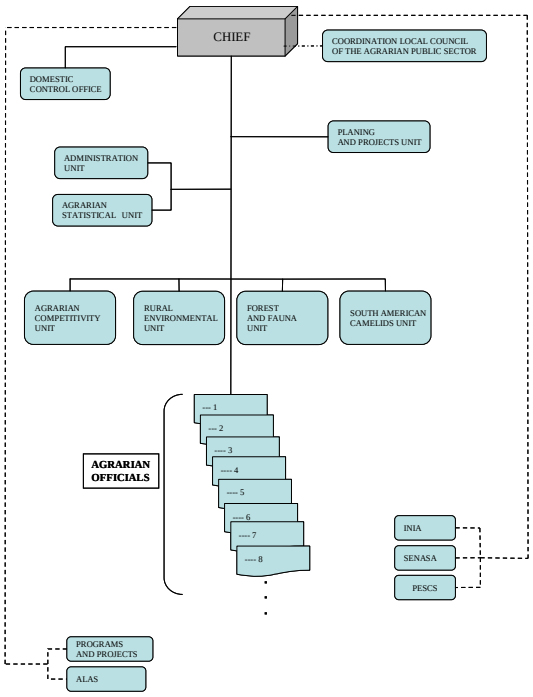
(3) Number of Staff of DRA related to Reforestation

There are 12 branch offices and Apurimac River project office (*VRA: VALLE RIO APURIMAC*) belong to DRA H.Q. The each branch office consists of management, administrative and technical officials (Figures 4.5.8 and 4.5.9). The numbers of officials in the branch offices are shown in Table 4.5.11. There are 4 to 21 officials in each branch office.



Source: DRA organization Rule

Figure 4.5.8 Organization Chart of DRA



Source: DRA organization Rule

Figure 4.5.9 Organization Chart of Branch Office

Table 4.5.11 Numbers of Officials of Branch Offices of DRA

Office	Management	Administration	Technical	Others	Total
Huanta	1	2	11	1	15
La Mar	1	-	5	1	7
Huamanga	1	3	21	4	29
Cangallo	2	-	8	2	12
Vilcas Huaman	1	-	10	-	11
Victor Fajardo	-	-	7	1	8
Huanca Sancos	1	-	8	-	9
Sucre	-	1	4	1	6
Lucanas	-	-	10	2	12
Parinacochas	1	-	8	1	10
Paucar del Sara Sara	-	-	6	1	7
Valle Rio Apurimac	-	1	4	-	5
Total	8	7	102	14	131

Source: DRA (Officials' name list in 2009)

Table 4.5.11 shows that most of them are agricultural technicians, only a few numbers of experts are available, and no experts/technicians for reforestation exist. Thus the agricultural experts and technicians are in charge of the reforestation and environmental projects.

Table 4.5.12 Number of Technical Officials in each Branch Office of DRA

Office	A*	B*	C*	D*	E*	F*	Total
Huanta	3	1	-	-	6	1	11
La Mar	-	-	-	-	5	-	5
Huamanga	2	-	-	-	19	-	21
Cangallo	-	-	-	1	7	-	8
Vilcas Huaman	1	-	-	-	9	-	10
Victor Fajardo	2	-	-	-	5	-	7
Huanca Sancos	-	-	2	-	6	-	8
Sucre	2	-	-	-	2	-	4
Lucanas	1	-	-	-	9	-	10
Parinacochas	1	-	-	1	5	1	8
Paucar del Sara Sara	2	-	-	-	4	-	6
Valle Rio Apurimac	1	1	-	-	2	-	4
Total	15	2	2	2	79	2	102

A: Agricultural expert, B: Agricultural extension expert, C: Agriculture and pasture expert, D: Veterinarian, E: Agriculture technician, F: Agriculture/pasture technician

Note: Valle Rio Apurimac is a project office, others are branch offices in each province

Source: DRA (Officials' name list in 2009)

4.5.5 Issues and Inhibition Points for Development

The issues related to the reforestation and environmental conservation sector are divided into 1) issues based on natural conditions and 2) issues related to implementation of projects.

(1) Issues related to Natural Conditions

The natural conditions such as weather, land productivity, soil, and topography, are very severe. The weakness of poor peasants is hard, since the agriculture/pasture fields are easy to have soil erosion damage by low temperature. These are serious issues for them. The forest area is less basically, but they have been decreased over clearance. And the shortage of logs/firewood can occur easily, then, the decreasing of sub-income and shortage of firewood (commodity essential to life) are introduced. Therefore, the poor peasants might harvest logs much, which leads to clearance/decline of the forests. It cannot be denied there is such bad spiral. The mitigation of weakness of poor peasants is pointed out as the most important point of issues for reforestation and environmental conservation sector, followed by increasing of production of logs/firewood.

(2) Issues related to Implementation of Projects

Since now, the reforestation activities have been carried out for formulation of productive forests, soil conservation, environmental conservation, recover of loss of forests by DRA and PRONAMACHCS (now AgroRural). The issues of the implementation of the projects are as follows, and consequently it is difficult to execute the systematic and effective reforestation:

a) The present condition of forest, achievements of reforestation are not precisely grasped,
b) The necessary areas for reforestation are not determined,
c) The alive ratio of planted seedlings, survival ratio of planted trees are not monitored, and
d) The projects have been implemented by each organization, and the information is not shared. Besides, the achievements of reforestation are not recorded.

The lack of the regional reforestation master plan can be recognized as the main cause for these issues. And the reforestation works proceed by the process described in Clause 4.5.4. They are implemented by the communes without supervising by any experts, so that the activities are not controlled. Meanwhile, the forest products need longer time period for production compared to agricultural products, and the intention for reforestation of farmers are not high. There are issues of shortage of; number of officials, capacity for techniques/planning/management for the project implementation. And they cause the difficult situation of solving the issues correlatively with less expansion of necessity/techniques of reforestation.

Table 4.5.13 is the outline of the relation between the issues and the inhibition points of developments related to the reforestation and environmental conservation sector.

Table 4.5.13 Relation between Issues and Inhibition Points of Development Related to Reforestation and Environmental Conservation Sector

Classification	Issues	Inhibition Points of Development (caused phenomenon)
Issues related to natural conditions	Soil erosion on fields	Increasing of soil erosion - Degradation of productivity - Degradation/loss of production base ⇨ Decreasing of production (agri./pasture)
	Degradation of water penetration of f	Dry of soil - Degradation of productivity ⇨ Decreasing of production (agri./pasture)
	Low temp. damage	Low temp. damage - Degradation of productivity ⇨ Decreasing of production (agri./pasture)
	Decline/degradation of forests	Decline of forest resources - Decline of logs - Decline of firewood ⇨ Decreasing of income, Decreasing of commodity Increasing of soil erosion - Degradation of water penetration - Increasing of soil flow ⇨ Decreasing of agri. production (decreasing of water resource), Decreasing of agri. production (bad influence on irrigation) Warming gas emmision ⇨ Degradation of global environment Decreasing of habitat of wildlife ⇨ Bad influence to ecologic system
Issues related to implementation of forestation projects	Lack of regional master plan, lack of cordination between National/Regional level organization	Not enough data of; - present forests condition - decreasing amount of forests - necessary forestation area Not well planned forestation No comparison between plan-achievements
	Shortage of management of forestation works	Not enough data of forestation achievements and results
	Shortage of number/capacity of offcials, low motivation of farmers	Hard for implementation of forestation
		⇨ Difficult for effective/well-planned forestation

Source: JICA Study Team

4.6 Agro-processing

4.6.1 Policy, Regulation and Plan (Central and Regional)

The decision making of policy, plan and regulation of the Agro industrial Sector is in a competent of the Ministry of Production, among their objectives are as follows;

Respecting environmental aspect, the government will take effort to create the Peruvian companies toward the internationally competitive companies. As the specific objectives, through the strategy of efficient use of natural resources, the government will promote the industrial sector to convert the international competitive companies that can produce in accordance with the international norms and regulation.

As a norm and incentive to promote the agro industry, the Law No. 27360 approves the Norms of Promotion of the agrarian sector. Regarding to the income tax, the government established the application of 15% on the income tax to: (i) natural or juridical people who develop cultivations and/or breeding, except for the forest industry; and, (ii) natural or juridical people who carry out agro industrial activity, whenever they use mainly agricultural products or acquired from the numeral (i) precedent. The referred norm also mentioned the recoup of the General Tax to the Sales (*IGV*) that paid in the reproductive stage (maximum 5 years) of its investments, companies will be able to recover IGV paid by the acquisitions of capital goods, inputs, services and construction contracts in advance. This Law No. 27360 is effective up to December 31 2021. At the regional level, special incentives or matters do not exist.

4.6.2 Present Situation of Agro Processing in Ayacucho Region

The contribution of the industrial sector in the Economic Structure of the Region is insignificant, being less than 1% (Regional GDP is of S./ 1.46 thousand million and Industrial GDP is of S./ 12 million). The active industries are the home manufacturing companies of transformation of foods and of milk, operating as pilot industries. It is necessary to highlight that most of companies are of handmade level. The registered types of agro industries in General Direction of Environment & Health (*DIGESA*) in the Region are indicated in the following table;

Table 4.6.1 Type and Number of Companies Registered in DIGESA

Industrial Type	Number of Industry
Liquor	3
Mills	8
Flour Millers	122
Marmalades	87
Coffee, Chocolate	5
Conserves	5
Cereals	104
Potatoes Processed (Pap, Parboiled)	10
Daily Products	24
Total	368

Source : http://www.digesa.sld.pe/
Note Preparation of JICA Study Team

It is necessary to highlight that different types of transformation of the Andean Products exist, such as of Bruise, Kiwicha, Honey, raw material of Tara, Marmalades, etc. The tara is used as raw material to prevails for the production of tints and weather-beaten of leathers.

4.6.3 Daily Industry and Slaughterhouse

The daily industry absorbs 95% of the milk Production. However, this industry is in a handmade level, producing the Cheese (*Type Cachipa*) at production site.

Table 4.6.2 Commercialized Cheese Volume in the Provinces of Huamanga (kg/week)

	Cachipa Cheese	Sincha Cheese	Andes Cheese
Condorcocha	2,600	560	49
Manallasacc	1,200	310	70
Allpachaca	-	-	280
Cusibamba	600	1,000	70
Sachabamba	800	1,000	256
Satica	2,000	1,000	70
Pampa Cangallo	1,800	180	-
Chanquil	600	100	
Chiara	400	60	
Feria Putacca	3,000	300	
Total	13,000	4,510	1,025
Conversion to milk (lit/week)	16,200	12,875	9,255

Source : Análisis de la Cadena Productiva de Leche y Queso en Huamanga y Cangallo, DRA Ayacucho

Major parts of producers are in a house industry without containing sanitary control of the products. In the following table shows the commercialized cheese volume according to the data of Regional Agrarian Direction (*DRA*);

The Daily Products, in their great majority, are processed in the patio of the producer, dedicating it to their self-consumption. A part

of the production sometimes is commercialized in the local market. The companies of lacto are few. The managerial units registered in DIGESA are: 10 companies of Cheese dairy and 14 companies of Yogurt. The meat processing is conducted at the authorized meat processing slaughterhouses or no authorized ones. The registered slaughterhouse is the following ones;

Table 4.6.3 List of Registered Slaughterhouses

Slaughterhouse	Province	District
Pausa Municipality	Paucar del Sara Sara	Pausa
Lucanas Municipality	Lucanas	Lucanas
Querobamba Municipality	Sucre	Querobamba
Playa de beneficio Acocro	Huamanga	Acococro
Playa de beneficio Occollo	Huamanga	Vinchos
Camal de Equinos PERUAGRO SAC	Huamanga	Carmen Alto
Huamanga Municipality	Huamanga	S.J.Bautista
Huanta Munincipal Slaughterhouse	Huanta	Huanta
Lucanas-Puquio Munincipal Slaughterhouse	Lucanas	Puquio
"Don Victor" Private slautherhouse	Parinacochas	Cora Cora
Los Libertadores CAFRILL S.R.L. Frigorific slautherhouse	Huamanga	Ayacucho

Source: JICA Study Team

4.6.4 Cereals and Wood Processing

In the Study area, there are moderate quantities of Agro industrial products of flours of cereals, of maize and of wheat for cakes, flakes, cookies, etc. As wooden processing, tanning using Tara is executed mainly at Huanta Province.

4.6.5 Problems and Constraints for Development

In the Study area, the development of the agro-processing is in a precarious stage, only existing some small ones and micro companies. The reasons of underdevelopment in the agro processing sector are as follows:

Table 4.6.4 Problems and Constraints for Development on Agro-Processing

Item	Problems		Constraints
Institution and Plan	・ It is necessary to promote the agro-processing considering the market of surplus agricultural products in the region, but relevant entities don't know how to establish the agro-processing factory ・ Investment system to promotion of private agro-processing is insufficient ・ There is no appropriate environment that private sector invests. ・ Relevant entities don't know how to make new investment. ・ It is necessary to promote the agro-processing to cope with production expansion in the future, but promotion system is not established.	⇒	・ New market could not be developed. ・ Local resources are not effectively used.
Processing	・ Potential of local resources is not effectively used. ・ Wool and fur of alpaca are important resources for the region, post –shearing is not good. ・ Sanitary level for enabling food processing is low.	⇒	・ New market could not be developed.

Source : JICA Study Team

It is deemed that the agro-processing in the region could not be developed due to complicated involvement of problems and constraints mentioned above. However, the recent growth of agricultural production centering on potato is large, and also production of livestock is increasing gradually, so that it is essential to promote the agro-processing industry from viewpoint of expansion of market.

4.7 Distribution and Marketing

4.7.1 Policy, Regulation and Plan (Central , Regional and Local)

(1) Central Government Level

The Peruvian Government, through the Sartorial Strategy "Plan Multianual of Agriculture 2007-2011", points out the Strategy of marketing sector as follows;

Table 4.7.11 Established Strategy in the Distribution and Marketing Sector in the Multi-annual Sartorial Strategy 2007-2011

Political Guideline	Strategy
To strengthen the productive and management capacities of the agrarian producers.	· To design and to execute qualification programs and technical assistance for the incorporation of the small farmers to the internal and external markets · To design mechanisms of co-financing of business plans between the private and public sector
To promote development of capacities of storing of producers and modernization of the infrastructure for distribution of foods ·	· To promote the qualification in handling post harvesting and commercialization. wholesale markets · To promote the development and modernization of storing centers, storage centers and markets.
To develop instruments and mechanisms to improve the competitiveness of producers in the mark of commercial agreements.	· To promote programs directed to the improvement of the Competitiveness of the organized producers, in the mark of the commercial agreements.· · To promote the farmers association for the improvement of productivity and diversification of the exportable offer.
To develop instruments of commercial internal and external promotion	· Participation of the agrarian products in fairs and national and international missions.· · To consolidate the access of products by means of the processes of commercial negotiation· · To develop prospecting of markets.
To defend the interests of the national producers in the international negotiations of commercial exchange of products of the agriculture.	· To use the mechanisms settled down in the multilateral agreements to neutralize the measures of disloyal competition applied in the international trade.
To promote the value added in the agrarian products related with the regional potentialities.	· To promote programs and agro industrial projects decentralized for the development of a competitive offer of· products of quality.
To promote the hygiene and quality of the agrarian and agro-processing production	· To implement programs and projects of Good Practices agricultural, cattle, of factory and traceability.· · To implement standard of quality through norms and technical regulations.
To strengthen the sanitary services for the products dedicated to the internal and external market.	· Subscription of protocols of sanity to allow the access from the agricultural products to external markets.· · To develop programs and control projects and eradication of plagues and illnesses.· · To strengthen the quarantine systems, surveillance and capacity diagnoses in plagues and illnesses.
To promote the productive re-conversion of the agriculture, guiding it to the cropping with market potential	· To promote projects of technical attendance and infrastructure for the installation of cultivations and alternative, profitable and sustainable upbringings

Source: Plan Estratégico Sartorial Multianual de Agricultura 2007-2011

(2) Regional Governments Level

The Regional Government's plans, in accordance with the Central Government policy, plans to strengthen agricultural sector, giving priority to the competitive products in the market, especially in the focus on strengthening to the vicuñas breeding, based on their potentials in the international market. In the sector of institutional capacity buildings, plan to strengthen DIRECETUR to reinforce their management in the exports, particularly in the

cultivations of Tara and Avocado, also of the Falk craft that is considered as a niche of the international market.

(3) Local Governments Level

In the Provincials Governments and Districts, there are several plans formulated. The specific measures at district levels are to promote the colza production for Biodiesel, and improve the production and distribution of Alpaca and Guinea pigs (*Cuy*). In addition, there are modernization plan of the municipal slaughterhouse to improve the quality of the meats marketed in the Ayacucho Region.

4.7.2 Distribution Route

The distribution route in the Study area is divided in two main completely separate systems, because of the inexistence of road connects the two flows. One, this formed by the distribution flow in the north part of the Region that concentrated to the Ayacucho City and the other one, this formed by the distribution flow in the south part of the Region. Besides these two main flows, a third distribution flow that connects to the Ayacucho City with the other two flows exists. The main characteristics of these three flows are the following ones;

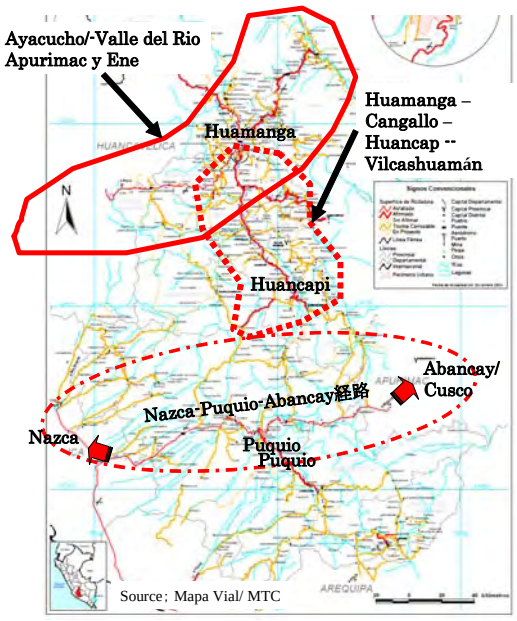


Figure 4.7.1 Distribution Route

(1) Pisco-Ayacucho/-Valle of Rió Apurímac and Ene

This system is an important route for the Region connecting the Huamanga Provinces to the Metropolis Lima via Ica. Most of the production of the Region uses this distribution flow, especially for agricultural production of Huanta Province, Huamanga Province, Victor Fajardo Province, La Mar Province and Cangallo Province.

(2) Huamanga-Cangallo-Huancapi- - Vilcas Huaman

This route is used to transport the products of the provinces of Huamanga, Cangallo and Huancapi. However, the road connected the production areas are not asphalted, causing bad conditions of transport.

(3) Nazca-Puquio-Abancay

This route is a part of routes between the City of Nazca and Cusco. In the Region, the provinces of Lucanas, Parinacochas and Paucar del Sara Sara uses this route for the transportation.

4.7.3 Present Situation of Agricultural Products Distribution

The distribution of agricultural products of this region is centralized mainly in potato's transport, bovine meat and of sheep. In the year 2007, the total transported volume were 150,000 tons approximately. More than half of the transported volume corresponded to potato.. The participation of the other producers was insignificant. Their products were basically dedicated to the consumption inside the region. The agricultural transported products are shown in the following table.

