

Japan International Cooperation Agency (JICA)

**Study on Economic and Fiscal Policies
in Resource-Rich Countries**

Final Report

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KRI International Corporation
Mitsui Mineral Development Engineering Co., Ltd

FOREWORD

Japan International Cooperation Agency (JICA) has been in technical and financial cooperation with many developing countries endowed with rich natural resources, such as oil, natural gas, metal and other mineral resources. Among those countries, there are countries advancing their national development leveraged by natural resource revenue, however, there are also countries facing with difficulties in developing their economy and industry due to “resource curse”, and also with their fiscal situation affected by the recent fluctuation of oil and commodity prices. This suggests that there are specific challenges in planning development and cooperation for resource-rich countries, which requires particular consideration in their economic and fiscal conditions. Otherwise there is a risk that a development project would not achieve the expected output due to fluctuation of economy and exchange rate, and inadequate fiscal resources caused by fiscal structure peculiar to resource-rich countries.

JICA has been studying and analyzing impact of fiscal condition to its cooperation projects, by compiling documents such as “Thematic Issue Guideline for Public Financial Management (PFM)” and “PFM Handbook: PFM in Developing Countries”. However, there are limited researches being conducted focusing on economic/fiscal policies and PFM in developing countries, focusing on the issues of risks associated with their natural resource revenues. With this background, JICA assigned this study project to a joint study team formed by KRI International Corporation and Mitsui Mineral Development Engineering Co., Ltd, started in August 2015. The purpose of this study project is to study and analyze characteristics of economic and fiscal conditions as well as PFM in resource-rich countries, then preparing reference materials to be used by JICA and recipient country governments for their policy making and cooperation project preparation. This study also covered case studies in three countries through which valuable real examples have being collected to enrich the study contents.

This Report is expected to assume a role as an introductory document for learning economic/fiscal policies and PFM in resource-rich countries, and it is intended to be referred to by fiscal authorities, central banks, related ministries and agencies, universities and institutions in resource-rich countries, besides JICA staff, consultants and other interested parties.

The information and data in this Report have been presented in the best knowledge available and updated, based on survey results and analyses conducted by the Study Team. However, the contents of this Report do not necessarily indicate opinions or thoughts of JICA or organizations of the Study Team members.

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Industrial Development and Public Policy Department
Japan International Cooperation Agency

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Draft Final Report

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List of Abbreviations

Abbreviation	Abbreviated Term
ADB	Asian Development Bank
BOM	Bank of Mongolia
BOP	Balance of Payments
BRICs	Brazil, Russia, India and China
BS	Balance Sheet
BSP	Bank South Pacific
CAPEX	Capital Expenditure
cf	cubic feet
CIT	Corporate Income Tax
CPI	Corruption Perceptions Index
DBM	Development Bank of Mongolia
DCF	Discounted Cash Flow
DNPM	Department of National Planning and Monitoring
DOF	Department of Finance
DOT	Department of Treasury
DSA	Debt Sustainability Analysis
DSR	Debt Service Ratio
EGR	Expenditure Growth Rule
EIA	Environmental Impact Assessment
EITI	Extractive Industries Transparency Initiative
EOR	Enhanced Oil Recovery
EPU	Economic Planning Unit
ETP	Economic Transformation Program
FDI	Foreign Direct Investment
FHF	Future Heritage Fund
FOB	Free on Board
FS	Feasibility Study
FSF	Fiscal Stabilization Fund
FSL	Fiscal Stability Law
FTZ	Free-Trade Zone
GDP	Gross Domestic Product
GLC	Government Linked Corporations
GST	Goods and Services Tax
HDF	Human Development Fund
IDE	Institute of Developing Economies
IDEAS	Institute for Democracy and Economic Affairs
IMF	International Monetary Fund
IT	Information technology

Abbreviation	Abbreviated Term
IRC	Internal Revenue Commission
IWG	International Working Group of Sovereign Wealth Funds
JCOAL	Japan Coal Energy Center
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JOGMEC	Japan Oil, Gas and Metals National Corporation
JV	Joint Venture
KIA	Kuwait Investment Authority
KWAN	National Trust Fund / Kumpulan Wang Amanah Negara
LME	London Metal Exchange
LNG	Liquefied Natural Gas
NRPB	Non Resource Primary Balance
NRGI	Natural Resource Governance Institute
MDF	Mongolian Development Fund
MIDA	Malaysian Investment Development Authority
MMC	Malaysian Mining Corporation
MNT	Mongolian Tugrik
MOF	Ministry of Finance
MRRT	Mineral Resource Rent Tax
MSC	Malaysia Smelting Corporation
MSG	Multi-Stakeholder Working Group
MTEF	Medium Term Fiscal Framework
OECD	Organization for Economic Co-operation and Development
OPEX	Operating Expense
PIH	Permanent Income Hypothesis
PIT	Personal Income Tax
PNG	Papua New Guinea
PPP	Public–Private Partnership
PSC	Production Sharing Contract
QA-QC	Quality Assurance-Quality Control
RAPID	Refinery and Petrochemical Integrated Development
RC	Refining Charge
REER	Real Effective Exchange Rate
RER	Real Exchange Rate
RGI	Resource Governance Index
RM	Malaysian Ringgit
R/P	Reserve / Production Ratio
RRC	Resource-Rich Countries
RRDC	Resource-Rich Developing Countries
RSPT	Resource Super Profits Tax

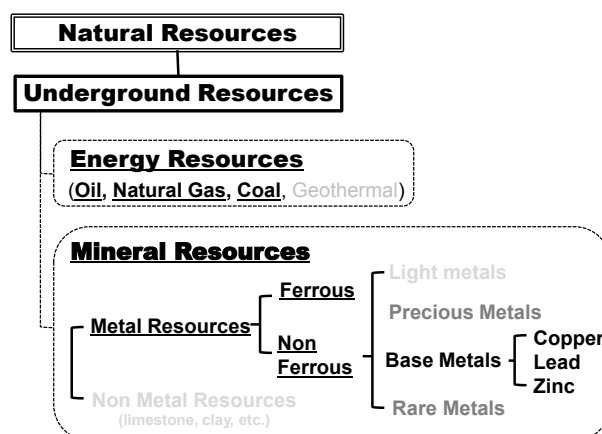
Abbreviation	Abbreviated Term
SME	Small and Medium Enterprises
SOE	State-Owned Enterprises
SPB	Structural Primary Balance
SWF	Sovereign Wealth Fund
TC	Treatment Charge
TI	Transparency International
TSL	Two Step Loan
TT	Trade Tax
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
USA	The United States of America
USD	United States Dollar
UTP	Universiti Teknologi PETRONAS
VAT	Value Added Tax
WGI	Worldwide Governance Index
WTI	West Texas Intermediate

CHAPTER 1 ECONOMIC AND FISCAL CHARACTERISTICS OF RESOURCE-RICH COUNTRIES (RRCs)

1.1 Classification of RRCs and Fiscal Policy

1.1.1 Outline of RRCs

Underground natural resources are economically valuable materials concentrated in the process of long-time diastrophism and available in the form of an ore deposit or an oil field. As shown in Figure 1-1, the underground resources are mainly divided into energy resources and mineral resources. The energy resources are oil, natural gas and coal while the mineral resources consist of metal resources (ferrous and non ferrous metals) and non metal resources. This document focuses on the underground natural resources in resource-rich developing countries having an impact on a country's economy and government finance. (In Figure 1-1 the resources are indicated by bold letters)



Source: Mitsui Mineral Development Engineering Co., Ltd

Figure 1-1: Classification of Underground Resources

The natural resources covered in this document are energy resources (coal, oil, natural gas) and mineral resources categorized as metal resources. The metal resources are divided into ferrous and non-ferrous metals, and non-ferrous metals are further classified into light metals (aluminum, titanium), precious metals (gold, silver), base metals (copper, lead, zinc) and rare metals. Non metal resources (Limestone, clay) are not covered in this study. Table 1-1 shows 58 RRCs producing natural resources by the regional block.

Table 1-1: RRCs by Regional Block

1) Sub-Saharan Africa

Energy Resources	Angola(oil), Cameroon (oil), Equatorial Guinea (oil), Nigeria (oil), South Sudan (oil), Gabon (oil).
Mining Resources	Guinea (bauxite, alumina, gold), Liberia/South Africa (gold, diamond, vanadium), Sierra Leone/Botswana (diamond), Tanzania (gold), Zambia (copper), Zimbabwe (gold, platinum, chromium).
Energy/Mining	Congo DRC (oil, diamond, cobalt), Ghana (gold/oil), Mozambique (natural gas, coal, titanium).

2) East and Central Asia

Energy Resources	Azerbaijan (oil), Kazakhstan (oil), Turkmenistan (natural gas)
Mining Resources	Mongolia (copper)
Energy/Mining	Russia (oil/vanadium), China (coal/copper/rare metals)

3) Middle East & Europe

Energy Resources (oil)	Algeria, Bahrain, Egypt, Iran, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, Yemen, Norway, United Kingdom (oil)
Mining Resources	Morocco (copper, silver)

4) South Asia

Energy Resources	Afghanistan (gold, lithium, iron ore)
Energy/Mining	India (coal, iron ore)

5) Southeast Asia & Pacific

Energy Resources	Malaysia/ Vietnam (oil), Timor-Leste (oil)
Mining resources	Philippines (nickel, copper)
Energy/Mining	Cambodia (oil, minerals), Myanmar (natural gas, gems), Papua New Guinea (oil, copper, gold, natural gas), Indonesia (oil, nickel), Australia (coal, iron ore, copper, gold)

6) Middle and South America

Energy resources	Bolivia/ Trinidad and Tobago (natural gas), Brazil/Colombia/ Ecuador, Mexico, Venezuela (oil)
Mining Resources	Chile (copper), Peru (copper, zinc, gold)

7) North America

Energy/ Mining	Canada (oil, cobalt, nickel, zinc), USD (oil, natural gas, copper)
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Source: Prepared by JICA Study Team based on Resource Governance Index published by Natural Resource Governance Institute (2013)¹

Remarks: Parentheses indicate natural resources

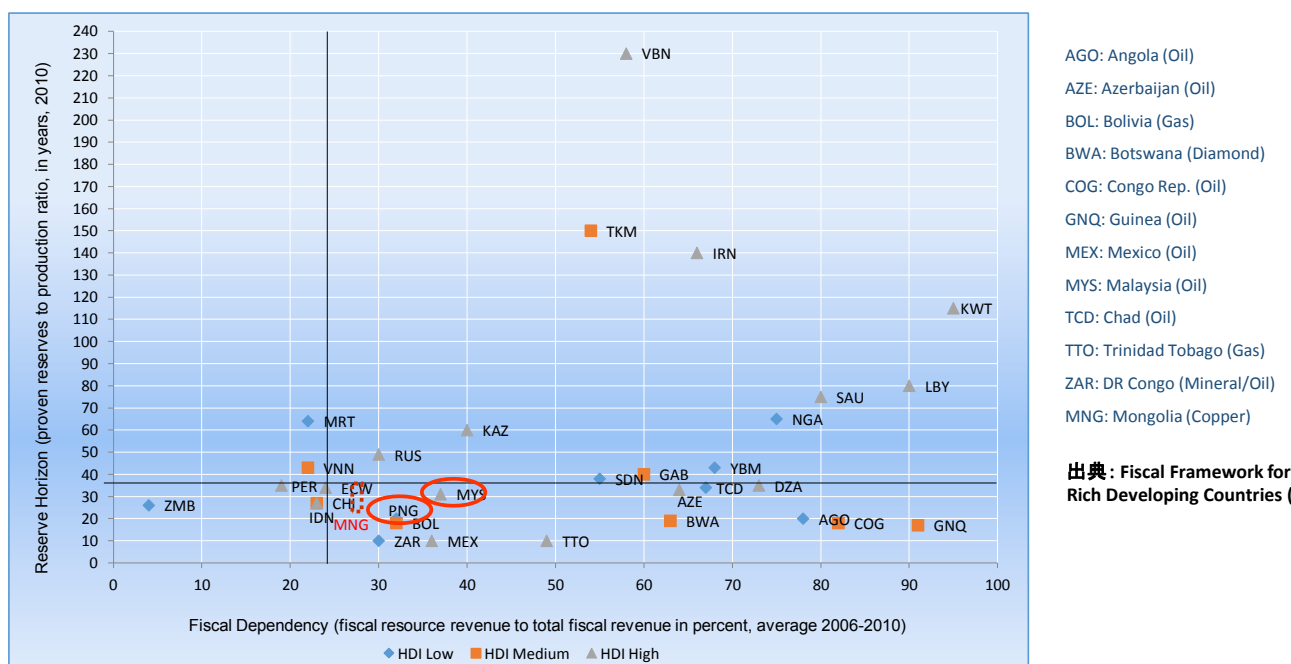
The main endowment of regional blocks is summarized below.

- Middle East/ Europe are mostly featured by oil producing countries.
- Africa is balanced by oil producing and mining producing countries.
- Southeast Asia & Pacific is featured by countries producing both of energy (coal, oil and natural gas) and mining resources. Australia is the resource-rich country producing coal and various kinds of mineral resources.
- Mining resources are concentrated in Afghanistan while India is producing coal and iron ore in South Asia.
- East and Central Asia is featured by oil producing countries (Central Asia and Russia) and copper producing country (Mongolia).
- Middle and South America is featured by dominance of oil producing countries in South America and Chile having the largest proven copper resource.
- Rare metal and rare earth are mainly distributed in China, Russia and South Africa.

¹ Natural Resource Governance Institute (NRGI), <http://www.resourcegovernance.org/resource-governance-index>

1.1.2 Classification and Definition of Resource-rich Countries

There already has been valuable study and analysis conducted focusing on fiscal policies of Resource-rich developing countries (RRDCs) in the IMF Staff Discussion Note². The Note discusses that RRDCs are classified according to two criteria: that is, 1) fiscal dependency (fiscal resource revenue to total fiscal revenue in percent) and 2) reserve horizon (proven reserves in production years). According to the IMF cross-country survey, an indicative threshold for fiscal dependency could be in the range of 20 to 25% of total fiscal revenue while an indicative threshold or reserve horizon could be set at 30 to 35 years. Provided that a threshold for revenue dependency is set at 25% of total fiscal revenue while a threshold for reserve horizon set at 35 years, RRCs' classification is illustrated in Figure 1-2. The horizontal axis indicates fiscal dependency percentage while the vertical axis states reserve horizon in years. The RRDCs with fiscal dependency of 25% or more in the first and fourth quadrant of Figure 1-2 are the targets of fiscal policies proposed by IMF. RRDCs plotted in the first quadrant are those having reserve horizon of more than 35 years. The oil producing countries such as Kuwait (KWT), Saudi Arabia (SAU), Iran (IRN), Kazakhstan (KAZ) and Russia (RUS) are plotted in the first quadrant. RRDCs in the fourth quadrant are categorized as those of shorter reserve horizon. They are Angola (AGO), Botswana (BWA), Trinidad and Tobago (TTO), Malaysia (MYS), Papua New Guinea (PNG), Bolivia (BOL), and Mongolia (MNG). The characteristics of RRDCs in the fourth quadrant are presented in Table 1-2. Fiscal dependency of Botswana (diamond) and Angola (oil) is very high, more than 60% while that of Malaysia (oil) and Mongolia (copper) and Papua New Guinea (gold) is not so high, less than 40%.



Source: Prepared by JICA Study Team based on Figure 1 of IMF Staff Discussion Note, May 16, 2012

Remark 1: Both Malaysia (MYS) and Papua New Guinea (PNG) and Mongolia (MNG) are RRCs for case study in the PFM Handbook. Due to absence of data on reserve horizon of Mongolia, the Study Team estimates the range of reserve horizon shown in the dotted encircle.

Remark 2: HDI low; Countries with low HDI, HDI medium; Countries with medium HDI, HDI high; Countries with high HDI

Figure 1-2: Classification of RRCs

² Tomas et al., IMF Staff Discussion Note, Fiscal Frameworks for Resource-rich Developing Countries, IMF, 2012

Table 1-2: Key Indicators of Selected RRCs

Country	Main Resource	Resource exports in % of total exports	Resource revenue in % of fiscal revenue	Reserve horizon in years	GDP/capita 2010, PPP)
Angola(AGO)	Oil	95%	78%	20	\$5,632
Botswana(BWA)	Diamond	66%	63%	18.6	\$15,489
Trinidad Tobago(TTO)	Natural gas	38%	49%	9.7	N.A
Malaysia(MYS)	Oil	8%	37%	30.9	\$14,670
Papua New Guinea (PNG)	Gas/Gold/Copper	80%	32%	20 (gold)	\$2,300
Bolivia (BOL)	Gas	5%	32%	19.5	\$4,592
Mongolia(MNG)	Copper	81%	29%	N.A	\$4,006

Source: Prepared by JICA Study Team based on Appendix 1 of IMF Staff Discussion Note, May 16, 2012

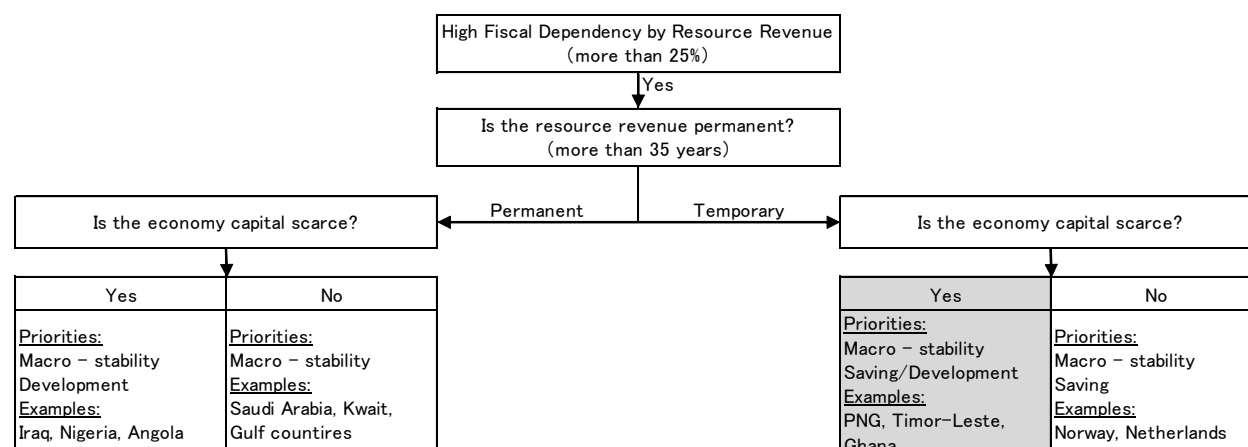
Remark: Export and fiscal dependency are the average of 2006-2010 while reserve horizon is based on the 2010 data

If there is a change of proven reserve, for this reason, reserve horizon is a determinant factor for fiscal stability and economic policy of RRDCs.

1.1.3 Classification of RRDCs and Fiscal Policy

The IMF Staff Discussion Note (Fiscal Frameworks for Resource-rich Developing Countries) presents the design of appropriate fiscal policy frameworks for RRDCs as shown in Figure 1-3. The decision process to determine an appropriate fiscal framework for RRDCs starts at fiscal dependency of more than 25%, then shifts to reserve horizon of more than 35 years or less than 35 years, and finally sets the conditions about ample capital or scarce capital. RRDCs are classified into four groups as follows:

- Temporary reserve horizon/ ample capital: Norway, Netherlands
- Temporary reserve horizon/ scarce capital: PNG, Timor-Leste, Ghana
- Permanent reserve horizon/ ample capital: Saudi Arabia, Kuwait
- Permanent reserve horizon/scarce capital: Iraq, Nigeria
-



Source: Prepared by the Study Team based on Figure 2 presented in IMF Staff Discussion Note, May 16, 2012

Figure 1-3: Appropriate Fiscal Framework for RRDCs

Fiscal framework is comprised of long-term fiscal sustainability and short to medium-term fiscal policies

such as short to medium-term fiscal anchors (rules) depending on reserve horizon and capital scarcity. Long-term macro-fiscal stability is needed for all RRDCs to prepare a long-term plan of financial allocation for consumption, saving and investment. Short to medium fiscal policies have options for fiscal anchors in terms of the extent resource revenue linked to fiscal revenue. In particular RRDCs targeted (see the shaded box presented in Figure 1-3) are generally characterized by temporary reserve horizon but with limited non-resource revenue (i.e. taxes). It has been suggested to set up fiscal anchors against unstable resource revenue caused by price volatility of natural resources.

(1) Non Resource Primary Balance (NRPB)

NRPB is the balance of non-resource revenue (tax revenue) and primary expenditure consisting of government spending for investment and operating expenditures. NRPB is relevant for RRDCs with a relatively short reserve horizon for natural resources. The merit of NRPB is to protect government finance from fiscal instability (fiscal revenue shortage or expansion of expenditure) caused by price volatility of the resource. Although it is ideal for RRDCs to adopt a tight fiscal retrenchment for both investment and consumption under the NRPB's rules, RRDCs are reluctant to accept a fiscal anchor which is too tight for them. To ease the strict condition of NRPB, it is suggested to set up another fiscal anchor called "scaling-up expenditure" which allows development expenditure to be made in line with growth of non-resource GDP. In short scaling-up expenditure allows a fraction of resource revenue to be included in fiscal revenue. As of practice, NRPB is still suggested as a fiscal anchor for RRDCs with temporary reserve horizon and low income. For instance, IMF recommends PNG to adopt NRPB as fiscal anchor, but the financial authority of PNG is reluctant to adopt it.³

(2) Structural Primary Balance (SPB)

In order to alleviate the demerit of NRPB that resource revenue to delink with fiscal revenue, IMF suggests Structural Primary Balance (SPB) in which a part of resource revenue can be included in fiscal revenue, and in which resource revenue will be decomposed into a structural and a cyclical components. In this way, the revenue in a cyclical component is delinked to fiscal revenue⁴. In other words, SPB is equal to NRPB added with the structural component of resource revenue. SPB delinks expenditures from externally-driven volatility in resources price, and SPB is relevant for RRDCs with medium reserve horizon. Mongolia and Mexico are case countries applied with SPB, as described below.

1) Mongolia

In Mongolia, the structural revenue linked with fiscal revenue is computed by using a 16-year moving average of mineral prices, composed of actual prices of the past 12 years and projected prices for the current year and the next 3 years. However, the use of a formula which refers back a long time may lead to a forecast error and undermine the credibility of this rule.

2) Mexico

In Mexico, the structural revenue is computed by a 10-year moving average of oil prices, composed of

³ Fiscal anchor (i.e. NRPB) sets up a target of fiscal deficit in percent of GDP on a single year basis. The reluctance of PNG authority to adopt NRPB as fiscal anchor is attributed to difficulty in achieving a target of fiscal deficit in a single year basis.

⁴ A cyclical component of revenue is transferred to a fiscal stabilization fund.

25% from the past, 50% from immediate future and 25% from medium-term future. Use of a formula with weighting for future prices has the demerit that SPB is difficult to achieve if the future prices deviate from the price forecast.

(3) Expenditure Growth Rule (EGR)

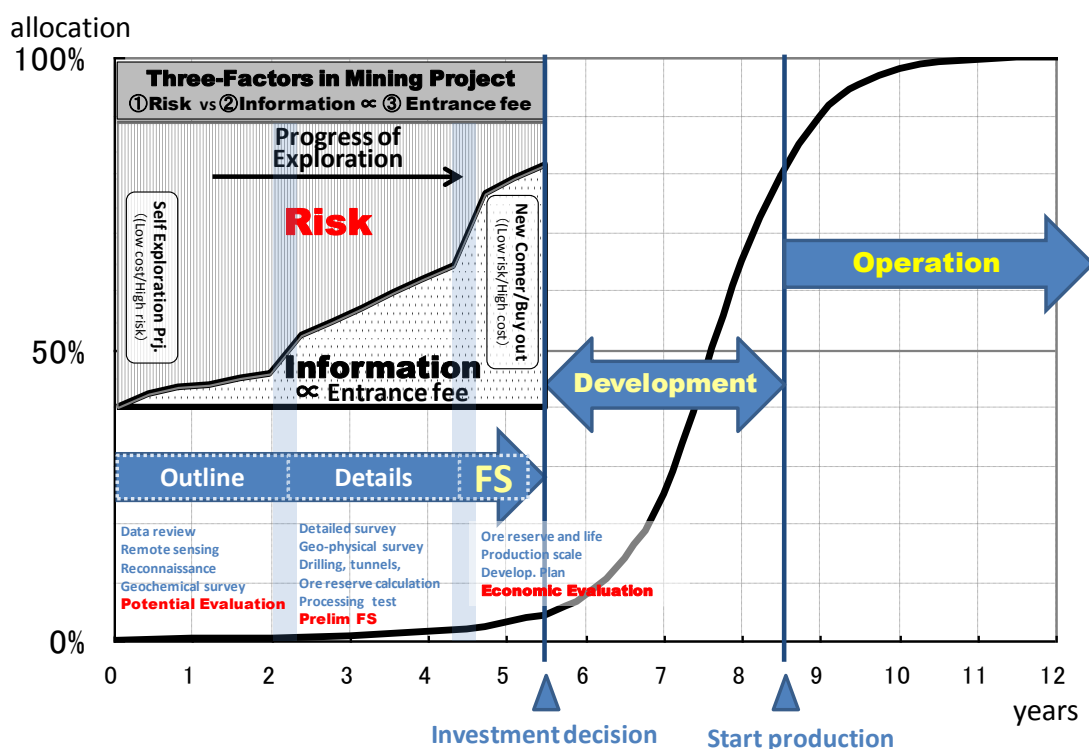
EGR is a fiscal anchor of expenditure that allows government investment to be expended in line with non-GDP growth rate. The use of EGR definitely needs precautionary saving of resource revenue and government capacity absorption of budget expenditure implementation.