Table 4.7.2 Present Situation of Main Agriculture and Livestock Products Commercialization (Estimated with the data of 2007)

Distribution System	Main Products and Annual Transported Volume (Estimated values)
Distributed products for out of the region (138, 000 ton)	· Potatoes (Of the 170,000 ton of production, 76,000 ton transported to Lima)· · Bovine cattle (Of the 400,000 cattle in the region, 28,000 ton transported to Lima)· · Sheep (Of the 820 000 sheep of the region, 28,000 ton transported to Lima)· · Cactus Fruit (3,600 tons)· · Coffee and cocoa (Of the 10,000 production, 2,500 tons were transported to Lima)
Products marketed inside the region (Of the Cangallo for the Huamanga)	· Cheese (Product of low quality, marketed in Huamanga like Cachipa)
Products consumed inside the region	· Potatoes (From Acocro / Chiara for Huamanga)· · Milk (Of 20 000 tons; 15 000 tons are marketed)· · Alfalfa (production 245 000 annual tons)· · Cereals (corn, wheat, barley, etc)· · Beef (production and sale of the total of the production regional 6,600 tons)· · Pork (production and sale of the total of the production regional 2 thousand tons)· · Lamb (production and sale of the total of the production regional 1,500 tons)

Source: Calculated by JICA Study Team based on "Garita de Ancón, Garita de Pucusana, y Garita de la Oroya"

The classification of the main transported products can resume as follows;

Table 4.7.3 Commercialization System and Required Facilities

Distribution System	Products	Required Facilities
Bio-transport	Bovine Meats and Lambs	Truck
Products that should arrive at the market after the harvest	Potatoes Cactus Fruits Alfalfa	Collecting facilities and truck
Products that need treatment after the harvest (drying)	Cereals Coffee and Cacao	Truck Drying facilities Collection Facilities
Products that require special Facilities of transport and storage	Milk Daily Products Bovine Meats and Lambs	Refrigerated trucks Cameras of cold Storing centers with sanitary control

Source: JICA Study Team

The main products for order of volume are the following ones;

Table 4.7.4 Volume of Production for District and Volume of Annual Production (2009)

Product	Provinces	District	Harvested Area (ha)	Production Volume (ton)	Distribution Conditions
Potatoes	Huamanga	Acocro	2,653.0	57,214	Out of the region
Other Forage	Huamanga	Chiara	0.0	26,702	In the Region
Potatoes	Huamanga	Chiara	996.0	21,369	Out of the region
Forage Oat	Cangallo	Los Morochucos	1,841.0	19,680	In the Region
Other Forage	Cangallo	Los Morochucos	0.0	17,894	In the Region
Alfalfa	Lucanas	Laramate	0.0	17,578	In the Region
Alfalfa	Lucanas	Llauta	0.0	14,553	In the Region
Alfalfa	Lucanas	Huac-Huas	0.0	13,889	In the Region
Potatoes	Cangallo	Cangallo	929.0	13,198	In the Region
Potatoes	Cangallo	Los Morochucos	952.0	13,130	Out of the region
Alfalfa	Parinacochas	Pullo	0.0	11,016	In the Region

Source: http://sisca.minag.gob.pe/sisca/

In the table, it is observed that the main products marketed outside of the region, corresponding to the agricultural sector, are only the potato and the forage is a commercialized product in the interior of the region or for self-consumption. At district level, Acocro, Chiara, Cangallo, Morochucos, Vinchos, Tambilho and Socos are the

main district marketed their products. The access from these production points is quite precarious and the means of transport is generally of ordinary trucks, trafficking for the earth roads; as consequence, the products arrive at the market deteriorated during the transport. Products that require special facilities of transport as the milky products, still depend on the transport of regular trucks and for deficiency in the transports the products deteriorate or they reach a reduced price. To achieve economic better conditions for the producers, it is necessary to improve the commercialization system. The districts and products with high priority are;

Table 4.7.5 Main Productive Districts

Product	Province	District
Potatoes	Huamanga	Acocro, Chiara, Vincho y Ocros
Bovine Cattle	Huamanga Cangallo Huanca Sancos	Chiara y Vinchos Los Morochucos Sancos
Sheep	Huanca Sancos Victor Fajardo Cangallo	Sancos y Sacsamarca Hualla Chuschi
Coffee	La Mar	Ayna, Sivia, Anco
Cacao	La Mar	Ayna, Sivia, Llochugua
Cereals	Cangallo Huamanga	Los Morochucos Vinchos, Ocros
Milk and derivatives	Huamanga Cangallo	Chiara y Vinchos Los Morochucoa y Chuschi
Cactus Fruits	Huanta	Huanta, Luricocha

Source: JICA Study Team

In the following table, the balance of the supply and demand of the main products produced in Peru and the region Ayacucho are shown. At national level, it is observed that deficit exists in wheat. However the other products are in the overproduction situation, especially the potato that is the main product of the region Ayacucho. At region level, it exists wheat deficit, milk and yucca.

Table 4.7.6 Situation of Supply/Demand of the Main Agricultural Products

Regional Production	Annual Consumption per Capita (kg/year)	Peru (2007)			Ayacucho Region (2007)		
		Estimated Demand (ton)	Production Volume (ton)	Balance (ton)	Estimated Demand (ton)	Production Volume (ton)	Balance (ton)
Yuca	25.0	700,000	1,158,042	458,042	15,300	8,496	(6,804)
Coffee	1.8	50,400	225,992	175,592	1,102	4,435	3,333
Maize	13.0	364,000	1,361,656	997,656	7,956	22,314	14,358
Potatoes	72.0	2,016,000	3,383,020	1,367,020	44,064	169,481	125,417
Leguminous	9.0	252,000	253,282	1,282	5,508	10,783	5,275
Wheat	51.0	1,428,000	181,552	(1,246,448)	31,212	22,338	(8,874)
Cattle Meat	4.0	112,000	163,235	51,235	2,448	17,552	15,104
Milk	47.0	1,316,000	1,579,834	263,834	28,764	24,348	(4,416)

Source: Annual consumption per capita: FAO STAT; production volume: http://sisca.minag.gob.pe/sisca/

From the market point of view, examining the potential market, the potato as a main product in the region, presents an oversupply in the whole Peru and also inside the region. However, the potato is one of the few agricultural products that can assure income source for the producers, being therefore, necessary to improve and to increase the market of this product, mainly to face to the increase of the production coming from the implementation of new irrigation systems and other work of improvements in the future, so much of the cultivated area as of the number of families dedicated to its production.

The other cereals, except for the wheat, also present oversupply for that practically possibility of opening of new

markets doesn't exist inside the region. With relationship to the wheat, in spite of the potential of the internal national market, the low productivity doesn't allow the competitiveness with the imported products. In the current situation, the potential of expansion of markets is low and the production should be directed to the internal consumption of the region.

With relationship to the livestock sector, possibility of expansion of the market of milk exists inside the Ayacucho Region. However, an oversupply exists at national level for that, to capture the market milkman in the region, it is necessary to strengthen the competitiveness with relationship to the milk that arrives of other regions. Also, to guarantee the market inside the region it is necessary to improve the sanitary control of the products.

With relationship to new products, at the moment the avocado production and peach is in increase. However, for the transport outside of the districts big volumes of products are required and it will be necessary some years until it can guarantee himself this volume. Diverse programs come promoting the Tara production, fruits and avocado but time is required so that these products come profitable. The cultivation areas are even reduced and problems exist for their transport outside of the region, they still exist problems to promote these products like measure to improve the conditions of life of the region like an everything.

Considering all these factors, to improve the potential of market of products is important to develop another type of markets, (as for processed potato), to improve the system of transport of milk and to develop the internal market of the region, improving the production quality of having derived milky and strengthening the market niches.

4.7.4 Existence of Middlemen and Wholesalers in Distribution Chain

In the distribution system in the region, the paper of the middlemen and wholesalers is important, especially in the products marketed outside of the region. The interventions of the wholesalers and middlemen can be summarized in the following ones:

Potatoes Production Zone (Acocro)	The sale destination is defined before the seedling, being for the middlemen (regional small buyer) and for the wholesaler (marketed Volume; Wholesaler 50%, Middlemen 50%) The Wholesaler buys directly in fields in contract form, financing the purchases of agricultural inputs and it carries to Lima. The wholesaler directly provides agricultural inputs, such as of fertilizers, agrochemical, etc, . the producers, as financing of premature purchase, fixing the prices of products. The middleman negotiates individually in the property and in the market Wholesaler.
Bovine Cattle Production Zone	Small buyer buys cows in the properties and in the ferias. The destinations of sale of the middlemen are the fatting or the slaughter house.
Milk Production Zone	The distribution of milk depends on small middleman. However that volume is alone 5 to 6% of the volume of milking. The Middleman buys in the Center of Storing and sells the final consumer directly, however the biggest buyer is the Social Program of Governments. The middleman of milk is generally members of the community. Exploitation is not observed, they incorporate only the costs of transport. However the cost of transport is expensive, due to the bad conditions of the roads.
Tara & Cactus Fruits	The places of productions increase in several places. Middlemen buy directly in the court of the Producers. However, control of quality of the products doesn't exist.

Due to the bad conditions of roads and to that most of the producers doesn’t count with means of transport, the distribution system depends strongly on the middlemen. The reasons of this dependence before the middlemen and wholesalers are the following ones.

- The bad conditions of the roads and the lack of means of transport. The lack of association of the producers also makes that they don't have means of transport to market in the market Wholesaler and consequently the producers are forced to give their products to the middlemen.
- The system of storing group of the producers doesn't exist

- For potato's production, they require financing to acquire agricultural inputs. For the non capitalized producers, because of the lack of financing system, the wholesalers are taking the paper of financial agents.

In the Study Area, the existence of middlemen in the distribution system has an important paper for the production of small farmers. Middleman's presence makes that the farmer can realize cultivation in favor of informal loan to acquire the agricultural inputs, the existence of wholesalers in the production area is important for the cultivation.

4.7.5 Distribution System of Agriculture and Livestock Products

(1) Transported Volume to Lima Metropolitan

The transported volumes of agricultural products to Metropolitan Lima are the following ones;

Table 4.7.7 Transported Volume of Agricultural Products to Lima from Ayacucho Region (ton/year)

Items/Year	2005	2006	2007	2008
Potatoes	66,473	69,706	76,149	75,793
Cactus Fruits	2,968	3,141	3,511	3,575
Coffee	1,960	4,226	1,888	2,540
Avocado	692	692	692	692
Maize	240	306	282	710
Dry Potatoes	250	260	210	437
Oat	277	157	159	356
Barley	214	38	123	118
Frijol bean	33	30	47	145
Pumpkin	73	38	97	39
Quinua	32	28	18	103
Olluco	70	44	49	18
Wheat	11	43	49	21
Hava Beam	8	2	2	16
Garlic	2	18	9	
Choclo Serrano Maize		10		17
Acachora	8	9	3	0
Soya		4		
Calabaza	0		2	

Source : Garita de Ancón, Garita de Pucusana, y Garita de la Oroya.

Table 4.7.8 Transported Volume to Lima from Ayacucho (ton/year)

Items/Year	2005	2006	2007	2008
Cattle	29,488	28,356	32,147	28,354
Sheep	23,203	23,293	26,358	28,676
Livestock for carriage (horse, mule, etc.)	2,003	1,852	2,267	3,154
Goat	893	1,405	2,098	2,214
Cuy	100	0	260	200
Alpaca	0	0	0	30
Pig	0	7	3	10
Yogurt	20			
Fresh Cheese				2
Wool	14	10		36

Source : Garita de Ancon, Garita de Pucusana, y Garita de la Oroya.

The transported volume of agricultural products from Ayacucho to the Metropolis Lima is the potatoes, in the first place, followed by bovine cattle in foot, Ovens, Tuna and Coffee. Potato's cultivated area in the Region is increasing, however the Lima market is in a saturating situation. In order to increase potatoes market in Lima, it is necessary to improve the competitiveness of potato's production.

(2) Supply and Demands Analyzed from the Consumption per Capita in Main Products

Based on the FAO data, the consumption per capita of the main products in Peru and the balance of offer and demand of the region estimated using production volumes in 2007 are shown in Tables 4.7.9 and 4.7.10.

The balance between production and internal consumption indicates the existence of regional deficit in Yucca, Sugar, Wheat and milk. The Products: Pope, Meat Vaccinates, Corn and the tubers have regional surplus, requiring you to sell outside of the Region.

Table 4.7.9 Consumption per Peruvian Capita (kg/Year)

Item	1990	1995	2000	2003
Yucca	12	16	25	25
Coffee	0	0	0	0
Maize	8	14	13	13
Potatoes	32	65	69	72
Tuberculosis	9	10	9	9
Sugar	31	35	35	36
Wheat	42	56	52	51
Bovine Meat	4	3	4	4
Cheese	0	0	0	0
Milk	42	51	50	47

Source: http://faostat.fao.org/.

(3) Potentiality of Consumption of Main Products

The following table shows the annual consumption per capita of the main products in the neighboring countries:

Table 4.7.10 Balance of Offer and Demands in Ayacucho Region (in base of 2007)

Crops	Production (2007) (t/year)	Consumption per Capita (kg/year)	Regional Consumption (t/year)	Balance (t)
Yucca	8,496	25	15,312	-6,816
Coffee	4,435	0	0	4,435
Maize	22,314	13	7,962	14,352
Potatoes	169,481	72	44,099	125,382
Tuberculosis	10,783	9	5,512	5,271
Sugar		36	22,050	-22,050
Wheat	22,338	51	31,237	-8,899
Bovine Meat	17,552	4	2,450	15,102
Cheese		0	0	0
Milk	24,348	47	28,787	-4,439

Source: Prepared by JICA Study Team based on http://sisca.minag.gob.pe/sisca/

Table 4.7.11 Consumption per capita of Mains Products (kg/Year)

Countries	Coffee	Maize	Potato	Sugar	Wheat	Beef	Cheese	Milk
Argentina	0.0	10.0	43.0	34.0	128.0	54.0	8.0	164.0
Brazil	1.0	26.0	15.0	54.0	53.0	33.0	0.0	117.0
Chile	0.0	16.0	51.0	44.0	113.0	21.0	3.0	111.0
Colombia	2.0	38.0	46.0	29.0	26.0	15.0	1.0	106.0
Ecuador	5.0	12.0	24.0	36.0	33.0	15.0	0.0	99.0
Neighboring countries	1.6	20.4	35.8	39.4	70.6	27.6	2.4	119.4
Peru	0.0	13.0	72.0	36.0	51.0	4.0	0.0	47.0
USA	4.0	13.0	63.0	31.0	83.0	41.0	15.0	261.0

Source: http://faostat.fao.org/.

Table 4.7.11 indicates that Potato's Peruvian consumption is superior to the other countries and other cattle products such as of bovine meat and of milk are under the average of neighboring countries. It is considered that the consumption of these products will be increased in proportion to the economic growth of the country similarly to the 5 neighboring countries. In the following Table, the balance of the Foods of Ayacucho is indicated in the supposition that the consumption per Peruvian reaches the values average of the 5 neighboring countries.

Table 4.7.12 Balance of Foods in Assumption of Consumption per Peruvian Capita at Level Average of 5 Neighboring Countries

Item	Production in 2007 (ton/year)	Consumption per Capita (kg/year)	Region Consumption (ton/year)	Balance (ton)
Yucca	8,496	25.0	15,312	-6,816
Coffee	4,435	1.6	980	3,455
Maize	22,314	20.4	12,495	9,819
Potatoes	169,481	35.8	21,927	147,554
Tuberculosis	10,783	9.0	5,512	5,271
Sugar	0	31.0	18,987	-18,987
Wheat	22,338	70.6	43,242	-20,904
Bovine Meat	17,552	27.6	16,905	647
Cheese	0	2.4	1,470	-1,470
Milk	24,348	119.4	73,131	-48,783

Source : http://sisca.minag.gob.pe/sisca/

With assumption that the consumption of foods reaches the average of the neighboring countries, in the Region, their main cultivations: potato, coffee, maize and tubers, will be in excess, being required their market outside of the Region. It is considered that milk, wheat and sugar will be in deficit. Table 4.7.13 shows the difference between the balance of current situation and the assumption with the neighboring countries consumption.

Table 4.7.13 Comparison between Current Situation and Supposition of Consumption per Capita with Average of Neighboring Countries

Item	Balance of Present Situation (ton)	Balance with Average of Neighboring Country (ton)
Yucca	-6,816	-6,816
Coffee	4,435	3,455
Maize	14,352	9,819
Potatoes	125,382	147,554
Tuberculosis	5,271	5,271
Sugar	-22,050	-18,987
Wheat	-8,899	-20,904
Bovine Meat	15,102	647
Cheese	0	-1,470
Milk	-4,439	-48,783

Note : Negative figure shows the high potential of consumption in the region in the future.

Source: http://faosrar.fao.org/

The deficit products are Yucca, Sugar, wheat and milk. These products will have further deficit tendency, indicating the possibility of expansion of these cultivations. Analyzing the potential internal market of the Region, it is considered that expansion potential exists in the wheat crop, cattle products, milk and milky products. On the other hand, the products such as of potatoes and maize have saturated market in Ayacucho Region, so that it is indispensable to establish the new market including agro-processing industry.

4.7.6 Distribution System of Main Products

The channel of distribution of the main products is as follows;

(1) Potato

(a) Production of National Level

The following table shows the transfer of potato production in 23 regions of Peru. The potato, main crop of the Region, is cultivated in the all the region, excepting the regions of the north coast and of the Amazon region. The Ayacucho Region is located in the 10 place in potato's production in the Country.

Table 4.7.14 Evolutions of potato's production in the 23 Region (ton/year)

Items/Year	1990	1995	2000	2005	2007
Tumbes	--	--	--	--	--
Loreto	--	--	--	--	--
Piura	5,624	6,422	10,290	12,563	15,125
Cajamarca	83,463	140,277	260,614	300,939	293,218
Amazonas	16,507	46,463	56,249	47,543	74,439
Lambayeque	--	1,642	1,530	10,756	7,000
San Martin	--	--	--	--	--
Callao	--	--	--	--	--
Lima	147,305	143,803	119,236	180,634	182,882
Pasco	74,980	130,858	165,812	130,030	81,132
Ancash	77,526	95,892	129,773	118,195	110,263
Huanuco	111,863	191,591	465,625	406,434	447,470
La Libertad	75,331	223,642	318,860	344,070	337,156
Junín	169,922	275,847	420,059	355,381	293,520
Ucayali	--	--	--	--	--
Huancavelica	33,782	138,432	186,715	140,590	76,239
Ica	47,667	65,163	34,641	34,209	72,011
Ayacucho	12,939	70,851	143,770	129,370	169,481
Apurímac	67,712	221,657	241,671	153,826	201,173
Cuzco	94,107	226,298	179,130	237,221	288,272
M. De Dios	--	--	--	--	--
Arequipa	73,624	127,438	119,406	164,284	226,517
Moquegua	8,529	8,607	6,742	8,429	7,588
Puno	41,281	234,158	397,062	503,857	486,310
Tacna	11,817	19,400	17,670	11,370	13,223
Total	1,153,979	2,368,441	3,274,855	3,289,699	3,383,020

Note : letra en rojo corresponde a Departamentos Vecinos

Source : http://sisca.minag.gob.pe/sisca/

(b) Balance of potatoes in the Regional Level

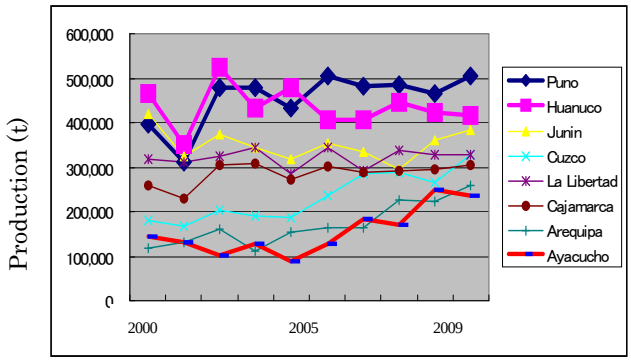
The following Table shows the potato's balance which is estimated using the produced volume, population and consumption per capita of potato;

Table 4.7.15 Balance of Potato, in accordance with production volume, population and consumption per capita

Region	2007 Production	Population	Consumption per Capita	Estimated Consumption	Balance
	(t)	-2007	(kg/year)	(t/year)	(t/year)
Tumbes	0	200,306	72	14,422	-14,422
Loreto	0	891,732	72	64,205	-64,205
Piura	15,125	1,676,315	72	120,695	-105,570
Cajamarca	293,218	1,387,809	72	99,922	193,296
Amazonas	74,439	375,993	72	27,071	47,368
Lambayeque	7,000	1,112,868	72	80,126	-73,126
San Martin	0	728,808	72	52,474	-52,474
Callao		876,877	72	63,135	-63,135
Lima	182,882	8,445,211	72	608,055	-425,173
Pasco	81,132	280,449	72	20,192	60,940
Ancash	110,263	1,063,459	72	76,569	33,694
Huanuco	447,470	762,223	72	54,880	392,590
La Libertad	337,156	1,617,050	72	116,428	220,728
Junín	293,520	1,225,474	72	88,234	205,286
Ucayali	0	432,159	72	31,115	-31,115
Huancavelica	76,239	454,797	72	32,745	43,494
Ica	72,011	711,932	72	51,259	20,752
Ayacucho	169,481	612,489	72	44,099	125,382
Apurímac	201,173	404,190	72	29,102	172,071

Region	2007 Production	Population	Consumption per Capita	Estimated Consumption	Balance
	(t)	-2007	(kg/year)	(t/year)	(t/year)
Cuzco	288,272	1,171,403	72	84,341	203,931
M. De Dios	0	109,555	72	7,888	-7,888
Arequipa	226,517	1,152,303	72	82,966	143,551
Moquegua	7,588	161,533	72	11,630	-4,042
Puno	486,310	1,268,441	72	91,328	394,982
Tacna	13,223	288,781	72	20,792	-7,569
Total	3,383,019	27,412,157		1,973,675	1,409,344

Source : http://sisca.minag.gob.pe/sisca/, Population in 2007



Source : http://sisca.minag.gob.pe/sisca/

Figure 4.7.2 Change of Potatoes Production at Main Region

As shown in the above table, market of potato exists in the Metropolis Lima, in the Regions located in North Costa of the country and in Amazons. The neighbors Regions of Ayacucho Region supply potato and become competitive region each other. It is considered that approximately 60% of potato production are for consumption, 15% for seeds and 25% for loss. The potato production in Peru has been stagnant since 2000. Such tendency is remarkably observed in major potato production Regions. Figure 4.7.2 indicates the change of production for the past 10 years in major potato production region. The potato production in Puno, Huanuco and Junin Regions which are major potato production areas, are stagnant. For the future, production adjustment is required since increase in potato production might bring about the risk of price down.

(c) Ayacucho Region

Potato production n Ayacucho Region is remarkably increasing in recent years. In particular, Huamanga Province, the center of Ayacucho Region, shows the high increase in potato production. The following table shows the change of potato production by province:

Table 4.7.16 Change of Potato Production by Province (ton/year)

Province	1997	2000	2005	2007	2008
Huanta	10,138	15,836	5,981	3,809	10,501
La Mar	13,706	20,716	14,310	11,223	12,605
Huamanga	22,860	32,292	68,916	105,140	143,456
Cangallo	10,002	18,562	17,241	18,332	27,327
Vilcas Huaman	4,043	9,200	5,755	5,847	5,936
Victor Fajardo	4,880	7,288	4,820	4,143	9,394
Huanca Sancos	1,330	2,066	1,407	1,289	2,443
Sucre	5,085	7,581	2,261	3,320	5,081
Lucanas	14,415	21,707	4,837	8,195	16,365
Parinacochas	4,147	4,971	4,543	6,628	12,708
Paucar del Sara Sara	2,548	3,551	1,023	1,667	2,088
Total	93,154	143,770	131,094	169,593	247,904

Source : Agencias Agrarias de la DRA-Ayacucho

Elaboration: Dirección de Información Agraria Ayacucho

Sixty percent of potato production come from t Huamanga Province. In particular, such tendency is remarkable. The exported volume from each province which is estimated using production, quantity consumed of seeds,

consumption volume in the province assumed from population, is tabulated below:

Table 4.7.17 Exported Volume of Potatoes in the Year of 2007 (Estimated)

Province	Population (2007)	Consumption per Capita (kg/capita)	Internal Consumption (t)	Production (t)	Seed	Loss(t)	Consumable Volume (t)	Exported Volume (t)	% of Transported
Huanta	93,360	72	6,722	3,809	571	533	2,704	-4,018	-105%
La Mar	84,177	72	6,061	11,223	1,683	1,571	7,968	1,908	17%
Huamanga	221,390	72	15,940	105,140	15,771	14,720	74,649	58,709	56%
Cangallo	34,902	72	2,513	18,332	2,750	2,566	13,016	10,503	57%
Vilcas Huaman	23,600	72	1,699	5,847	877	819	4,151	2,452	42%
Victor Fajardo	25,412	72	1,830	4,143	621	580	2,942	1,112	27%
Huanca Sancos	10,620	72	765	1,289	193	180	915	151	12%
Sucre	12,595	72	907	3,320	498	465	2,357	1,450	44%
Lucanas	65,414	72	4,710	8,195	1,229	1,147	5,818	1,109	14%
Parinacochas	30,007	72	2,161	6,628	994	928	4,706	2,545	38%
Paucar del Sara Sara	11,012	72	793	1,667	250	233	1,184	391	23%
Total	612,489	72	44,099	169,593	25,439	23,743	120,411	76,312	45%

Note : Seed: 15 % of production, Loss : 14% of production. Consumtion per capita:72kg/year

Source: JICA Study Team

It is deemed that 45% of potato production is transported outside of the Region. This tendency is strongly seen in Huamanga and Cangallo Provinces. In general, potato is cash source for farmers. The good quality of potato is sold at market, and the remaining is for self-consumption. Potato is exported to Lima and Ica from January to July of harvesting time. Potato cultivation area is concentrated in Acocro District, Huamanga Province. According to the 2007 data, Acocro District produces 32% of the potato production of Ayacucho Region and 52.3% of that of Huamanga Province. The following table shows the change of potato production in Acocro District:

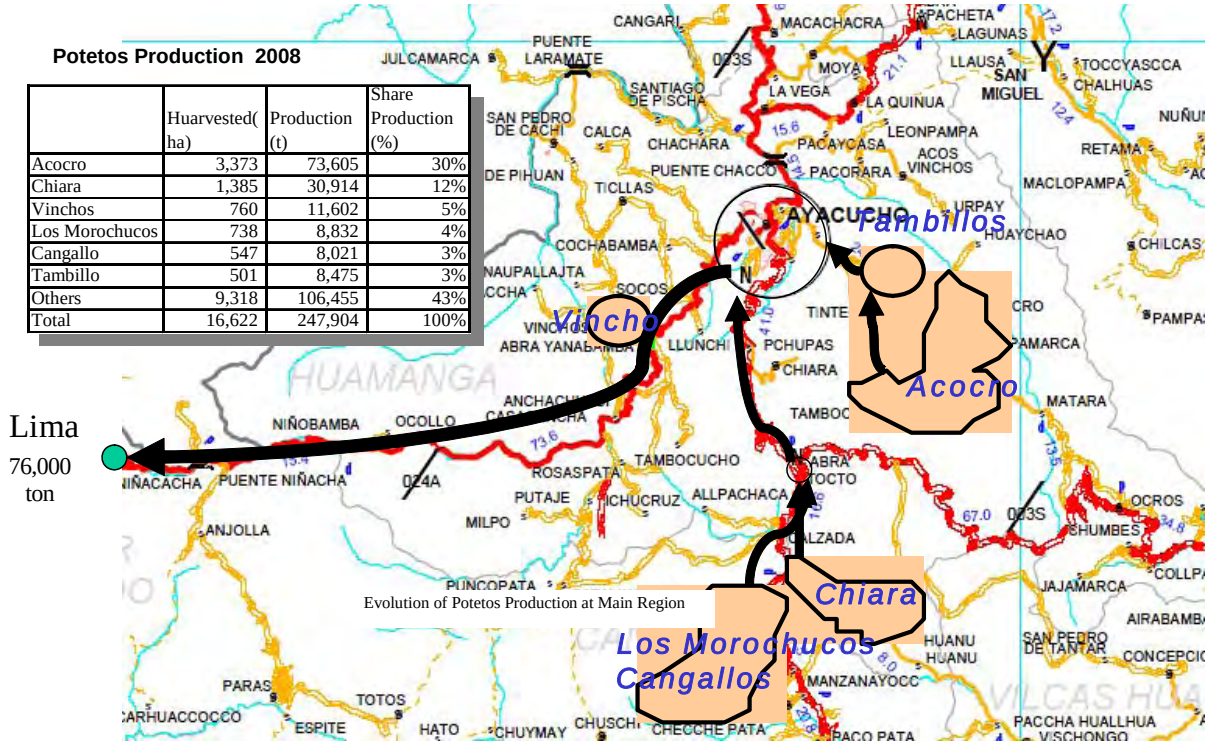
Table 4.7.18 Evolution of Potato's Production in the Acocro District

Province / District	1997	2000	2005	2007
Ayacucho	93,154	143,770	131,094	169,593
Huamanga	22,860	32,292	68,916	105,140
Acocro	19,182	10,873	28,367	54,960
Other Districts	3,678	21,419	40,549	50,180
% de Acocro/ Province	83.9%	33.7%	41.2%	52.3%
% de Acocro/ Region	20.6%	7.6%	21.6%	32.4%

Source : Boletín. Estudio de Rentabilidad LA PAPA, Junio 2008

(d) Distribution Route

The main distribution route is Acocro-Tambillo-Ayacucho - Lima.. The following figure shows the distribution flow of potato.



Source: JICA Study Team

Figure 4.7.3 Commercialization Route of Potatoes (Huamanga)

According to the Report of "Bulletin of the Study of Profitability THE POTATO, June 2008", the distribution routes of potato in Acocro District, are as follows:

Table 4.7.19 Distribution Routes of Potato in Acocro District

Seventy seven percent of production is marketed and the remaining is dedicated for the seed and consumption. Potato's 50% surrenders to the Wholesaler that has strong relationship with the producers. Most of potato is dedicated to the market of Lima. Little volume is dedicated to the market of Ayacucho Region. The distribution roads are much defined, being one for the wholesaler and another for middlemen.

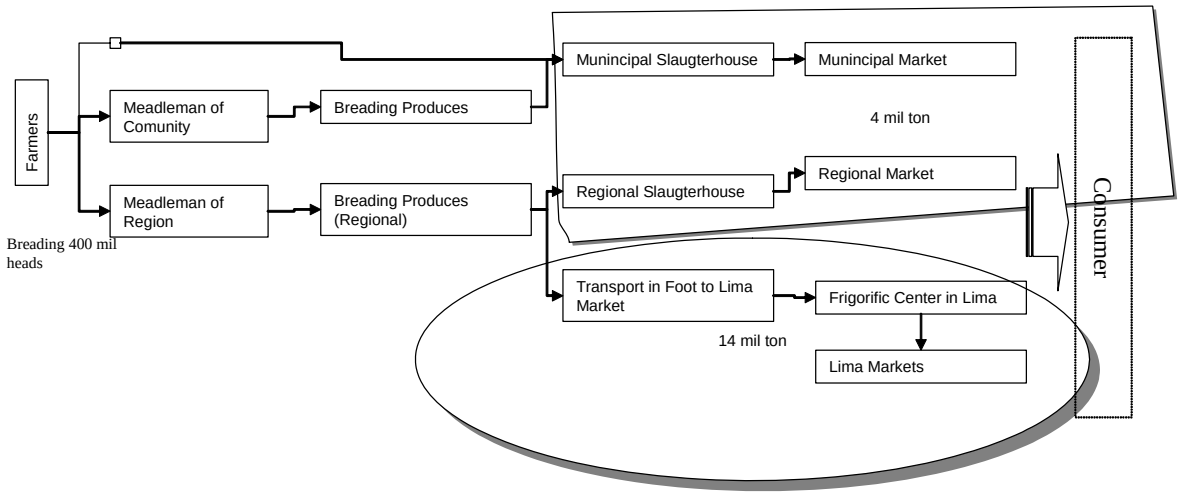
Index	Results
1. Potatoes volume designated to sell (%)	77.3%
2. Purchase Agent of Potatoes (% of lot)	
Middlemen	69.1%
Wholesaler	36.8%
3. Distribution of Potatoes according to Purchase agent (%)	
Middlemen	50.4%
Wholesaler	49.6%
4. Place of delivery of sold Potato (% de Lots)	
Chacra	60.3%
Mercado de Mayorista No 1 (MM1)	33.8%
Other Placer	12.5%

Note :Elaboración; PROSAMER, Estudio de Rentabilidad
Note : 1/ Respuesta múltiple
Source :Encuesta de Rentabilidad de la Papa, campaña agrícola 2006-2007

Source : Boletín del Estudio de Rentabilidad LA PAPA, Junio 2008

(2) Bovine Meat and Sheep

Ayacucho Region, being the supplier's region of cows and sheep to the Market of Lima, transported 2.8 thousand tons of cows and 30 thousand tons of sheep in 2007.



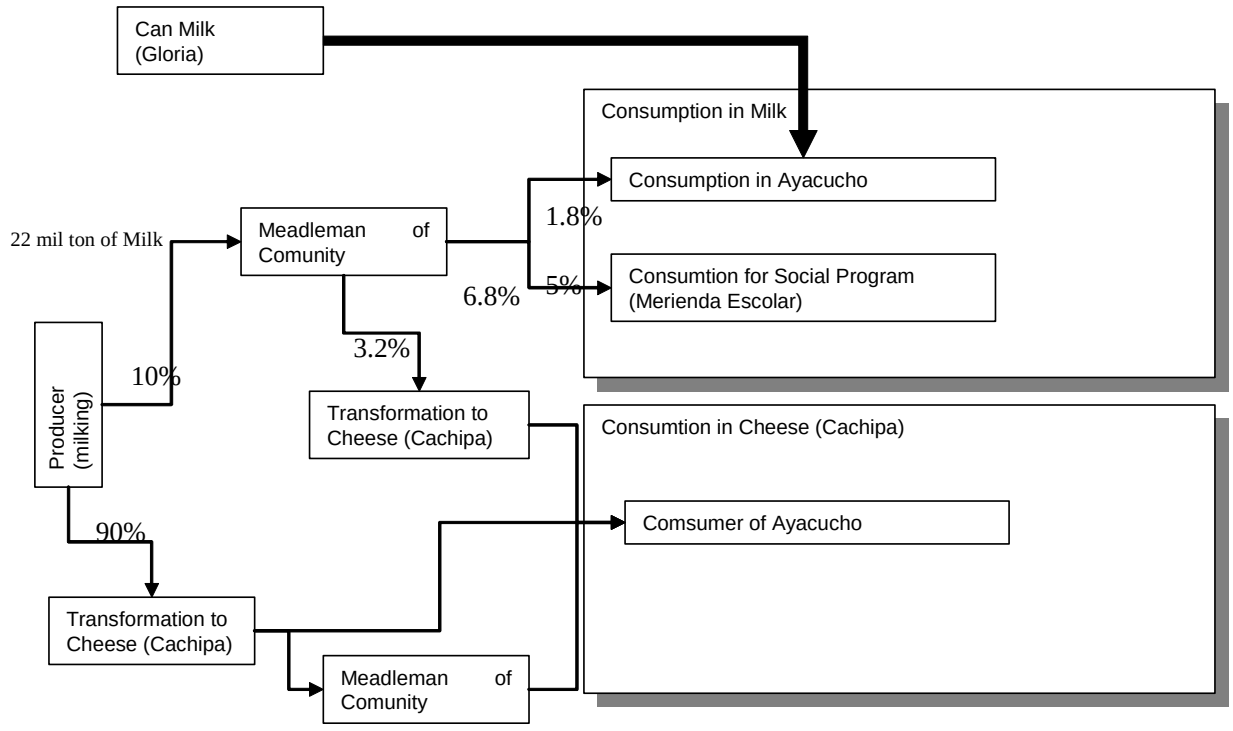
Source: JICA Study Team

Figure 4.7.4 System of Cow Distribution and Sheep

It is assumed that 400 thousand heads of cows are raised, and 4 thousand tons of meat approximately was consumed in Ayacucho Region and 14 thousand tons of meat was consumed at Lima which are estimated based on the 2007 data. If considering the population of Ayacucho Region, say about 600 thousand, the consumption per capita of Ayacucho Region is higher than the average consumption per Peruvian (4 kg/year) capita. The main road of transport is the Route PE 38, Vilcas Huaman-Ayacucho-Lima. The slaughterhouses in Ayacucho Region and communities are with low capacity and in poor sanitary situation. In order to increase in consumption of bovine meet and sheep for the future, it is indispensable to modernize the slaughterhouses facilities.

(3) Milk and Dairy Products

The distribution system of the dairy products and milk in Ayacucho Region is as follows:



Source: JICA Study Team

Figure 4.7.5 Distribution System of Dairy Products and Milk

According to the statistic data in 2007, the production of milk is approximately 22 thousand tons/year. Out of them, the volume marketed as milk is about 2%. And, 5% of milked volume is used for lunch service at school and 93% for production of cheeses (type Cachipa) which is low price. The following table shows the monthly average price of milk at Ayacucho City from April 2004 to April 2009.

Table 4.7.20 Average Monthly Price of Milk from April 2004 to April 2009

Product	Unit	Wholesaler			Consumer		
		Average	Max	Min	Average	Max	Min
Fresh Milk	Lit	1.41	1.90	1.11	1.54	1.77	1.49
Gloria Can Milk 410gr.	Lit	5.07	5.98	4.61	5.38	6.22	4.88

Source : Prepared by JICA Study Team based on the data provided by DRA-Ayacucho

The average wholesale price of fresh milk is S/.1.41 and the consumer price S./1.54 , so that there are no large difference in both. However, the fresh milk of local product has small occupation at market. Generally, the marketed milk is GLORIA milk coming from outside of Ayacucho Region. The price of GLORIA milk is about S/.5.4/lit.

(4) Coffee and Cacao

In Ayacucho Region, the main production area of Cocoa and Coffee is limited to Huanta and La Mar Provinces. The change of cultivated area, production and volume transported to Lima of Coffee and Cocoa are shown below:

Table 4.7.21 Harvested Area, Production and Volume Transported to Lima

Item		2005	2006	2007
Cacao	Harvested Area (ha)	8,144	8,144	8,849
	Production (ton)	5,603	5,834	6,359
	Transported to Lima (ton)			
Coffee	Harvested Area (ha)	6,016	6,074	6,497
	Production (ton)	4,110	4,221	4,435
	Transported to Lima (ton)	1,960	4,226	1,888

Source : http://sisca.minag.gob.pe/sisca/, Garita de Pucusana y Garita de la Oroya

As for the transported volume of Cocoa to Lima, the data are not available. The annual transported volume of Coffee to Lima varies year by year. Coffee to be consumed in Ayacucho Region is firstly transported to Lima and then returned to Ayacucho Region again after processing. However, the consumed volume of coffee is estimated to be approximately of 980 tons/year (610,000 x 1.6 kg/year). The main area of the production is the surrounding area of Apurímac valleys, Huanta Province and La Mar Province. The distribution route is the San Francisco - Ayacucho - LIMA.

The coffee and cacao are considered as international trade products. Brazil is the main producing country. The consumption of coffee and cocoa is expected to be increased for the future. As for coffee, the main region producer (San Pablo's State) in Brazil is diminishing its production by replacing it by sugar cane. Thus, it is expected that coffee supply from Brazil might become stagnant, which would result in expansion of market opportunity for Peruvian coffee. Also, in the case of Cocoa, the same tendency occurs, so that it is expected that the Peruvian products would have a possibility of participating in the international market.

(5) Vegetables

The vegetables in Ayacucho Region are mainly cultivated in Huamanga, Lucanas, Huanta and La Mar Provinces. Especially, the urban area of Huamanga Province produces vegetables. The following table indicates the average cultivation area of vegetables from 1997 to 2008.

Table 4.7.22 Average Cultivation Area of Vegetables from 1997 to 2008 (ha)

Item	Huamanga	Lucanas	Huanta	La Mar	Others	Total
Maize	253	120	148	74	424	1,020
Green Pea	322	116	99	109	217	862
Broad Bean	175	155	91	89	335	844
Onion	83	53	71	69	94	370
Garlic	33	66	26	31	145	301
Carrot	58	36	20	37	23	174
Pumpkin	74	27	20	36	9	166
Total	997	572	476	445	1,246	3,737

Source: Prepared by JICA Study Team based on the data provided by DRA-Ayacucho

Varieties of vegetables cultivated in the Study Area are maize, green pea, broad bean, onion, garlic, carrot and pumpkins which are no difficulty in transportation. The fresh vegetables such as lettuce and cabbage, are produced in the near of the Ayacucho City. These vegetables are insignificant volume and are directly carried in markets of Ayacucho City or local markets by producers themselves without intervention of middlemen. Vegetables cultivation near Ayacucho City are using treated sewage, so that demand of them is less from hygiene aspect. Most of marketed vegetables available at Ayacucho City come from Lima.

(a) Balance of Demand and Supply estimated by Peruvian Average Annual Consumption per Capita

The consumption of produced vegetables and the annual consumption per capita in Peru are the following ones:

Table 4.7.23 National Consumption of Vegetables and Consumption per Capita (2000 - 2006)

Item		2000	2002	2004	2006	Average
Consumption (t/year)	Maize	370,451	399,621	377,904	360,600	
	Green Pea	73,925	80,870	66,462	86,459	
	Broad Bean	67,262	66,121	56,187	57,174	
	Onion	383,495	463,075	515,459	576,666	
	Garlic	47,661	56,376	48,218	72,787	
Population		25,939	26,749	27,547	28,349	
Consumption per Capita (kg/year)	Maize	14.28	14.94	13.72	12.72	13.89
	Green Pea	2.85	3.02	2.41	3.05	2.91
	Broad Bean	2.59	2.47	2.04	2.02	2.25
	Onion	14.78	17.31	18.71	20.34	17.43
	Garlic	1.84	2.11	1.75	2.57	2.09

Source: Prepared by JICA Study Team based on the data provided by DRA-Ayacucho

Balance of supply and demand of above vegetables at the Region level is assumed as follows::

Table 4.7.24 Balance of Production and Consumption of Vegetables (2007 base)

Item	Consumption per Capita (kg/Year)	Production (t/year)	Consumption (t/year)	Balance (t/year)
Maize	13.89	22,314	8,509	13,805
Green Pea	2.91	2,661	1,785	876
Broad Bean	2.25	2,447	1,380	1,067
Onion	17.43	2,514	10,676	-8,162
Garlic	2.09	1,914	1,280	634

Source: Prepared by JICA Study Team based on the data provided by DRA-Ayacucho

As can be seen in the above table, onion is in shortage condition, but others are in surplus condition. Garlic is one of exported products in Peru. If garlic has enough competitive in price, it could have a possibility as strategic product for export.

(b) Possibility of Expansion of Garlic Cultivation

Garlic is one of the important products for export and also is one of the crops of which the cultivation area is

expanded in the recent years. The cultivated area at national level is around 6 to 8 thousand ha. Main production area is located in Arequipa Region. However, the harvested areas are in a tendency of decreasing from 2007. The harvested area was decreased around 2 thousand ha in two years of 2007 to 2009. This deceased tendency is conspicuous in Arequipa Region.