1.2 Overview of Resource Development

1.2.1 Flow of Resource Development

Since the resource deposit underground cannot be directly viewed from the ground, there are many cases where it takes several years, even more than a decade, from exploration to development and operation in extracting natural resources, and there are even quite a few cases where this process has taken several decades. In addition, it takes enormous amount of financial input to invest in mining, from 100s of million US dollars, and this makes it necessary to avoid or mitigate investment risks. This requires a careful, stepwise examination from reconnaissance to detailed surveys over time, as well as a feasibility study (FS) at the final stage to determine the commercial investment.

The Figure 1-4 is a conceptual diagram of the time and investment allotments from exploration to operation and commencement of production, as a case study of mining projects. While there is a difference by the kind of resource, the mining project demonstrates common characteristics with other types of underground resource development.



Source: Mitsui Mining & Smelting Co., Ltd.

Figure 1-4: Mining Development Projects: Investment Allocation and Period

In a mining development project, 5~10% of total investment is for work done from exploration to financial feasibility assessment in order to reach an investment decision. The purpose of doing exploration over a period of time lies with increasing the amount of information about existing resources through surface surveys, physical prospecting, boring, and other exploration activities. As more information is obtained about the underground, the knowledge about the state of resources becomes clearer and more accurate, so as the stage progresses to detailed study to FS, and the risk of investing in development can be pushed down. However, as exploration reaches the final stage, an enormous amount of capital has to be paid to obtain mining rights and interests. On the other hand, at the initial exploration stage it is possible to obtain the mining rights at low cost, but the risk is high, because there is little information available, and it takes a long time to reach the development stage.

The mining industry can be described as “1) exploring, 2) extracting and 3) concentrating the crude resources and selling them as a product or as a concentrate”. If a mine operation can produce total revenue exceeding the total cost, from exploration to concentrate production, then the mine can be feasible. In summary, the key characteristic of mine operations is “high risk-high return”, which entails, among other things: 1) a long lead time from exploration to development (several years to several decades), 2) the large scale of investment (100s of million dollars), 3) instability of the market which is difficult to hedge, and 4) the difficulty in shifting cost rises to the sales price since prices are based on world market prices.

When a company conducts economic evaluations of a mine development project, an accurate estimation of sales revenues (production volume X unit price) and development/production costs can help to mitigate

risk. However, the metal prices used to determine the sales revenue is unexpectedly fluctuating, so for a long-term stable supply of a resource, deposits with a “low cost position” are also an important point for lowering the risk. The mines with good cost position will likely to yield large profit, while the cost is largely affected by the natural conditions such as deposit shape, quality and location, among others. There is a limit in cost reduction by improving operations, and it is usually said that a mine’s profits are “grade (grade of ore) at first, and followed by the market price”.

The following topics outline the basic flow of mine development, from preparations development, operation and mine closure.

- (1) Preparations for development
 - Acquisition of information and selection of properties (review of the literature, survey of properties, exploration contracts)
 - Exploration and resource evaluation studies (geological studies, calculation of reserves, FS)
 - Development design/ capital procurement/ construction
- (2) Development and production (mining, processing, transport, sales)
- (3) Mine closure (countermeasures for mine pollution, restoration, use of old mine site)

1.2.2 Feasibility Study

The followings contents of a feasibility study are conducted to determine the investment worthiness.

- (1) Information about geological deposits

Geography, topography, access; deposit model, shape of deposit, reserves and grade; mining rights, process of exploration

- (2) Financial feasibility

Method(s) and conditions for selling ore; infrastructure, land, water and labor that are required; financing

- (3) Operational plan

Mining method and schedule, processing method, production schedule, plant design

- (4) Estimates of CAPEX and OPEX, and economic evaluation

- 1) CAPEX (capital expenditures): Land preparation, preliminary drilling, operating capital, mine construction, purchase of machinery, peripheral mine equipment
- 2) OPEX (operating expenses): Labor costs, depreciation, maintenance, safety, common expenses
- 3) Profitability: Profitability expectations and sensitivity analysis based on financial calculations (DCF method, etc.)

- (5) Other necessary items

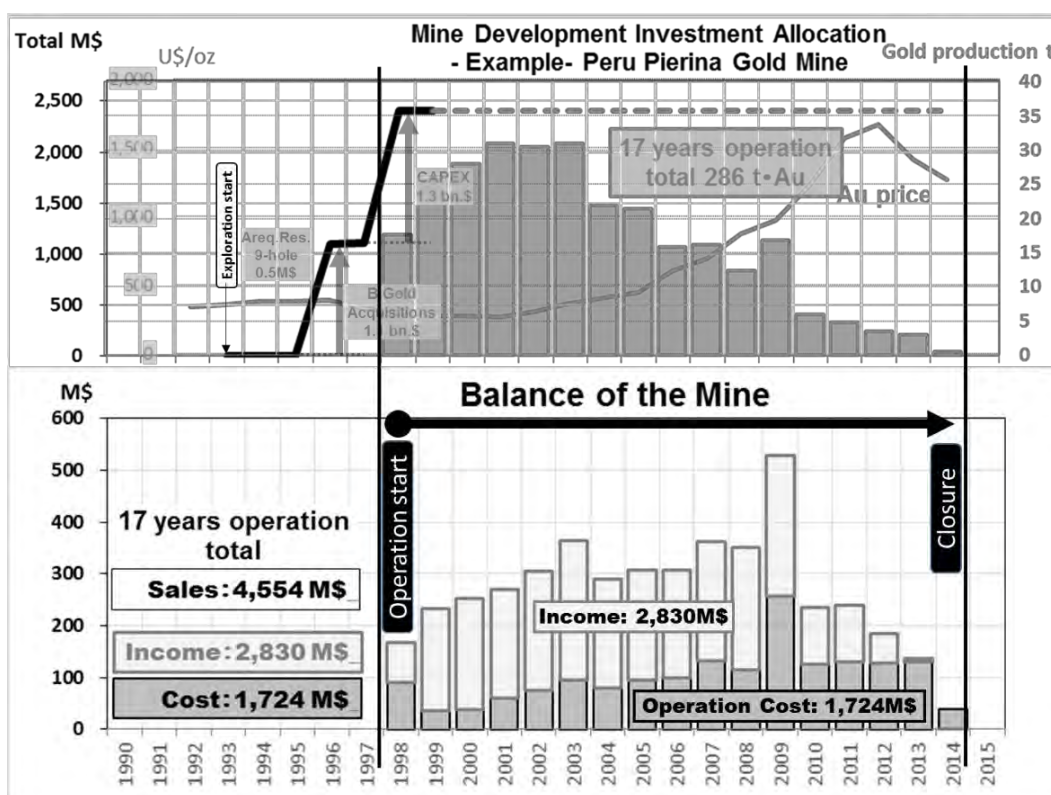
Environmental Impact Assessment (EIA): Impacts of mining on the natural environment, ecosystems, heritage, local communities, etc., and associated countermeasures

When conducting economic assessment of a resource deposit in an investment project, it is necessary to make evaluations from the perspectives of cost competitiveness, operating scale, and resource security in combination with the DCF (discount cash flow), a method which is commonly used in investment project

assessments. Since there is a wide distribution of base metal deposits and base metal mines around the world, this is an important starting point for new mine development for evaluating the sustainability of stable mining operations in the context of competitiveness with existing mines and market conditions. Contrary, the resource and producers of rare earths are extremely limited, and operations are small in scale. In this case, it is necessary to consider resource security, by avoiding ripple-effect risks, rather than profitability. It should also be noted that in recent bankable feasibility studies, there are many cases where there is demand for an objective corroboration of acquired data using the QA-QC (Quality Assurance/Quality Control) method from the perspective of minimizing risk to investors.

In this way, it takes much time to prepare a mine for development, and where the amount of resource is limited, this restricts a mine's life to a few years or decades after the start of production. Initial investment up to development must be collected during the working period. Figure 1-5 shows the cash flow of the recently closed Pierinya gold mine in Peru, which was developed with a relatively short exploration period, and yielded enormous profits.

Exploration at the Pierinya gold mine commenced in 1993, and operations were started 5 years later in 1998 (initial investment: US\$ 24 million). From 1998 until it was closed in 2014, the mine yielded 286 tons of gold (this was 3.4 times as much as Japan's Sado gold mine produced in 400 years). Despite the fact that gold prices started to fall shortly after mining operations commenced, the mine had a total profit of US\$ 2.83 billion. In other words, the operation of this one mine created a cash flow (combination of initial investment and sales) of about \$7 billion.



Sources: Prepared by referring to Barrick Gold Annual Report, JOGMEC Report, and Mineral Commodity Summaries
Figure 1-5: Investment Allocations, Income and Expenditures in Mine Development, from Exploration to Mine Closure (Case study: a Peruvian Gold Mine)

1.2.3 Sales from Non-Ferrous Metals Mines (Concentrate Prices)

In the case of non-ferrous metal mines, the metal components (=grade) of raw mined ore are low, so physical methods (beneficiation/processing) are used to concentrate the product with a higher grade known as a concentrate. Many minerals are bought and sold as concentrates.

The price of concentrate, which is the “product” that generates revenues for a mine, is determined by transaction conditions between the seller (mine) and buyer (smelter) such as market prices set by the London Metal Exchange (LME) and others that are based on the grade, treatment charge (TC), and refining charge (RC) of the concentrate.

Factor that led to high prices and a worldwide resource crunch includes rising oil prices began in 2003, the economic development of BRICs countries (especially China), and the massive expansion of resource consumption. As a result, in order to ensure a supply of raw ores that they lacked, smelters intensified their efforts to buy ore under unfavorable conditions (smelting fees as cheap as those in China), and, relatively speaking, there was a continuous decrease in smelter sales while mine profits tended to significantly increase.

It is said that in this way, a relatively fair system for setting prices based on a balance between supply and demand of non-ferrous metals was established, but there are numerous cases where prices for oil, rare metals, etc., were determined through negotiations between buyers and sellers. This was especially the case for widely-distributed and monopolized resources such as oil, iron ore, and rare metals (rare earths), which are subject to sudden, unexpected, and massive price fluctuations due to speculation by producers, political situations, and other factors.

1.3 Volatility in Resource Prices and Resource Revenues

Profits obtained from the mining of underground resources are greatly affected by the transaction price (market price) of the product (concentrate, oil, etc.). Market price fluctuations are affected not only by the intentions of producers and buyers when contracts are signed and balances between global supply and demand, but also by the release of warehoused stock, development of new applications, the appearance of alternatives, political situations, and the flow of investment monies, among other things. While rare metals are widely distributed, their market scale is small, and their prices have often been subject to dramatic increases and decreases by such things as political instability and influx of investment capital. In addition, for resources such as iron ore, coal, oil, etc, that are being monopolized by majors, it is possible that producers are arbitrarily setting prices, and there are cases where “production adjustment” can lead to turmoil in markets.

The most recent example of resource price volatility is the price of oil. In early 2000, the price of crude oil was about \$20 per barrel, but by July 2008 it had risen to \$147 per barrel, and the next year, in the wake of the Lehman Brothers crisis, it had fallen dramatically to \$40. After that, it fluctuated between \$80-\$100, but then fell again in 2014 during the “shale gas revolution”, and by August 2015 it was once again testing the \$40 level.

In addition, the average world prices for base metal resources of copper, zinc and lead were relatively

stable in early 2000, but a few years later began to fluctuate greatly. For example, compared to a base of 100 in 2003 prices, by 2007 the base had reached 400, and then dropped to below 200 in 2009, then fluctuated between 300 and 400 after that. This volatility in world prices led to unpredictable factors such as regional conflicts (in the Middle East, etc.), dramatic increases in demand (China), dramatic decreases (Lehman Brothers crisis), development of new resources (shale gas), investments, etc., and this had a direct impact on the financial situations of countries that are highly dependent on revenues from resources. Because revenues from resources are foreign currency revenues, this had an effect on the operating budgets of the countries in question, while at the same time led to an increase in the foreign reserves of central banks.

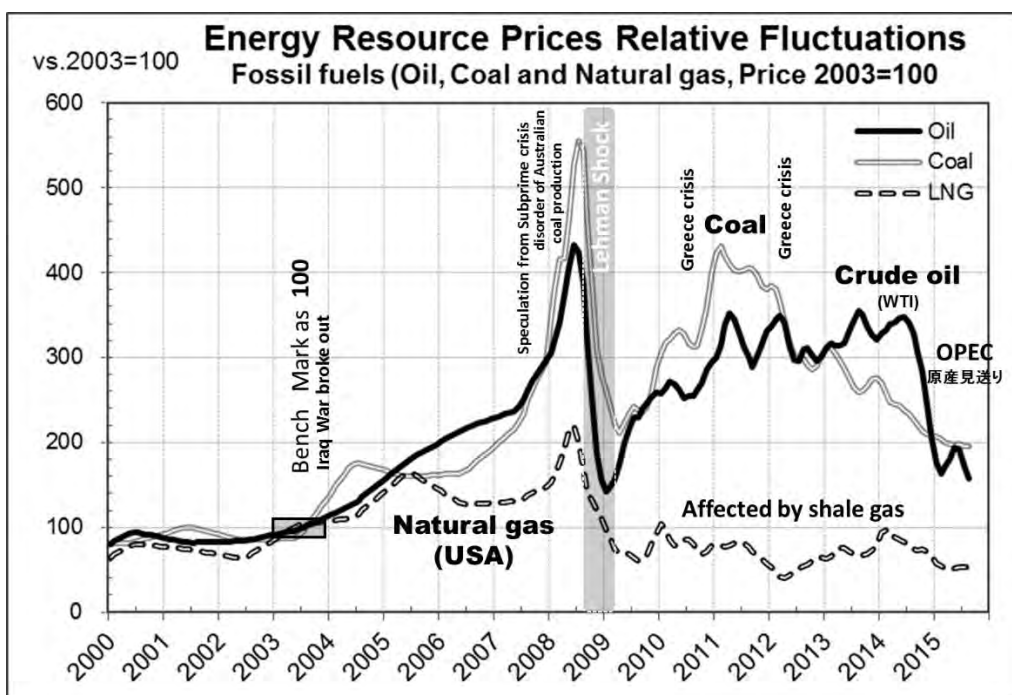
The following sections discuss trends and factors related to the volatility of various resources over the past 15 years.

1.3.1 Energy Resources (Oil, Natural Gas, Coal)

Crude oil prices are determined by the balance between supply and demand on the world market, and rise or fall based on trends in the global economy, supply trends in producing countries, as well as investment capital. In recent years, prices have increased due to the 2003 Iraq War, and later skyrocketed due to unstable supplies in the United States, growing demand in China and elsewhere, and influx of investment capital in the aftermath of the subprime loan crisis, among other factors. By July 2008, the price had risen to \$147 per barrel. After that, prices fell as demand slackened, then began to rise again in 2010, exceeding \$110 per barrel in January 2011. Due to the dramatic rise in crude oil prices, the prices of natural gas and coal also began to rise and maintained a high level. However, such factors as the decision by OPEC not to reduce production led to a dramatic decrease in crude oil prices beginning in the second half of 2014.

Figure 1-6 shows a graph of price volatility. Prices began to rise in the late 2000s, with oil and coal increasing by a factor of 4 - 5 compared with their 2003 prices. After the Lehman Brothers crisis, they fell to about 2X their 2003 levels, but then began to rise again, maintaining a level of 3 - 4X until 2014, when they underwent a dramatic decrease. Natural gas prices were also affected by the increased production of shale gas, and after the Lehman Brothers crisis they decreased.

Coal is turned into coke in steel production, and its price, like that of crude oil, began to rise in the mid-2000s, especially in 2008 when China shifted from being a coal exporter to a coal importer, and when flooding in Australia, a major coal exporter, disrupted production, there was a remarkable price increase.

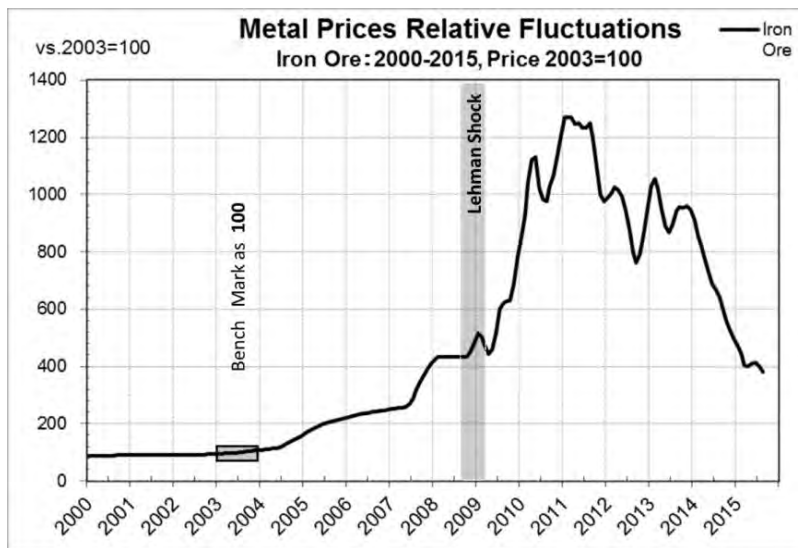


Sources: Japan Coal Energy Center (JCOAL), JOGMEC, IMF Primary Commodity Prices

Figure 1-6: Trends in Fossil Fuel Prices (Oil, Natural Gas, Coal) (2000-2015)

1.3.2 Iron Ore

Due to the rapid growth of the Chinese economy in the latter half of the 2000s decade, there was a tight situation in the supply and demand of iron ore, but the trend was a little different from those of oil and non-ferrous metals. This was because the development of iron ore mines required not only the resources, but also railways and other mine-related infrastructure, which caused delays in supplies. There was no effect from the Lehman Brothers crisis, as the price rise continued to the point where in 2010, it surpassed 10X the 2003 level. Because 3 major companies—Rio Doce (Brazil), Rio Tinto (UK, Australia) and BHP Billiton (UK, Australia)—had monopolistic control (over 80% of export share), prices could be arbitrarily manipulated.



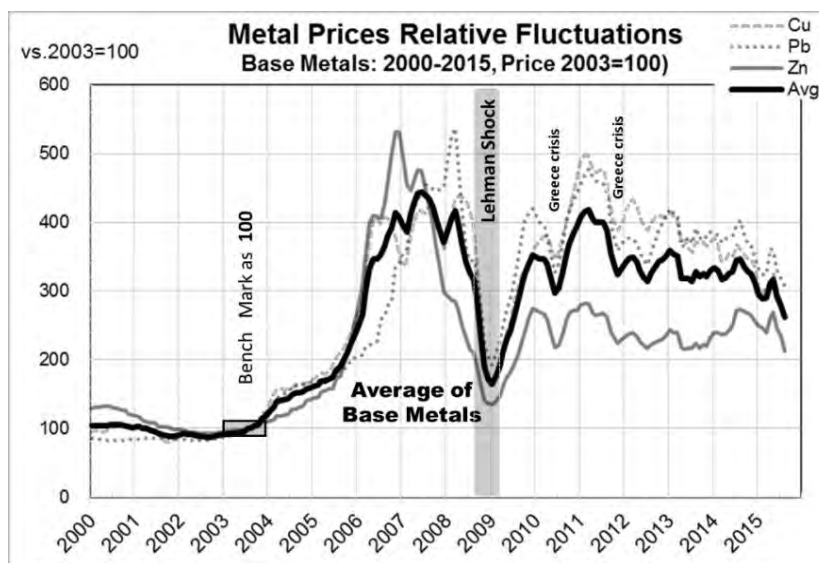
Source: IMF Primary Commodity Prices data

Figure 1-7: Trends in Metal Prices - Iron Ore (2000-2015)

1.3.3 Base Metals (Copper, Lead, Zinc)

Copper, lead and zinc all show the same trends. Prices in the latter 2000s decade rose steeply to 4~5X the 2003 prices, then fell to about 2X the 2003 prices after the Lehman Brothers crisis, then increased again. Some investment capital circulated through the copper market so that the prices reached their peak of about \$10,000 per ton in 2011. After that, the Greek economic crisis sent prices falling again, and today they are holding steady at around 3X the 2003 price.

Causes of the increases in base metals prices included increasing demand resulting from economic development in BRICs countries, especially China; and rising costs of oil and materials that began in 2003, and which pushed the operating costs of mines up.



Source: LME Prices data

Figure 1-8: Trends in Base Metals Prices - Copper, Lead and Zinc (1996-2015)

1.3.4 Rare Metals

The amount of rare metals acquired and used by industry is small and applications are limited, so prices can rise rapidly in response to rapid increases in demand. Market prices are characteristically unstable.

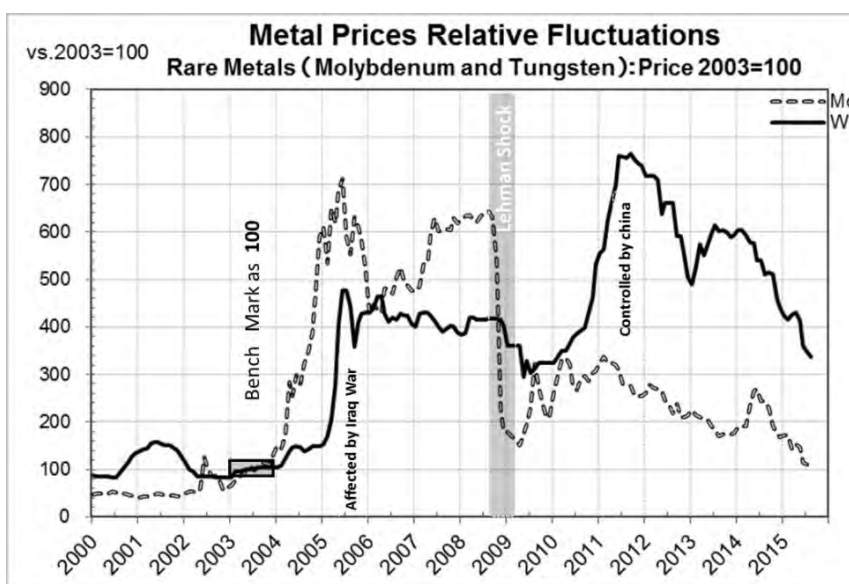
Although there are some rare metals that show price trends that are basically similar to those of iron, non-ferrous metals, and energy resources, nearly all rare metals have limited demand and circulation, and it is difficult to maintain a fair system for market prices. As a result, they are not traded on exchanges such as LME, and transactions are not particularly transparent.

The following sections compare price factors and trends for 1) molybdenum and tungsten, which generally follow price trends, and 2) tantalum and rare earths, which show completely different and sudden changes.

【Molybdenum and Tungsten】

Because molybdenum is often a by-product of copper ore, it is difficult to adjust production to match demand. This results in volatile (excessive and insufficient) production which easily leads to dramatic fluctuations in prices.

Tungsten began to attract attention as an alternative strategic material for depleted uranium bombs, which were causing environmental problems during the Iraq War. In 2005, prices began to rise steeply, then China, which accounted for more than 80% of world production, began to adjust production and manipulate prices, which remained high even after the Lehman Brothers crisis. However, the global economic slowdown that began in 2014 has tended to cause prices to fall a bit.



Source: London Metal Bulletin

Figure 1-9: Trends in rare metals prices-- molybdenum, tungsten (1996-2015)

【Rare metals: Tantalum, Rare Earths】

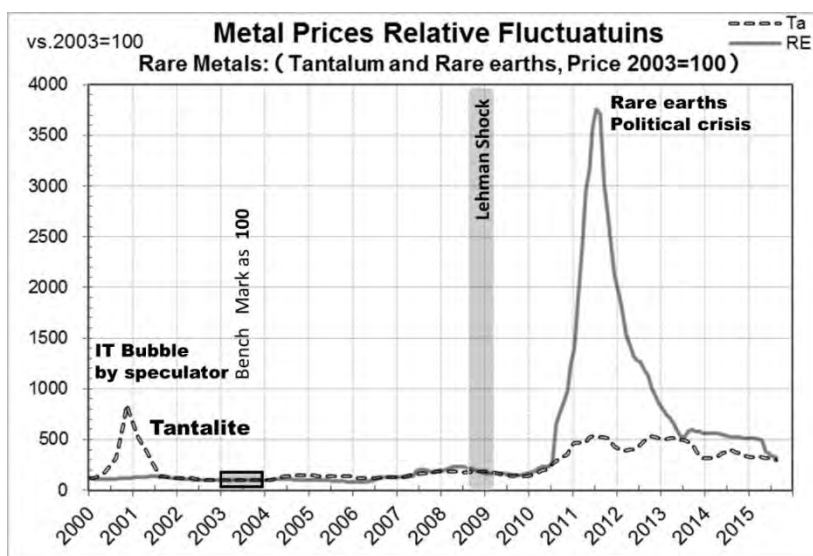
Even among rare metals, tantalum and rare earths show unique trends that differ from other types of minerals. From late 2000 into 2001, the prices were 8X higher than their 2003 prices, and for a short time in 2011, rare earth prices skyrocketed to nearly 40X their 2003 levels. In all cases, this tightness was not due to normal balancing between supply and demand; rather, investment monies were flowing into the tantalum market because of growth in the mobile telephone condenser market; for rare metals, the price increases were the result of investment monies flowing into the market as a result of political restrictions on exports.