Table 4.7.25 Change of Cultivation Area of Garlic (ha)

Region/Year	1990	1995	2000	2005	2006	2007	2008	2009
Arequipa	892	1,545	2,184	3,090	3,846	4,501	3,471	2,890
Cajamarca	596	747	1,872	1,117	1,235	1,200	1,053	933
Lima	361	1,196	1,131	897	1,247	627	614	719
La Libertad	8	357	678	268	496	539	458	360
Ayacucho	87	169	340	157	343	426	388	272
Junin	39	46	180	260	208	214	206	222
Other Regions	486	543	1,076	662	507	468	522	468
Total	2,469	4,603	7,461	6,451	7,882	7,975	6,712	5,864

Source: MINAG SICA

Change of cultivation area of garlic in Ayacucho Region is as follows:

Table 4.7.26 Change of Garlic Production (ton/year)

Province	2000	2002	2004	2006	2007	2008
Huanta	194	94	128	36	50	16
La Mar	280	116	93	127	113	120
Huamanga	154	33	0	251	355	226
Cangallo	268	666	126	601	523	515
Vilcas Huaman	38	19	0	0	4	4
Victor Fajardo	176	103	64	238	378	321
Huanca Sancos	0	0	0	0	0	0
Sucre	4	93	0	8	0	0
Lucanas	432	315	227	269	476	782
Parinacochas	219	73	4	0	0	0
Paucar del Sara Sara	5	0	0	0	0	0
Total	1,770	1,512	642	1,530	1,899	1,984

Source: Prepared by JICA Study Team based on the data provided by DRA-Ayacucho

The consumption of garlic per capita in the neighboring countries is as follows:

Table 4.7.27 Consumption of Garlic in Neighboring Countries

Country	Population (2003)	Consumption (t/year)	Consumption per Capita (kg/year)
Argentina	38,428	48,605	1.26
Brazil	178,470	196,164	1.10
Colombia	44,222	24,917	0.56
Ecuador	13,003	6,495	0.50
Peru	27,167	56,782	2.09
United States of America	294,043	293,293	1.00

Note : Consumption is average consumption in year 2000 - 2006

Source : http://faostat.fao.org/

Consumption per capita of garlic in Peru is bigger than the neighboring countries, so that there is doubtful whether consumption of garlic will be increased for the future. To expand the production of garlic, it is necessary to expand the export competing with the other countries of exporters of garlic. Table 4.7.28 presents the main countries importers and exporters of garlic. As for neighboring countries mentioned in this table, the import country is Brazil and Argentina is the export country. For Peru, it is, therefore, necessary to compete with Argentina on price.

(c) Possibility to Expand the Production from Viewpoint of Export

The products which exports have grown in recent years are: coffee, chili, mango, grapes and avocados. Table 4.7.29 presents the major exported agricultural products

Table 4.7.28 Change of Import and Export Volume of Garlic by Major 5 Countries (ton/year)

Import Countries	2000	2002	2004	2006
Indonesia	174,035	226,085	243,721	296,476
Brazil	88,897	79,334	101,164	120,565
Malaysia	55,056	89,435	113,743	114,494
Viet. Nam	16,300	67,371	81,370	87,619
USA	28,709	48,159	56,100	79,847
Export Countries	**2000**	**2002**	**2004**	**2006**
China	383,859	1,049,395	1,127,833	1,224,243
Argentina	80,081	62,380	100,637	100,047
Spain	65,070	56,749	65,993	50,608
Malaysia	10,711	21,516	50,415	32,363
Netherlands	14,512	9,467	8,945	13,797

Source : http://faostat.fao.org/

Table 4.7.29 Change of Export of Agricultural Products (ton/year)

Agricultural Products/Year	1990	1995	2000	2005	2006	Possibility of Production in Ayacucho Region
Coffee	98,160	278,430	223,831	306,075	513,842	◎
Asparagus	5,070	23,860	53,798	160,015	186,821	
Chile	14	55	5,903	95,307	73,408	◎
Mangos, Mangosteen, Guava	2,210	6,930	23,305	38,396	59,317	
Grape	1,310	1,240	5,981	35,152	48,089	○
Sugar	36,540	30,230	14,909	13,113	43,463	◎
Avocado	430	0	2,480	23,367	38,802	◎
Frozen Leguminous	4,036	2,667	14,251	27,381	34,317	◎
Beans	970	11,920	6,791	14,663	28,329	○
Plantains	15	100	264	17,590	26,557	
Olives	412	221	9,684	20,248	25,932	○
Cocoa	7,741	7,429	8,915	23,810	22,932	
Tangerine	280	210	1,009	17,920	22,593	◎
Onion	10	1,290	6,461	17,336	16,264	◎
Dry Nut of Brazil			3,413	18,193	12,106	
Juice of Fruits	4,592	2,120	4,238	5,447	11,559	

Source: Prepared by JICA Study Team based on FAO STAT website http://faostat.fao.org/

Note:◎ : High possibility, ○: Medium possibility

The products that fit to the characteristic of the region are the following ones;

- Selva (low elevation area): Cacao
- Selva (medium): Coffee
- Sierra (medium): Avocado and Orange
- Sierra (medium/high): Products for Sugar, Onion

(d) Possibility to Expand from the Agro-energy Products

As a measure for the global climate change and for the step out from the fossil fuel, USA and lot of countries try to use the vegetable source fuel. Peru also has been gradually planning the ethanol mixture to gasoline since 2010. In the plan, the discussion is made for executing E7.8% (mix with gasoline the ethanol 7.8%) between 2010 and 2011. The annual consumption of gasoline in Peru is 1.12 million kilo liter, equivalent to 40 l/capita. If ethanol is mixed with gasoline at rate of 7.8%, 87,000 lit of ethanol is demanded. This demand is a little.

However, If taking it into consideration that the consumption of gasoline per capita of year 2005 is very small compared with neighboring countries, the potential to the fuel demand is judged to be height. The following table shows the consumption of gasoline by 3 main gasoline consumption countries and 5 neighboring countries.

Table 4.7.30 Consumption of Gasoline by 3 Main Gasoline Consumption Countries and 5 Neighboring Countries.

Country	Annual Consumption (thousand kilo liter)	10%equivalent (thousand kilo liter)	Population (thousand)	Per Capita(ℓ/Year)
World	1,228,024	122,802.4	6,512,279	189
USA	531,514	53,151.4	302,741	1,756
China	65,808	6,580.8	1,319,624	50
Japan	60,631	6,063.1	127,449	476
Argentine	4,089	408.9	38,732	106
Brazil	17,866	1,786.6	186,075	96
Chile	3,064	306.4	16,297	188
Colombia	5,407	540.7	43,049	126
Ecuador	2,254	225.4	13,063	173
Average of 5 neighboring countries				138
Peru	1,116	111.6	27,836	40

Source: International Energy Annual 2006

As shown in this table, a Peruvian consumption of gasoline is in a low level compared with five neighboring countries. It is anticipated that the consumption will be increased by the average one. At the world level, USA has huge demand of ethanol (53 million kilo litter/year), and China and India follow in a similar demand. It is expected that the demand for ethanol raw material will be increased. It could be judged that the beet cultivation introduction is one of potentials because there remains possibility by the beet cultivation in the Peruvian mountains region.

4.7.7 Market and Price of Agriculture and Livestock Products

The produced Products and consumed in Ayacucho Region can be classified into 5 types such as products of internal consumption including of self consumption, marketed products in the Region, Marketed products outside of the Region, products of other Regions and exported products. Generally, vegetables and consumed fruits are less produced in the Region, therefore come from other Regions. Vegetables produced in the Region are green peas, broad beans, pumpkin, garlic and onion, which are resistant to the severe conditions of transport. Also, the leaf vegetables come from outside of the Region. Cereals and leguminous are dedicated for the processing inside the Region (Huamanga Province) and mainly a part for flours. The tubers such as potatoes and olluco are demanded mostly outside of the Region, especially in Lima. According to information of the area potato producer, Acocro District, 77.3% of products is dedicated to markets, and the difference is used for seeds and consumption by family. Meats are transported to Lima, and meats consumed in Ayacucho Region are processed at existing unauthorized slaughterhouses. The produced milk is mostly dedicated for the agro-processing of traditional (type Cachipa) cheeses, and the consumed milk of Ayacucho Region comes from Lima. Wool which is mainly for export, is treated outside Ayacucho Region. As special products, Tara, tuna and cochineal are produced for export purpose. The following table shows the classification of marketed products:

Table 4.7.31 Classification of Products Marketed

	Internal Consumption		Internal Commercialized		External Commercialized		Products from other Region	Export
	Consumption	For Agro industry	Consumption	For Agro industry	Consumption	For Agro -processing		
Fresh Vegetable (in nature)	○						◎	
Resistible Vegetable	△		○		◎			
Fruits (in nature)							◎	
Cereals / leguminous (in nature)	◎		○	△				
Processed Cereals	△		○				◎	
Tuberculosis (in nature)	△		○		◎			
Meat (in nature)	△		○		◎			
Caw	◎							
Poultry							◎	
Milk (in nature)	△	◎					○	
Daily Products (Cheese)	△		○				◎	
Dairy Products (Yogurt)			○				◎	
Fiber (in natural)						◎		
Tejidos								◎
Niche Products (Tara)								◎
Niche Product (Cochinilla)								◎

Note : ◎: Main market, ○: Second market, △ : Small market

Source : JICA Study Team

The distribution of products is carried out by traders and sometimes directly by the producers in the fairs and markets. The demanded main products in Ayacucho Region are marketed in market of Huamanga Province. The permanent and temporary markets are indicated in the following table

Table 4.7.32 Number of Permanent and Temporary Markets

Provinces	Permanents	Temporary	Total
Huanta	3	20	23
La Mar	2	25	27
Huamanga	10	54	64
Cangallo		22	22
Vilcas Huaman		15	15
Victor Fajardo		31	31
Huanca Sancos		10	10
Sucre	1	11	12
Lucanas	2	21	23
Parinacochas	1	14	15
Paucar del Sara Sara	1	8	9
Total	20	224	251

Source : JICA Study Team

The markets concentrate on Huamanga Province. The main markets are shown in the following table;

Table 4.7.33 List of Main Markets

Province / district	Permanents
Huanta / Huanta (40,198 personas)	Mercado Mercado Central Mercado De Productor
La Mar / San Miguel (18,775 personas)	Mercado Central Mercado Ambulante
Huamanga / Ayacucho (100,935 personas)	Mercado 12 De Abril Mercado Andres F. Vivanco

Province / district	Permanents
	Mercado Magdalena Mercado Mariscal Caceres Mercado Nery Garcia Mercado Playa Grau Mercado Santa Clara Mercado Carmen Alto Mercado Jesus Nazareno Mercado San Juan Bautista Mercado Mayorista Las Amétricas
Sucre / Querobamba (2,645 personas)	Mercado Municipal
Lucanas / Puquio (13,870 personas)	Mercado Municipal
Parinacochas / Coracora (14,769 personas)	Mercado Municipal
Paucar Del Sara Sara / Pausa (3,050 personas)	Mercado Municipal

Source : JICA Study Team

These markets function the smallest sale and direct sale. The function as the bought wholesalers is Market of Nery García and Mayorista las Amétricas. The Market Nery García is located in the urban center, carrying-in and –out by large truck are difficult. The following table indicates the average prices of the agricultural main products;

Table 4.7.34 Average Prices of Vegetables from April 2004 to April 2009

Products	Unit	Wholesale Prices			Consumers Price		
		Ave	Max	Min	Ave	Max	Min
Garlic	kg	2.09	5.40	1.26	4.28	6.28	3.37
Green pea	kg	1.96	2.73	1.07	2.28	2.95	1.36
Onion	kg	1.18	2.40	0.42	1.62	3.21	0.65
Maize	kg	2.25	2.87	0.91	2.60	3.19	1.61
Broad bean	kg	0.77	1.16	0.46	0.99	1.51	0.59
Manzana	kg	1.07	1.61	0.80	1.35	2.01	1.01
Olluco	kg	1.18	2.68	0.50	1.44	3.15	0.68
Potato (Amarilla / Tumbay / Tomillo / Otros)	kg	0.96	1.86	0.68	1.17	1.99	0.80
Potato (Papa Blanca / Valle / Otros)	kg	0.53	1.30	0.21	0.71	1.64	0.29
Banana	kg	0.59	0.72	0.38	0.84	1.44	0.65
Tomato	kg	0.93	2.03	0.50	1.24	2.50	0.72
Cassava	kg	0.65	1.12	0.44	0.99	1.63	0.71
Carrot	kg	0.50	0.94	0.22	0.74	1.34	0.38
Pumpkin	kg	0.53	1.02	0.33	0.85	1.68	0.53

Source : Agencias Agrarias de la DRA-Ayacucho

4.7.8 SWOT Analysis on Contribution to Improvement of Distribution of Products in Ayacucho Region

Ayacucho Region is classified into area for potato, meat, milk and sheep, alpaca and vicuña and the areas for self-consumption, from the viewpoints of its economic importance. From the SWOT analysis on possibility of these areas, it could be said that the potentiality exists in the reactivation of daily products, smaller production of animals, promotion of the tuna in niches market and the promotion of processed products using the potato like matter prevails. The results of the analysis are shown in the following table.

Table 4.7.35 Result of SWOT Analysis from Viewpoint of Distribution

Opportunity	Threaten
・ Strong potato production exists with possibilities of promoting its agro-processing using the surplus. ・ The suitable weathered area is available for beet sugar cultivation which is material for ethanol with large demand. ・ The meat production, in market terms has possibilities to expand so much inside as outside of the region. ・ The production area of milk is dispersed in the high susceptible areas to the freezes and he/she has an effect of mitigation of poverty ・ Great possibility of expansion of market of milky products exists inside the region ・ Possibility of market expansion exists to the interior of the region for the production of vegetables ・ Promotion of market niches for the production of the tuna	・ The market of the potato, agricultural main product of the region, it is saturated and under the current conditions it is very difficult to expand their markets. To continue increasing the cultivation of the potato has the competition risk with other regions. But the potato is one of the agricultural few products that can be monetized. ・ the population's 54% lives in the rural areas and it is necessary to reactivate these areas, otherwise the inequalities will leave increasing. ・ Also, the marketed products transported inside the region that you/they can be monetized is the potato, milk and derived.
Strength	**Weakness**
・ Transformation possibilities in area producer of milky for the topography. ・ Production of cocoa and coffee in the low areas of the region. dispersed ・ Small producers with strengths in sectors that you/they need care. ・ The medic is cultivated in extensive areas (food of animals and livestock). ・ Many communities are dispersed and they are devoted to the agriculture without the use of agricultural inputs. ・ The tuna grows naturally for the whole region and it is possible to increase the revenues with the application of few inputs and manpower	・ High cost of transport and high percentage of loss of products for infrastructure lack, being one of the factors that subtracts competitiveness to the products of the region (necessity to structure a net of transports that it connects the main areas producers). ・ A plant of modern prosecution of cattle products doesn't exist inside the region, great part of the livestock is transported I live to Lima with added low value. ・ The plant of prosecution of meats has sanitary low level and technician for that that in the future, to expand the consumption, it is necessary to modernize the prosecution plant. ・ The factor for the first floor consumption of milky products taken place to the interior of the region is due to distribution (health, distribution system, system of transport and time of distribution) difficulty. ・ A market Exists for the consumption of fresh milk inside the region but mechanisms don't exist and neither a distribution system. ・ The area of the peasants' cultivation is reduced and the increase of productivity satisfies the self-consumption, being difficult an increment of monetary revenues

Source: JICA Study Team

4.7.9 Problems and Constraints for Development

The production areas classified in the above have different problems and constraints from difference in farming pattern. The problems and constraints on major products are shown in the following table:

Table 4.7.36 Problems and Constraints by Agricultural Products

Products	Problems	Constraints
Potato	・ Production is in excess of supply。 ・ Roads for transportation are not developed. ・ Infrastructures for transportation are not developed. ・ Transmission system on market information is hardly available. ・ There is no cooperative consignment system	・ Competitive with other regions ⇒ ・ Decrease in local competition ・ Damage of products ・ Low price ・ Over production ・ Price collapse at market ・ Dependence of traders ・ Low income ・ Difficulty in Expansion of production
Cacao and Coffee	・ Treatment after Post harvesting is not good. ・ There is no primary processing facility. ・ There is no sufficient market information for producers. ・ There is no adequate information on promising market.	・ Deterioration of quality ⇒ ・ Low price ・ Dependence on traders ・ Difficulty in giving value added ・ Inactivity in production

Products	Problems	Constraints
Dairy Products	・ Sanitary control is not made for locally produced milk. ・ Distribution system (cooperative consignment place, treatment facility after milking, transportation facility) is not established. ・ There is no cooperation among producers. ・ Producers associations are not organized ・ Most of produced milk in the region is used for cheese (Cachipa) and yogurt without sanitary control.	・ Difficulty in distribution to market ⇒ ・ Low price ・ Difficulty in ensuring market ・ Sales at local market only ・ Difficulty in Expansion of production
Meat Products	・ There do not exist the modern slaughterhouses in the Region, so that cow is transported to Lima. ・ Sanitary and technology at slaughterhouses in the Region are at low level.	・ Transportation to outside with low value added ⇒ ・ Difficulty in Expansion of production
Niche Products	・ There are no sufficient information on marketing. ・ Consignment system is not established.	・ Difficulty in ensuring market ⇒ ・ Difficulty in Expansion of production

Source: JICA Study Team

In addition, problems and constraints on marketing and distribution are mentioned below.

Table 4.7.37 Problems and Constraints for Development on Market and Distribution

Sub-sector	Problems	Constraints
All	・ Structure on distribution and agro-processing for heightening competition of potential agricultural production in Ayacucho Region is not established.	・ Inactivity of market development ・ Keeping of traditional farming
Market	・ Market size in Ayacucho Region is small. ・ It is necessary to expand market at Metropolitan area of Lima, to enlarge agriculture and livestock ・ Expansion of potato market is difficult due to saturated condition. ・ Market for products which have possibility of expansion of market in Ayacucho Region is not developed due to no establishment of transportation system (road, cooler truck). ・ Markets in Ayacucho Region are not developed due to insufficient quality control and sanitary control for products. ・ Market has only roof, but not cooler facility, therefore, fresh fishes should be sold before damage. ・ Market facilities like warehouse are not enough and do not meet the requirements for expanding large-scaled distribution. ・ Functions as market are not equipped, and wholesalers directly transact producers. ・ Due to insufficient sanitary control, products become low quality, so that these have no competitive for outside products.	・ Difficulty in market expansion ⇒ ・ Difficulty in expansion of agricultural production ・ Difficulty in production of commercial crops
Market Distribution System	・ Information and know-how on establishing distribution system supporting potential products are insufficient. ・ Selling volume of products except potato and meats, to other provinces is insignificant ・ Distribution system of cacao and coffee is insufficient. ・ There is no storing infrastructure of basic cereals, so that product loss occurs. ・ Market support to commercial crops is not enough. ・ Market support to wool and vicuna is not adequate. ・ Market and distribution support to dairy products is not sufficient. ・ Market support to niche products is not enough.	・ Difficulty in production of potential crops ⇒ ・ Difficulty in growing local potential ・ Inactivity of growing regional industry ・ Difficulty in expansion of wool and vicuna ・ Inactivity of diary ・ Difficulty in growing niche industry

Sub-sector	Problems	Constraints	
Distribution Infrastructure	・ Distribution infrastructure for potential products and areas is not sufficient. ・ Markets in district are not developed. ・ Sanitary control for slaughterhouse is at low level. ・ Markets enabling sale to other provinces are not developed. ・ Consignment facility of agricultural products in district is not developed. ・ Non-development of roads in the Region ・ Non-development of distribution network ・ Products are limited to ones which can be transported for long distance.	・ Delay in distribution infrastructure ・ Distribution only within local area ・ Damage of products ・ Difficulty in expansion of production of transportation products in short time (milk, fresh vegetables)	⇒ ・ Difficulty in giving value added to products ・ Inactivity of expansion of market ・ Difficulty in growing out of traditional farming

Source : JICA Study Team

4.8 Tourism and Handicrafts

In order to achieve regional development, infrastructure improvement related to promotion of tourism and handicrafts sectors is urgently required considering the poverty alleviation in Ayacucho Region.

4.8.1 Politics, Organization and Plan

(1) Central Government Level

(a) Tourism promotion

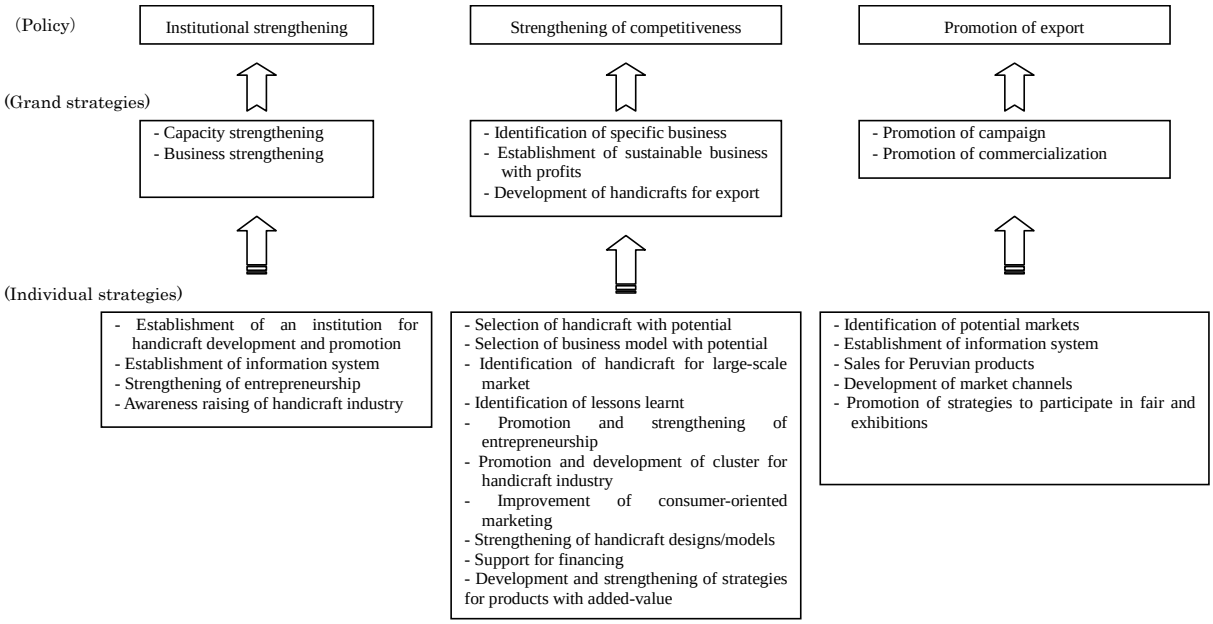
The Ministry of Foreign Trade and Tourism (*MINCETUR*) designed, in 2004, the national strategic tourism plan 2005-2015 (*PENTUR*) (in 2008 this plan was renovated for the period 2008-2018) in order to look for regional development through the implementation of infrastructure improvement in consideration of tourism resources.

MINCETUR pays special attention to tourism development in rural communities and prepares the following strategies in order to accomplish such goals.

- Contribute to economic development and poverty reduction through tourism activation
- Contribute to diversity of Peruvian tourism destinations, in addition to the already famous Cuzco and Macchu Picchu.

(b) Handicrafts promotion

MINCETUR, which is in charge of promoting handicraft sector in Peru, prepared the "Plan to Strengthening Handicrafts Exports 2003-2013" March 2004 which aims to increase the artisan products exportation, therefore A brief summary is shown as follows.



Source: Plan de Desarrollo Artesanal de la Region Ayacucho 2005 – 2015, Dircetur-Ayacucho

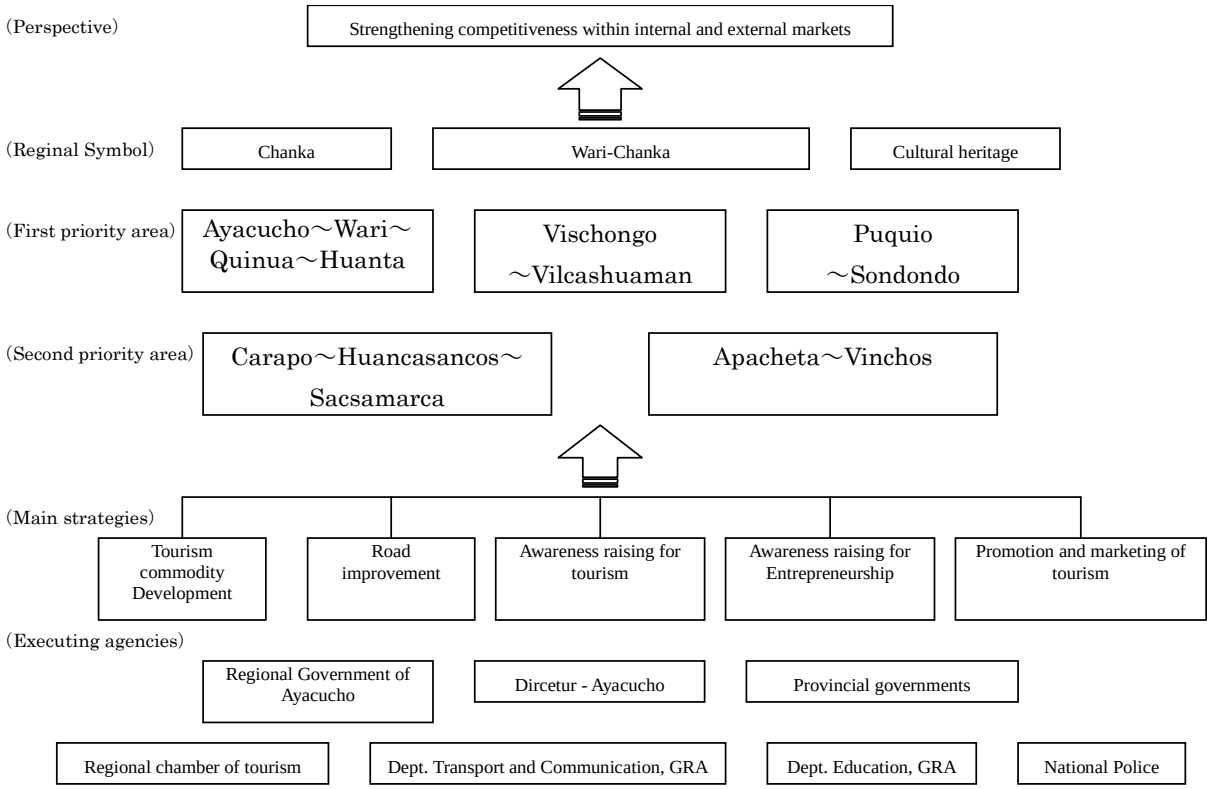
Figure 4.8.1 Implementation Plan for Export of Peruvian Handicraft Products 2003-2013

(2) Regional Government level

The institution in charge of the development and promotion of tourism and handicrafts in Ayacucho Region is DIRCETUR (*Dirección Regional de Comercio Exterior y Turismo del Gobierno Regional de Ayacucho*). DIRCETUR has elaborated the following development plans for the tourism and handicrafts sectors, which aim to strengthen competitiveness of their products in the domestic and international markets.

(a) Tourism Promotion

GRA worked out the "Tourism Development Plan in Ayacucho 2004-2014" under the national tourism policy in March 2005, to make more clearly tourism policies and short-midterm plans. The following figure shows a brief summary of this plan.

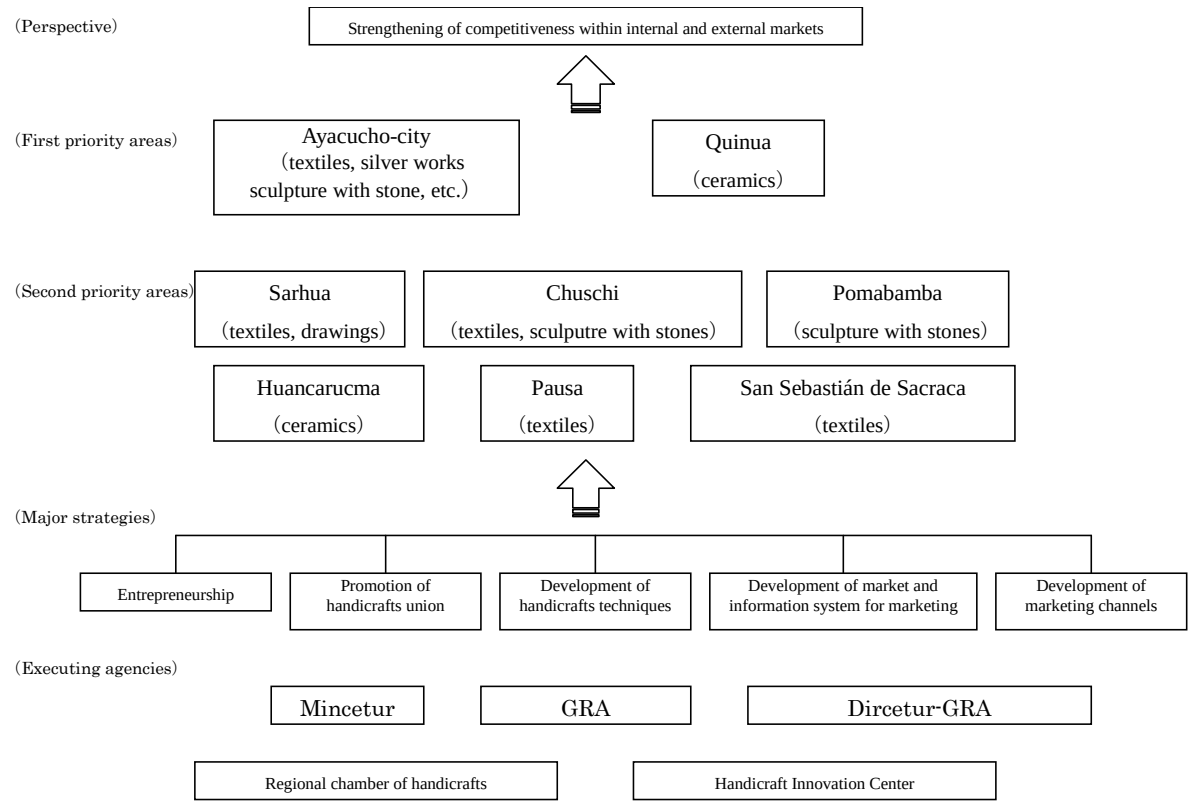


Source: Tourism Development Plan in Ayacucho 2004-2014

Figure 4.8.2 Outline of the Tourism Development of Ayacucho 2004-2014

(b) Handicraft Promotion

According to MINCETUR, about 7% of the population is engaging in handicrafts production businesses; which is therefore a very important sector to generate employment. DIRCETUR-Ayacucho has elaborated the "Handicraft Development Plan 2005-2015" in order to promote such sector.

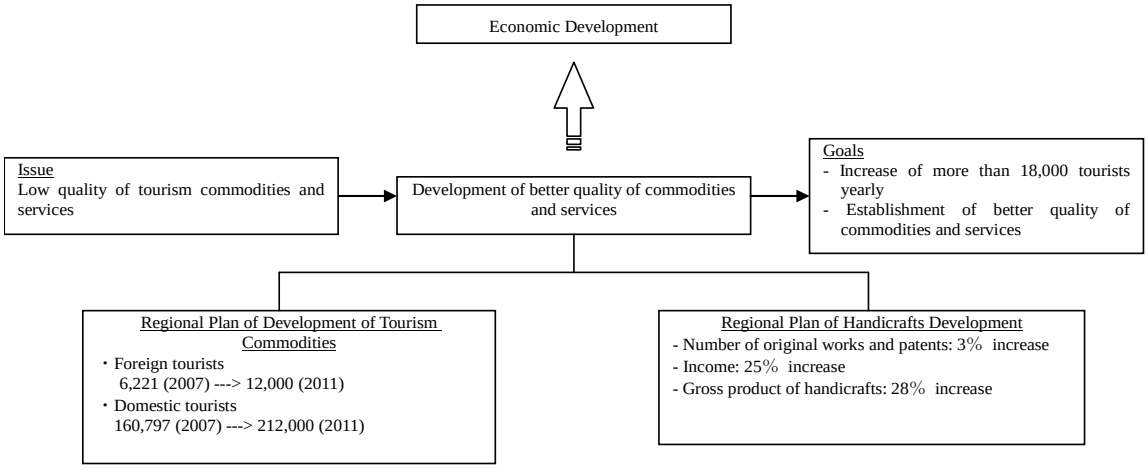


Source: Regional Development Plan of Handicrafts in Ayacucho Region 2005-2015

Figure 4.8.3 Outline of Handicraft Development Plan in Ayacucho Region 2005-2015

(c) PDRC 2007-2024

In 2007, GRA prepared PDRC 2007-2024 (*Plan Wari*). According to PDRC, tourism and handicraft are considered important activities for the economic development in Ayacucho Region. The following table shows the objective and correspondent goals.



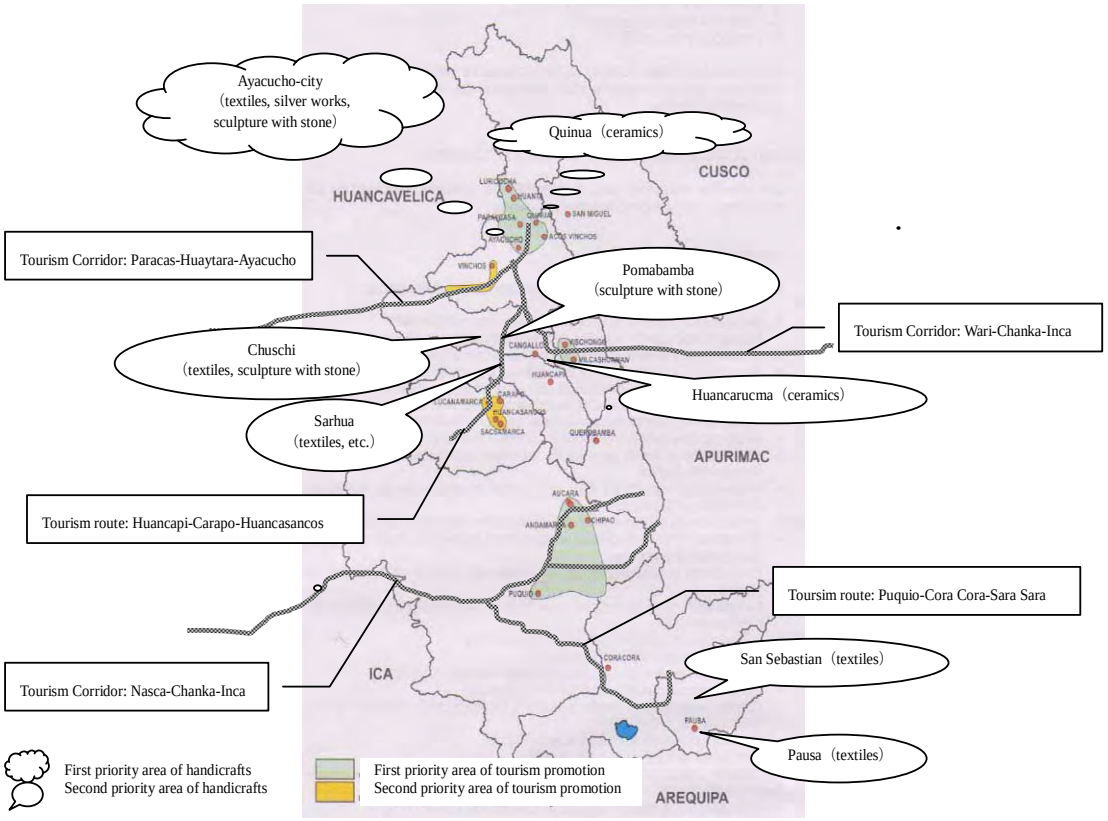
Source: Regional Tourism Development in Ayacucho 2004-2014

Figure 4.8.4 Promotion Plan for Tourism and Handicraft in PDRC 2007-2024

(d) Priority Areas of Development

According to the above mentioned development plans for tourism and handicrafts in Ayacucho Region, the

following image shows the priority areas, which are concentrated in approximately 5 tour routes or tourism corridors, therefore allowing promotion to be much more efficient.



Source: Integrated Development Plan in Ayacucho 2004-2014, Development Plan for handicraft in Ayacucho 2005-2015

Figure 4.8.5 Priority Areas in Regional Tourism Development Plan / Handicrafts Development Plan in Ayacucho Region

4.8.2 Current Situation in Tourism and Handicrafts

(1) Existing Conditions in the Tourism Sector

The number of tourists was over 100,000 people in 2005, and attained 137,000 in 2008, which represents almost 1% of the travelers to whole Peru. Ninety six percent to 97% were domestic tourists and 3% to 4% were foreign tourists to Ayacucho Region as a recent tendency. Comparing with the national tendency, the percentage of foreign tourists is low, because it represents only 0.2% to 0.4% of tourists.

Table 4.8.1 Total Number of Tourists per Year (Peru – Ayacucho Region)

Year	Ayacucho Region			Peru		
	Domestic	Foreigners	Total	Domestic	Foreigners	Total
2004	91,269 (95.4%)	4,362 (4.6%)	95,631	10,784,118 (89.4%)	1,276,610 (10.6%)	12,060,728
2005	109,924 (96.5%)	4,006 (3.5%)	113,930	11,166,531 (88.3%)	1,486,502 (11.7%)	12,653,033
2006	144,203 (95.9%)	6,221 (4.1%)	150,424	11,538,997 (87.6%)	1,634,745 (12.4%)	13,173,742
2007	125,501 (97.2%)	3,620 (2.8%)	129,121	11,931,358 (86.8%)	1,812,384 (13.2%)	13,743,742
2008	133,001 (97.0%)	4,082 (3.0%)	137,083	12,310,867 (85.4%)	2,100,000* (14.6%)	14,410867

Source :DIRCETUR-Ayacucho, MINCETUR
Note : Estimated from MINCETUR

According to the records of stays at hotels and accommodations, there were over 200,000 guests in 2006 and close to 225,000 in 2008. Breaking it down, it was observed that 94% were domestic tourists and 6% foreign tourists. Comparing with the average stay days per number of tourists, it was noticed that domestic tourists stay 1.6 days, while foreign tourists stay a little bit more, say between 2.3 to 3.4 days.

Table 4.8.2 Number of Days of Stay (Ayacucho Region-Peru)

Year	Ayacucho			Peru		
	Domestic	Foreign	Total	Domestic	Foreign	Total
2004	144,002 (92.3%)	11,932 (7.7%)	155,934	16,176,640 (85.6%)	2,725,290 (14.4%)	18,901,930
2005	172,914 (94.5%)	10,041 (5.5%)	182,955	17,890,159 (85.5%)	3,033,719 (14.5%)	20,923,878
2006	232,602 (94.3%)	14,093 (5.7%)	246,695	16,699,424 (84.7%)	3,025,251 (15.3%)	19,724,675
2007	199,911 (94.9%)	10,847 (5.1%)	210,758	18,730,444 (84.4%)	3,451,279 (15.6%)	22,181,723
2008	211,901 (93.9%)	13,737 (6.1%)	225,638	N.A	N.A	N.A

Source: DIRCETUR-Ayacucho, MINCETUR

On the other hand, the tendency and the offer of lodgings and beds have not been changed in promotion to the increase in the number of tourists and their stay in the recent few years. It is not possible to keep a steady number of visitors during the whole year, because the visit of tourists is a lack in balance in a year, such as in February for the carnival, the Holy Week in Ayacucho Region, Peruvian Holidays in July, or the end of year, when there are more continuous holidays. Regarding hotel categories in Ayacucho Region, there are no 4 stars or 5 stars hotels, but there are five 3 stars hotels -medium category- and there are others which have no classification, say less than two stars.

Table 4.8.3 Lodging in Ayacucho

Year	Nos. of lodgings	Nos. of rooms	Nos. of beds	Avg.Nos. of staff
2004	89	1,425	2,521	286
2005	96	1,588	2,660	308
2006	91	1,943	3,321	384
2007	88	1,646	2,893	342
2008	86	1,564	2,713	313

Source : Lodgings data registered in DIRCETUR-Ayacucho

(2) Tourism Resources

In the northern central part of Ayacucho Region, there are important historical and archeological pre-Incan monuments from the Wari and Chanka cultures; and there are typical natural tourism resources from the highlands area in the southern part of Ayacucho Region. As of June 2009, there were 226 historical and archeological sites, and 115 natural resources sites

Table 4.8.4 Tourism Resources registered in DIRCETUR-Ayacucho

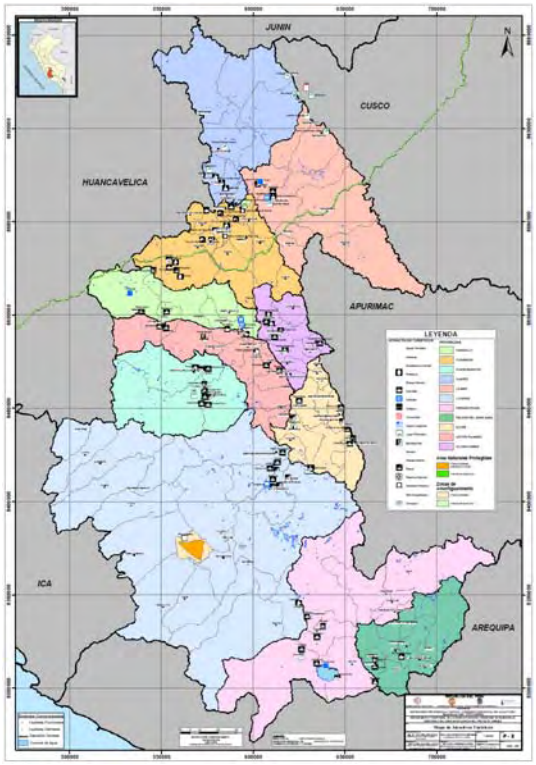
Province	Nos. of registered resources	Resources Description
Huanta	29	16 historical or archeological monuments 13 natural resources
La Mar	8	3 historical or archeological monuments 5 natural resources
Huamanga	85	74 historical or archeological monuments 11 natural resources
Cangallo	7	6 historical or archeological monuments 1 natural resource
Vilcas Huaman	19	17 historical or archeological monuments 2 natural resources
Victor Fajardo	9	5 historical or archeological monuments 4 natural resources
Huanca Sancos	32	20 historical and archeological monuments 12 natural resources
Sucre	31	24 historical or archeological monuments 7 natural resources
Lucanas	68	32 historical and archeological monuments 36 natural resources
Parinacochas	23	15 historical or archeological monuments 8 natural resources
Paucar del Sara Sara	30	14 historical or archeological monuments 16 natural resources
Total	341	226 historical or archeological monuments 115 natural resources

Source: DIRCETUR-Ayacucho

registered in DIRCETUR – Ayacucho.