【Effect of the Influx of Speculation/Investment Monies】

The experience of tantalum in the aftermath of the 2001 IT bubble is even today acting as a drag on the mining industry, and users are quickly shifting raw material procurement strategies to recycle and away from mineral resources. Small-scale markets like tantalum and the influx of excessive investment monies into upstream caused a chain of events like those shown below to occur:

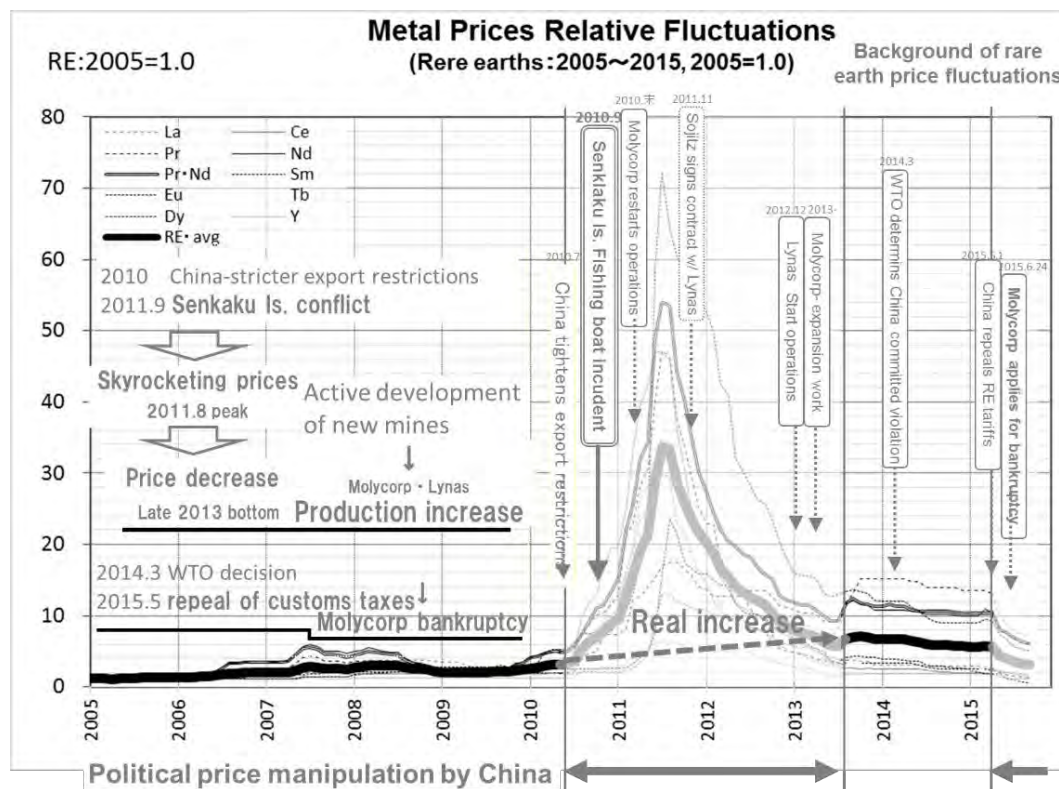
- i) Resource bubble (steeply rising metals prices) → ii) resource development boom, oversupply →
- iii) market collapse, mine closures → iv) resource shortages, skyrocketing prices, chaotic markets → v) avoidance of mineral resources

The main cause of the recent rare earth supply crises and steep price increases stems from China’s near 100% monopoly on these resources. They derive from the Chinese government’s production policies and export restrictions. In 2008, prices began to rise, and in the wake of the Senkaku Islands conflict prices suddenly were 10X higher than before, which further attracted investment monies so that by August 2011, prices had shot up to 30~50X previous levels. The impact of these dramatic increases was similar to that of tantalum— new rare earth projects were in a chaotic situation. Subsequent reactions resulted in such things as decreasing prices, mine closures, and end-users weaning themselves away from rare earths.



Source : London Metal Bulletin and Asian Metals

Figure 1-10: Trends in Rare Metals Prices - Tantalum, Rare Earths (1996-2015)



Source: Mitsui Mineral Development Engineering Co., Ltd.

Figure 1-11: Recent Fluctuations in Rare Earth Prices and the Background behind them

1.4 Impact of Resource Price Volatility on Macro-Economy

1.4.1 Relation between Price Volatility and Macro-Economy

The fundamental question of whether abundance of natural resources really contribute to economic development/growth of RRCs or may exert negative impact on economy of RRCs, has been long researched. This topic is being called “Resource Curse” as a problem commonly faced by RRCs. This section deals with the relation between price volatility explained in section 1.3 and macro-economy of RRCs and then explains mechanism of Dutch Disease, which is a typical phenomenon of “Resource Curse”.

The impact of resource prices increase to macro-economy of RRCs can be assessed in various aspects such as i) inflow of foreign currency due to natural resource export, ii) increase of domestic money supply, iii) domestic inflation, iv) appreciation of real exchange rate, and v) increase of real interest rate if a tight monetary policy is taken to control inflation. Real exchange rate (RER) is a key economic variable to assess the impact of resource prices increase to macro-economy of RRCs⁵. RER is expressed by a nominal exchange rate and relative price of overseas price standard over domestic price measured by domestic currency (see equation of RER in the box).

⁵ IMF(2012)

The expected impact of resource price increase to macro-economy of RRCs can be explained as follows.

Appreciation of RER

Price increase of natural resources brings about inflow of foreign currency (income earned by export of natural resources). This could result in appreciation of a nominal exchange rate(S) and expansion of domestic demand for non-tradable goods (services and construction).

Monetary Market

Inflow of foreign currency brings about increase of domestic money supply and a central bank may implement tight monetary policy by raising its policy rate (a lending rate to commercial banks).

Government Expenditure

In case government expenditure expands due to increase of resource revenue, domestic demand for tradable and non-tradable goods increase. Demand for tradable goods can be managed by import of them, but increasing demand for non-tradable goods (construction and services) is constrained by domestic supply capacity, resulting in increase of wages in non-tradable goods' sector and working population shifts from the tradable goods sector (manufacturing in particular) to the non-tradable goods sector. This could cause Dutch Disease ("the negative impact on an economy of anything that gives rise to a sharp inflow of foreign currency, such as the discovery of large oil reserves").

From a Fixed Exchange Rate to Flexible Exchange Rate System

Long-run appreciation of RER for a certain period could keep high relative prices of domestic over trade partners. This could lower competitiveness of exports and puts pressure on depreciation of a nominal exchange rate(S). Auto adjustment of exchange rates does not work under a fixed exchange system. Therefore RRCs adopting a fixed exchange system shift to peg it to currency of trade partners or flexible exchange rate system.

External Debt

Some of oil producing countries in Sub-Saharan Africa (i.e. Nigeria) experienced a severely indebted country because of increase of external debt and it lowered the country's creditworthiness due to rescheduling or exemption of external debt. Appreciation of RER lays the trap of making a debtor country borrow foreign currency with less amounts of domestic currency.

RER

$$RER = S \times \frac{P^f}{P} = \frac{S \times P^f}{P} = \frac{\text{Overseas Price Standard}}{\text{Domestic Price Standard}} \quad (1)$$

where S is a nominal exchange rate, P^f is overseas price standard, P is domestic price standard.

Increase of domestic price standard (P) makes RER smaller, which indicates appreciation of RER.

Tradable Goods and Non-Tradable Goods

In general, “Tradable goods” are those goods sold and bought in the world market. On the other hand, “Non-tradable goods” are goods mainly traded only in the domestic market. (The World Britannica Encyclopedia) For example, agriculture products, parts and assembled manufactured product are tradable goods, and service, construction and real estate are categorized and non-tradable goods. This categorization gives an important point in considering effect of Dutch Disease, since tradable goods can increase its supply by and import for a domestic demand increase, while supply capacity cannot be immediately increased for non-traded goods, which leads to inflation of domestic prices.

Real effective exchange rate (REER) is used to evaluate change of RER for a certain period. REER is computed by weighting trade volume with several trade partners and is indexed by making REER in base year 100. There appears to be appreciation of REER during 2000 to 2012 after a resource boom in the world.

1.4.2 Mechanism of Dutch Disease

The term “Dutch Disease” is traced back to decline of manufacturing industry in Netherland after exploitation of new natural gas fields in 1959 and was coined by the UK’s “The Economist” in 1977. Since then, the Dutch Disease implies RRCs’ inability of industrial diversification because of specialization in a single sector (resource sector) in a so-called neoclassical economy suggesting that it is optimal for counties to specialize in sectors having a comparative advantage, the Dutch Disease should not be viewed as a problem. Nevertheless a spillover effect of working population from a manufacturing sector to a single resource sector has become viewed as a serious problem⁶. This section explains the mechanism of the Dutch Disease of how this problem breaks out.

The Dutch Disease (de-industrialization following a natural resources boom) can be caused by two factors⁷. One is “factor movement effect” and the second is “spending effect”. The former is direct while the second is indirect. They are discussed below.

Factor Movement Effect

⁶ Wijnbergen, The ‘Dutch Disease’: A Disease After All?, *The Economic Journal*, Volume 94, 1984

Sachs and Warner, Natural Resource Abundance and Economic Growth, *NBER Working Paper Series*, 5398, 1995

⁷ Corden, Booming Sector and Dutch Disease Economics: Survey and Consolidation, *Oxford Economic Papers*, 36, 1984

In an economy with three sectors, natural resources (booming tradable goods), manufacturing (non-booming tradable goods) and a sector producing non-tradable goods, the booming natural resources sector will take inputs away from the rest of economy for the following reasons and impact spending as described thereafter.

- ✧ Increase of demand for labor in the booming sector
- ✧ Wages increase in the booming sector
- ✧ Labor movement from non-booming tradable sector (manufacturing) to the booming sector
- ✧ Increase of demand for non-tradable goods
- ✧ Increase of relative price of non-tradable goods' sector over trade partners
- ✧ Appreciation of RER
- ✧ Decline of competitiveness of non-booming tradable sector (manufacturing)

Spending Effect

- ✧ Increase of national income and government spending caused by increase of resources revenue
- ✧ Increase of domestic demand for non-tradable goods
- ✧ Increase of demand for labor in non-tradable goods' sector and wages increase in the sector
- ✧ Labor movement from manufacturing to a sector producing non-tradable goods
- ✧ Increase of relative price of non-tradable goods to tradable goods
- ✧ Appreciation of RER
- ✧ Decline of competitiveness of manufacturing sector

The mechanism of how the Dutch Disease breaks out in macro-economy affected by the resource boom can be explained by referring to the case of Trinidad and Tobago.⁸ The country experienced two booms of natural resources. The first boom was increase of oil price during 1972-1982 and the second boom was increase of oil and natural gas prices during 2003-2008. The second boom was astonishing with a hike in oil prices from \$30 per barrel in 2000 to \$ 100 per barrel in 2008 and in natural gas price from \$3 to \$8 per thousand cubic feet. The country seemed to receive much resource revenue from increased production of oil and particularly natural gas in the second boom. How natural resources boom affected macro-economy of the country is explained below. Impact of natural resources booms to macro-economy in Trinidad and Tobago is generally featured by spending effect, particularly government spending.

Impact of Natural Resources Booms to Macro-economy

The First Boom (1972~1982)

- ✧ Government spending in percent of GDP increased from 20 % in 1972 to 50 % in 1982.
- ✧ The first boom brought about increase of wage in both sectors of tradable and non-tradable goods. Wage in the sector of non-tradable goods continued to be higher than wage in the sector of tradable goods. This was supposed to be government spending on non-tradable goods. As a result, the

⁸ Alvin et al., Dutch Disease in Trinidad & Tobago: Then and Now, Central Bank of Trinidad & Tobago, 2012 (<http://www.central-bank.org.tt/sites/default/files/Dutch%20Disease%20Presentation%20June%202012.pdf>)

wage differential widened after 1980 gave rise to further movement of labor from non-booming tradable goods sector to non-tradable goods sector.

- ◇ Demand for labor increased in the oil development sector after 1974. Demand for labor decreased in the non-booming sector (manufacturing) while increased in the sector of non-tradable goods. It implies that a massive movement of labor took place from the non-booming sector to both sectors of natural resources and non-tradable goods.
- ◇ The real effective exchange rate (REER, 2005=100) steadily appreciated
- ◇ GDP shared by non-booming tradable goods (manufacturing) decreased at constant price basis.
- ◇ The ratio of fiscal revenue to GDP jumped from 20% in 1973 to 50% in 1982, which correlated to the wage differential between sectors of tradable goods and non-tradable goods.

Transition Period (1983~2002)

- ◇ The wage in both sectors of tradable goods and non-tradable goods steadily increased. Wage differential remained in a transition period.
- ◇ Change of employment in the three sectors was as follows: a gradual decrease in the non-booming tradable goods, constant in natural resources sector, and increase in non-tradable goods.
- ◇ Appreciation of REER was at peak in 1985, turned to depreciation from 1985 onwards. The Central Bank changed the exchange rate system from the fixed rate to peg system (peg to US\$).
- ◇ Change of real GDP shared by the three sectors was as follows: a gradual decline in the non-booming tradable goods, increase in the natural resources sector, and decrease in non-tradable goods after 1989. The petro-chemical industry started to contribute to GDP in 1994.

The Second Boom (2003~2008)

- ◇ Wages in both sectors of tradable and non-tradable goods sharply increased so that wage differential continued during the second boom.
- ◇ The ratio of fiscal revenue to GDP increased from 25% in 2002 to 35% in 2008.
- ◇ Change of employment in the three sectors was almost the same as in the transition period.
- ◇ REER turned to appreciation. The Central Bank shifted the exchange rate system from peg to floating system.
- ◇ Change of real GDP shared by the three sectors was almost the same as in the transition period.

The country experienced a continuing wage differential between the sectors of tradable and non-tradable goods and appreciation of REER. In fact, expansion of the government expenditure fueled appreciation of REER. Spending effect accelerated movement of labor from the sector of non-booming tradable goods to the sector of non-tradable goods and then the sector of non-booming tradable goods lost its strength in terms of employment and real GDP. Table 1-3 shows the change of employment structure in the three sectors. The non-booming tradable goods' sector lost about 20% in terms of its share of total employment for 35 years. The government had a safeguarding policy for domestic industries in the first boom while it changed to open policy in the second boom. De-industrialization experienced in Trinidad and Tobago was also influenced by the government policy.

Table 1-3: Change of Employment Structure

(Unit: %)

Sectors	1974	1982	2003	2008
Non-tradable	65	70	80	85
Manufacturing/Agriculture	30	25	15	10
Natural Resources	5	5	5	5
Total	100	100	100	100

Source: Prepared by the Study Team based on Alvin et al. (2012)

Remark: Figures in the above table are indicative based on the Figure showing change of employment prepared by the Central Bank of Trinidad and Tobago

In the period of the second resource boom, appreciation of RER gave rise to decline of competitiveness of manufacturing sector. The pressure for depreciation of a nominal exchange rate to keep competitiveness of tradable goods made the government alter its exchange rate system from fixed to floating system. The natural resources sector kept a constant share of employment and increased its share of real GDP. On the other hand, the non-tradable goods sector gradually lost its share of real GDP while increasing its employment. That is why labor productivity increased in the natural resources sector while decreased in the non-tradable goods sector.

The United Nations Industrial Development Organization (UNIDO)⁹ researched to what extent domestic consumption was dependent on imports by manufacturing industry in Central Asia and Sub-Saharan Africa. Import dependency increased in 1992, 2000 and 2007. This was mainly ascribed to trade openness but manufacturing industries in those countries declined. The solution to Dutch Disease requires two policies: that is, fiscal revenue/expenditure management and industrial development.

1.5 Corruption Issue about Resource Revenue

1.5.1 Resource-rich Country and Corruption

Corruption, defined by the World Bank as ‘the abuse of public office for private gain’, is recognized a serious issue about resource-rich country governance. Also, it has been regarded to be detrimental to their fiscal status, especially the revenue side. In this sense, various anti-corruption efforts have continued within each country and in the international framework as well.

Furthermore, corruption can be thought of to be an issue for the economy. That is, corruption is broadly believed to be one of factors behind the phenomenon, ‘the resource curse’, so that natural resource ends up deteriorating the gap of wealth, and hampers economic development, rather than bringing wealth to resource-rich countries.

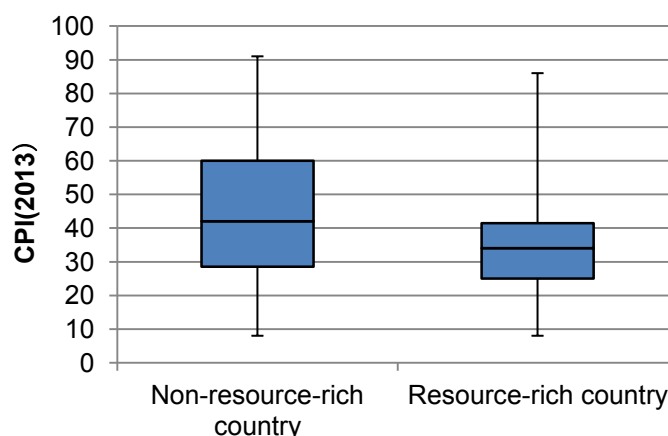
Although corruption is not unique only to resource-rich countries, there seems to be a correlation between natural resource and corruption. Figure 1-12 is a box plot graph to show the scores of Corruption Perception Index (CPI)¹⁰ of resource-rich countries¹¹ and non-resource-rich countries, which indicate the

⁹ Raphael and Masuma, ‘Promoting Industrial Diversification in Resource Intensive Economies’, UNIDO

(http://www.unido.org/fileadmin/user_media/Publications/Pub_free/Promoting%20Industrial%20Diversification%20Report.pdf)

¹⁰ CPI measures the perceived levels of public sector corruption worldwide, from 0 (highly corrupt) to 100 (very clean).

tendency that resource-rich countries have relatively lower CPI. According to the figure below, the CPI scores of resource-rich country seem to concentrate at the lower level compared with those of non-resource-rich country.



Source : Prepared by Study Team based on Transparency International (2013)

Figure 1-12: Natural Resource and Corruption

Moreover, the OECD conducted a survey on foreign bribery, based on analysis of the information from enforcement actions against 427 cases of foreign bribery offence¹². One of its key findings is that 19% of the foreign bribery cases occurred in the extractive sector, which is the biggest among all sectors. For example, there was a recent incident in Brazil regarding state oil company scandal. (see box article)

Petrobras Corruption Scandal

In March 2014, executives of Petrobras, semi-governmental Brazilian multinational energy corporation, were alleged to have accepted kickbacks from contractors for many years, by inflating contract values. Moreover, it was found that parts of illicit money were used for illegal donation to ruling and coalition parties. This led to the arrests or prosecution of more than 50 people including many politicians, and furthermore, the allegation of illegal campaign financing against President Dilma Rousseff.

(Source: the Wall Street Journal, August 22, 2015)

1.5.2 What Causes Corruption?

It is widely accepted that corruption is likely to occur under weak governance. Although the “governance” has various definitions, this report refers to the concept of the World Bank; the quality of governance consists of rule of law, government effectiveness, and accountability and transparency.

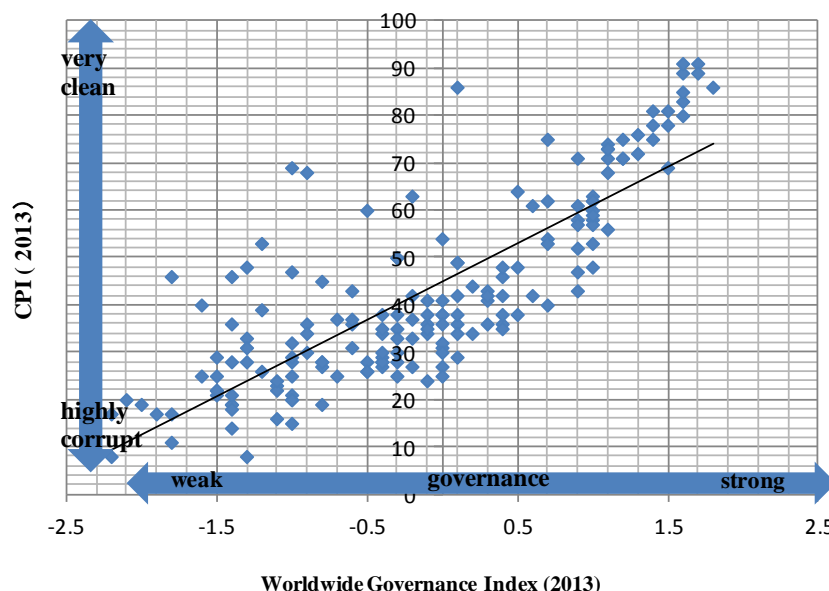
Generally, not limited to the extractive sector, corruption is thought to happen as a consequence because weak governance overlooks illicit activities taken by politicians and private firms. Figure 1-13 is a scatter

Transparency International (2013) <http://www.transparency.org/cpi2013/results>

¹¹ Those are 58 countries covered by Natural Resource Governance Institute, NRGI. <http://www.resourcegovernance.org/rgi>

¹² OECD Foreign Bribery Report, 2014

graph which shows the relationship between CPI and governance index¹³, and it gives the idea that quality of governance correlates with corruption. That is, the weaker the governance, the higher the corruption occurrence in the country.



Source: Prepared by the Study Team by referring to Transparency International (2013) and World Bank (2013)

Figure 1-13: Governance and CPI

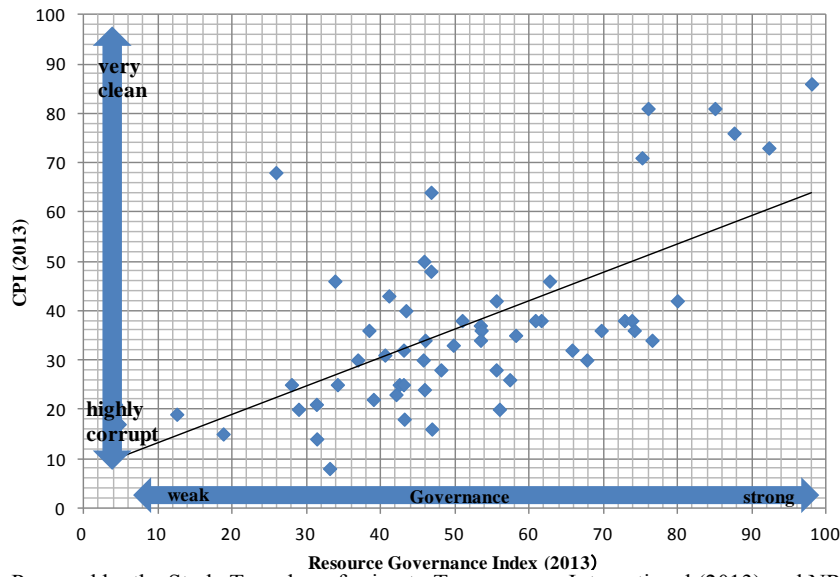
Figure 1-14 similarly shows the relationship between governance and corruption in resource-rich countries. This illustrates the same tendency as the preceding figure; countries with poor governance tend to be more corrupt. This figure adopts a governance index by Resource Governance Index (RGI)¹⁴ for resource-rich countries. According to Bhattacharyya and Hodler¹⁵, the relationship between natural resources and corruption is stronger in less democratic states. Furthermore, Aslaksen¹⁶ concluded, based on the analysis of a large dataset, that an improvement in democracy would mitigate the negative impact of mineral wealth on corruption.

¹³ Worldwide Governance Indicator (WGI): The aggregate index which measures quality of governance with the scale from -2.5 to 2.5, based on statistical analysis of six individual indices; 1) Voice and Accountability, 2) Political Stability and Absence of Violence, 3) Government Effectiveness, 4) Regulatory Quality, 5) Rule of Law, and 6) Control of Corruption. (<http://info.worldbank.org/governance/wgi/index.aspx#home>)

¹⁴ The RGI measures the quality of governance in the extractive sector of 58 resource-rich countries, by assessing four components: 1) Institutional and Legal Setting; 2) Reporting Practices; 3) Safeguards and Quality Controls; and 4) Enabling Environment. Natural Resource Governance Institute (NRGI). (<http://www.resourcegovernance.org/rgi/report>)

¹⁵ Bhattacharyya, S. and Hodler, R., 2010. "Natural resources, democracy, and corruption", *European Economic Review*

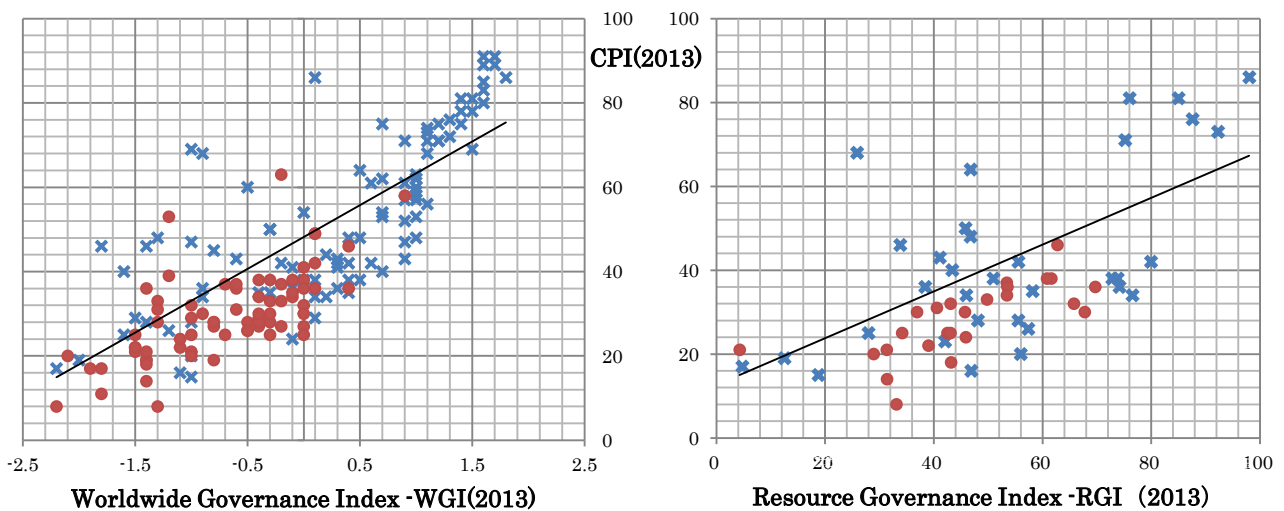
¹⁶ Aslaksen, S., 2011. "Corruption and oil: evidence from panel data"



Source: Prepared by the Study Team by referring to Transparency International (2013) and NRG (2013)

Figure 1-14: Resource Governance and CPI (Resource-rich Countries)

Generally, the reason why corruption seems comparatively more frequent in developing countries can be explained by inadequacy in governance, such as laws, regulations, and monitoring capability, tend to be less advanced than those of developed countries. Figure 1-15 was reproduced from Figures 1-13 and 1-14 by adding (red) circles for developing countries¹⁷ and cross marks for developed countries, which shows that most of developing countries come together at the lower left, which means weak governance. Rose-Ackerman¹⁸ conducted a similar research, by adopting Human Development Index (HDI) rather than GNI, which found that the corruption level changes widely across developed countries whereas those of developing countries are mostly high.



Source: Prepared by the Study Team by referring to Transparency International (2013), World Bank (2013), and NRG (2013)

Figure 1-15: Governance and CPI (Developing Countries)

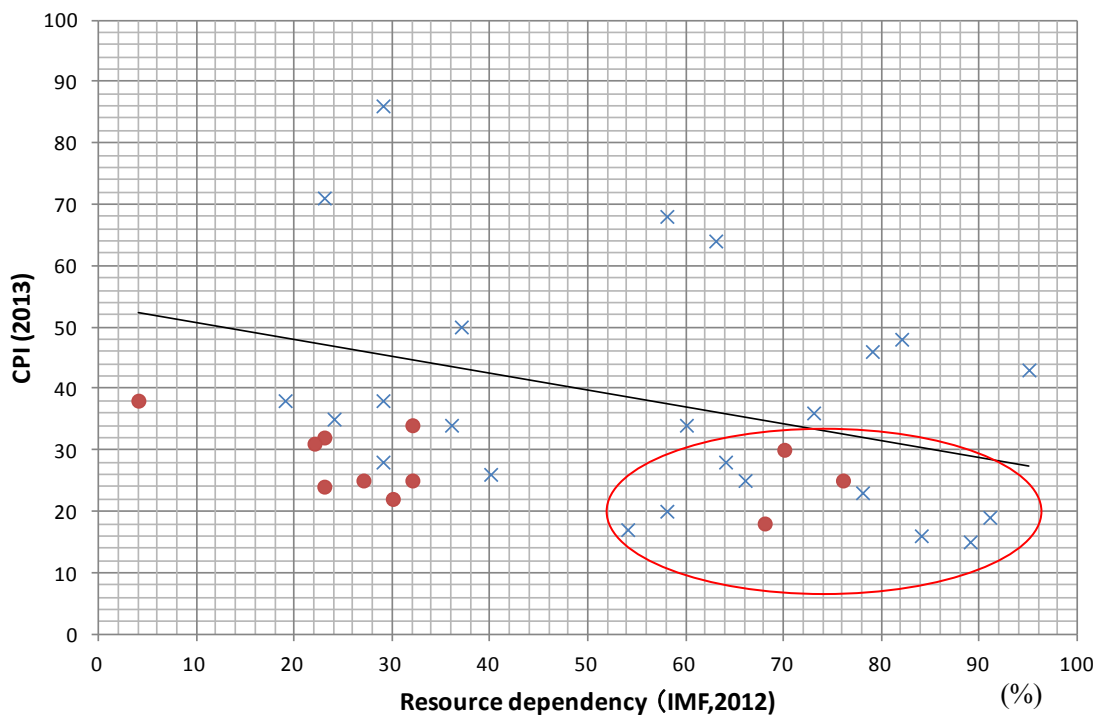
¹⁷ According to the World Bank’s classification, those included ‘low-income economies’ and ‘lower-middle-income economies’ (GNI per capita is US\$4,125 or less)

¹⁸ Rose-Ackerman, Susan (2004), ‘The Challenge of Poor Governance and Corruption’

However, as some developed countries are also positioned at the lower left, it seems that poverty is not the only factor to encourage corruption. Figure 1-16 illustrates CPI and resource dependency¹⁹ of resource-rich countries, and shows a negative correlation between two sets of data. This means that the more countries depend on resource revenue, the chances of corruption is higher.

In this sense, it could be explained why some of developed countries are positioned at the lower left in the Figure 1-15. Most of developed countries (cross X-mark) in Figure 1-15 which are highly corrupt (CPI below 30) come to the lower right in Figure 1-16, as they are circled. In brief, even developed countries could be corrupt if they depend highly on resource revenue. In other words, besides poverty and weak governance, high resource dependency could be a factor related with corruption.

This correlation has been supported by several literatures²⁰ in a way that countries dependent heavily on resource revenue have weak incentive to collect tax revenue from their citizens, and then accountability to tax payers would be weakened. As a result, if the transparency is weak, government officers can easily use their authorities for private gain.



Source: Prepared by the Study Team by referring to Transparency International (2013) and IMF (2012)

Figure 1-16: Resource Dependency and CPI

1.5.3 Corruption Risks

The corruption in resource-rich countries could be operating through two main mechanisms²¹. One is

¹⁹ The percentage of natural resource revenue to national revenue, the average in the period of 2006-2010, IMF (2012) 'Macroeconomic Policy Frame for Resource-riches'

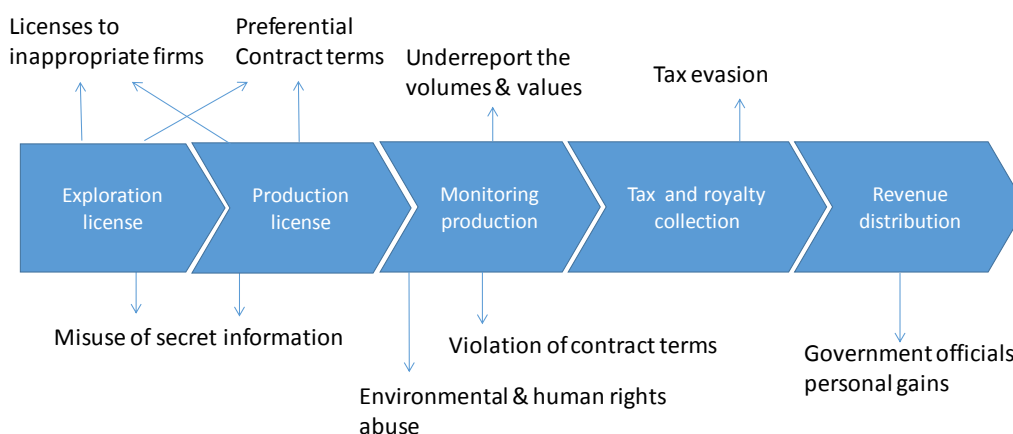
²⁰ Humphreys et al, Escaping the Resource Curse, *New York Columbia University Press*, 2007

²¹ Soreide, Tina 'Corruption in natural resource management: Implications for policy makers', *Resource Policy*, 34 (2009) 214-226

called ‘Rent-seeking’; ‘rent’ means additional income above normal income level which an individual or a firm would receive in a competitive market. Then, ‘rent-seeking’ is known as a behavior, in order to pursue such extra income, to create, maintain or change the institutional rights on which a particular rent is based²².

The other mechanism, ‘Patronage’, is defined as the use of public resources to secure political power²³; with this purpose, politicians are said to bring benefit in excess of their own constituencies in order to stay in the position longer. In other words, patronage benefits the politician to protect or promote self-interest.

In the extractive sector, corruption occurs mainly under these two mechanisms. Yet, through the development of natural resource, corruption risks seem to take different forms at each phase. Figure 1-17 illustrates corruption risks in the development of natural resources.



Source: Natural Resource Governance Institute

Figure 1-17: Mapping Corruption Risks in the Extractives Chain

Through the process of natural resource development, starting from license awarding, exploration, development and operation, collection of tax and royalty, up to resource management, various kinds of corruption can arise by the two mechanisms.

1.5.4 Corruption Risks within Fiscal Framework

In accordance with the resource development process, this sub-section describes corruption risks related to public financial management, which is the main subject of this report.

In the framework of public financial management, corruption would take place mainly at the phase of collecting and managing revenues (‘tax and royalty collection’ & ‘resource distribution’ in the case of Fig. 1-17). The revenue flow in the extractive sector is composed of two kinds of revenue flows between governments and private companies as listed below.

²² Khan, Mushtaq and Jomo, Kwame Sundaram, eds. (2000), ‘Rents, Rent-seeking and Economic Development in Asia’

²³ Anti-Corruption Resource Center (<http://www.u4.no/document/glossary.cfm#patronage>)

- 1) **Contractual scheme:** companies, as contractor, develop natural resource and share productions with governments: e.g. production-sharing contract
- 2) **Tax/royalty system:** companies, granted exploration or operation rights, are entitled to total flow of production including sales of products. Then companies are responsible for payment of tax and royalty, which are based on production volume or gained incomes,

Both systems are common in oil and gas, whereas the latter dominates in mining²⁴.

Focusing on the phases of collecting and managing revenue, the latter (tax and royalty) are more likely to be affected by corruption. With regard to tax and royalty system, revenues composed of; 1) signature bonus which companies pay for license of exploration or development (prior to operation), and 2) tax and royalty companies are levied (during operation). Furthermore, state-owned companies responsible for licensing are required to pay the governments dividends every year. These are general fiscal regimes, and however, they differ across nations in terms of names, collecting entities (federal governments, state governments or state-owned enterprises), related legal systems, rates, and calculation methods.

Within this fiscal regime, the following part explores about corruption risks which would take place prior to operation and during operation. Firstly, when a payment of signature bonus happens, there could be a chance of bribery by a particular investing company to provide favor in for providing exploration licenses. In addition, there is a case that some portion of signature bonus is embezzled after the payment. This type of corruption tends to occur under the situation in which tender systems or contract terms are not open to the public, or political elites hold such earnings in offshore bank accounts, not controlled by the national treasury or the central bank account. For instance, there was an incident in the Democratic Republic of Congo, US\$23.7 million may have been embezzled from a US\$100 million signature bonus for a copper mining contract.²⁵

Furthermore, another type of corruption which is possible to take place prior to operation, is that the authorized personnel amends contract terms in favor of investors, e.g., royalty amount or tax rates, in return for bribe payment.

Secondly, during operation in which companies pay royalty and tax, and state-owned enterprises pay dividends, various kinds of corruption could affect these revenue items. For example, corrupt elites collude with companies to accept their false reports for tax evasion. Specifically, if corporate income tax is fixed based on profit, inflating production costs could decrease profits. Also, companies can underreport production and prices in order to reduce amount of royalty to be paid. Table 1-4 summarizes the risks associated with each revenue item.

²⁴ IMF (2012) Fiscal Regimes for Extractive Industries: Design and Implementation

²⁵ Global Witness (2011)

Table 1-4: Corruption Risks and Revenue Compositions

Items	Corruption risks	Impacts on revenue
Bonuses	Embezzlement/ Bribery for illicit licensing	Loss of public money/Lower upfront payment
Royalties	Bribery for underreporting production or price	Lower royalty to be collected
Corporate Income Taxes	Bribery for inflating operation cost/ undue tax exemptions or rebates	Lower tax revenue
Production share	Bribery for underreporting production and operation costs	Lower production to be shared

Source: Anti-Corruption Resource Centre (2011)²⁶

In addition to these fundamental revenue items, such indirect revenue such as export tax related to extractive sector could be at a risk for corruption. The majority of products in the extractive sector are exported, and export taxes are levied and paid by exporters. There is a chance that authorized personnel would collude with exporters for their under-invoicing for tax evasion. Furthermore, state-owned enterprises responsible for licensing have to pay dividends; however, it is a risk that they make a false report about their annual incomes to the governments in order to reduce dividends to be paid.

After transferred to treasury, these revenues are still exposed to high level authority corruption risks, especially embezzlement. Holding resource revenues outside of countries make it possible. In Nigeria, the Presidents of the time in 1993-98 have diverted totally more than US\$ 20 billion to offshore bank accounts of the companies controlled by his family in oil revenues from the government accounts²⁷.

A corruption can be said to be a serious issue on for public finance of in resource-rich countries, in particular by affecting national revenues. The resource-rich countries which rely more on resource revenue would face a higher risk of corruption.

1.5.5 Measures against Corruption

Awareness that corruption brings enormous impacts on revenues has been shared among resource-rich countries, and then, anti-corruption measures have been implemented not only at the national level but also within the global framework. For prevention of corruption, it is necessary to improve transparency in resource revenue management. In this respect, the following ideas are examples of effective policies at the national level.

- Rule of law: to legislate against corruption, by prescribing the obligation of information disclosure, company's responsibilities for employee's compliance, tender system, and penalties.
- Establishment of anti-corruption body: to create independent bodies, for example, commissions to investigate and prosecute reported or discovered corruption practices, and audit commissions to check financial flows of concerned organizations on regular basis.
- Joining the Extractive Industries Transparency Initiative (EITI)²⁸: EITI is a global standard to

²⁶ Anti-Corruption Resource Centre, Extractive sectors and illicit financial flows: what role for revenue government initiatives? , 2011

²⁷ J. Edgardo Campos, Sanjay Pradhan, 'The Many Faces of Corruption: Tracking Vulnerabilities at the Sector Level', 2007

²⁸ <https://eiti.org/eiti>

promote transparent management of natural resources. Its main requirement is to compare the payment disclosed by companies and receipt of payments disclosed by governments, to identify the gaps, and to draw and implement a work plan to narrow them. There are currently 31 compliant countries out of 48 implementing countries. EITI requirements are regarded to be rigorous and aiming to be a compliant country reflects the government's indomitable wills for improving transparency.

Anti-corruption policies and measures to improve transparency are diverse depending on government, and even EITI action plans appear quite different across the world. At the same time, it can be thought that the degree of improvement varies widely.

1.6 The Difference of Business Environment by Kind of Resources

The natural resources covered in this study are mineral and energy resources extracted from underground, and however, the business environment for these resources, such as the market, resource reserves, business players and the cost for development and production, are different depending on the kind of resources. Therefore, the kind of resource and the characteristics of resource-rich countries must be understood when reviewing strategies for the development of a country's economy and its fiscal conditions. This section presents an overview and comparison of the characteristics of the business environment for five typical kinds of resources: petroleum/gas, coal, base metals, rare metals, and iron. (Refer to the attached table at the chapter end)

(1) Market Environment

Oil/Gas

Petroleum and natural gas are considered to be the most profitable of these natural resources for the host countries. However, for developers and business players, risks associated with their development and productions are also high. In the global market, the crude oil price skyrocketed to US\$ 147 per barrel in 2008, but the price plunged to \$ 40 in 2009, indicating its high volatility. The difference from other resources to be noted is that oil and gas have compatibility with other energy resources such as coal and bio-energy, and unlike metallic resources, they can be used as raw materials for the petro- and gas-chemical industries.

Coal

As per unit of energy produced, coal is cheaper than oil and natural gas, and because of its cost advantages, it is of great importance in both electric power generation and as an industrial fuel. However, because extraction and transport run up the costs of coal, it is becoming more profitable to use coal as a locally-produced, locally-consumed resource rather than a means for obtaining export revenues through mine operation and production.

Compared with oil/gas and non-ferrous metal resources, the geological structure of coal deposits (beds) is

simple: there is a little risk in exploration, and there is price volatility. For example, in 2008, the price of coal shot up 2.5 times compared with the previous year, and then plunged in 2009. After that, the price rebounded, and has maintained a relatively high level since then, moving roughly in tandem with the price of oil.

Fuel coal competes with other energy resources, especially natural gas. However, there is no alternative to coking coal (coke for steel mills), so the coal is indispensable for the steel industry.

Base Metals

Base metals (copper, lead and zinc) have long been widely used in various industry, and their deposits are various in types and scales in the World. The profitability of mining operations is largely dependent on the types of deposit, the mineral grade, which affect market price of these metals. They are also “high-risk and high-return” resources that require special technology and large amount of capital for their exploration and development.

Prices moved in tandem with oil and iron ore, and began to increase in 2004. After peaking in 2007~08, they fell precipitously in 2009, after which they rebounded. They are currently maintaining a level of about 3 times as their 2003 prices. Along with iron, these metals are indispensable for industrial activities, and the possibility of finding alternative metals is low.

Rare Metals

There are various types and deposits of rare metals. Generally, the market is small and is subject to severe volatility, so they are high-risk, and high-return to individual investors. However, for mining and related companies, as well as resource countries, they can be said to be “high-risk and low-return” minerals.

These rare metal deposits are often found in politically-unstable countries, and the demand is limited. Moreover, prices of these metals are easily influenced by investment capital, so these conditions can result in volatile price fluctuations. In addition to the small-scale production, their uses are limited, so, as can be seen with recent trends in rare earths and tantalum; they constantly face the risks of changes in demand and the appearance of alternate materials.

Iron

Iron ore is the main material for steel production, and the scale of both mineral deposits and markets is large. Because the geological structure of deposits is simple, there is low risk to mining the ore, and it is a “low-risk and high-return” resource.

Market price fluctuations started in 2004 generally preceded those of base metals. By 2011, the price of iron ore had risen to 12 times its 2003 level, and today is maintaining a level of about 5 times that of 2003. It is a metal that supports various types of infrastructure like ports and railways and is a backbone of heavy industries. The possibility of alternate materials to iron is low.

(2) Resource Reserves and Business Players

Oil/Gas

Petroleum/gas reserves are found in areas where there is a large-scale depositional basin from ancient eras (such as Jurassic), and 63 % of the deposits are found in the Middle East, indicating uneven distribution

in the world. This uneven distribution of an increasingly needed resource is bringing fortune to petroleum/gas producing countries. Petroleum/gas reserves are found in underground layers down to 3,000 meters in depth, which requires an advanced excavating technology and an enormous amount of funding. In the near future, the depth of mined deposits could go down 5,000 meters deep, including off-shore reserves. Consequently, the main business players are limited to international petroleum majors such as the “Seven Sisters”, and state-owned companies which have the ability to mobilize funding and special technology.

Coal

Compared with other fuels, coal resources are abundant. It is estimated that there are about 900 billion tons of coal reserves in the world, which can last for 100 years production. They are more evenly distributed than oil reserves, that is, they are an energy resource that can be widely mined around the world. The countries with the large reserves include the United States (27% of world reserves), Russia (18%), China (13%), and India (8%). Most of these reserves are in politically-stable countries, and they are easily utilized as a fuel resource, but they also have disadvantages, such as the costs for excavation and transport, and their emission of greenhouse gas when burned. The market price is largely affected by the grade and type of coal (lignite, bituminous and anthracite) and the deposit location. Although coal reserves are not monopolized to the same extent as oil reserves, there are 5 companies that control about 55% of the world market: BHP Billiton (UK, Australia), Glencore (Swiss), Rio Tinto (UK, Australia), Anglo (South Africa), and Peabody (Australia).

Base Metal

Deposits of base metals (copper, lead and zinc) are widely distributed in orogenic belts around the world. These 3 minerals (copper, lead, zinc) are often produced together. In the case of copper, which has the largest market, there are about 700 million tons of reserves in the world. Most of these reserves, including 28% of the world’s reserves in Chile, 13% in Peru, and 12% in Australia, are in politically-stable countries. Compared with gold deposits and rare metal resources, most of these reserves are large in scale, and there are many mines that can be mined stably for a long period of time.

The resources in main producing countries are allotted between major and junior companies. Juniors are in charge of exploration, while majors such as Glencore and Rio Tinto develop and operate mines. However, there are also many medium-size domestic companies that operate mines as well.

Rare Metal

Rare metals are often disbursed in politically unstable regions like China, Russia, and various African countries. These 3 regions account for 50~90% of the export production of these minerals. There are many types of these minerals, including by-products of base metals (Mo, In²⁹) and strategic materials (W, Be³⁰). Due to great volatility in supply and demand, there are many cases where mining operations are forced to have unstable and intermittent operations. Major companies do not invest much capital in rare earths, so there are many deposits excavated by small- to medium-size companies and artisanal miners, and there are numerous cases of illegal mining by individuals.

²⁹ Mo: Molybdenum, In: Indium

³⁰ W: Tungsten, Be: Beryllium

Iron

There are many deposits of iron ore located in the world, including 200 billion tons of high-grade ore (Fe 50%–65%) alone. If low-grade ore is included, total world reserves of iron ore exceed 1 trillion tons. Although 17% of these reserves are in China, most of the export reserves are in politically-stable countries, including 22% in Brazil, 18% in Australia, and 11% in India. Normally, high-grade hematite that has a low smelting cost is mined, but when the price is high, then magnetite is also feasible for mining. Although exploration risk is low, the iron ore market is monopolized by 3 major developers, Rio Doce (Brazil), BHP Billiton (UK, Australia) and Rio Tinto (UK, Australia), which together control 80% of the world export share and have control to maintain iron prices.

(3) The Cost for Development and Production

Oil/Gas

The development and production of petroleum/ gas proceeds in three steps: 1) Exploration (acquisition of rights and boring); 2) Development (construction of production facilities); and 3) Production. These steps are the same as for other types of mineral resource development. For each of these steps, fees must usually be paid to the owner (resource country), such as: 1) exploration license fees; 2) production fee in the case of a commercial discovery; and 3) royalties and taxes based on the amount produced. Typical production phase contracts with petroleum-producing countries include “lease contracts”, “production sharing contracts” and “risk and service contracts”. Production sharing contracts (PSC) began in Indonesia in the 1960s and expanded to other areas, as a favorable contract system for the host country’s participation in the business management and sharing of products, with minimum risk.

Coal

From the acquisition of coal properties to the exploration and boring stages, it is necessary to pay property acquisition fees, land purchase fees, and exploration fees (mainly for boring). Because there are many deposits where the continuity of coal beds and coal exists in layers near the ground surface that have long been surveyed, exploration costs are much lower compared with other types of minerals. Most iron ore mines are open-pit mines where large-scale mining can be done at low cost. Developers must pay for initial stripping, building a processing plant, and purchasing large, heavy-duty mining equipment. Because coal is a solid material, the costs associated with its extraction, processing, transport, and storage are higher than those of oil/gas, and there are sometimes other expenses involved as well, such as income taxes, royalties, and even carbon taxes.

Base Metal

The costs to develop and operate base metal (copper, lead and zinc) mines are generally standardized in the mining industry, in which costs required at the property acquisition, exploration, and boring stages include property acquisition fees, land purchase fees, exploration fees, including physical prospecting, boring and tunneling. At the development stage, the costs include initial stripping (site preparation), tunnel development, processing plant construction, slag heap/tailings dam construction, and purchase of heavy-duty mining equipment. At the production stage, the costs include mining, processing, transport, income taxes, and royalties, and other operating expenses.

Rare Metal

There are various scales and mining methods for rare earths, depending on the ore type. However, generally speaking, the costs include property acquisition, land purchase, and exploration fees (geological surveys, mineral tests and beneficiation tests) at the property acquisition/exploration/boring stages. At the development stage, necessary costs include heavy mining machinery, construction of a processing (beneficiation) plant, slag heap/tailing dam construction, local smelting facility and other required cost items. At the production stage, the costs include mining, processing, smelting, transport, income taxes, and royalties, among others. However, the deposits of tin, titanium-ilmenite, etc., that are easily mined, are often illegally mined, and there are many aspects that are not transparent.

Iron

Hematite is the main type of iron ore which can be mined in massive amounts in open pits, and sales price is high and so is the cost. At the property acquisition/exploration/boring stages, necessary costs include property acquisition, land purchase, and exploration fees. Because the geological structure is usually simple, exploration can be done using a few boreholes at widely spaced intervals to minimize costs. The costs at the development stage include initial stripping, purchase of heavy mining equipment, etc., while at the production stage, the costs can include mining, transport, income taxes, and royalties. It should be noted that preconditions for transporting massive amounts of ore in development operations include improving transport infrastructure and port facilities, among other requirement.

1.7 The Debt Problems in Resource-rich Countries

When a country is not able to repay the debt as scheduled, due to imbalance in international balance of payment, it is called a debt crisis. Since 2010, it has been frequently in the news report about a debt crisis in Europe, and recently in Greece. But if we look back for some decades, there was an Asian financial crisis in 1998, the Russian Ruble crisis in 1999, and debt crises in Latin America in the 1980s.

Among these crises, there are cases faced by resource-rich countries relying their foreign exchange earnings by resource exports. In this section, the cases of petroleum-producing countries which faced debt crises are introduced, and policy counter-measures are explained.

1.7.1 Debt Caused by Resource Development Investment and Resource Price Downturn

Mexican Debt Crisis in 1982

In Mexico, there was an oil investment boom triggered by oil price increase in 1970's. During this time, a state-owned company, Mexican Oil Corporation was eligible for government guarantee for the foreign loans, and it was considered as a safe borrower from creditors in USA, under fixed exchange rate regime between Mexican Peso and US Dollars. Consequently, there was an increase in investment into Mexican energy resource sectors, for capital goods and infrastructure, making sharp increase in the external debt amount. However, in 1980's, an increase in US interest rates pushed up payment obligation by the oil company to creditors under declining oil price. Then re-payment could not be kept as scheduled by the oil company, and Mexican government could not afford to secure its obligation as guarantor, declaring moratorium in 1982. Consequently, Mexican economy experienced recession which caused bad inflation

and increase in unemployment.

Russian Debt Crisis in 1999

In 1999, marking 10 years after collapse of former Soviet Union, 80% of the Russian export was shared by natural resources such as oil, gas, metal and timber, leading to a vulnerable situation to fluctuation of resource prices in the international market. As the oil price fell, the tax revenue from the exportation of petroleum decreased and aggravated the fiscal conditions of the Russian government. The Russian currency, Ruble, plunged further by aggravating the economy due to the price downturn of the main export products influenced by Asian Financial Crisis occurring in the previous year. As a consequence, foreign investment funds started to withdraw which caused substantial drop in the value of Ruble and resulted in incapability in paying foreign debts as scheduled.