The National Institute of Culture (*INC*) has a registration of the historic and archeological heritage; there were 344 historic and archeological heritages in 2006 in Ayacucho. INC has registered 4,542 archeological sites all over Peru, and 7.6% are located in Ayacucho Region. Most of them are located at the Provinces of Lucanas, Cangallo, Sucre, Parinacochas and Huamanga.

In Ayacucho Region there are 4 historical or archeological museums under the INC jurisdiction. Nearby Ayacucho City, there is an on-site museum of the Wari culture, which was visited by almost 39% of foreign tourists visiting Ayacucho Region, while the Intihuatana on-site museum, which is 3 hours from the city, was visited by only 5% of the foreign tourists.



Source: GIS data of GRA

Figure 4.8.6 Distribution Map of Tourism Resources in Ayacucho

Table 4.8.5 Number of Visitors to On-site Museums in Ayacucho Region (2008)

Visitors	Department museum from INC (City of Ayacucho)	Archeological Museum from the Wari culture (District of Quinua)	Museum of Quinua (District of Quinua)	Intihuatana on-site Museum (District of Vischongo)	Total
Domestic	5,096	12,788	3,412	734	22,030
Foreign	734	1,598	686	197	3,215
% of foreign *	18.0%	39.1%	16.8%	4.8%	
Total	5,830	14,386	4,098	931	25,245

Department Museum from INC

Wari archeological on-site museum

Museum of Quinua

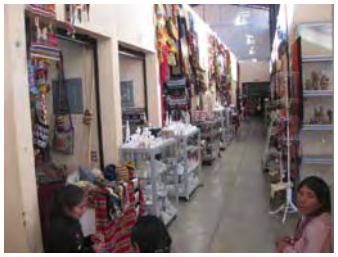
Note: Foreign tourists 4,082 people (2008)

Source: INC

(3) Handicrafts

Ayacucho Region, along with Junin, Cuzco and Piura Provinces, has an active handicraft sector, which is acknowledged nationwide. DIRCETUR-Ayacucho considers the most representative handicrafts areas in Ayacucho Region as follows:

Table 4.8.6 Main handicraft products in Ayacucho

Province	District / Community	Artisanal product
Huamanga	Ayacucho	Textiles, altarpieces, sculptures in the Huamanga stone, silver works
	Quinua	Ornamental ceramics, souvenirs
Cangallo	Huancarucma	Ceramics
	Chuschi	Textiles, sculptures in the Huamanga stone
Victor Fajardo	Sarhua	Textiles, etc.
Paucar del Sara Sara	Pausa	Textiles
	Sacraca	Textiles
 Handicraft Market in the city of Ayacucho	 Handicraft store in Quinua	 Textiles shop in Sarhua	

Source : DIRCETUR-Ayacucho

The distribution route of handicrafts is not consolidated in Ayacucho Region and there are great number of artisans and associations which do not have a regular and steady market for their products.

- Markets for handicrafts and gifts shops in Lima.
- Markets for handicrafts and gifts shops in Ayacucho City.
- Sales in fairs and crafts exhibitions within the country and abroad.

4.8.3 Promotion Plan of Tourism and Handicrafts

There exist 3 promotion plans of tourism and handicrafts in Ayacucho Region. The following tables show the priority projects proposed for these plans.

(1) SNIP Sub-projects

As the result of the inventory survey in this Study, there are 42 registered sub-projects in Ayacucho Region related to tourism and handicrafts. The table below shows the situation of SNIP registration.

Table 4.8.7 Projects with SNIP registration related to tourism and handicrafts in Ayacucho

Province	Being Performed		Approved Profile		Profile under Evaluation	
	Nos. of Projects	Invested amount (S/.)	Nos. of Projects	Invested amount (S/.)	Nos. of Projects	Invested amount (S/.)
Huanta	0	0	3	1,688,336	0	0
La Mar	0	0	1	55,731	0	0
Huamanga	3	1,026,299	12	101,597,074	6	33,414,557
Cangallo	1	244,282	1	60,000	1	51,054
Vilcas Huaman	1	567,337	5	6,058,815	1	2,374,265
Victor Fajardo	0	0	0	0	0	0
Huanca Sancos	0	0	1	3,906,651	0	0
Sucre	0	0	1	232,690	0	0
Lucanas	1	1,769,058	3	888,841	0	0
Parinacochas	0	0	1	192,000	0	0
Paucar del Sara Sara	0	0	0	0	0	0
Total	6	3,606,976	28	114,680,138	8	35,839,876

Source: Inventory survey by the JICA Study Team

(2) PDRC 2007 – 2024 (Plan Wari)

In relation to PDRC 2007 – 2024 (*Plan Wari*), 5 tourism routes and tourism corridors have been considered for every main strategy, which proposal is as follows:

Table 4.8.8 Priority projects in the Comprehensive Development Plan in Ayacucho 2007 - 2024

Main Strategy	Type of Sub-project	Nos. of Sub-projects
Development of tourism products	Corridor Wari –Chanka – Inca	56
	・ *Infrastructure rehabilitation projects for the archeological sites, historic constructions and ecotourism.*	*(33)*
	・ *Cultural and scientific projects.*	*(23)*
	Corridor Nasca –Chanka – Inca	54
	・ *Infrastructure rehabilitation projects for the historical sites.*	*(28)*
	・ *Projects for ecotourism*	*(26)*
	Corridor Paracas – Huaytara - Ayacucho	5
	・ *Projects for ecotourism*	*(5)*
	Route Huancapi – Carapo –Huanca Sancos	19
	・ *Infrastructure rehabilitation projects for historical sites.*	*(9)*
	・ *Projects for ecotourism*	*(10)*
	Route Puquio - Cora Cora –Sara Sara	26
	・ *Infrastructure rehabilitation projects for the historical sites.*	*(18)*
	・ *Projects for ecotourism*	*(8)*
Roads	Paved roads, improvement of unpaved roads, construction of new routes	7
Awareness raising of tourism	Create tourism courses, projects to make people aware about the importance of tourism.	2
Promoting entrepreneurial spirit	Create tourist services schools.	4
Tourism promotion and marketing	Tourism reactivation for the internal market, market studies and others.	4
Total		177

Source: Tourism Development Plan in Ayacucho 2004-2014

(3) Development Plan of Handicrafts in Ayacucho 2005 - 2015

Regarding the development plan of handicraft in Ayacucho 2005-2015, some projects have been proposed which emphasize the facility construction, institutional strengthening and capacity buildings.

Table 4.8.9 Condition of Priority Projects in Development Plan of Handicraft in Ayacucho 2005 - 2015

Main Strategies	Type of Projects	Nos. of Projects
Strengthening of entrepreneur spirit	・ Strengthening for handicrafts qualities ・ Registration of handicraft products for marketing ・ Strengthening of artisans associations	9
Development of production techniques	・ Promotion of technical support services for artisans ・ Promotion of quality control and products supply ・ Construction of access roads	6
Development of products and markets information system	・ Information center regarding handicraft market	3
Development of commercialization routes	・ Promotion of handicraft commercialization	5
Total		23

Source: Development Plan of Handicraft in Ayacucho 2005-2015

(4) PDRC 2007 – 2024 (Plan Wari)

Within the PDRC 2007-2024, there are 12 priority projects proposed for tourism promotion and 6 priority projects for handicraft promotion. In regards to the tourism promotion plan, 5 have already been approved by SNIP.

4.8.4 Problems and Constrains for Development

As a result of the analysis of the individual profiles from SNIP, site surveys for handicrafts and tourism in Ayacucho Region, and assessments performed by other entities related to the current report, it is identified that there are some problems and constraints in tourism and handicrafts promotion in Ayacucho Region as shown in the following figures.

Table 4.8.10 Problems and Constraints for Development in Tourism and Handicrafts Promotion

Problems		Constraints		
Rudimentary development of Tourism Goods Insufficient Development of Infrastructure Non-use of Tourism Resource Inappropriate Behavior to Tourism Poor Private Capital	⇒	Poor Promotion of Tourism ・ Low degree of international and domestic recognition as tourist sites ・ Low degree of recognition to tourist marketing activities ・ Lack of development strategy and plan on tourist marketing activities ・ Insufficient tourist marketing activities at large cities like Lima ・ Lack of human resources of tourist relating agencies Insufficient tourism facilities and services offered ・ Insufficiency in rest places, toilets and walkway in surrounds of tourist sites ・ Lack of tourist information center at local cities ・ Limited choices on tourist facilities and services ・ Non-diffusion of equalization on tourist services ・ Lack of security system such as medical care toward tourists	⇒	Stagnation of Tourist Activities ・ Insufficient know-how on management of tourist promotion projects ・ Lack of opportunity of capacity strengthening to human resources relevant to tourism ・ Insufficiency in coordination between tourist sites and tourist agencies ・ Limited participatory opportunity by local people ・ Poor project operation and absence of people organization

Source : JICA Study Team

Table 4.8.11 Problems and Constraints for Development in Handcrafts

Problems		Constraints		
Low competition on development and sales of handcraft development Difficulty in access to market Weak firms and producers associations Insufficiency in Private Investment	⇒	Insufficient production and marketing Facility ・ Non-establishment of quality control system on production of handcraft ・ Insufficient processing ability of raw materials at site ・ Insufficiency in sales places ・ Ineffective use if existing facility such as handcraft market Insufficient sales promotion activity ・ Low degree of international and domestic recognition as Ayacucho products ・ Low recognition to sales activity of handcraft ・ Lack of sales strategy and plan of handcrafts ・ Insufficient sales activities at urban area like Lima	⇒	Stagnation of Handcraft Activities ・ Decrease and loss of skilled workers ・ Lack of opportunity of capacity strengthening to human resources on handcraft ・ Insufficiency in coordination between production sites and handcraft agencies ・ Limited participatory opportunity by local people

Source : JICA Study Team

Chapter 5 Social Infrastructure Condition in Ayacucho

5.1 Classification of SNIP Sub-projects by Sector

This section shows the results of analysis on SNIP sub-project supplied by the central, regional and local governments. The sub-projects to be analyzed are 3,940 sub-projects except the completed and rejected ones out of 4,871 sub-projects as of April 2009. The classification of them was made from 4 categories of "approved", "submitted", "under revision" and "under evaluation". In this classification, the lowest administrative level was province or district.

(1) Administration Level

In the application of sub-projects to SNIP, the local governments applied 2,366 sub-projects equivalent to 60 % of 3,940 sub-projects registered in SNIP, the regional government applied 751 sub-projects equivalent to 19 % of them and the central government 823 sub-projects equivalent to 21% of them. The following table shows the number of applied sub-projects at administrative levels:

Table 5.1.1 Evaluation Condition of Applied Sub-projects and Their Present Conditions

Condition	Number of Applied Sub-projects				Assumed Investment Amount (S/.000))			
	Total	Central	Region	Local	Total	Central	Region	Local
Approved	3,040	451	601	1,988	2,878,589	654,752	977,432	1,246,405
Submitted	615	364	46	205	814,522	340,385	114,065	360,072
Under revision	44	2	2	40	102,682	6,061	3,979	92,642
Under evaluation	241	6	102	133	491,599	12,392	345,023	134,183
Total	3,940	823	751	2,366	4,287,393	1,013,590	1,440,500	1,833,302

Source: Inventory Survey (Banco de Proyectos MEF. Elaboración Equipo de estudio)

The total required investment amount of SNIP sub-projects applied by local government is S/.1,800 million, that by regional government is S/.1,400 million and that by central government is S/.1,000 million. As shown in the above table, the local government has strong intension toward promotion of development. The average investment amount applied by local government is estimated at S/.775,000 per one project. On the other hand, that by regional government is at S/.2 million.

(2) Distribution by Region

Ayacucho Region is largely divided into 3 regions: northern region, central region and southern region. The northern region consists of 3 provinces (Huanta, La Mar, Huamanga), the central region of 6 provinces (Cangallo, Vilcas Huaman, Victor Fajardo, Huanca Sancos, Sucre) and the southern region of 3 provinces (Lucanas, Parinacochas, Paucar del Sara Sara). The population composition is 65.1 % for the northern region, 17.5% for the central region and 17.4% for the southern region. The northern region has the highest population density, followed by the central region and southern region in turn.

Huamanga Province and Huanta Province are cores of economy in Ayacucho Region, and show the higher rate of preparation of infrastructures, health, education, energy and water supply and sewage as compared with other provinces.

The application number of SNIP sub-projects as of April 2009, was 2,032 sub-projects for northern region (52%), 1,199 sub-projects for central region (30%) and 709 sub-projects (18%). In comparison of central region with southern region, central region has higher application number of SNIP sub-projects than southern region although the population number is almost the same. It can be seen in the same situation as for the required investment amount,

namely 53% for northern region, 30% for central region and 17% for southern region. The following table shows the application number of SNIP sub-projects and the required investment amount by province:

Table 5.1.2 Application Number of SNIP Sub-projects and Required Investment Amount by Province

Province	Area		Population(2007)		Population Density	Number of Sub-projects	Required Investment Amount (S/.)
	km^2	%	Total	%			
Northern region	11,252	25.7	398,927	65.1	35	2,032	2,256,682
Huanta	3,879	8.9	93,360	15.2	24	454	438,174
La Mar	4,392	10.0	84,177	13.7	19	560	366,195
Huamanga	2,981	6.8	221,390	36.1	74	1,018	1,452,313
Central region	10,002	22.8	107,129	17.5	11	1199	1,291,682
Cangallo	1,916	4.4	34,902	5.7	18	315	237,106
Vilcas Huaman	1,178	2.7	23,600	3.9	20	247	197,236
Victor Fajardo	2,260	5.2	25,412	4.1	11	343	293,530
Huanca Sancos	2,862	6.5	10,620	1.7	4	102	418,700
Sucre	1,786	4.1	12.595	2.1	7	192	145,109
Southern region	22,560	51.5	106,433	17.4	5	709	739,029
Lucanas	14,495	33.1	65,414	10.7	5	302	454,475
Parinacochas	5,968	13.6	30,007	4.9	5	166	129,505
Paucar del Sara Sara	2,097	4.8	11,012	1.8	5	241	155,049
Total	43,814	100.0	612,489	100	51	3,940	4,287,393

Source: INEI Censo 2007, Banco de Proyectos MEF and Plan base de ordenamiento territorial del Departamento de Ayacucho 2005

(3) Sub-projects by Sector

As for the budget of regional government, it was assured by transportation, agriculture education/culture, energy, health and water supply and sewage in turn from higher rank. The priority order in development in the region is also the same situation. Table 5.1.3 shows the disbursement amount of each sector in the regional government in 2008 and the budget requested in SNIP

Table 5.1.3 Disbursement Amount in 2008 in Regional Government and Requested Budget in SNIP (S/.000)

Sector	Working Budget	%	Before Revision			After Revision		
			Nos. of Sub-projects	Requested Budget (S/.000)	Ratio	Nos. of Sub-projects	Requested Budget (S/.000)	Ratio
Management and plan preparation	4,669	3.6	100	78,874	1.8	114	91,216	2.1
Agriculture	26,373	20.6	827	1,469,060	34.3	915	1,469,161	34.3
Vulnerability measurements	400	0.3	361	107,535	2.5	208	79,366	1.9
Maintenance of public order	6,730	5.3	19	27,305	0.6	19	27,305	0.6
Education/culture	12,759	10.0	640	580,162	13.5	634	577,678	13.5
Energy & Natural resources	11,809	9.2	81	153,794	3.6	81	153,794	3.6
Commerce & industry, service	1,764	1.4	83	173,549	4.0	90	176,151	4.1
Health & Water supply and sewage	9,794	7.7	964	730,503	17.0	966	735,840	17.2
Transportation	52,758	41.3	714	905,096	21.1	761	915,144	21.3
Urban development & Housing	676	0.5	151	61,513	1.4	152	61,737	1.4
Total	127,722	100.0	3,940	4,287,392	100.0	3,940	4,287,392	100.0

Remarks: PIM; Modified budget

Source: Banco de Proyectos MEF April 2009.

As indicated in the above table, the budget allocation of regional government is made for transportation, agriculture, education and energy in turn. On the other hand, the requested budget reflecting the local demand shows the maximum one for agriculture sector, followed by transportation sector, health sector, water supply and sewage sector and education/culture sector in turn. Basically, the similar tendency is found in working budget of regional

government and requested budget.

The inhabitants' demand to investment to agriculture sector is high, and occupies 34% of total requested budget. It also occupies 21% of the working budget in 2008. As for the transportation sector, its working budget occupies 41% of total working budget, but its requested budget occupies 21% of total one. In case that central, regional and local governments prepare the working budget based on the inhabitants' demand, it could be judged that the composition shown in the requested budget for SNIP in Table 5.1.3 is desirable.

(4) Sub-projects by Scctor (Agriculture, Transportation, Communication)

Out of 3,940 sub-projects applied to SNIP in Ayacucho Region, 1,676 sub-projects (43 %) are categorized as agriculture and transportation sub-projects. The requested budget for them are S/. 2380 million equivalent to 56% of total one. Agriculture sub-projects are 915 in number, of which the total amount becomes S/.1470 million. In agriculture, irrigation is highly demanded, namely 520 sub-projects of which the total requested amount comes to S/.1000 million.

If classifying the SNIP sub-projects from process condition, 74% of total sub-projects were already approved. Seventy percent of agriculture sub-projects, and 79 % of transportation sub-projects were in approved situation. As for investment amount, agriculture sector occupies 62% and transportation sector 38% of total one. Table 5.1.4 shows the number of approved sub-projects in SNIP and the ratio of fund requirement:

Table 5.1.4 SNIP Sub-projects in 2009 (Agriculture and Transportation Sectors)

Sector	Nos. of Sub-projects		Invest Amount (S/.000)		
	Total	Approved	Total	Approved	%
Agriculture	915	641	1,469,161	782,984	62
Farming	150	85	254,958	73,154	11
Irrigation	520	411	1,011,412	611,305	42
Reforestation・Environmental Conservation	58	41	89,215	44,896	4
Livestock	146	70	91,958	38,859	4
Inland Fishery	41	34	21,618	14,769	1
Transportation/ Communication	761	599	915,144	704,905	38
Road	676	518	840,622	656,911	35
Others	85	81	74,523	47,994	3
Total	1,676	1,240	2,384,305	1,487,889	100

Source: SNIP-MEF

(5) Sub-projects by Sector and Requested Budget in 2009

Table 5.1.5 shows the requested budget of SNIP for each province by sector. The agriculture sub-projects are ranked second in number, following the health/water supply and sewage sub-projects, but the requested budget for the agriculture sub-projects comes to S/.1,470 million, which is largely beyond that of the health/water supply and sewage sub-projects (S/.740 million). Out of agriculture sub-projects, irrigation sub-projects occupies 69% of them, which clarifies the high demand for water. In particular, such trend could be seen in Lucanas and Huamanga Provinces. Cangallo and Victor Fajardo Provinces show the high demand to agriculture sub-projects.

Table 5.1.5 SNIP: Requested Budget for Each Province by Sector

(Unit: S/.000)

Province	Total	Administration, O&M/ Development Plan	Agriculture	Social Vulnerability Measurements	Maintenance of Public Order	Education/Culture	Energy and Natural Resources	Commerce and Industry/Service	Health. Water Supply and Sewage	Transportation	Urban Development and Housing
Huanta	438,174	9,297	109,620	19,899	3,305	61,316	22,287	6,018	59,683	142,878	3,871
La Mar	366,195	3,916	79,112	5,276	150	66,970	34,284	4,749	71,512	98,992	1,233
Huamanga	1,452,313	58,350	306,564	33,345	22,476	131,866	40,794	147,490	405,961	280,283	25,183

Province	Total	Administration, O&M/ Development Plan	Agriculture	Social Vulnerability Measurements	Maintenance of Public Order	Education/Culture	Energy and Natural Resources	Commerce and Industry/Service	Health. Water Supply and Sewage	Transportation	Urban Development and Housing
Cangallo	237,106	6,510	124,929	1,920	534	26,662	23,487	202	29,426	19,121	4,315
Vilcas Huaman	197,236	161	21,798	9,508	0	25,365	182	9,120	22,603	107,945	554
Victor Fajardo	293,530	998	120,723	3,375	87	34,085	20,023	1,286	32,428	74,681	5,844
Huanca Sancos	418,700	896	180,996	615	0	172,745	1,263	3,907	12,390	45,888	0
Sucre	145,109	1,264	61,920	2,017	453	15,459	538	350	16,297	44,490	2,321
Lucanas	454,475	5,639	354,626	780	300	11,930	275	1,630	38,377	48,542	1,377
Parinacochas	129,505	2,425	63,723	1,614	0	7,783	4,617	350	18,596	27,673	2,724
Paucar del Sara Sara	155,049	1,759	54,148	1,016	0	23,496	6,044	1,050	28,567	24,652	14,315
Total	4,287,393	91,216	1,469,161	79,366	27,305	577,678	153,794	176,151	735,840	915,144	61,737

Source: Banco de Proyectos MEF 2009.