1.7.2 Debt Caused by Temporary Increase of Sovereign Credit Rating

Mongolia (2013)

The Mongolian economy marked rapid development by increasing national income by five times in 10 years and reduce poverty, thanks to the world's commodity price increase which have induced foreign direct investment to mineral sectors (mainly copper and gold), and their booming exports in the first half of the 2000s. During this period, Mongolian sovereign credit rating was increased by foreign investors, which made it possible for Mongolia to issue foreign currency denominated state bond amounting to US\$ 3 billion. However, macroeconomics conditions were aggravated in the late 2000s which caused a surge in government spending unbalancing the fiscal condition. Mongolian export earnings were dominated by mineral resources by 90%, and 90% of the mineral export was shipped to China which started slowdown in economic growth thus decreasing resource imports. IMF recommended to keep fiscal rules and stabilization of primary balance during the Article 4 consultations held in 2013 and 2015, but there seems to be challenges faced by Mongolian economy to keep up with those recommendations.

1.7.3 Policy to Avoid Debt Problems in Resource-rich Countries

Utilization of Risk Sharing Arrangement between Government and Private Sector such as Production Sharing and Public-Private Partnership (PPP)

As it was introduced in the chapter 1.2, a resource exploration and development, in general, requires a long leading period, lasting several years, and a large amount of funds to be invested during these periods. There are financial needs for the host country to cover some part of the exploration and development using its fiscal capacity. In the case of Mexico in 1982, Mexican Oil Corporation took risks in the initial investment phase with the government guarantee which turned out to become the state debts. The rate of commercial findings for oil exploration, in terms of quality and quantity, is said to be about 10%, and after successful development, it must face with volatility in price during production phase, which is a high risk business. As a way of avoiding debt risk at the phase of exploration and development, the system to invite private sector for financing initial investment and risk sharing has been developed, and it has been widely applied in most resource-rich countries.

Along with resource exploration and development, there are also needs in building and establishing

surrounding infrastructure, environmental protection measures, resource management system and other facility and institutional arrangement in the host country. Among these, as for the construction of the infrastructure facilities such as harbor, airport, railroad, road, industrial estate development, application of Public-Private Partnership (PPP) is a possible option to reduce debt risk by the government. But it should be noted that inviting private funds for those purposes requires careful preparation of institutional arrangement supported by professional know-how for smooth implementation of fair risk share between government and investors, securing incentives for private sector, contract and management systems to support such arrangement.

Future Value Assessment for Windfall Resource Revenue

In the case of oil/gas, crude oil prices surged many times: at the time of the first oil crisis in 1974, the second oil crisis in 1982, the Gulf War in 1991 and the world wide resource boom in early 2000s. Some conclude that the price surge and drastic drop following-after happen approximately every 10 years. Also, it must be noted that recent resource price soaring in the 2000s has been said to be more volatile due to inflow of speculative-money. Under this kind of “boom and bust” cycle circumstances, resource countries should become more careful in assessing the future value of resources whose price level cannot be assumed to continue at the price level during high time enjoying windfall revenue.

Foreign Currency Risk Hedged by Foreign Asset such as SWF

Investing foreign currency resource revenue in overseas-assets or foreign currency bonds have advantages as savings for future generation as well as to hedge the risk for the fluctuation of exchange rate between local currency and foreign currency. At the same time, it prevents occurrences of Dutch Disease which is caused by foreign currency inflow to the domestic economy which push up the exchange rate which leads to a decline in non-resource industries. This point is described further in detail in the next chapter.

Table 1-5: Comparison Table of Resource Types and Business Environment

Type of Resource	Market Environment			Reserve Allocation & Main Players			Cost Associated with Development and Production		
	Profitability	Price Volatility	Compatibility	Geographical Allocation	Commercial Viability	Main Players	Exploration Phase	Development Phase	Production Phase
Oil & Gas	High risk/ high return for developers Low risk/ high return for resource countries	High volatility with \$147/barrel in 2008, dropped to \$40 in 2009. As of August 2015, dropped to below \$40 again.	Compatible as energy resource, with coal, bio fuel and other energy.	World Oil Reserves: Middle East: 63% Latin America: 12% Africa: 10% Former USSR: 8%	Probability of finding viable reserve: 10%. Large investment amount with high risk.	Limited number of players such as international majors, state oil companies and independent players.	Acquisition of concession right Exploration cost Test boring cost	Construction of production facility Bonus payment for commercial well finding	Production/ transportation cost Royalty (5% to 20%) Income tax (max 60%)
Coal	Production is feasible close to market. Exploration risk is lower than metals, but the price is more volatile.	The price increased by 2.5 times in 2008, dropped in 2009, maintaining 2.0 times level afterwards. (Synchronized with oil)	Fuel coal is compatible with other energy resources, but for iron making coal is indispensable as raw material.	World coal reserves: USA(27%), Russia(18%), China(13%)and many other developing countries.	The price varies largely by its quality and infrastructure for production.	Oligopolistic situation by five coal international majors with 55% share.	Acquisition of exploration right Land acquisition cost Test boring cost	Primary land surface removal Coal cleaning plant Heavy equipment for mining	Cost for minig, cleaning and transportation Royalty, Income tax, carbon tax, etc
Base Metal	High risk/ high return, depending on the size of reserves.	The price increase started in 2004, peaked in 2007~08, dropped in 2009, returned to 3.0 times of 2003 level.	Each base metal has no compatibility. Indispensable metals for heavy industries, along with iron.	World copper reserves: Chile(28%), Peru(13%), Australia(12%) and other deposits found in other countries.	Stable production for medium to long term can be expected compared to rare metals.	Players are mixed with large and medium/small scale, while medium size national players are also in operation.	Acquisition of exploration right Land acquisition cost Test boring cost	Primary land surface removal Metal cleaning plant Heavy equipment for mining	Cost for minig, cleaning, smelting and transportation Royalty, Income tax, etc
Rare Metal	High risk/ high return for developers High risk/ low return for resource countries	High volatility largely affected by politics and economic conditions, and also by speculative fund movement.	Possibility with new compatible material, due to limited use as well as demand shifts. (such as rare earth magnet)	Reserves are located in China, Africa and Russia. Top 3 producers share 50% to 90% of the world reserves..	Wide variety of metals such as by-product of base metal(Mo, In)and strategic metal (W,Be) with intermittent operation.	Many producers are small firms or individuals.	Acquisition of exploration right Land acquisition cost Test boring cost	Heavy equipment for mining Cleaning plant Deposit area In-situ smelting facility	Cost for minig, cleaning, smelting and transportation Royalty, Income tax, etc
Iron	Low risk/ high return for both developers and resource countries	The price hike started from 2004, earlier than base metal, jumped to 12 times of 2003 level in 2011, currently returned to 5 times level.	Indispensable metal for all manufacturing industry, non compatible.	World iron reserves: Brazil(22%), Australia(18%) and many other stable countries.	While mining risk is low, the price is being controlled by 3 Iron majors.	Oligopolistic stuation with 3 Iron majors (Rio Dose, BHP, Rio Tinto) share 80% of the world market	Acquisition of exploration right Land acquisition cost Test boring cost	Primary land surface removal Heavy equipment for mining	Cost for minig and transportation Royalty, Income tax, etc

Source: Kanekiyo (2013)³¹ for oil & gas, JCOAL³² for coal, JOGMEC³³ for base metal, rare metal and iron

³¹ Kanekiyo, Mechanism of Oil and Gas Development, Kagaku Kogyo Nippo Sha, 2013

³² JCOAL, Coal Statistics, 2014, JCOAL, Coal Note 2014, 2014

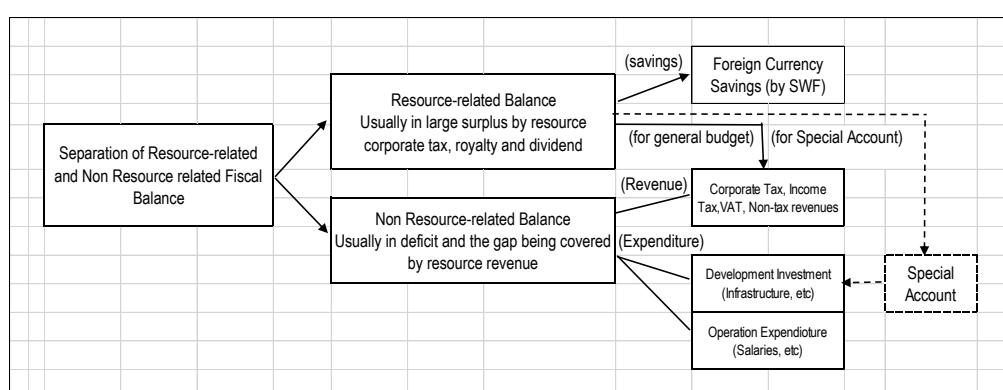
³³ JOGMEC, Mining Resources Material Flow 2014, 2014, JOGMEC website (<http://mric.jogmec.go.jp/>), JOGMEC, Rare Metal Handbook 2014, 2014, Arumu Syuppan Sya, Rare Metal News

CHAPTER 2 PUBLIC FINANCIAL MANAGEMENT FOR RESOURCE-RICH COUNTRIES

2.1 Fiscal Framework for Resource-rich Countries

2.1.1 Separate Management of Resource and Non-resource Fiscal Balance

In section 1.1.3, Categorization of Resource-rich Countries and Fiscal Policy, three kinds of fiscal rules recommended by IMF to be applied by resource-rich developing country (RRDC) were introduced; they are; 1) Non-Resource Primary Balance (NRPB), 2) Structural Primary Balance (SPB), and 3) Expenditure Growth Rule (EGR). This section will describe the fiscal management framework needed for practical application of these rules. The figure below illustrates the flow outlining the contents of this section.



Source: JICA Study Team

Figure 2-1: Outline of Fiscal Management Framework

The starting point is a separation of the resource related fiscal balance and the non- resource related fiscal balance in the primary fiscal balance. This separation makes it possible to clearly indicate the country's level of dependency on resource revenue: in other words, the share of resource revenue in the total fiscal revenue, and the level of non-resource revenue financing the total fiscal expenditure. For this purpose, it is necessary to capture the resource related revenue such as exploration right fee, commercial discovery bonus, royalty and taxes in the production phase, regardless of the revenue received directly to the treasury or through managing agencies. On the expenditure side, by capturing resource related expenditure, or identifying net revenue from resources, it will become possible to identify non-resource fiscal balance.

Table 2-1: Fiscal Framework and Indicators for Resource-rich Countries

Fiscal Policy Indicators	Overall Fiscal Balance	Total revenues minus total spending. Indicates net financial position (i.e., whether government is accumulating or reducing financial wealth). This indicator is also useful to assess financial vulnerability.
	Non-resource Primary Fiscal Balance (NRPB)	Overall fiscal balance, excluding resource revenues, spending associated with the development of the resource sector, and interest payments. Useful to measure the fiscal stance (i.e., whether fiscal policy is being pro cyclical or counter cyclical). It can help to delink fiscal policy from revenue volatility.

Source: "Macroeconomic Policy Frameworks for Resource-Rich Developing Countries", 2012, IMF

Table 2-1, above, shows the fiscal policy indicators and their framework recommended by IMF to be adopted by resource-rich countries. It indicates that overall fiscal balance (the upper row) and non-resource fiscal balance (the lower row) are required to be separately kept in the accounting system. The non-resource primary fiscal balance (NRPB) in the lower row is equivalent to the primary fiscal balance generally handled in non-resource-rich countries. Within NRPB in general, the revenue is composed of tax revenue (e.g. corporate tax, individual income tax, property tax, inheritance tax, customs duties and other taxes collected by the government) and non-tax revenue (fee revenue from public services, dividend from government owned stocks and profit transferred by state-owned corporations). The expenditure, under NRPB consists of current expenditure (salary for government employees, maintenance cost of the government office buildings, operation and other costs required to be spent for providing public services) and investment expenses (infrastructure construction, government facility building cost, equipment purchase and other costs for acquisition of assets)³⁴. For illustration purpose, the revenue and expenditure items are listed for each resource related and non-resources related items in Table 2-2 below.

In general, the profitability of resource-related business, after commercial production, is very high, so that the resource-related fiscal balance of resource-rich countries is usually a large positive amount. In the actual example of the gold mine project in Peru, explained in section 1.2 Outline of Resource Development, the project made the total profit of US\$ 2.8 billion out of US\$ 4.5 billion sales during 17 years of operation, which yielded profit to sales ratio of 62%. In addition, during the period of exploration and development, there are fees and levies paid by developers for exploration rights of mining concession, bonus paid at the time of commercial discovery (in the case of petroleum), and contract fee for commercial production. These fees are counted as resource revenue for the host country government with comparatively small amount of associated cost.

On the other hand, it is not easy to balance the non-resource fiscal balance for resource-rich developing countries, since the taxation and the tax collection systems are, in general, undeveloped, and the taxable bases of the non-resource related local business and individuals are generally small. While some efforts are made to strengthen tax collection from custom duties, foreign enterprises and individuals, it is likely to be insufficient to fully cover the debt in NRPB. Therefore, resource-rich developing countries have tendency to depend on the resource income to achieve an overall fiscal balance.

Table 2-2: Resource and Non-resource Fiscal Revenue and Expenditure Items

Category	Revenue (example)	Expenditure (example)
Resource Related	Exploration rights fee, Commercial discovery bonus	Exploration cost (shared portion by host government)
	Royalty, Mining tax	Surrounding infrastructure building cost, Resource management cost
Non-resource Related	Tax (Corporate tax, Individual income tax, Property tax, Custom duties)	Current expenditure (salary for government employees, maintenance cost, operating cost)
	Non-tax revenue (Dividend, Public service fees)	Investment expenditure (Infrastructure development, Research and development)
Overall Fiscal Balance	Σ Revenue	Σ Expenditure

Source: JICA Study Team

³⁴ As for categorization of government expenses, there are other methods such as administrative category and functional category, besides economic category referred above. (JICA Guidelines by Subject: Fiscal Management – Public Finance Management, 2013 (in Japanese))

2.1.2 Fiscal Structure and Resource Revenue

The separation of resource and non-resource fiscal balance makes it possible to focus on each primary balance, in particular, the non-resource primary balance. Figure 2-2 indicates concept of overall fiscal balance with high dependency on resource revenue (the left side) and that of low dependency on resources (the right side). In the left case, a part of the current expenditure (including salary, etc.) of non-resource balance depends on the resource revenue, while on the right case, non-resource current expenditure is fully covered by non-resource revenue and only part of investment cost is dependent on resource revenue. In the case of high dependency (left case), the government fiscal balance will be vulnerable to fluctuation of the resource price/revenue and expiration of resource revenue due to future extinction of reserves.

As it has been described in the preceding section, the basic starting point is whether the government is managing the account by separating resource and non-resource related revenue and expenditure in the government. This will make it possible to measure the degree of dependency on resource revenue in financing current expenditure. The three kinds of fiscal rule recommended by IMF explained in section 1.1, Categorization of Resource-rich Countries and Fiscal Policy,³⁵ presented the alternative options for allowing resource revenue to be utilized for ordinary fiscal revenue.

Among the three rules, NRPB is the most strict rule for fiscal authorities in a resource-rich country since it pre-supposes the fiscal balance to be maintained only by the non- resource finance balance. Papua New Guinea (PNG) is one of countries adopting NRPB rule; however, it allows designated level of deficit under the modified NRPB. The applications of these rules need to be adjusted flexibly to each country's situation. On the other hand, Structural Primary Balance (SPB) rule is a method to approve a part of resource revenue to be transferred to ordinary fiscal revenue within the range which is not influenced by the fluctuation of resource prices. Outlay Growth Rule (EGR) is to set up a fixed ratio of resource revenue for ordinary fiscal revenue responding to the economic growth rate of the country. These rules have different criteria for using resource revenue as a part of ordinary fiscal revenue, and the choice of method needs to be approved by the fiscal authority under each logical discipline, as a modified version of NRPB.

Fiscal Structure with High Dependency on Resource Revenue		Fiscal Structure with Low Dependency on Resource Revenue	
Resource Revenue	Resource-related Expenditure	Resource Revenue	Resource-related Expenditure
	(Non Resource) Investment Expenditure		(Non Resource) Investment Expenditure
Non Resource Revenue	(Non Resource) Current Expenditure	Non Resource Revenue	(Non Resource) Current Expenditure

Source: JICA Study Team

Figure 2-2: Concept Level of Fiscal Dependency on Resource Revenue

³⁵ 1) Non Resource Primary Balance (NRPB), 2) Structural Primary Balance (SPB), 3) Expenditure Growth Rule (EGR), "Fiscal Frameworks for Resource-rich Developing Countries", IMF Staff Discussion Note, May 2012.

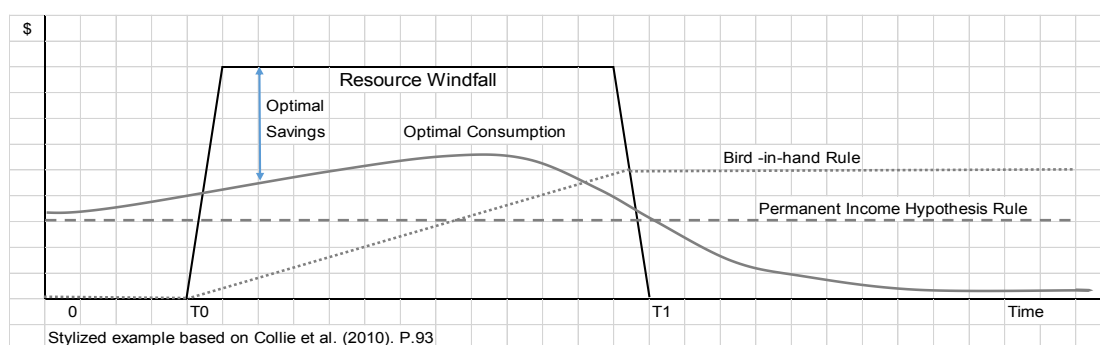
2.2 Optimal Allocation of Resource Revenue

2.2.1 Consumption Level of Resource Revenue

Some discussions have been held among IMF, resource-rich country governments and concerned economists, regarding optimal allocation of resource revenue for consumption/investment and savings: in other words, the question of “how much of resource flows to consume and how much to save/invest” can be a key issue³⁶.

There was a theory to limit the spending from resource revenue to the level based on Permanent Income Hypothesis (PIH), which used to be a major concept in IMF. The consumption level based on PIH can be calculated by pre-supposing total revenue amount from the resource production lifetime to be re-calculated into annual revenue sustained for a longer period to determine the consumption level, as if it lasts permanently. PIH theory comes from the American economist, Dr. Milton Freedman, who advocated that an individual consumption level decision comes from his/her life-long income to be allocated evenly over his/her lifetime, indicating rational behavior to control consumption level despite higher income during his/her most productive working period in life.³⁷

The most conservative way of thinking is so-called “Bird-in-hand” rule, in which consumption is only allowed within interest income from accumulated resource revenue. The case of Norway in managing its natural gas revenue is an example similar to this rule. (Refer to Figure 2-3 and box article below entitled “Oil and Gas Revenue Management in Norway”)



Source: “Macroeconomic Policy Framework for Resource-Rich Developing Countries”, IMF, August 24, 2012 (page 11)

Figure 2-3: Consumption and Saving Allocation of Resource Revenue

However, the application of any of the above-mentioned rules is too strict a policy for a resource-rich developing country, and it is not realistic to expect developing countries, which usually have shortfall in fiscal resources and foreign currency reserve, to save most or a large part of foreign exchange earnings. In the past, IMF recommended policies to discourage spending for consumption and investment from resource revenue, but there has been some discussion with different thoughts within IMF.³⁸ Recently, there is an opinion that there is economic merit to spend part of resource revenue for current consumption and domestic investment, in particularly for resource-rich developing countries. This is based on a theory

³⁶ IMF (2012)

³⁷ Milton Freedman, “A Theory of the Consumption Function”, Princeton University Press, 1957 (Chapter III The Permanent Income Hypothesis)

³⁸ Tomas et al. (2012) (page 4)

that if the consumption is increased at low-income level, it contributes to reduce poverty with enhanced socio-economic welfare. This comes from the concept that a dollar consumed by the poor has more value in the society than a dollar spent by the rich. In addition, the developing country's domestic capital market is usually undeveloped and access to international capital market is limited, which means the opportunity cost of capital is higher, if a portion of resource revenue is geared for domestic investment.

Oil and Gas Revenue Management in Norway

Norwegian case in managing its oil/gas revenue is considered as good practice among resource-rich nations, and its methodology is summarized in the five points as described below.

- (i) In Norway, oil and gas resources are prescribed by the law as a public asset from the initial stage of development and the resource revenue is defined as the property of the nation's citizen.
- (ii) Supported by this legal ground, the government is managing 80% of resource profit, but its allotment to the general budget is limited to a small portion, and most of the resource revenue has been accumulated in the public pension fund since 1970s.
- (iii) Furthermore, it has been stipulated that the oil and gas reserves must be managed for the benefit of both present and future Norwegian citizen under economic and ethical discipline.
- (iv) In the politics, the conservative party maintains the concept that the Norwegian economy must be prevented from overheating and waste, by restricting excessive inflow of resource revenue.
- (v) Public pension fund is under management of Norwegian central bank (Norges Bank), and its position has become more independent from the government which means receiving less influence from politics.
- (vi) The size of the pension fund reached US\$ 450 billion (US\$ 94,000 per person) in 2009.

Source: "Natural Resource Endowment: A Mixed Blessing?" By Thorvaldur Gylfason, from IMF "Beyond Resource Curse", summarized by JICA Study Team.

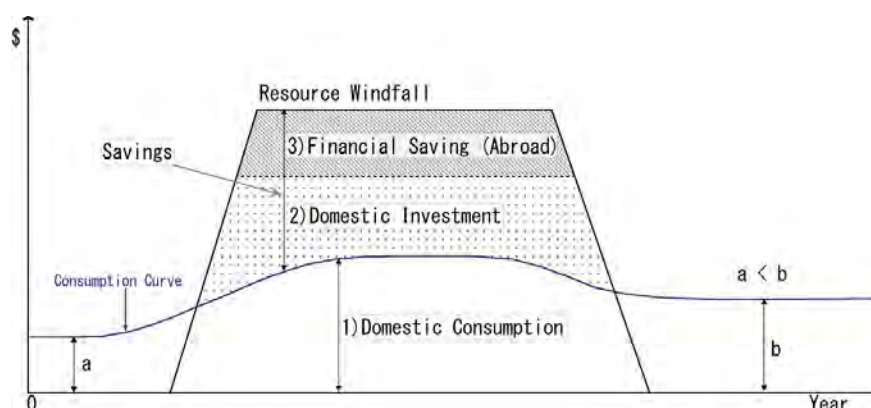
2.2.2 Optimal Allocation

Based on the above-mentioned concept, IMF recommends³⁹ to make an optimal allocation for three kinds of outlay regarding resource windfall revenue at RRDC; namely, 1) Domestic consumption, 2) Domestic investment, and 3) Saving in foreign assets. Each of these resource allocations can be economically justified, if managed properly, in a way that the domestic consumption is increased by: "1)" should be targeted for the presently poor generation which have higher marginal utility in consumption compared with rich, and the domestic investment by "2)" should be intended for sustainable socio-economic capital formation by investing in infrastructure and human resource development, and savings by "3)" should manage the accumulated asset for future generations in foreign currency such as sovereign wealth fund. The domestic investment will have potential to yield higher benefit compared to international capital market, due to the capital scarce situation in developing countries, if the investment opportunities are selected for economic benefit. As a consequence, the target country will be able to enjoy higher consumption level compared with the level before the resource windfall, by new non-resource industry developed.

³⁹ IMF (2012)

Figure 2-4 illustrates the resource revenue accrued during the limited period of time (Resource Windfall) as trapezoid area, while the vertical axis indicates monetary value and horizontal axis for time in years. The length of the bottom of this trapezoid shows the resource production period in years (say, 30 to 35 years), and the height indicates the net revenue for the country.

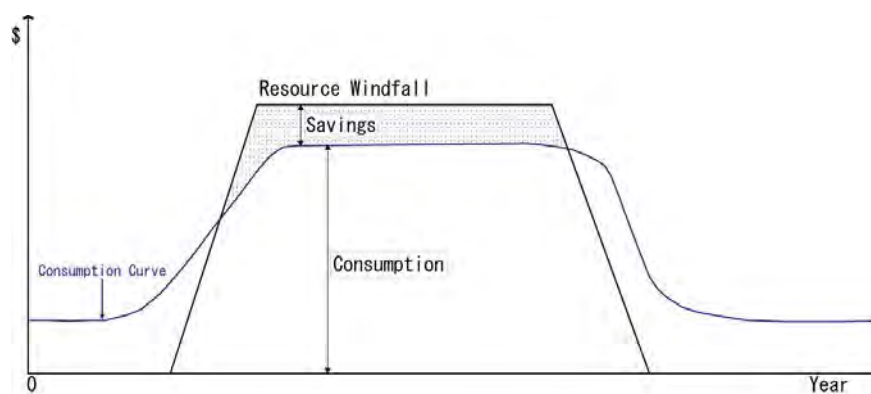
By dividing this resource revenue into the above-mentioned outlays including 1) Domestic consumption, 2) Domestic investment, and 3) Financial saving abroad (the domestic consumption for poverty reduction and widening economy base), then the domestic investment stimulates industrial development by forming infrastructure human resource upbringing, and forming future generation asset by overseas savings. As a result, the initial consumption level shown as "a" is increased to level "b" by the investment and savings after the resource revenue breaks off.



Source: JICA Study Team based on Figure 4 in “Macroeconomic Policy Frameworks for Resource-Rich Developing Countries”, 2012, IMF

Figure 2-4: Optimal Scenario

On the other hand, the worst "resource curse" scenario (Figure 2-5) is to spend almost all temporary resource revenue for consumption (e.g. increasing salary which is current expenditure) or low-yielding investment (e.g. infrequently used buildings), thus enjoying a resource boom by high level wasteful spending. The government limits the allocation toward the investment and savings for the future, causing the consumption level, after resource boom with resource being exhausted, to return to the level before the resource boom. There is a risk that if the borrowings were made during boom period, the fiscal balance will become a deficit.



Source: JICA Study Team

Figure 2-5: Bad Scenario

2.3 Issues of PFM and Fiscal Policy in RRCs

This section focuses specific issues of public financial management common for RRCs based on economic and fiscal characteristics of RRCs discussed in Chapter 1. Specific issues are presumed to be the following: i) securing of resources revenue, ii) resources revenue fund management for fiscal anchors and public expenditure in the future, and iii) medium-term budget plan.

2.3.1 Securing of Resources Revenue

(1) Resources Revenue

The term “resource revenue” has been used in many of the relevant research documents without a clear definition. The definition of resource revenue has to be made clear at first. IMF defines that resources revenue is generated at the stage of natural resource development⁴⁰. Nevertheless this definition is not clear yet. The Department of Interior of the United States explains resources revenue in its publication. If there are natural resources under approved Federal lands, the US Department of the Interior issues leases to explore for and extract these products for sale. In return, part of the sales value for natural resources is paid to the Federal Government for the benefit of the American People. They are called “royalties” and other fees⁴¹.

In general, a company doing exploration and sale of natural resources makes a concession agreement with the government and pays fees shown in Table 2-3.

Table 2-3: Fees Paid at the Stages of Exploration and Production

Stages	Fees	Remarks
Prospecting	Prospecting Fees	A company makes a contract on mining area with the government and is given a lease for exploration and production of natural resources. A contract specifies duration of lease consisting of prospecting, construction and production. A prospecting fee is paid on mining area per hectare as a fee keeping a right on mining area contracted.
Construction	Extension of Prospecting Fees	A company keeps paying a prospecting fee to keep a right on mining area contracted during construction.
Exploration/ Production	Royalty	Royalty is a fee to keep a right on mining area at the stage of exploration and production. Royalty is charged on a physical volume or the value of production or profit. Royalty base is different by RRC.

Source: Prepared by the Study Team based on JOGMEC information on royalty

Royalty and other fees are complex and different by RRC in terms of rates of royalty/fees and payees (federal government or local government). In the case of US, Federal Government and state governments are paid the fees shown in Table 2-4.

⁴⁰ IMF, Guide on Resource Revenue Transparency, 2005

⁴¹ Department of Interior , Natural Resource Revenue from US Federal Land (<https://useiti.doi.gov/>)

Table 2-4: Fees/Taxes Paid for Natural Resources Development

Payees	Fees/Tax	Remarks
Federal Government	Bonus	Initial fee paid by a successful bidder
	Lease	A fee keeping a right on mining area contracted
	Rent	A fee keeping a right on mining area at the prospecting stage
	Federal royalty	A fee keeping a right on mining area at exploration/production stage
State Governments	Severance tax	A tax paid for environmental hazard at the stages of production, storage and sales of natural resources
	State royalty	A fee keeping a right on mining area at the stage of exploration/production

Source: Prepared by the Study Team based on the Office of Natural Resource Revenue, USA

Federal Government receives bonus/lease/rent while state governments receive environment tax. Royalty is paid to both of Federal Government and state governments, but its allocation is different by location of exploration. Royalty on onshore development is paid to state governments while that on offshore development is paid to Federal Government.

A products sharing system for oil development is a unique contract allocating oil production between oil developers and a state-owned company responsible for oil development in Indonesia and Malaysia. The government finances its equity on a state-owned company and receives dividends and bonus in return. The state-owned companies, Pertamina (Indonesia) and Petronas (Malaysia) are now advancing to oil development in overseas countries. Petronas is the giant and rich state-owned corporation closely linked to the federal government of Malaysia, and its money used to be mobilized for risk management, i.e. the Currency Crisis in 1998⁴².

(2) Royalty by type

Among the natural resources development fees paid to the government, the charging basis of “royalty” is different by RRC and shown in Table 2-5.

Table 2-5: Different Royalty Bases

Royalty Type	Charging Basis	Example
Unit based royalty	Dollars per ton or m ³	Malaysia (Petronas)
Ad valorem royalty	Gross sales, FOB price	PNG, Canada, Mongolia
Profit based royalty	Operating profit	Peru, Australia, Chile
Economic rent based royalty	Net margin after income tax	None

Source: Prepared by the Study Team based on Pietro (2012)⁴³

Unit based royalty

A fixed monetary rate is applied to a physical rather than financial base, for instance as dollars per ton or dollars per cubic meter. This type of royalty generates stable revenue and is administratively efficient and easy

⁴² Kumagaya, Petronas IDE-JETRO, 2014

⁴³ Pietro, Mineral royalties and other mining specific taxes, International Mining for Development Center, 2012

to audit. Nevertheless since unit based royalty takes the form of a uniform rate, it is not easy to raise its rate when resources' prices increase. Unit based royalty is generally applied to bulk low-value commodities.

Ad valorem royalty

Ad valorem royalty consists of a uniform percentage (the rate) of the value (the base) of the minerals in the products sold by the miner. One method is gross value by multiplying the weight of the mining products sold with market price on the day of the sale. The other is FOB prices. This type of royalty is clearly defined and leads to simpler audits, and fewer disputes. Some values added by downstream processing should be deducted to calculate the value at the point of extraction. In this sense, this type of royalty incurs administrative costs.

Profits based royalty

A percentage rate is applied to operating profit realized by the project. Because operating profit is profit after deduction of sales/general administration costs, this type of royalty maintains fairness to miners rather than ad valorem royalty.

Economic rent based royalty

In economics, economic rent is defined as the benefits producers take other than net margin after deduction of income tax. For instance, economic rent would be receivable benefits from land or intellectual rights. This concept is difficult to comprehend. Further there is no clear method to testify receivable benefits other than net margin. For this reason, this type of royalty is not actually adopted by RRCs yet.

(3) Administration Levying Royalty

Royalty is very complex and different by RRC in terms of the rate, basis, receiving entity (central and local governments). The issues of administration levying royalty are summarized below⁴⁴.

- ✧ In the countries with a federal system (Australia, Brazil, Argentina, USA), royalty is paid to local governments and royalty base (a physical unit of volume, value of production, current profits, operating profits) is different by state. A state government with ownership of natural resources has its own policy over royalty so that the rate of royalty and royalty bases are different by state.
- ✧ The Federal Government of Australia introduced the MRRT on iron ore and coal, which entails dual royalties imposed by the Federal Government and state governments.
- ✧ In the countries where authority is concentrated in central governments, royalty paid to the central government is re-allocated to provincial governments where the natural resources are located (Indonesia). However, RRCs in Africa do not allocate part of royalty to regional governments.
- ✧ Role of central government agencies over natural resources is different and lack coordination between the concerned agencies. A mining agency is responsible for monitoring of natural resources development and check/control of royalty revenue computation. A finance agency responsible for incorporation of royalty into fiscal revenue has no information about how royalty is levied, which accelerates corruption on the side of revenue levy administration. There is lack of coordination over levy of royalty between the headquarters (central) and a branch office (local) of mining agency.
- ✧ Levy administration of royalty is accompanied by incorrect reporting and corruption.

⁴⁴ Pietro, How to Improve Mining Tax Administration and Collection Frameworks, The World Bank, 2013

Levy administration of royalty seems to be the object of public financial management common for RRCs. Review of royalty system, levy administration and monitoring are prerequisite requirements for public financial management for RRCs. The Extractive Industries Transparency Initiative has its guideline for transparency over matching of royalty receipts and payments. This is the first step to achieve transparency.

2.3.2 Fund Management Options in RRCs

The challenge for RRCs is how resource revenue is to be controlled or managed for different objectives such as stability, saving and investment. This section deals with fund management of resource revenue which is one of the most important elements for public financial management for RRCs.

Governments in RRCs started to establish Sovereign Wealth Funds (SWF)⁴⁵ in 1990s. Initially SWFs have invested resources revenue in foreign assets, especially securities traded in the global financial market. Due to the chronic fiscal deficit of RRCs and low interest rate of external financial assets, SWFs shifted their purposes to domestic financial needs of; i) fiscal stability, ii) saving, and iii) development (domestic social capital). Some SWFs accumulating foreign exchange reserves and oil revenues invested directly in foreign companies or through overseas stock exchange markets. The scale of assets possessed by SWFs in the world is estimated to be US\$ 5 trillion⁴⁶. However SWF is frequently placed in a position of “off-budget” and outside of control of the government except the fiscal stability objective. Since the nature of SWF is for overseas savings and investments, the fund management does not always stay in line with government budget reliability and transparency which are objectives of public financial management. This section discusses fund management options such SWF.

(1) Fiscal Stability

The purpose of a fiscal stabilization fund is basically to insulate the budget and the economy against commodity prices swings by transferring fund money to a treasury account when fiscal revenue turns out to be less than expected. A stabilization fund needs transparency of its management rules and the transfer of fund money to a treasury account needs approval of the parliament. In general, royalties paid to a mining agency are transferred to a stabilization fund administered by the ministry of finance. Fund money is then transferred to a treasury account for fiscal revenue. For example, for RRCs where non-resource primary balance is applied as fiscal anchor, fund money is used to achieve a target budget deficit (expressed in the percent of GDP) of non-resource primary balance.

Stabilization Fund

1. Russia

Russia adopts non-resource primary balance as a fiscal anchor and the Ministry of Finance determines to what extent a target budget deficit of non-resource primary balance is to be financed by a stabilization fund

⁴⁵ The governing bodies of SWF are the ministry of finance or central bank or Fund.

IWG, Sovereign Wealth Funds: Generally Accepted Principles and Practices “Santiago Principles”, 2008

⁴⁶ Baffi, Towards a New Normal Sovereign Wealth Fund Annual Report 2014, Università Commerciale Luigi Bocconi, 2014

called the National Wealth Fund. A transfer of fund money to a treasury account is under the surveillance of the Ministry of Finance and Central Bank.

2. Mexico

Mexico is a country which applies its structural primary balance to its budget. Structural primary balance is composed of structural component for supporting fiscal stability and cyclical component to be saved for the Oil Revenue Stabilization Fund. The allocation of fund revenues is made by the Ministry of Finance, audited by auditors and reported to the Congress,

3. Chile

In Chile, the Fiscal Stabilization Law was enacted in 2006. If actual fiscal surplus exceeds 0.2% of GDP, The Economic and Social Stabilization Fund receives a contribution and transfers it to a treasury account to finance the budget deficit.

Source: SWF Generally Accepted Principles and Practices, International Working Group of SWF (2008)

(2) Saving

Savings for the future are needed to prepare for short-term and medium-term volatility in income, repayment of external debts, and public investment for economic development and savings for long-term future. This is the fundamental purpose to establish a SWF for saving purpose. The balance between consumption and saving should be taken into account for RRCs, in particular, whose reserve horizon is less than 35 years. IMF used to recommend the savings level based on the standard Permanent Income Hypothesis (PIH) which provides a fiscal framework too tight for a low-income country, and it has been impractical and unacceptable among RRCs. There has been discussion to recommend, instead of the PIH-based fiscal rule, an expenditure growth rule allowing consumption to grow in line with non-resource revenue increase rate and expenditure to be allocated into priority projects⁴⁷. In RRCs where an expenditure growth rule is applied to fiscal operation, SWFs have the dual objectives of fiscal stability and saving.

The box below illustrates examples of SWF whose main purpose is savings. Savings are mainly income (foreign currency) earned by export of natural resources.

SWF for Savings

Azerbaijan is an oil exporting country with reserve horizon of 32 years, and fiscal anchor applied to the country's fiscal operation follows an expenditure growth rule. The State Oil Fund of the Republic of Azerbaijan (SWF) saves foreign currency earned by export of oil and contributes to its fiscal stability fund as well. The expenditure in fiscal current balance is allowed to grow in line with growth rate of non-resource GDP and under the surveillance of the parliament. In addition, a transfer of SWF's fund to the treasury account for fiscal revenue is limited to public expenditure program approved by the parliament.

Kuwait, endowed with oil reserve horizon of more than 100 years, established Kuwait Investment

⁴⁷ IMF (2012)

Authority (KIA) in 1982. KIA's fund is only mobilized to a treasury account for repayment of external debts and public expenditure for industrialization, as a measure to avoid Dutch Disease. KIA is responsible for the country's strategic asset allocation by referring to a benchmark portfolio of external financial assets. KIA's asset is divided into General Reserve Fund for saving (the repository of all of the State of Kuwait's oil revenues), and Future Generation Fund for investment .

(3) Investment

The governing body of SWF, whose purpose is for investment, is usually not a government organization but an autonomous entity independent from the government or a public corporation called "Fund", whose revenue and expenditure are treated as "off-budget" from the government. Such SWFs are responsible for strategic asset allocation based on risk analysis of external financial assets and invest in profitable businesses or assets in both domestic and external markets. Typical SWFs for investment are those in Korea and Singapore, although their fund source is not from resources, but foreign exchange revenue. SWFs in oil producing with high income counties invest in domestic business and infrastructure by the use of export earning of crude oil. SWFs for investment in RRCs are required to take consideration for strategic asset allocation adjustable against change of terms of trade (TT) or the exchange rate with major trading partners. Table 2-6 shows typical SWFs for investment.

SWFs for Investment

Table 2-6: SWFs for Investment

Country	Fund	Year established	Purpose	Asset	Source of Fund
Bahrain	Mumtalakat	2006	Economic diversification	13.5 US\$ billion	Oil
Malaysia	Kazanah	2003	Industrial diversification	34.4 US\$ billion	Non-natural resources
Kazakhstan	Samruk-kazyna	2008	Economic development	47.4 US\$ billion	Oil

Source: Staff of WB for G20 Infrastructure Working Group, 2014, Sovereign Wealth Funds and Long-Term Development Finance: Risks and Opportunities, The World Bank

Although SWFs under the independent entity is usually effective to be professional fund management, its off-budget condition has lack of transparency to the public. A special account system introduced in the following section (2.3.4) could be an alternative system.

2.3.3 Budget Reliability and Medium-Term Budget Plan

According to JICA's Guideline⁴⁸ for Public Finance/Public Financial management, budget reliability is explained in terms of budget integration/reliability/transparency, with careful attention paid to "off budget management" and "debts management" in fiscal framework. In order to maintain fiscal discipline, the off-budget management is necessary to be integrated into fiscal operation, for instance, a fiscal

⁴⁸ Guideline for Public Finance/Public Financial Management, JICA, February 2012

stabilization and also SWF for saving or investment to be integrated with fiscal framework. By lessons learnt from excess spending associated with increase of external debts outstanding during resource boom, the importance of debt sustainability closely linked with counter cyclical budget is being suggested.

IMF's Article IV Consultation Report⁴⁹ indirectly contributes to public financial management of RRCs. The report covers fiscal anchors applicable to RRCs based on forecast of macro-economy and tax/resources revenue projection, medium-term budget plan, medium-term debt sustainability plan and analysis of fund management options (SWF or development bank). Budget reliability is the prerequisite condition for introduction of fiscal anchors. IMF focuses on fiscal revenue management and expenditure plan including medium-term budget plan in public financial framework for RRCs⁵⁰. Budget plan used to be short-term one and shift to medium-term plan in many of RRCs.

The fiscal anchors and medium-term budget plan are in complementary relation with each other. A short to medium-term budget plan is subject to fiscal anchor rules under constraint of resources revenue while medium-term expenditure/budget plan is for allocating budget to prioritized expenditure programs based on forecast of macro-economy and fiscal revenue. It may adjust fiscal anchors in the short-term fiscal framework and in medium-term fiscal framework. However, budget authorities tend to fail to review and adjust budget plan of a single fiscal year in medium-term fiscal framework. In short, fiscal anchor to control pro-cyclical expenditure tends to be less prioritized. Under such circumstance, IMF suggests budget authorities to shift back to the stringent fiscal rule, a non-resource primary balance.

In 2013, 81 countries had adopted some type of fiscal rule, with budget balance and debt rules being the most common.⁵¹ Medium-term budget frameworks have been introduced in 61 countries. A fiscal anchor IMF recommends is proposed to be the target of fiscal deficit on a single year basis, but the lack of flexibility can be a burden to financial authorities. The attractiveness of medium-term budget framework is that they can help plan, manage, and prioritize revenue and expenditure while being in compliance with fiscal rules under the ceiling of public debt-GDP ratio. The medium-term fiscal framework is applied by IMF recommendations, as listed below.

- ✧ Preparation of estimates of macro-economy, fixed liabilities (external debt, budget expenditure), contingent liabilities (government guarantee for trade/foreign exchange risks) and resource prices
- ✧ Preparation of Medium-term fiscal strategy including prioritized programs
- ✧ Application of Medium-term budget plan
- ✧ Review of a single fiscal year budget plan in line with the medium-term plan

Fiscal revenue plan is being made based on conservative estimate of resources prices while fiscal expenditure is estimated based on more accurate cost estimation in cooperation with relevant agencies. IMF introduced a fiscal anchor in consultation with Saudi government at the time of a single fiscal year budget plan review. Saudi Arabia has not applied fiscal anchor under IMF Guidance. IMF suggested structural primary balance for short-term and overall balance for medium-term. In general, RRCs adopting structural primary balance give weight to prices in the past to compute the moving average price

⁴⁹ IMF's Report about forecast of macro-economy and fiscal balance/economic growth/debt sustainability

⁵⁰ Teresa and Jean-Luc, A Public Finance Management Framework for Resource-Producing Countries, IMF Working Report, 2010

⁵¹ Ahmed et al., Saudi Arabia: Tackling Emerging Economic Challenges to Sustain Growth, IMF, 2015

of resources, and Saudi government adopted a conservative oil price by giving weight to the future 5~8 years of oil prices under more restricted oil demand/market conditions. The structural primary balance is composed of structural (not influenced by volatility) and cyclical components, and fiscal revenue in structural component is based on conservative estimate of oil prices. The review of a single fiscal year's budget plan could lessen uncertainty in medium-term fiscal framework. While Saudi Arabia is a model RRC case introduced with MTF, coordinated relation between fiscal anchor and MTF is important for reliable budget planning.

2.3.4 Strategic Allocation of Fiscal Resource to Avoid Dutch Disease

The counter-measures for Dutch Disease can be divided into industrial policy for its diversification and fiscal and monetary policy for controlling foreign fund inflow, as illustrated in the table below. In this section, cases in industrial development policy and fiscal investment program in Japan are introduced.

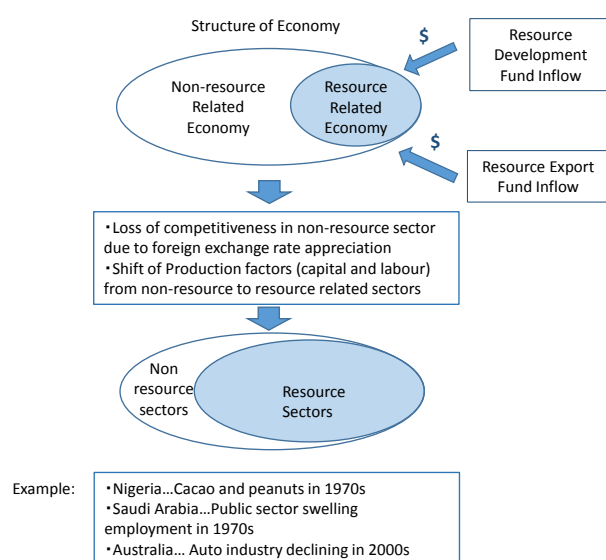
Table 2-7: Option for Counter-measures for Dutch Disease

Measures by Industrial Diversification	<ul style="list-style-type: none"> ● Non-resource Industry Development (agriculture, manufacturing, service sectors) ● Resource-related Industry Development (mining and energy related industry and business)
Measures by Controlling Foreign Fund Inflow	<ul style="list-style-type: none"> ● Managing foreign fund inflow to curving consumption and encouraging development investment ● Utilization of off-shore accounts of resource developing companies ● Foreign currency saving and investment by SWF

Source: JICA Study Team

(1) Policy Measures for Non-Resource Industrial Development

In order to avoid Dutch disease in resource-rich countries, it is effective to promote non-resource industrial development, such as agriculture and manufacturing, which have a comparative advantage, based on experience in other resource countries. While it has been outlined in section 1.4, Dutch disease is an economic phenomenon where foreign currency inflow by resource development triggers currency appreciation, which leads to decline in non-resource related tradable goods industry such as agriculture and manufacturing by loss of export competitiveness. This symptom becomes stronger if the export dependency on resource revenue is higher. It is possible to avoid by increasing export of non-resource related products. Thus, policy strategy for such economic sector development can be an effective option to be applied.



Preventive Policy for Dutch Disease

- Restraint from resource revenue spending
- Domestic investment for industry diversification (for human resource, infrastructure, research and development, etc)
- Sophistication and diversification of resource-related industries
- Foreign asset management (Sovereign wealth fund)

Examples of Success in Avoiding Dutch Disease

- Investment in infrastructure for agriculture and manufacturing industry lead to domestic economy diversification with foreign investment promotion: Malaysia and Indonesia
- Open economy policy and foreign investment promoted for industry diversification: Chile (marine product (salmon) and agriculture (wine))

Source: JICA Study Team

Figure 2-6: Occurrence and Avoidance of Dutch Disease

As for country cases which succeeded in avoiding Dutch disease by the promotion of the non- resource industry, there are Malaysia, Indonesia and Chile, based on some relevant literature⁵². These case countries promoted agriculture and/or manufacturing with strong political initiative, which have led to attract non-resource industry developed. These countries mobilized resource revenue into investment for infrastructure to support those non-resource industrial developments. Furthermore, they took foreign investment promotion policy and encouraged research and development for new product development. As for successful country in promoting non-conventional industry, Dubai Emirate, a member of the United Arab Emirates is also an interesting case. While Dubai itself is not categorized as a resource-rich country because its crude oil production is very small despite of its geographical location, Dubai started to develop non-resource business by developing infrastructure to attract service industries such as finance, media, tourism and air transportation, due to its natural resource scarceness. Then now it has the world-class hub airport in the Middle East. Dubai has been regarded as good practice in developing service industry as the country's main economic activity⁵³.

(2) Fiscal Investment and Loan Programs in Japan

Special Account

The Special Account is a unique fiscal system developed in Japan as a tool to focus on specific policy objectives with reserved financial sources collected from special-purpose tax, issuing bond, postal savings and occasional allocation from general budget. The Special Account is subject to approval by the congress, just like a second budget of the government, which makes it different from independently-managed "Fund" system. The Japanese Fiscal Law stipulates three conditions required

⁵² Leonor Coutinho, "The Resource Curse and Fiscal Policy", Cyprus Economic Policy Review, 2011

⁵³ IMF, Rabah Arezki et al., "Beyond Curse – Policy to Harness the Power of Natural Resources", 2011

for establishing Special Account, in Article No.13, as stated below.⁵⁴

- When the government needs to implement special policy
- When the government owns a specific fund and need to manage
- When the government needs to manage specific financial resources, separated from ordinary fiscal revenue and expenditure, for the purpose of designated policy objectives

Currently in Japan, there are 14 kinds of special accounts being managed by several central government ministries. For example, there are “Fiscal Investment and Loan Special Account” managed by Ministry of Finance and the Ministry of Land, Infrastructure and Transportation, “Energy Measures Special Account”, managed by Ministry of Education, Culture, Sports, Science and Technology, Ministry of Economy, Trade and Industry and Ministry of Environment, and “Pension Fund Special Account” by Ministry of Health, Labor and Welfare, among these 14 special accounts.

Similar accounting system exists in other countries. In USA, the federal government fiscal system has many kinds of “Trust Fund” programs, including social security program, which are separated from Federal Fund which is equivalent to ordinary fiscal revenue and expenditure. Besides these trust funds, there are government-owned institutions, such as US Export-Import Bank, which are also separated from ordinary fiscal accounting. In USA, these government and quasi-government managed revenue and expenditure are integrated into one document, as President’s Financial Note, to be explained to the Congress.

Table 2-8: Special Accounts in Japan

	Name of Special Account	Ministry in Charge	Amount (US\$ Million)
1	Re-insurance for Earthquake	Ministry of Finance	1,078
2	Labor Insurance	Ministry of Health, Labor and Welfare	30,833
3	The national forest debt management	Ministry of Agriculture, Forestry and Fisheries	2,628
4	Pension Fund	Ministry of Health, Labor and Welfare	474,982
5	Forest Insurance	Ministry of Agriculture, Forestry and Fisheries	35
6	Trade Re-insurance	Ministry of Economy, Trade and Industry	1,701
7	Food Supply Stabilization	Ministry of Agriculture, Forestry and Fisheries	9,472
8	Patent	Ministry of Economy, Trade and Industry	1,049
9	Automobile Safety	Ministry of Land, Infrastructure and Transport	2,856
10	Foreign Exchange Fund	Ministry of Finance	3,107
11	Government investment and loan program	Ministry of Finance	144,076
12	Tax allocations and the local transfer tax distribution	Ministry of Public Management, Home Affairs, Posts and Telecommunications	160,553
13	National Debt Consolidation Fund	Ministry of Finance	761,598
14	The energy measures	Ministry of Economy, Trade and Industry/ Ministry of Environment / Ministry of Education, Culture, Sports, Science and Technology	10,535
15	Eastern Japan earthquake disaster reconstruction	Agency for Reconstruction	24,833
	TOTAL		1,629,336
	Conversion rate: Yen120/US\$		

Source: JICA Study Team based on Japanese MOF website

⁵⁴ Special Account Guidebook for Fiscal Year2013, by Bureau of Accounting, Ministry of Finance (http://www.mof.go.jp/budget/topics/special_account/fy2013/)

Fiscal Investment and Loan Program Special Account in Japan

Fiscal Investment and Loan Program covers economic activities needed by policy for society, but difficult to be implemented by private sector financing. The Program enables finance of projects with long-term and low interest-rate fund. For example, providing loans to small and medium enterprises (SME), promoting overseas investment for infrastructure development, securing stable supply of resources such as rare metal, encouraging creation of new venture business utilizing new and frontier technology developed by universities and research institutions, and sharing financial risk to start new business.