5.2 Irrigation

5.2.1 Policies, Institutions and Programs (National and Departmental Level)

(1) National Level

While MINAG is responsible for irrigation development, the Cooperation Fund for Social Development (*FONCODES*) under the Ministry of Women and Social Development (*MIMDES*) is also implementing small-scale irrigation projects in Sierra. The following agencies have executed irrigation projects in Ayacucho Region.

- MINAG Program of Rural Agrarian Productive Development (*AgroRural*)
  Central and South Sierra Special Project (*PESCS :Proyecto Especial Sierra Centro Sur*)
- MIMDES FONCODES

Though "Irrigation Sub-sectoral Program (*PSI*)" under MINAG is executing irrigation projects, it has had no activities in Ayacucho Region. "Cachi River Special Project (*PERC*)" realized integral development in the Cachi river basin, which is contributing to improving the living standard of farmers in the basin through providing power generation and irrigation water. This project was implemented by National Institute of Development (*INADE*), and its operation has been transferred to GRA.

As a national level program, MINAG elaborated "Multi-annual Strategic Plan of Agriculture Sector 2007-2011", which presents the following targets to be accomplished by 2011.

- New irrigation development of 200,000 ha in Costa and Sierra
- New technical irrigation development of 30,000 ha in Sierra
- Creation of beneficiary farmlands of 347,600 ha through construction, improvement and rehabilitation of irrigation canals

In June 2003, "National Plan and Strategy for Irrigation in Peru" was elaborated by the Multi-sector Technical Committee, which was organized by MINAG, Ministry of Housing, Construction and Sanitation (*MVCS*), MEF and National Water Users Association. It indicates the basic policy on irrigation for the coming ten years, however, it does not present the specific targets.

(2) Regional Level

In GRA, the Regional Department of Agriculture (*DRA*) formulates irrigation development plans and manages the irrigation schemes, while the Regional Division of Infrastructure manages the construction works of irrigation infrastructure.

"Irrigation and Integrated Rural Development Regional Program (*PRIDER*)" has been founded in February 2009, but has not executed any irrigation project so far.

In the regional level, GRA elaborated "The Strategic Plan on Agriculture Sector in Ayacucho Region 2009-2015" and defines the following goals to be achieved by 2015.

- Technical irrigation facilities for 630 ha
- Rehabilitation of 2,610 ha farmlands

5.2.2 Present Irrigation Development and Existing Programs

(1) Present Situation of Irrigation Development

The National Census carried out in 1994 by National Institute of Statistics and Information (INEI) is the latest statistic data regarding agriculture as of 2009, of which the summary is presented in Table 5.2.1. No official updated statistics are available since that time.

Table 5.2.1 Farmlands and Irrigation Area by Province (1994)

(Unit: ha)

Province	Area	Farmland					Others*3
		Total*1		with Irrigation*2		without Irrigation	
Ayacucho Region	4,381,480	208,367	4.8%	84,506	40.6%	123,861	4,173,113
Huanta	387,891	27,355	7.1%	6,064	22.2%	21,291	360,536
La Mar	439,215	46,534	10.6%	3,898	8.4%	42,636	392,681
Huamanga	298,137	38,254	12.8%	13,078	34.2%	25,176	259,883
Cangallo	191,617	16,336	8.5%	6,649	40.7%	9,687	175,281
Vilcas Huaman	117,816	7,816	6.6%	2,854	36.5%	4,962	110,000
Victor Fajardo	226,019	9,287	4.1%	3,889	41.9%	5,398	216,732
Huanca Sancos	286,233	2,937	1.0%	1,838	62.6%	1,099	283,296
Sucre	178,564	3,969	2.2%	1,979	49.9%	1,990	174,595
Lucanas	1,449,464	34,732	2.4%	26,625	76.7%	8,107	1,414,732
Parinacochas	596,832	14,879	2.5%	11,841	79.6%	3,038	581,953
Paucar del Sara Sara	209,692	6,268	3.0%	5,791	92.4%	477	203,424

Source: Ayacucho Regional Directorate of Agriculture (DRA)

**1: Ratio of Farmlands to the Total Area*

**2: Ratio of Irrigation Area to the Farmland Area*

**3: Natural Pastures, Mountains, Bushes and so on*

This table shows that while the northern part has more irrigation areas, irrigation service ratio in the southern part is higher. Though the precise incremental farmland area since 1994 is unknown, the irrigation projects implemented by the major executing agencies are described hereafter.

(a) GRA

The maintenance and operation of irrigation canals in Ayacucho Region is undertaken by General Department of Hydraulic Infrastructures (*DGIH*), which was formerly called River Channeling and Water Storage Structures Program (*PERPEC*), in the Regional Department of Agriculture. The annual rehabilitation program for 2009 obtained from DGIH is summarized in Table 5.2.2.

Table 5.2.2 Rehabilitation Program for Irrigation Canals in 2009 - GRA

Province	Nos. of Irrigation Areas	Budget (S/.)	Nos. of Beneficiary Families	Irrigation Area (ha)
Ayacucho Region Total	884	13,704,800	120,967	135,433
Huanta	44	630,000	7,466	4,090
La Mar	111	1,711,000	7,449	5,593
Huamanga	76	1,290,600	10,359	9,150
Cangallo	56	1,060,000	3,795	4,001
Vilcas Huaman	36	725,000	6,894	3,069
Victor Fajardo	87	1,304,000	9,781	8,410
Huanca Sancos	53	691,000	8,843	5,630
Sucre	62	1,222,000	7,640	4,768
Lucanas	257	3,474,000	48,597	70,496
Parinacochas	45	882,900	5,390	14,219
Paucar del Sara Sara	57	714,300	4,753	6,008

Source: General Department of Hydraulic Infrastructures (DGIH), DRA Ayacucho

This table counts only the irrigation areas in the whole Ayacucho region where rehabilitation is scheduled, which were implemented by various executing agencies such as AgroRural, PESCS and FONCODES. The total irrigation area in this table exceeds the irrigation area of 84,506 ha given in the National Census 1994 carried out by INEI. The complete list of the irrigation areas in the Ayacucho region could not be obtained though requested.

(b) AgroRural

National Program of Hydrographic Basin Management and Soils Conservation (*PRONAMACHCS*), under MINAG, had been carrying out rural and social development in the Sierra such as small scale irrigation schemes. In March 2008, PRONAMACHCS was merged with the following agencies, and AgroRural was founded.

- Special Project of Promotion of Manure Use coming from Sea Birds (*PROABONOS*)
- Support Services Program to Access the Rural Markets (*PROSAAMER*)
- Natural Resources Management in Southern Sierra (*MARENASS*)
- Support to the Productive Rural Alliances in Sierra (*ALIADOS*)
- Corridor Puno-Cusco
- Northern Sierra Project and Southern Sierra Project

It is noted that World Bank and JBIC (present JICA) have assisted in financial cooperation. The projects executed by PRONAMACHCS at the national level are summarized in Table 5.2.3.

AgroRural has its regional office in Ayacucho, which was used before by PRONAMACHCS, in the same lot with DRA. The irrigation development executed by PRONAMACHCS in Ayacucho Region to date is summarized in Table 5.2.4.

Table 5.2.3 Irrigation Projects Executed by PRONAMACHCS at National Level

Year	Project Nos.	Irrigation Area (ha)	Beneficiaries
Total	4,332	509,966	448,709
1992	115	62,427	33,501
1993	149	32,881	31,150
1994	225	68,272	41,913
1995	229	47,309	28,330
1996	357	47,128	35,301
1997	541	43,976	49,534
1998	539	47,905	47,720
1999	812	61,315	69,628
2000	559	33,333	44,805
2001	438	33,792	35,583
2002	118	8,836	8,822
2003	68	3,514	5,014
2004	38	2,274	2,629
2005	27	2,624	3,870
2006	117	14,380	10,909

Source: Website of PRONAMACHCS

Table 5.2.4 Irrigation Projects Executed in Ayacucho Region by PRONAMACHCS (1997-2008)

Province	Project Nos.	Beneficiaries	Irrigation Area (ha)	Investment (S/.)
Ayacucho region Total	340	33,564	35,020	21,160,280
Huanta	10	986	576	313,240
La Mar	5	308	462	267,459
Huamanga	11	478	284	571,364
Cangallo	12	709	445	488,385
Vilcas Huaman	18	1,299	700	1,315,959
Victor Fajardo	10	581	540	1,048,273
Huanca Sancos	49	3,858	2,064	3,473,447
Sucre	28	2,513	1,675	2,161,331
Lucanas	81	11,511	14,631	4,396,678
Parinacochas	52	5,777	7,150	2,820,352
Paucar del Sara Sara	64	5,544	6,494	4,303,791

Source: Data obtained from AgroRural

(c) PESCS

PESCS was one of the special programs executed by INADE, and it has been transferred to and is operated by MINAG at present. PESCS is developing its activities in 4 regions of the central and southern Sierra; Ayacucho as well as Apurimac, Huancavelica and Cusco. It is conducting developments in various sectors: agriculture, sanitation, electrification and transportation. Based on the data obtained from PESCS, irrigation projects in Ayacucho Region implemented by PESCS are summarized in Table 5.2.5 (since 2004).

Table 5.2.5 Irrigation Projects in Ayacucho Region by PESCS (since 2004)

Item	Nos.	Irrigation Area (ha)	Beneficiaries	Investment (S/.)
Under execution	4	2,365	8,377	12,051,551
To be executed	10	2,485	14,505	33,337,523

Source: Data obtained from PESCS

(d) Cachi River Special Project (PERC)

Cachi River Special Project as well as PESCS mentioned above was managed by INADE. This project is an integrated development project for the Cachi river basin located to the south of Ayacucho City with components of power generation, irrigation and sanitation. The construction works have been almost completed, and the project execution has been transferred from INADE to GRA. PRIDER actually has become responsible for the operation and maintenance of the project.

The project features are as follows:

- ensure the river flow of 1.10 m^3/s including ecological flow by constructing Cuchoquesera dam, of which 0.30 m^3/s is required even in the drought
- create 14,493 ha irrigable farmlands aiming at increasing production and productivity of agriculture, livestock, forestry and agro-industry (enabling annual double cropping in 5,050 ha and breeding more than 4,750 cattle in pasture of 977 ha)
- supply domestic and industrial water of 0.95 m^3/s to Ayacucho city for more than 500,000 inhabitants
- generate 15.5 MW to supply electricity for domestic and industrial use in rural areas as well as Ayacucho City, and contribute to agro-industry
- ensure the base flow of 0.15 m^3/s for the river course maintenance and ecological conservation around Ayacucho City

The report[1] prepared in 2006 states that the 14,068 ha farmlands out of the projected area of 14,493 ha were actually under irrigation by this project.

(e) FONCODES

As described above, FONCODES under MIMDES is the agency responsible for social infrastructure reinforcement for rural poor people, under operation through its regional office in Ayacucho City. Its main work components are listed below.

- Production Development: Irrigation development, assistance for agro-industry projects
- Capacity Development: Reinforcement and enlightenment of rural organization
- Social Infrastructure: Construction of sewage, roads and bridges, health centers and schools
- Peace Promotion: Peace education, domestic harmony, remedies for victims in terrorism of the past time
- Inter-American Development Bank (*IDB*) and JBIC have jointly provided FONCODES projects with loan funds. It is noted that the FONCODES Ayacucho regional office covers only 8 provinces in the northern and central parts of Ayacucho region, and the other three provinces in the southern part belong to FONCODES Ica regional office. The data on the irrigation projects already executed by FONCODES in Ayacucho region during the period 1992-2009 were obtained in the FONCODES headquarters in Lima, which are summarized in Table 5.2.6.

Figure 5.2.1 Irrigation Canal in Upstream Portion of Cachi River Special Project

Figure 5.2.2 Introduction of Sprinkler
Paccha village, Vinchos District, Huamanga Province (FONCODES)

Table 5.2.6 Irrigation Projects Executed by FONCODES in Ayacucho (1992-2009)

Province	No.	Cost (S/.)
Ayacucho Region Total	493	54,501,529
Huanta	62	5,687,492
La Mar	22	2,416,281
Huamanga	163	16,848,740
Cangallo	48	5,639,870
Vilcas Huaman	29	3,302,903
Victor Fajardo	41	4,885,431
Huanca Sancos	18	2,057,396
Sucre	13	1,768,669
Lucanas	72	8,734,121
Parinacochas	17	2,118,745
Paucar del Sara Sara	8	1,041,881

Source: Data obtained from FONCODES Headquarters in Lima

(2) Existing Irrigation Projects

In SNIP, 576 irrigation sub-projects are registered as of April 2009, out of which 56 sub-projects have already been launched into implementation, and 520 are in the waiting list for implementation. The summary is given in Table 5.2.7.

[1] *Final Report - Feasibility Study for Updating and Reformulation of Hydraulic Schemes Considering Optimization of Water Resources of PERC, February 2006*

Table 5.2.7 List of SNIP Irrigation Sub-projects

Province	Ongoing		To be Executed			
			Approved		To be Approved	
	Nos.	Cost (S/.)	Nos.	Cost (S/.)	Nos.	Cost (S/.)
Ayacucho Region Total	56	83,587,331	411	612,191,485	109	400,106,224
Huanta	4	24,084,459	37	21,174,646	13	50,052,361
La Mar	6	4,100,277	27	29,783,426	5	5,389,547
Huamanga	11	20,049,571	66	104,714,947	30	86,549,781
Cangallo	7	11,484,235	51	58,120,062	13	40,169,113
Vilcas Huaman	5	949,904	33	14,230,064	1	89,448
Victor Fajardo	11	9,244,556	54	83,968,530	14	9,665,689
Huanca Sancos	0	0	14	55,295,064	9	125,474,335
Sucre	1	3,433,256	32	19,852,289	6	25,362,753
Lucanas	9	8,447,137	53	144,063,334	9	41,492,707
Parinacochas	0	0	16	28,757,019	5	15,505,339
Paucar del Sara Sara	2	1,793,936	28	52,232,104	4	355,151

Source: SNIP Projects Inventory Survey (April 2009)

Excluding the ongoing sub-projects, 520 irrigation sub-projects are registered in Ayacucho Region, of which the total investment costs are estimated to be about S/.one billion. Outline sheets of some sub-projects do not describe irrigation area. To complement them, the following presumptive equations were introduced through correlation analyses between the investment costs and the irrigation areas.

- Non-technical Irrigation: Investment Cost (S/.) = 1,500 x Irrigation Area (ha)
- Technical Irrigation: Investment Cost (S/.) = 3,000 x Irrigation Area (ha)

By applying these equations, the irrigation areas are complemented and estimated as shown in Table 5.2.8.

Table 5.2.8 Estimated Irrigation Area of SNIP Sub-projects

Province	Ongoing		To be Executed			
			Approved		To be Approved	
	Nos.	Estimated Irrigation Area (ha)	Nos.	Estimated Irrigation Area (ha)	Nos.	Estimated Irrigation Area (ha)
Ayacucho Region Total	56	33,700	411	352,200	109	145,400
Huanta	4	3,700	37	10,600	13	7,200
La Mar	6	3,600	27	9,700	5	700
Huamanga	11	6,300	66	60,500	30	50,800
Cangallo	7	7,500	51	26,700	13	27,200
Vilcas Huaman	5	2,800	33	8,300	1	200
Victor Fajardo	11	3,300	54	51,000	14	6,500
Huanca Sancos	0	0	14	34,500	9	12,800
Sucre	1	200	32	17,300	6	16,900
Lucanas	9	4,800	53	82,600	9	17,400
Parinacochas	0	0	16	16,700	5	5,500
Paucar del Sara Sara	2	1,500	28	34,300	4	200

Source: Prepared by Study Team based on SNIP Inventory Survey

The 520 SNIP sub-projects as of April 2009 to be executed would create 500,000 ha irrigation farmlands. Out of 520 sub-projects, 58 were applied by the central governments, 123 by GRA and 339 by the local governments.

For the implementation of irrigation projects proposed by AgroRural titled "The Program of Small and Medium Irrigation Infrastructure in the Sierra, Peru", GOP requested GOJ for financial assistance. In response to this request, JICA executes "Preparatory Study on Program of Small and Medium Irrigation Infrastructure in Sierra" to realize the loan. The study is focused on 56 sub-projects in 9 Andean regions, out of which the following 7 sub-projects

belong to Ayacucho Region, and 4 are identified in the SNIP sub-projects list as shown in Table 5.2.9.

Table 5.2.9 Sub-projects in Ayacucho being Studied in "The Program of Small and Medium Irrigation Infrastructure"

Code	Province	District	Irrigation Area (ha)	Beneficiary Families	Investment Cost (S/.)	SNIP Code
Ayacucho Region Total			6,134	4,640	34,147,000	
AYA-02		Vinchos	439	550	2,691,000	66369
AYA-12	Huamanga	Chiara	2,000	2,000	5,760,000	-
AYA-13		Acocro	1,100	1,000	8,996,000	-
AYA-01	Cangallo	Cangallo, etc.	660	532	7,238,000	92061
AYA-09	Vilcas Huaman	Concepción	400	168	1,350,000	61579
AYA-05	Victor Fajardo	Huancapi-Huancaraylla	1,040	300	5,800,000	-
AYA-06	Lucanas	Puquio	495	90	2,312,000	106637

Source: Data received from "Preparatory Study on the Program of Small and Medium Irrigation Infrastructure in the Sierra"

5.2.3 Organizations and Institutions for Irrigation Development

Actually, the executing agencies aforementioned are independently planning, programming and realizing irrigation projects. For example, even though Ayacucho Regional Department of Agriculture and AgroRural have their offices in the same lot so closely in Ayacucho City, it is said that they seldom exchange data and information each other.

For irrigation development, an authorization for water use by National Water Authority (*ANA*) under MINAG, or its regional branch Local Water Authority (ALA) is needed. ALA operates its office in Ayacucho City, however, its coverage area is determined based on watershed boundaries. Therefore, 3 provinces such as La Mar, Lucanas and Parinacochas are administered by ALA offices in other regions.

The regional governments are in process of decentralization and their organizations are still in restructuring process. At present in Ayacucho Region, irrigation development plans are formulated by district branch offices of DRA in cooperation with district and local governments, in accordance with each district's policy. AgroRural, PESCS and FONCODES are carrying out irrigation development projects following their own policies. This situation could result in that those development projects may not comply with the integrated regional development strategies.

5.2.4 Operation and Maintenance of Irrigation Facilities

Once the irrigation facilities are constructed and enter its operation stage, an irrigation committee is organized by the members selected among the beneficiary farmers. SNIP system conditions the approval of the sub-project on the formation of the irrigation committee. The roles of the irrigation committee are irrigation scheduling, collection and management of irrigation fee, maintenance and operation of irrigation facilities, and so on.

For the maintenance of the irrigation facilities, the irrigation committee manages the water charge collected from the beneficiary farmers to use for the repair of irrigation facilities. For example, S/. 40 is to be collected per hectare per year as water charge in Cachi River Special Project, however, in almost all the irrigation schemes the farmers are unable to bear it and the facilities are left uncared.

The information regarding the irrigation committees obtained from DRA is summarized in Table 5.2.10.

Table 5.2.10 Irrigation Committees and Areas in Ayacucho Region

Province	Nos. of Committees	Beneficiaries	Irrigation Area (ha)	Farmland Area (ha)
Ayacucho Region Total	691	44,430	47,813	64,320
Huanta	158	9,798	8,480	9,993
La Mar	0	0	0	0
Huamanga	282	14,533	24,006	33,386

Province	Nos. of Committees	Beneficiaries	Irrigation Area (ha)	Farmland Area (ha)
Cangallo	81	5,650	7,062	10,538
Vilcas Huaman	28	1,591	737	906
Victor Fajardo	31	2,205	1,466	2,115
Huanca Sancos	22	2,481	1,704	2,239
Sucre	24	1,716	1,261	1,106
Lucanas	65	6,456	3,097	4,037
Parinacochas	0	0	0	0
Paucar del Sara Sara	0	0	0	0

Source: Data from DRA

An interview was made to the irrigation committee of Ccollota village in Vinchos district, Huamanga province. FONCODES constructed one headwork and introduced sprinkler irrigation system. With these, the farmers plant potato, maize and vegetables in 40 ha farmlands. Seven members elected from 45 families form the committee and they hold meetings every 3 months. Though they are requesting rehabilitation of damaged canals and expansion of irrigation area, it has not been realized.

Figure 5.3.3 Farmers of Ccollota Village

5.2.5 Administrative Supports and Inhabitants Participation in Irrigation Development

When the farmers need irrigation systems, the usual way is that they visit the local or the district government office for the petition. It is common that necessary documents for SNIP register such as the outline sheet (*ficha*) and the project profile (*perfil*) are prepared by the sub-regional office of GRA or AgroRural zonal agency as well as the district or the local municipality on behalf of the beneficiary farmers. If required, a consultant is employed for the necessary procedures.

5.2.6 Problems and Constraints for Development

Problems and constraints for irrigation development in Ayacucho Region are summarized as follows:

Table 5.2.11 Problems and Constraints for Irrigation Development

Problem	Constraints
Deficiency in Irrigation Facilities	Due to insufficient rainfall and its seasonal uneven distribution, irrigation is indispensable for stable agricultural production and its increase. However, a lot of farmers have no irrigation system and are unable to increase the production to get rid of poverty.
	Even where irrigation system is introduced, full areas are not being irrigated due to their damaged and decrepit facilities.
	In the areas where water resources are scarce or topographic condition is unsuitable, traditional irrigation method is unable to supply enough water to farmlands.
Institutional Vulnerability and Capable Deficiency	Due to ineffective operation and scheduling, the irrigation areas cannot be increased in some irrigation schemes.
	In some irrigation schemes, poor maintenance of facilities results in poor irrigation because the operation and maintenance system is not well established.
Lack of Basic Information for Irrigation Planning	Actually the national, regional and local governments are developing irrigation projects on their own without exchanging information among them. Therefore, it is impossible to obtain the data covering all the irrigation projects being executed in Ayacucho Region. This situation can be the hindrance for irrigation development planning.

Source: JICA Study Team

5.3 Road

Road infrastructure in Ayacucho Region is not developed, therefore a study on the existing road network considered

from the viewpoints of solution for regional disparities and poverty reduction is an important issue. Road infrastructure contributes to not only agriculture centered economic activities but also social activities and implementation of measures against vulnerabilities, so that the prompt construction of roads is expected.

5.3.1 Policies, Institutions and Plans

Road network in Peru is classified according to the institution responsible for its administration: (i) National Road, (ii) Regional Road, and (iii) Local or Rural Road. Standards for national and regional roads are as follows:

- National roads: Major roads to interconnect with neighboring countries
  Connect capital of regions
  Connection to major consumer markets and foreign countries
  Connection to international ports and airports
  Interconnection of main producers zones with consumer zones
- Regional Roads: Interconnect the capital of the region to the capital of provinces
  Important to the transportation within the region
  Interconnection to national roads and major local roads
  Connection to airports and ports of the region

All roads that do not correspond to the previously described types are local or rural roads.

Source: Statistics office, General office of planning and budget -MTC- July 2009

Figure 5.3.1 Situation of Road Network in Ayacucho Region

The scope of responsibilities of entities concerned with road administration is described in Table 5.3.1.

Table 5.3.1 Scope of Responsibilities of Road Administration Entities

Institutional Relationship among Road Infrastructure Sector		National Government						Regional Government				Local Government			
		PCM	MTC			MVCS	MINDES	General Administration		Provías Descentralizado – Ayacucho Zone		Provincial Municipality			District Municipality
		PROINVERSION	PROVIAS NAC	General Administration	PROVIAS DES	INADE	FONCODES	Regional Division of Infrastructure	Regional Division of Transportation and Communication	Program for Regional Road Development	Program of Rural Transportation by Decentralization	Provincial Road Institute	Sub Division of Public Infrastructure*	Division of Transport**	Sub division of Urban and Rural Development
	Airport	v		v											
National Road	Terminal		v												
	Asphalt paved road		v												
	Gravel paved road		v												
	Unpaved road		v												
	Car road		v												
	Bridge		v												
	Pedestrian bridge		v												
	O&M		v												
Regional Road	Terminal		v					v				v	v		
	Asphalt paved road				v	v		v		v		v	v		
	Gravel paved road				v	v		v		v		v	v		
	Unpaved road				v	v		v		v		v	v		
	Car road				v	v		v		v		v	v		
	Bridge				v	v		v		v		v	v		
	Pedestrian bridge				v	v		v		v		v	v		
	O&M							v	v	v		v	v		
Local Road	Terminal				v	v		v	v	v	v	v	v		v
	Asphalt paved road				v	v		v	v	v	v	v	v		v
	Gravel paved road				v	v		v	v	v	v	v	v		v
	Unpaved road				v	v	v	v	v	v	v	v	v		v
	Car road				v	v		v		v	v	v	v		v
	Bridge				v	v	v	v		v					v
	Pedestrian bridge				v	v	v	v		v					v
	O&M				v				v	v					v

(*) and (**) names of offices change according to the office in charge of Infrastructure and Transports

Source: MTC, GORE Ayacucho, FONCODES

Policies, institutions and plans of the central, regional and local governments are described as follows:

(1) Central Government Level

(a) National Policy of Transportation

The goals and indicators of the National and Sector Policy of Transportation approved by Ministerial Resolution (year 2009) are shown in the following table.

Table 5.3.2 National Policy of Transportation (2009)

Policies in issues of sector decentralization	1) Assure a timely and proper transfer of competences, functions and resources to Regional and Local governments 2) Define precisely the functions, scope and proper schemes for the coordination among the different government levels 3) Training of regional and local governments by sector 4) Develop regional platforms of competitiveness 5) Institutionalization of citizens' participation

Policy in relation to the improvement of social capacity of the sector	1) Promote and support leadership that promote cooperation and inter-sectors and inter institutional work
Policies in issues of employment and small enterprises (*MYPES*)of the sector	1) Promote the participation of small and micro enterprises in acquisitions of the State
Policies of Transportation Sector	1) Priority for the conservation of transportation infrastructure in different modes and levels of government. 2) Ordained development of transportation infrastructure.

Source: Ministerial Resolution 031-2009-MTC/01 January 15, 2009

According to the national policy of transportation, it can be appreciated that road development at regional and local level still depends on planning, proposals, and transfer of resources by the central government through the Ministry of Transportation and Communications. Policies give more emphasis to regular maintenance of major roads for the conveyance of goods, execution of rehabilitation works and construction of bridges, among others.

On the other hand, decentralized administration to regions is progressing within the Ministry of Transportation too, according to the decentralization policy in Peru. Especially, in order to strengthen social capacities of the transportation sector, each province has an Institute of Province Roads (*IVPs in Spanish*). In Ayacucho Region, all institutes of province roads have their own road development plans and maintenance of departmental and local roads by local population is being promoted.

(b) Institutions concerned with road development

The 3 major institutions contributing to local road administration have offices in Ayacucho region and coordinate issues of local, provincial and regional roads, as shown below.

PROVIAS NACIONAL	This entity was created by Supreme Decree N° 033-2002- MTC of July, 12,2002. It assumed all rights and obligations of the PRT - (P*rogram of Transportation Rehabilitation or Programa de Rehabilitation de Transporte*) PERT (*Special Project of Road Infrastructure Rehabilitation, or Proyecto Especial de Rehabilitation de Infraestructura de Transportes*) and the former SINMAC (*National System of Road Maintenance, or Sistema Nacional de Mantenimiento de Carreteras*). It is technically, administratively and financially autonomous and is in charge of the execution, construction, improvement, rehabilitation and maintenance of the National Road Network projects.
FONCODES	National Program of the Ministry of Woman and Social Development (*MIMDES*) operates in the framework of the National Plan to Fight Against Poverty, mainly in the rural area, financing projects of social and economic infrastructure and projects for the development of productive capacities, in coordination with the Regional and Local Governments and with strategic alliances with the civil society. In the strategic guidelines of social and economic infrastructure, there is the component of road development referring specifically to investment in trails, bridges and pedestrian bridges. Its modality of execution is through executing teams conformed by members of the community and specialists of the concerned entities to provide technical assistance.
PROVIAS DES (National Program on Decentralization of PROVIAS)	Provías Descentralizado - Zonal Ayacucho, is the executing unit of the Ministry of Transports and Communication in Ayacucho Region, of which the main objective is to coordinate the resources transfer process and institutional development of institutions in Ayacucho Region. Regarding the feasibility of its objective they are: promotion, support and orientation in the increase of resources and improvement of regional and rural transportation infrastructure. Provías Descentralizado is financed through programs in agreement with the Regional Government as shown as follows. Decentralized Program of Rural Transportation: Funding by IDB; BIRF and GOP for the period 2007-2011 consisting in US $ 150 million, for rehabilitation and maintenance of more than 4,000 km of rural roads and speed up decentralization by transferring rural road management to local governments' IVP . Program of Departmental Roads: Funding by IDB; BIRF and the Peruvian government for the period 2007-2011 consisting in US $ 200 million to rehabilitate and establish a decentralized maintenance system for departmental roads to be executed by Regional Governments Besides, Provias Descentralizado is funded by Ordinary resources, financed by CAF, grants open for bid such as the Italian-Peruvian fund, French-Peruvian fund, German-Peruvian fund, etc.

(c) National Road Plan

The national road plan classifies roads in North, Center and South basic circuits, as shown in Figure 5.3.2, and

give priority to the development of these roads considered as most important.

- Pan-American Highway, along the Coast from North to South
- Longitudinal Road of Sierra, crosses the Andes mountain range
- Selva Marginal Road along the Amazon River and its tributaries
- Access roads to the above mentioned roads

Ayacucho Region is in the sphere of South Pan-American Highway and has a transversal route: Pisco- Ayacucho Road, named "Vía de los Libertadores"

Source: Provias – MTC homepage

Figure 5.3.2 North, Center and South Road Network

(2) Regional Level

(a) Regional Policy of Transportation

The plan of regional policy of transportation in Ayacucho Region is formulated in order to achieve territorial integration and proper articulation of production units to the markets and consumer zones through the conservation of road infrastructure and to guarantee the operation of transportation services. Main objectives raised in the said plan are as follows:

- Institutional strengthening through the integration of entities concerned on road development.
- Assurance and promotion of social participation in road management through a technical and executive commission appointed by the regional government.
- Assignment of public funds giving priority according to needs of maintenance and expansion of road net.

(b) Sector Institutions at regional level

According to the organization chart of GRA, entities concerned with road development are as follows:

1	Regional Management of Infrastructure	Executes multi-sector projects, and projects for construction and improvement of roads according to agreements with local governments either by contract or direct administration, through the areas of Study and Research, Construction, Supervision and Settlement.
2.	Regional Direction of Transportation and Communications	Depends on MTC's concerning technical and regulation issues and depends on the GRA concerning functions, budget and administration. Said direction has an area of Road Direction that executes studies and projects by hiring consulting services and regular maintenance of departmental roads according to contracts with microenterprises of road maintenance. It supervises said contracts and operates machinery, although the maintenance situation is regular to good. Even so, it has a laboratory with equipment for conventional tests that presently are used more to be let to services to third parts than to actual quality control.

So, there are many institutions intervening in the construction and conditioning or roads in Ayacucho Region and their objectives are related, but due to the decentralization process, the sphere of responsibilities of each entity is not clear. Also coordination among them is not adequate, and resources allocation is not made based on the

volume of tasks corresponding to each of them.

(c) Participative Regional Road Plan - Ayacucho (*PVDP*)-2005

GRA prepared the Participative Regional Road Plan (*PVDP*) in 2005, according to the regional policy of transportation. This road plan defines 3 levels of accessibility as shown in the following table.

Table 5.3.3 Territorial Accessibility Defined by the PVDP

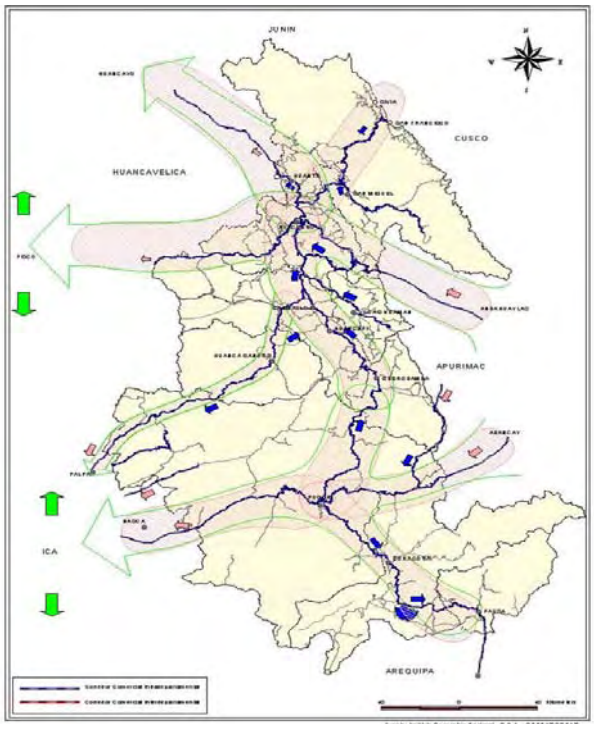
Territorial Sub- space	Level of Accessibility	Accessibility at the subject area
Northern Andean Selva	Proper	This is connected by paved road to the capital of Ayacucho Region. Accessibility is good.
	Regular	There is unpaved road connecting Huanta, San Miguel, San Francisco and Sivia but accessibility is regular. (less than acceptable).
Central	Intermediate	Predominant road net consists of unpaved roads and trails with poor maintenance. Basically there is a lack of connection among productive areas and settlements.
Southern Andean	Regular	There are roads connecting Nazca-Puquio-Abancay, of which the access conditions are good but regional roads connecting to it are unpaved and accessibility is poor.

Source: PVDP year 2005 of Ayacucho Regional Government

Based in the dynamics of the economic activities of the region, the plan (*PVDP*) defines the following strategic axis.

- Ica-Ayacucho-San Francisco
- Ayacucho- Huancayo
- Ayacucho- Puquio-Caravelí
- Nazca- Puquio- Abancay
- Ayacucho-Andahuaylas
- Ayacucho- Huanca Sancos- Palpa

Figure 5.3.3 indicates the distribution flow formulated in PVPD. The most important route for the region economy is Ica-Ayacucho-San Francisco road, responsible for the transport of the greater part of regional products. There is a paved road connecting Nazca-Puquio-Abancay but accessibility is poor. There is no connection between Northern and Southern axis. A basic condition to activate regional economy is to improve the accessibility of this road.



Source: PVDP- 2005

Figure 5.3.3 Flow of Economic Activities

Roads are classified under economic, social and technical criteria from the viewpoint of the region's integral policy, according to the accessibility and the 6 road axis as shown in the following Table.

Table 5.3.4 Regional Roads of Strategic Importance Defined by the PVDP

Section of regional road net	Area	Longitude km	Order
003S Junction (Toccto)- Cangallo- Huancapi- Querobamba- Junction 26 A	Central	353.15	1
Ayacucho- Tambillo- Matara- Junction 3S	Northern Andean Selva	75.80	2
Junction 24 B (Tambo)- San Miguel- Chungui	Northern Andean Selva	100.00	3
Junction 26 A (Puquio)- Coracora-Department Limit Shallashalla	Southern Andean	181.40	4

Source: PVDP- 2005

Concerning expansion of the road network of the region, PVPD gives priority for construction / rehabilitation of 3 roads and 4 bridges as shown in Table 5.3.5:

Table 5.3.5 Construction of Priority Roads and Bridges According to PVDP

Regional road or bridge	Location	Intervention Type	Longitude (m)	Priority
Sarhua- Portacruz	Central	Construction	9.00	1
Rodeo- Apulema	Andino Selva Norte	Construction	45.00	2
Dev. Huanta- Las Vegas	Andino Selva Norte	Rehabilitation	Undefined	3
Puente Tincocc	Central	Construction	Undefined	1
Puente Catarata	Central	Construction	Undefined	2
Puente Retamayo	Central	Construction	Undefined	3
Puente Inkachaca	Central	Construction	Undefined	4

Source: PVDP- 2005

PVDP considers 770 km of rehabilitation, 630 km of periodical maintenance and 1,400 km of regular maintenance for the entire regional roads including the above mentioned priority roads interventions for a period of 10 years and investment amounts of US $11.0 million, 7.8 million and 10.3 million respectively.

(3) Province level

(a) Participative Provincial Road Plans (*PVPP*)

Provinces of Ayacucho Region made good progress in the Participative Provincial Road Plans formulation, based on the decentralization process. The first plan was issued by Huamanga Province in 2003 and by now, all 11 provinces have prepared the plan. Technical assistance was provided for each IVP through Provias Rural (*presently Provías Descentralizado*).

Table 5.3.6 Existing Provincial Road Plans

Province	Participative Provincial Road Plans	Issuing date
Huanta	Yes	June 2004
La Mar	Yes	May 2009
Huamanga	Yes	October 2003
Cangallo	Yes	March 2007
Vilcas Huaman	Yes	2004
Victor Fajardo	Yes	October 2004
Huanca Sancos	Yes	February 2006
Sucre	Yes	February 2005
Lucanas	Yes	October 2003
Parinacochas	Yes	February 2005
Paucar del Sara Sara	Yes	February 2006

Source: Provías Descentralizado Homepage

Those road plans look far ahead into the coming 5 to 9 years. Provinces have estimated a large amount for maintenance costs for inter-connection roads between communities; however this activity is quite limited due to provincial governments' budgetary restrictions. Also, training of personnel to work in road maintenance is not sufficient, thus only emergency maintenance is carried out.

5.3.2 Existing Situation of Land Transportation Sector

The existing situation of the land transportation sector in Ayacucho Region is as follows.

(1) Roads

According to data as of November 2008, length of national paved or compacted roads is 1,344 km, regional roads length is 2,157 km and local roads length is 1,846 km and then total comes to 5,347 km.

Not all roads in Ayacucho Region are accessible all year round with exception of the national highway. Especially in rural roads, accessibility is very restricted and most of the communities do not have means to transport their products. Even in case there are roads, road conditions are very bad due to lack of maintenance, reflecting in a reduction of productivity, impeding the growth of local economy and thus, farmers have to pay for increasing costs. An increase

in transportation costs implies purchasing production input at higher prices, limiting the access to markets, making the distribution of agricultural products more difficult. Consequently, it is a cause for the poverty at rural areas.

Under such circumstances, population claims for better roads. In May 2009, there were 803 SNIP sub-projects registered. Of those, 52 requests were made by RGA attending the claims of the population and the number of sub-projects registered in SNIP by province. Level of maturity of them is shown in the table below. There are more sub-projects in Huamanga province where economic activities are more significant, followed by the provinces of La Mar and Huanta that have lively economic activity. The three northern provinces are responsible for more than half of the number of sub-projects and budget.

Table 5.3.7 Summary of SNIP Sub-projects of Transportation Sector in Ayacucho Region

Province	In Execution		Project			
			Approved		Under verification	
	Number	Cost (S/.)	Number	Cost (S/.)	Number	Cost (S/.)
Huanta	18	28.814.402	51	111.670.239	13	29.506.054
La Mar	23	348.417.698	73	87.570.412	6	9.460.931
Huamanga	65	839.211.771	172	136.421.069	47	70.627.433
Cangallo	12	22.056.031	21	16.281.438	3	1.532.222
Vilcas Huaman	10	10.334.615	35	97.923.315	4	9.294.231
Victor Fajardo	8	15.676.905	39	60.190.490	10	13.748.094
Huanca Sancos	2	7.240.333	25	36.933.795	5	8.622.410
Sucre	4	8.226.237	20	29.560.258	6	10.786.830
Lucanas	25	17.418.373	47	36.423.785	13	10.655.611
Parinacochas	3	5.285.518	18	21.711.663	2	4.215.626
Paucar del Sara Sara	4	9.468.387	17	22.224.136	2	1.212.275
Total Ayacucho	174	1.312.150.270	518	656.910.600	111	169.661.717

Source: Inventory of SNIP Sub-projects by May, 15 2009 conducted by JICA Study Team

(2) Vehicles and Services

According to MTC's data, there were 5,380 vehicles registered in 2006. In 2008, 305 large vehicles and 1,150 small vehicles totaling 1,455 vehicles were newly registered. In recent years, the number of vehicles has increases by around 1,500 per year, thus road infrastructure is required for coping with such increase in both urban and rural areas.

Table 5.3.8 Origin of Legal Cargo Transportation Companies in Ayacucho Region

Province	Start of operation range of years	No. of companies by province
Huanta	2005-2008	4
Huamanga	1994-2008	32
Victor Fajardo	Data not available	1
Lucanas	2008	1
Parinacochas	2006-2008	4
Total		42

Source: Homepage Universidadperu.com

There are many companies of cargo and passengers transportation operating in roads connecting provincial capitals with Ayacucho City. Passengers' transportation services in 2008 were provided by 54 legally authorized companies with an authorized fleet of 664 vehicles. Cargo transportation services were provided by 42 companies legally registered with a fleet of 117 vehicles for the same year. However, there is not a proper terminal for said commercial companies. The situation of vehicles and services provided in Ayacucho Region are shown in the following photos.