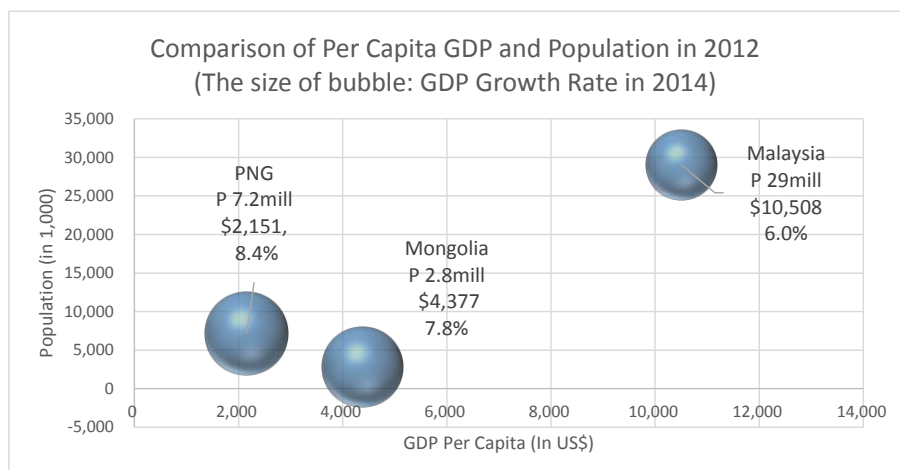
The financial sources of this Program used to be supplied by postal saving and pension fund widely collected from individual citizens; however, currently it is financed by bond issuance and accumulated fund of the special account, since the government finance system reform took place in 2001. Regarding the restriction on transfer of funds from special account to ordinary budget account, only the surplus fund, the amount in excess of the reserve fund for interest rate fluctuation, is allowed to be transferred.

CHAPTER 3 CASE STUDY

The case study was conducted for three countries, Malaysia, Papua New Guinea (PNG) and Mongolia. These three countries have different development stage, economic size, and kinds of resources endowed, which makes it possible to observe policies and measures to be taken at different stages of development. Among the three countries, Malaysia is categorized as a success case in diversifying its economy and lowering dependency on resources.

Comparison of Case Countries: Population and Economic Size

The bubble chart below compares population size and economic development stage. The vertical axis is population: 30 million for Malaysia, 7.2 million for PNG and 2.8 million for Mongolia. Malaysian population is almost 10 times that of Mongolia, which also means difference in domestic market size and thus economic size. The horizontal axis is GDP per capita: more than US\$ 10,000 for Malaysia and US\$ 4,000 for Mongolia which is categorized as middle income country. These indicators for the economic size are quite important to be noted for resource-rich countries, because of anticipated impact from large scale investment for resource development project. The bubble size in the chart indicates GDP growth rate in 2014.



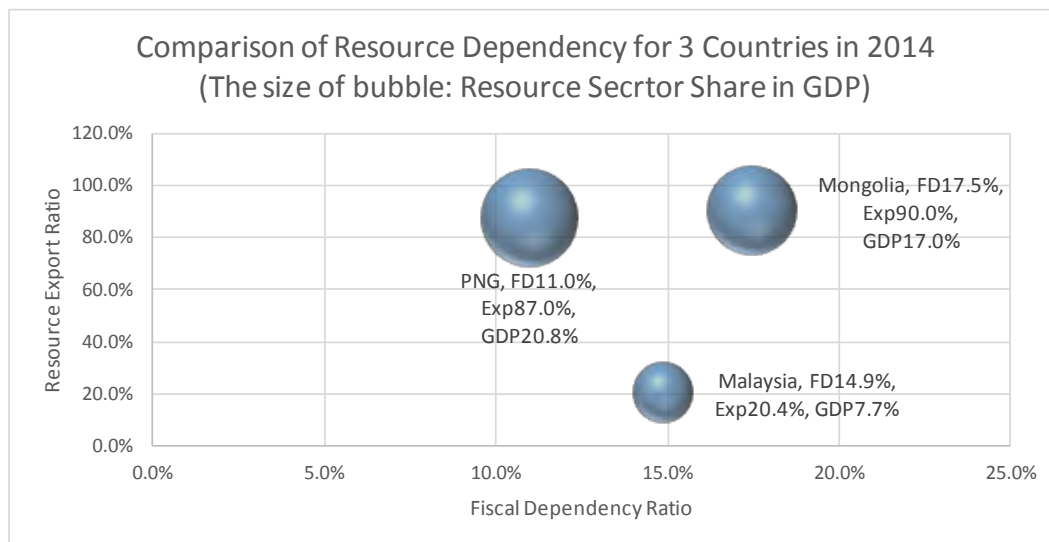
Source: JICA Study Team based on data from The World Development Indicator and each country data for GDP Growth.

Figure 3-1: Comparison of Case Study Countries: Population, GDP per Capita and GDP Growth Rate

Comparison of Case Countries: Resource Dependency

The following are comparisons of resource dependency in the economy and fiscal revenues for the three countries. Three kinds of comparative indicators are used in the next chart: share of resource in export, share of resource in GDP, and share of resource in fiscal revenue. The resource share in export is the largest, among three: for Mongolia (90%), followed by PNG (87%) and Malaysia with only 20%. The resource share in GDP also indicates a similar trend: 17% for Mongolia, 20.8% for PNG and 7.7% for Malaysia. The fiscal dependency is the highest in Mongolia, followed by Malaysia and PNG. In the case of Malaysia, its economy has diversified and departed from resource dependency but its fiscal

dependency is comparatively high. PNG is in the reverse situation: comparatively higher dependency in economy but lower in fiscal revenue. The background of these differences in dependency on resource, and its issues will be further explored in this chapter for each country.



Source: JICA Study Team Based on Study results. Note: PNG is 2015 data

Figure 3-2: Comparison of Case Study Countries: Resource Dependency on Export, GDP and Fiscal Revenue

Comparison of Case Countries: Characteristics of Resources

The following table shows kinds of energy and metal resources each country is endowed with. Malaysia is currently mainly an energy resource producer, while PNG produces both energy and metal resources. In the case of Mongolia, it is currently producing mainly metal resources but has abundant coal resources as well.

Table 3-1: Comparison of Case Study Countries: Resource Characteristics

Case Study Country	Characteristics of Resources
Malaysia	Transitioned from sole tin producer to oil and gas producer. Currently the World’s No.2 exporter of LNG.
Papua New Guinea	Endowed with many World-class scale copper and gold mines. Also has abundant potential in oil and natural gas.
Mongolia	Endowed with World-class copper and coal mines. However, disadvantaged in transportation and export due to landlocked location.

Source: JICA Study Team

3.1 Case Study 1: Malaysia

3.1.1 Resource Sector

- (1) Natural resources and major projects for developing them

Malaysia has a long history of mining, which was already been going for a century by the mid-1960s. Its main mineral product was tin concentrate. Taxes directly received from tin mining accounted for 25~30% of the government's revenues. In 1972, the production of tin ore peaked at 76,830 tons. Until 1987, Malaysia was the world's leading producer of tin, but since then tin production has greatly decreased.

In 1986, as one means of furthering economic development, the Malaysian government implemented the National Industrialization Policy to promote industrial production that utilized natural resources and enhance the level of research and development. In the beginning, there were many issues to overcome, but the transition to industrial production had the effect of changing the direction of the national economy. Since then, the manufacturing sector has been the main driving force of economic growth.

Because of the effects of the tin crisis that occurred in 1985, in which the international market for tin collapsed, Malaysia began to shift away from tin production in the latter 1980s, and many traditional mining companies diversified into such industries as construction, quarrying, and manufacturing. Companies such as Gopeng Berhad became involved with the construction of a north-south expressway, and also became involved in the quarrying industry. The Sunway Group put special emphasis on quarrying, real estate, and theme parks. The Malaysian Mining Corporation Berhad (MMC), which was established for tin operations, also shifted its strategy away from mining, and built foundations in the transport/distribution, public facilities, and engineering sectors. Small-scale mining sectors became involved with such activities as agriculture, aquaculture, and duck-raising at idled mine sites.

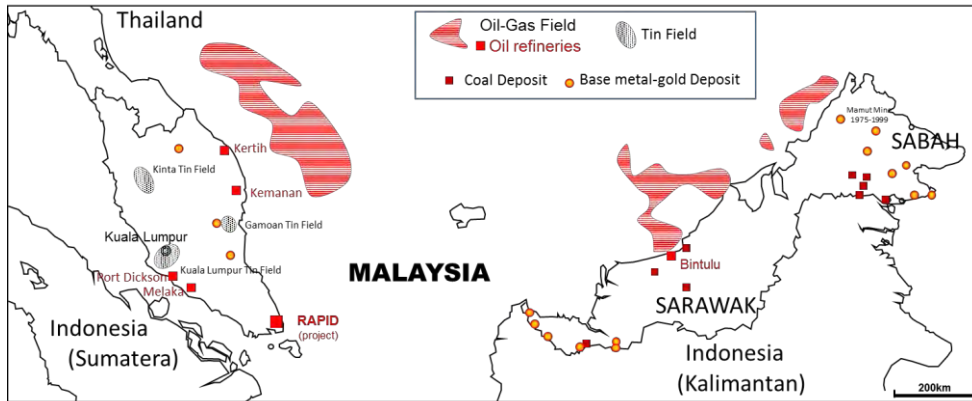
Although today's mineral resource sector is not what it was in its heyday, there is still production of such metal resources as tin, iron ore, copper, aluminum, nickel, as well as non-metallic resources such as clay and silica sands, and coal as an energy resource. A considerable amount of the metal resources are exported as raw materials, but tin (which has an annual production of 4,000 tons) is imported as ore from such countries as Australia and Indonesia. This ore is then smelted and exported as tin metal.

Rather than ore, energy resources, especially petroleum and natural gas, have been the focus of growth in resource production. In Southeast Asia, Malaysia is second only to Indonesia in its reserves of petroleum and natural gas. Petronas (Petroleum National Berhad), which was established as a nationalized oil and gas company in 1974, got exclusive ownership of petroleum resources based on the Petroleum Development Act, and was given the right to produce and sell in the refining and petrochemical fields, and development and production were managed under the direction of the government. In 1976, Petronas signed a Production Sharing Agreement (PSA) with Shell Oil and started development in regions such as Sabah and Sarawak in mainly PSC format. As of 2014, there were 90 oil fields and 66 natural gas fields in production⁵⁵. That same year, Malaysia's exports of liquid natural gas (LNG) ranked second in the world⁵⁶. (Later there will be a description of Petronas's operations outside of Malaysia). Today, Petronas is a huge corporation, with many companies under the umbrella of the Petronas Group. This includes the exploration company Petronas Carigali Sdn Bhd, as well as companies involved with petroleum refining, LNG, gas supply, pipelines, petrochemicals, real estate, trading, IT, and venture capital, among other things. Petronas is also making intensive efforts to develop projects in resource downstream industries,

⁵⁵ Petronas (<http://www.petronas.com.my/our-business/Upstream/Documents/PETRONAS%20Upstream%20Brochure.pdf>)

⁵⁶ BP Statistical Review of World Energy 2015
(<http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>)

and is aiming to start operations in 2019 of Refinery and Petrochemical Integrated Development (RAPID), which is an integrated plan for petrochemical production and oil refining on a global scale. It should be noted here that many foreign companies, including Japanese companies, are participating in related construction projects for refineries and other facilities.

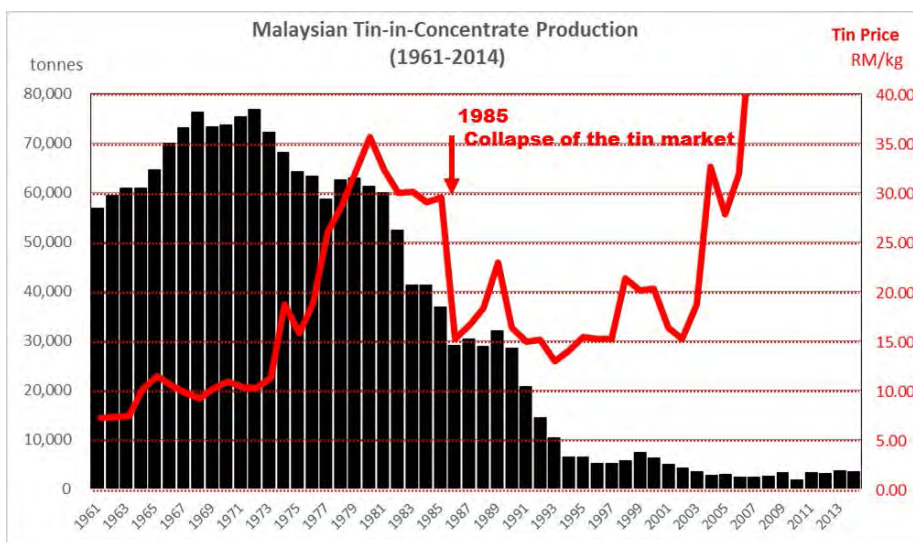


Source: Created by the survey team based on various materials

Figure 3-3: Distribution of Underground Resources in Malaysia

(2) Resource price fluctuations and production volume

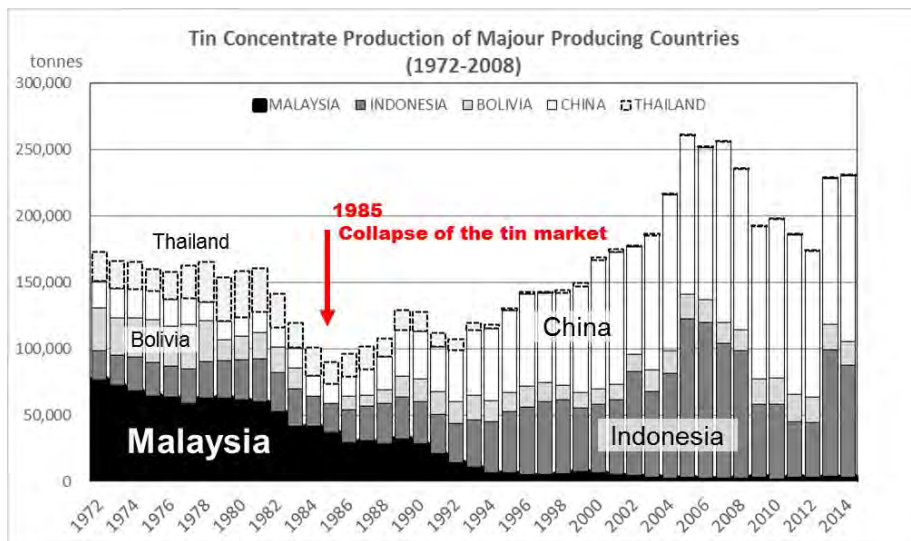
The figure below shows the relationship between the amount of tin concentrate produced in Malaysia (amount of metallic tin content) and price fluctuations since 1961. The collapse of the tin market in 1985 led to a huge decrease in tin ore extraction.



Source: Created by the survey team based on data from USGS Mineral Commodity Summaries and other sources

Figure 3-4: Malaysia: Volume of Tin Ore Production and Price Movements

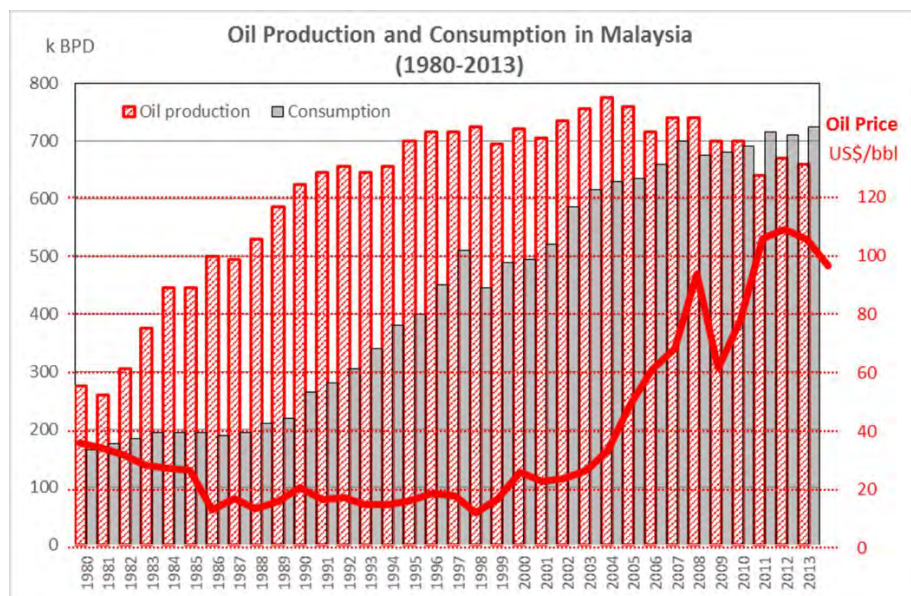
The next figure shows trends in the production of tin ore among the world’s leading tin-producing countries.



Source: Created by the survey team based on data from USGS Mineral Commodity Summaries and other sources

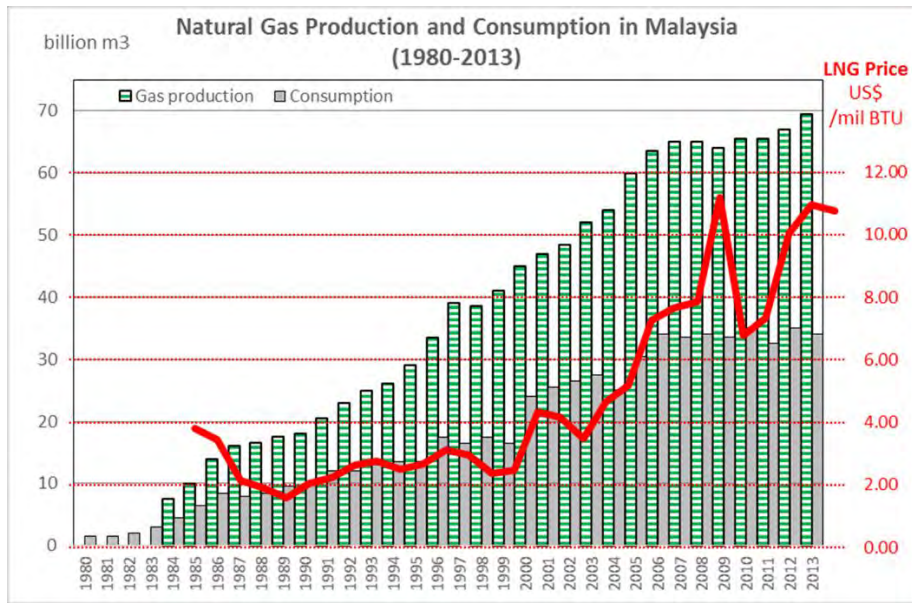
Figure 3-5: Trends in Production of Tin Ore among World’s Leading Tin-producing Countries

After the collapse of the tin market in 1985, market conditions did not recover until the 2000s, when global consumption also began to rise. However, there is almost no tin ore production in Malaysia. After the market collapse, Malaysia began to shift towards downstream production. The Malaysia Smelting Company (MSC), which was originally established by a national policy for producing tin ore, is today importing tin ore from Indonesia and other countries and is smelting and processing it (such as production of solder) and the tin industry itself is stable. In conjunction with the decline of tin ore mining, the production of oil and gas began to greatly increase in the latter 1980s, and the structure of the resource industry has made a remarkable shift away from metal resources, especially tin ore mining, toward energy resources.



Source: Created by the study team based on BP data

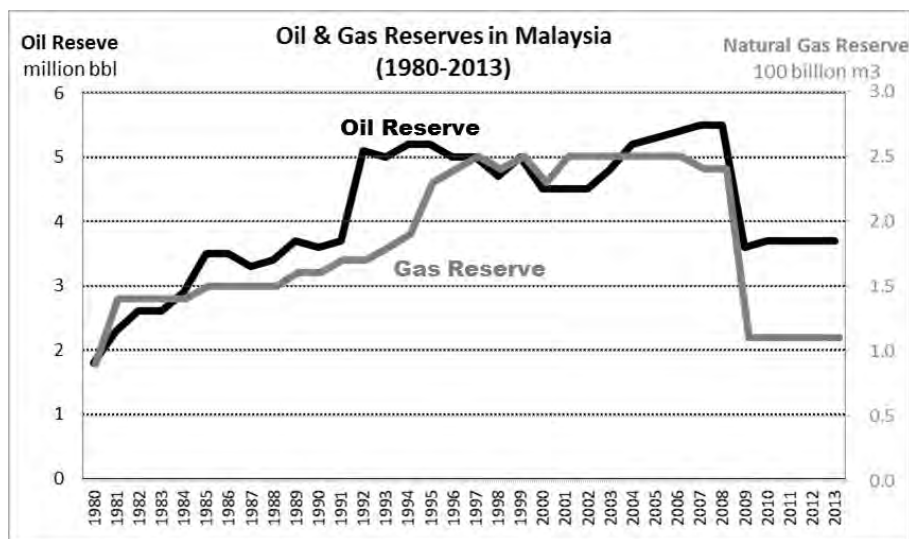
Figure 3-6: Malaysia: Petroleum Supply and Demand, and Price Movements



Source: Created by the study team based on BP data.

Figure 3-7: Malaysia: Natural Gas Supply and Demand, and Price Movements of LNG

In the early 1990s, the expansion of oil production was beginning to slowdown, and after peaking in 2004 it has fallen into a declining trend. On the other hand, natural gas production dramatically increased with the start of LNG production in 1983, but production began to decline in 2005. There are expectations for new projects.



Source: Created by the study team based on BP data

Figure 3-8: Trends in Natural Gas Reserves in Malaysia

In 2008, when there was a price collapse due to the Lehman Brothers crisis, there was a dramatic decrease in the reserves of oil and natural gas that could be extracted economically. The amount of reserves that

could be confirmed as of the end of 2013 showed an R/P (reserves-to-production) ratio for both oil and gas of about 5 years, which is quite low compared to the world average of 50+ years. If the prices of oil and natural gas do not recover, and if there is no success in deepwater development, technological developments such as enhanced oil recovery (EOC), and then the country will likely enter a stage where production cannot be increased.

(3) Resource development businesses

Although the Malaysian resource industry has shifted its focus toward oil and natural gas, for more than 20 years beginning in the 1970s, there was effort to internalize mining operations (that is, only Malaysians could manage operations) for mineral resources through the ethnic mining company MMC, which had been established by government policy. Many Malaysian engineers who had mining expertise that was cultivated and advanced by this system have presently been shifting their activities to overseas sites.

Besides oil, gas and tin, Malaysia has other resources such as base metals like copper, especially in the Kalimantan region, and there are numerous known occurrences of coal and limestone that show a high resource potential, but there is almost no activity for other land-based mineral resources. Base metals, coal, and limestone are important locally-produced, locally-consumed resources for supporting domestic industries. For regions with resource potential, the government has been overseeing the improvement of a geological foundation database which is considered to be necessary for the revival and technical maintenance of investments in mining businesses.

As has been described above, Malaysian domestic reserves of petroleum and natural gas are much smaller than the global average, and it is extremely difficult to increase production. Against this backdrop, in the 1990s Petronas began to diversify its portfolio and strategically proceed with projects outside of Malaysia⁵⁷. Including overseas resources, the reserve horizon for Malaysian oil and gas may be more than 60 years⁵⁸.

For unconventional natural gas resources (such as shale gas), Malaysia invested in the Australian company Gladstone LNG in 2010, and in the Canadian company Progress Energy in 2012. As reported earlier, Petronas is continuing to invest in downstream sectors such as petrochemicals and oil refining, and it is considered to be an excellent example of succeeding in both horizontal and vertical resource development.

3.1.2 Economic and Fiscal Characteristics

(1) Price Volatility of Natural Resources and Macro-Economy

Malaysia currently belongs to the high middle income countries with GDP per capita of US\$ 10,500 (2013) and the population of 30 million. Natural resources contributed to development of the Malaysian economy by the resource boom of tin production and export in 1970's and crude oil/natural gas in 1980's onwards. The country started to make industry diversification in 1980's which resulted in the

⁵⁷ According to Petronas's website, they participate in more than 80 development projects around the world, including Africa, Middle East and Southeast Asia.

⁵⁸ Interview to Petronas.

development of secondary and tertiary industries. Malaysia aims to become an advanced economy by the year 2020.

Real GDP grew 25 times in the 20 years between 1995 and 2015 with the range of annual average growth rate of 4.5 % and 5.3%.

Table 3-2: Real GDP and Growth Rate

Unit: Billion RM

	1995	2000	2005	2010	2015
GDP	416.01 [4.95]	524.78 [4.69]	659.25 [4.55]	821.44 [5.23]	1,060.09

Source : Prepared by the Study Team based on IMF Financial Statistics

Remarks : Real GDP at the 2010 constant price. [] indicates the annual average growth rate of five years.

The manufacturing industries such as textile and electricity/electronics began to be established in the era of 1980's. The GDP's share of the manufacturing industry increased from 16% in 1995 to 30% in 2000, and remained at around 25% onwards. GDP composition ratio by the agricultural and mining sector remained at around 10%. The service sector shares about 50% of GDP which means that the Malaysian economic structure approaches to that of an advanced economy. The employment composition by economic sector shows the gradual decrease of ratio by the agricultural sector. The same composition ratio by mining and manufacturing industries remained at around 0.3~0.6% and 17~23% respectively. The service sector increased its ratio at around 60% from 2010 onwards.

Table 3-3: Composition Ratios of GDP and Employment by Sector

Unit: %

	1995	2000	2005	2010	2012
Agriculture	12.9(19.3)	8.6(16.2)	8.3(12.8)	10.4(13.1)	10.0(12.2)
Mining	6.2(0.4)	10.6(0.3)	13.3(0.3)	10.9(0.5)	10.4(0.6)
Manufacturing	16.3(22.6)	30.9(22.8)	27.5(19.1)	24.5(17.1)	24.2(17.0)
Construction	6.2(7.7)	3.9(8.0)	3.0(8.7)	3.4(8.8)	3.9(8.9)
Service	58.4(50.0)	46.0(52.7)	47.9(59.1)	50.8(60.5)	51.5(61.3)
Total	100.0(100.0)	100.0(100.0)	100.0(100.0)	100.0(100.0)	100.0(100.0)

Source : Prepared by the Study Team based on statistics published by the Malaysian Statistical Office

Remark : GDP composition ratio by economic sector at nominal GDP while () indicates the composition ratio of employment by sector.

The contrast of composition ratios of GDP to employment reveals that labor productivity is highest in mining sector, followed by the manufacturing sector while it is lowest in the service sector.

The volatility of crude oil price per barrel stood at US\$ 50 in 2005 and increased to US\$ 100 in 2008 when economic downturn by the Lehman Shock took place. The oil price remained to be at US\$ 110 until 2013 and suddenly decreased and stands at around the range from US\$ 45 and 50 as of October 2015. The impact of price volatility of natural resources turned out to be not influential to macro-economy. This is

because the ratio shared by exports of natural resources out of total exports was at around 9% and its GDP share at 3-7% between 1995 and 2014. A relatively stabilized movement of real effective exchange rate (REER) between 92 and 100 during 2004-2014 (the base year of 2010 at 100) implies that macro-economy was little affected by price volatility of natural resources, that is, low domestic inflation. Since the Malaysian exchange rate shifted to the floating system in 2005, REER remained to be in the trend of appreciation and affected by nominal exchange rate rather than domestic inflation.

Due to industry diversification, Malaysia enjoyed long-term trade account surplus, which offset income/service accounts deficit, resulting in current account surplus. Financial account balance has been negative and the deficits amounted to RM 815 billion due to Malaysian investment in overseas countries and debts by public (the government and public corporations) and private sector. Deficit on financial account balance means that Malaysia is vulnerable to variation in factors such as change of policy rate by financial authorities in advanced countries. Malaysia is known as debt market of Islamic finance.

Table 3-4: Balance of Payments (Malaysia)

Unit: RM million

	2000	2005	2010	2014
Trade balance	79,114	128,891	124,182	113,413
Service balance	-10,670	-9,612	6,556	-11,189
1 st income balance	-28,909	-23,942	-26,131	-37,322
2 nd income balance	-7,313	-16,970	-21,790	-17,586
Current account	32,252	78,367	82,816	47,317
Capital transfer	-	-	-111	277
Financial account	-23,648	-36,991	-19,945	-81,597
Overall balance	-8,176	13,551	-2,628	-36,507

Source : Prepared by Study Team based on statistics by the Malaysian Statistical Office
Remark : Overall balance indicates that after adjustment of errors.

(2) Fiscal Revenue and Expenditure

Fiscal revenue of Malaysian federal government consists of direct taxes (corporate income tax, individual income tax, petroleum/natural gas tax, withholding tax) and indirect taxes (customs duties, excise duties, sales tax, goods and services taxes(GST)⁵⁹) and non-tax revenue (petroleum royalty, road tax, dividends). Fiscal expenditure is largely divided into current and development expenditures. The former is comprised of personnel expenses of federal government officials, payment of debt service, internal revenue allotment to state governments and public corporations, government consumption, fuel subsidy⁶⁰) while the latter consists of expenditures for defense, social and economic areas. The government introduced outcome-based expenditure planning based on the IMF's Government Financial Statistics Model in 2001 and applied its method to current expenditure.

According to fiscal balance of 2014, the composition ratios of revenue are direct taxes (57%), indirect taxes (17%), and non-tax revenues (26%). Corporate income tax is the largest source of direct taxes,

⁵⁹ GST introduced in April 2015. After introduction of GST, sales and services tax are abolished.

⁶⁰ Fuel subsidy is abolished in December 2014.

followed by petroleum tax⁶¹, and individual income tax. On the expenditure side, current expenditure is 5.5 times as large as development expenditure. Overall balance deficits are primarily financed by government bonds. GST was introduced in April 2015.

The resource revenues that the federal government receives from Petronas are: i) petroleum royalty (5% of petroleum/gas revenue to federal government and another 5% to state governments), ii) corporate income tax of Petronas, iii) export duties and iv) dividends.

Table 3-5: Fiscal Balance of Federal Government

Unit: RM million

	2012	2013	2014
(1) Revenue	207,913	213,370	220,626
Direct Taxes	116,937	120,523	126,743
1) Corporate tax	51,228	58,175	65,240
2) Income tax	22,977	23,055	24,423
3) Petroleum tax	33,934	29,753	26,956
4) Others	8,798	9,540	10,124
Indirect Taxes	34,706	35,429	37,462
Non-revenue Tax	56,270	57,418	56,421
(2) Expenditure	249,863	251,954	258,040
Current	205,537	211,270	219,589
Development	46,932	42,210	39,503
Less loan recovery	2,606	1,526	1,052
(3) Overall balance	-41,950	-38,584	-37,414
Net borrowing	43,344	39,526	37,557

Source : Prepared by Study Team based on Economic Report 2015/16 of Ministry of Finance

3.1.3 Economic Policy

(1) The Eleventh Master Plan

After 2010, Malaysia made its commitment to expand domestic demand through the Economic Transformation Program⁶² in order to achieve economic growth. Nevertheless increase of private and government investment gave rise to decrease of domestic saving, which caused reduction of current account surplus. As shown in Table 3-6, the current account surplus in percent of GDP decreased from 10.9% in 2010 to 3.5% in 2014.

Table 3-6: Saving/Investment/Current Account Balance in Percent of GDP

Unit: %

	2010	2011	2012	2013	2014
Saving	34.2	34.8	31.7	30.1	30.3
Investment	23.3	23.2	25.9	26.1	26.8

⁶¹ Petroleum Tax

⁶² The economic policy program to enter Malaysia into the advanced economies based on the Vision 2020

Current Account	10.9	11.6	5.8	4.0	3.5
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Source : Prepared by Study Team based on IMF 2013 Article IV Consultation

Remark : Figures of 2013 are estimates and those of 2014 are projection.

Economic circumstances surrounding the Malaysian economy have been challenging in the latter half of 2014 onwards. They are i) less dependency of fiscal revenue and macro-economy on natural resources' revenue owing to decrease of crude oil price, ii) domestic inflation (rise of import prices) caused by depreciation of nominal exchange rate, iii) weak external demand caused by economic downturn in emerging and advanced economies, and iv) outflow of foreign capital. Under such circumstances, the government made the 11th Master Plan in May 2015 and set its policy on economic growth scenario based on expansion of domestic demand. This included: i) investment on non-resource areas such as healthcare, tourism and infrastructure, ii) development of petroleum/ natural gas related service industries, iii) integration and complex of oil/gas industries in the south of Johor State, and iv) deregulation to promote FDI.

(2) Industrial Policy (natural resources/non-resources industries, avoidance of Dutch Disease)

The government policy for industry diversification to avoid Dutch disease in Malaysia is traced back to initial industry diversification in 1980s.

- In the latter half of 1980s, Malaysia experienced change of external economic circumstances, i.e. real appreciation of Ringgit rate against US\$ due to the Plaza Agreement (1985 agreement of G5 nations), the following decrease of crude oil price so that the country decided to liberate its economy by promoting FDI in order to establish base of manufacturing industries. This led to industrial diversification and strengthened export competitiveness of textile, electricity/electronics and rubber products. Malaysia changed its status from the country of exporting primary products to industrial nation of parts/assembly production.
- From 2000s onwards, market prices of natural resources showed an upward tendency due to the growing demand for natural resources from China. Malaysian Ringgit then appreciated and the Dutch disease began to take place. In order to avoid the Dutch disease, the government took the policy to strengthen natural resources related industries such as petrochemical, soda and fertilizer. Manufacturing industries were strengthened by linking supply chain such as (textile→apparel→retail).
- Petronas developed energy related service industries (more than 4,000 companies), which triggered corporate spin-off, independent from Petronas group industries.

Federal government budget plan of 2016 puts emphasis on productivity improvement and innovation of small and medium scale of industries.

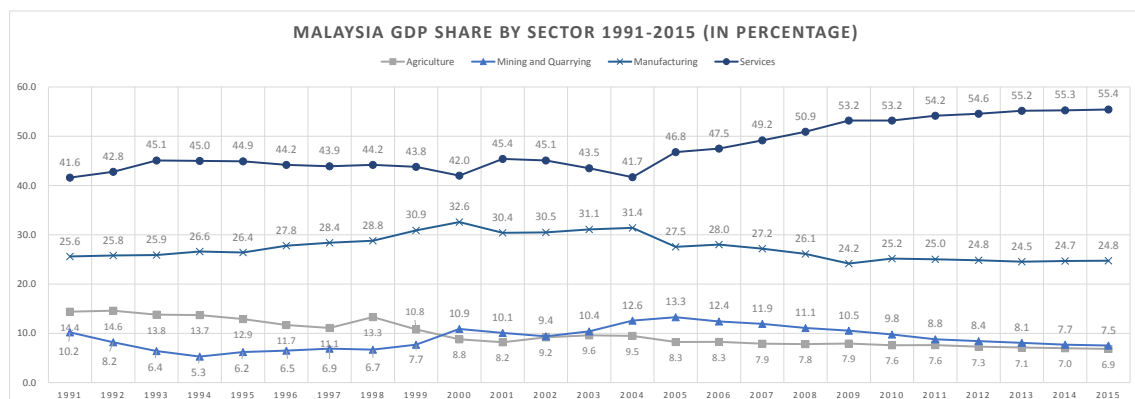
3.1.4 Fiscal Policy/Public Financial Management

(1) Resource Dependency

The Resource Revenue Share in GDP

Malaysian economy was based on agriculture in the 1970s, with rubber and palm oil plantation in agriculture, wood sawing in forestry and tin mining in mining sectors which have been developed during the colonial times. After independence, along with the "Look East" policy, the government started to develop electric and electronic industries by establishing free trade zone (FTZ) with tax incentives to promote foreign direct investment. Especially for Pinang Island, the government succeeded to attract Japanese manufacturers to be located, for which resource revenue played an important role in financing infrastructure development initiated by the government. On the one hand, Malaysian government, in line with its policy for a departure from resource dependency, planned to diversify its economy and production sectors.

It can be said that Malaysian government has re-distributed its resource income effectively for the development of the diversification of both resource related and non-resource industry in terms of optimum allocation of resource revenues⁶³. As for the trend of sector share in GDP, both agriculture and mining sectors are declined to less than 7%, manufacturing sector is being kept at around 25%, and service sector is increasing to 55%. Nevertheless, Malaysian government considers them important in preserving agriculture and forestry sectors for the purpose of food security and environmental sustainability in the country.



Source: JICA Study Team based on data from NSO

Figure 3-9: The Share of Resource and Other Economic Sectors in GDP

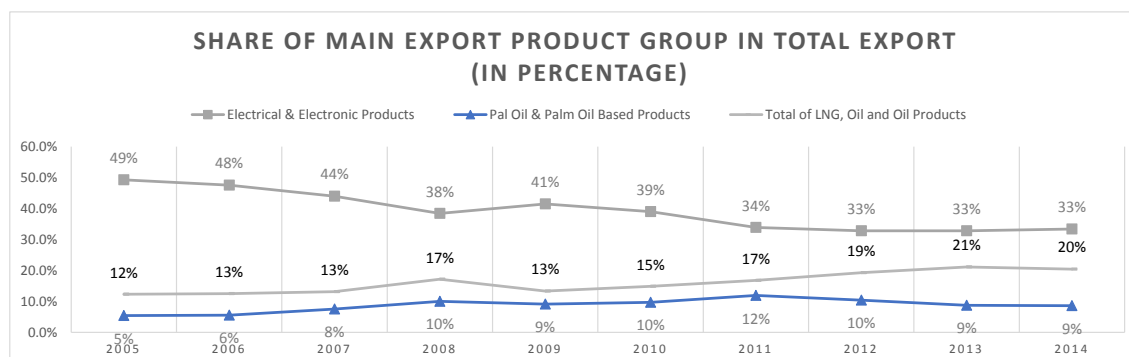
The Share of Resource Revenue in Export Earnings

The major exports have been diversified for agricultural and mining products during the oil crisis in 1970's, and after the second oil crisis in 1980's, Malaysia started to produce oil through Production Sharing Contract (PSC) managed by Petronas, which made it possible to invest in oil downstream industries for developing resource-related industries.

The share of oil and gas in the export was recorded as 20% in 2014, composed of 8.3% by LNG, 4.3% by petroleum and 7.9% by petroleum products. In 2015, during January to August, it was recorded as 10.8% by mining sector (oil and LNG) and 7.0% by petroleum product. The share of petroleum products, oil/gas

⁶³ Based on Study Team interview to EPU.

downstream products, has been increasing based on the government's Economic Reform Program started in 2010, and there is a plan to build large-scale oil/gas related industry complex, including oil refinery and petro-chemical plant, in the South part of Johor State.



Source: JICA Study Team based on data from Ministry of Finance

Figure 3-10: The Share of Resource Products in Total Export

In line with the Economic Reform Program, Petronas is expanding its activities overseas in oil exploration and energy development projects. For example, some African oil producing countries are requesting cooperation for their oil resource development, and a part of revenue from these overseas projects will be additional resource revenue to Malaysian government.

Dependency on Resource in the Fiscal Revenue

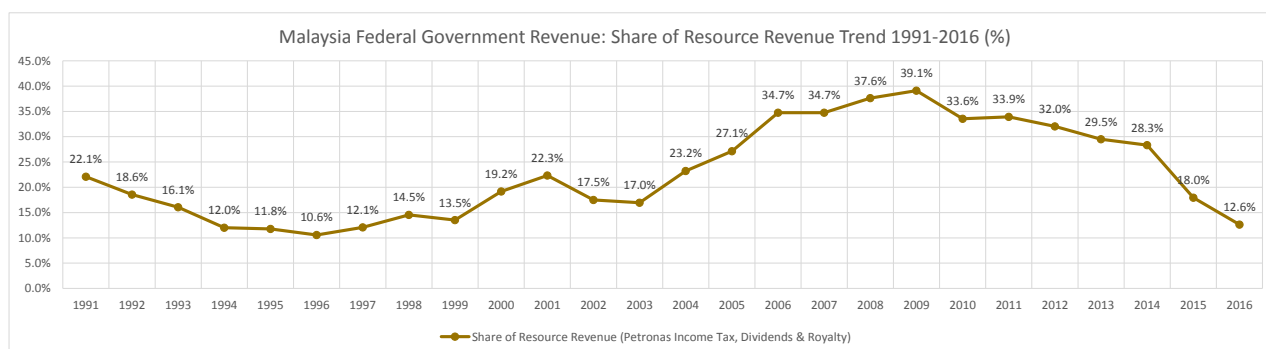
The share of oil/gas resource income⁶⁴ in fiscal revenue has been 40.3% in 2009, 29.0% in 2014 and 21.5% in the 2015 budget. But as the result of resource price decline in 2015, the share is expected to be around 18% in 2015. Due to reduction of resource revenue, petroleum income tax and dividends, and for 2016 budget, it is estimated to be further drop, to lower than 13%. The recent downward trend of international resource price, especially the decline of the energy prices, is rapidly lowering the share of resource revenue in the total fiscal revenue in Malaysia, which is also impacting Malaysian economy for its stagnation and devaluation of Malaysian Ringgit against US Dollar.

In April 2014, Malaysian government started to charge Goods and Service Tax (GST, 6%) which is equivalent to the Consumption Tax in Japan⁶⁵. GST is expected to play an important role in increasing non-resource fiscal revenue, since the tax-base for other tax (e.g. personal income tax) is narrow in Malaysian economy. GST started to function as supplementary tax to fulfill the gap left by reduction of resource related fiscal revenue. The tax revenue generated by GST in 2015 is expected to be around MR 2.7 billion accounting for 12% of fiscal revenue, and in the 2016 budget, it is estimated to be MR 3.9 billion accounting for 17% of the total fiscal revenue⁶⁶. According to Ministry of Finance, at the time of October, 2015, GST is already capturing 90% of the economic transactions.

⁶⁴ The total of dividend, royalty, income tax and petroleum export tax paid by Petronas to the federal government.

⁶⁵ GST has been proposed by Ministry of Finance since long time, and a drop of resource price in 2014 triggered to gain consensus to pass the bill in the parliament.

⁶⁶ STARBIZ News Paper October 27, 2015.



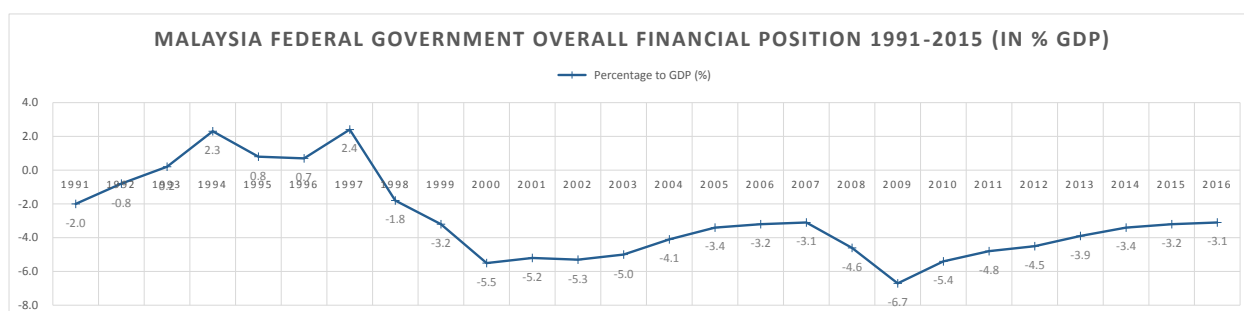
Source: JICA Study Team based on data from Ministry of Finance, with 2015 data is based on supplementary budget and 2016 data is based on 2016 budget.

Note: The resource revenue on the above graph is total of income tax dividends and royalty paid by Petronas, but not including petroleum export tax.

Figure 3-11: Trend of Resource Revenue in the Total Fiscal Revenue

(2) Fiscal Rule and Fiscal Deficit Ratio to GDP

Ministry of Finance sets the fiscal rule as; the Overall Fiscal Balance (fiscal balance plus net debt of the federal government) not to be lower than minus 2.7% (on 3 year average) as the ratio to GDP⁶⁷. In 2016 budget, the fiscal deficit has been set as minus 3.1% of GDP, and public debt to be 55% of GDP, reflecting its Fiscal Consolidation Policy to lower the deficit.



Source: JICA Study Team based on data from Ministry of Finance

Figure 3-12: Trend of Overall Fiscal Deficit Ratio to GDP

(3) Issues Related with Fiscal Balance

2016 Budget

Under the constraint of lowering oil/gas revenue and debt ceiling of 55% (of GDP), Malaysian government paid particular attention to low-income family support, targeting family with RM 4,000 per month or lower, among the 2016 budget expenditure. In the case of further downturn of oil/gas prices, Ministry of Finance would review the revenue projection and cut down expenditure, mainly for development expenditure, to maintain the fiscal balance.

Small and medium business support puts emphasis on productivity and innovation (technical innovation). Anticipating economic slowdown in foreign countries, especially China and developed countries, the country's economic growth will be led by domestic demand (investment and consumption) instead of

⁶⁷ Ministry of Finance plans, under Fiscal Consolidation Policy, the Overall Fiscal Balance to be balanced (no deficit) by 2020.

export. As for the economic growth rate, it is projected to be between 4.5% and 5.2%. Furthermore, while paying attention to the trend of international market demand, petroleum price and overseas financial market, the budget is to be adjusted with flexibility.

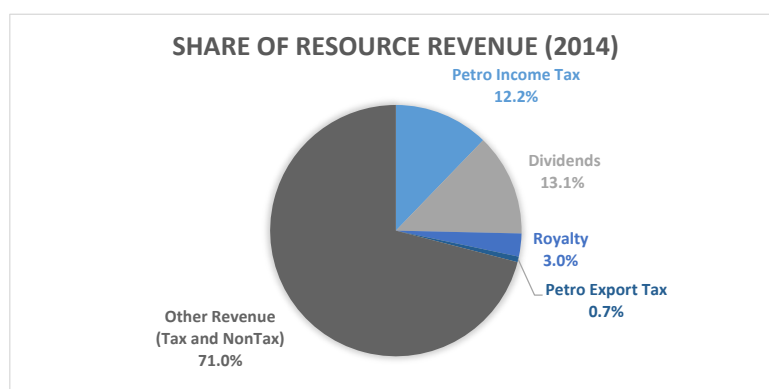
International Balance of Payment

Being affected by LNG export price decline, tourism revenue decrease and market stagnation in both developed and developing countries, Malaysia trade balance is not making large surplus which makes the current account barely surplus, at 2%, and it will continue to be at the same level. On the other hand, in the capital account, FDI increase is expected in investment in IT, petrochemical and distribution service business⁶⁸.

(4) Public Financial Management: Management of Resource Revenue

Resource Revenue Management

Most of the resource revenue of Malaysian government is paid by Petronas, a national oil company. The resource revenue for the government consists of: 1) royalty (10% of the sales is charged and paid 5% to the federal government and 5% to the state government in the operating area), 2) petroleum income tax and the export duty, and 3) dividend of Petronas paid to the treasury. Among these, the amount of dividend is determined by discussion between Petronas and the government as a sole shareholder. Unlike ordinary companies, the dividend amount is not automatically calculated from the profit after tax, but is pre-determined. For example, Petronas is reported to be in deficit during July to September 2015⁶⁹. However, the dividend in 2015, RM 26 billion, is scheduled to be paid based on the original budget, and the dividend for 2016 budget is already determined to be reduced to RM 16 billion.



Source: JICA Study Team based on data from Ministry of Finance

Figure 3-13: Resource Revenue at Federal Government Fiscal Revenue (2014)

The resource revenue income to the Malaysia government in 2014 accounts for 29% of the total fiscal revenue in 2014. This is composed of the Petronas dividend accounting for 13%, the corporate income tax for 12.2% and the royalty for 3%. At the time of 2015 budget plan, the resource dependency is targeted to

⁶⁸ Based on the Study Team's interview with EPU.

⁶⁹ Nikkei News Paper November 12, 2015. (Japanese)

decrease to 15% in 2020, however, the share is expected to decrease to 13% for 2016 budget, due to reduction of oil/gas price decline.

In the current Malaysian fiscal system, the above-mentioned resource revenue is incorporated into the consolidated general budget source. However, it should be noted that, in Malaysia, the resource revenue is managed by Petronas and also contributed to expand its organization and range of business activities through accumulation of capital and human resources. As the result, Petronas has developed to be a mega-corporation group, being named as a member of "New Seven Sisters". The case of Petronas can be considered as a model for other resource-rich countries as one of the types of developing competitive resource-related industry.

(Refer to box below for Outline of Petronas)

Outline of Petronas

PETRONAS (Petroliam Nasional Berhad) is an independent business entity established based on the Petroleum Development Act enacted in 1974. Unlike other oil producing countries, there is no ministry in charge of petroleum, such as "Oil Ministry" in Malaysia, and Petronas has dual functions; 1) as a regulating authority for oil and gas resources in Malaysian territory, and 2) act as an enterprise for development, production and sales of oil and natural gas and their products. Although the Prime Minister has principal supervising authority over Petronas management, PM delegates large part of its responsibility to the Managing Board which acts as an independent corporate entity. Nevertheless, the Board of Directors is composed of the government representatives from MOF, EPU, MIDA⁷⁰ and other relevant ministries.

The organization of Petronas is now expanded to a mega-corporation group which consists of number of subsidiaries and affiliated companies under its umbrella. There are 91 subsidiaries 100% owned, 39 invested companies partly owned and 20 companies with business affiliation. Among the group, there are companies specialized in geological survey, oil refinery, LNG, gas supply, pipeline operation, petrochemical industry, real estate (Petronas Tower), trade, IT, venture capitals, foreign subsidiaries and other related professional fields⁷¹. At the time of establishment in 1974, Petronas had no professional staff with knowledge and know-how in the petroleum business, but after 40 years, it now owns and operates 85 oil fields, 65 gas fields, 8,000 km long pipeline on its own resources. Petronas has now grown to be a comprehensive oil and gas company group covering exploration of oil/gas fields, refinery, transportation and even retail sales of petroleum products. Its activity is not only in the domestic market, but now spreading to 50 resource countries including Iraq, Algeria, Canada, and now being named as a member of "New Seven Sisters*", new players in international petroleum business.

According to its financial reports, the total asset as of 2004 was US\$53.5 billion, which has been tripled to US\$153.6 billion in 2014, in 10 years. This asset amount is very large compared to the capital amount (US\$30 million in 2014) suggesting large amount of accumulated internal reserves. In terms of profitability, the operating profit in 2013 was 30% of the sales (21% as net profit), and 23% (15% as net profit) in 2014. PETRONAS is can be regarded as very high profit company despite of the recent falling price of resources.

⁷⁰ Malaysian Investment Development Authority

⁷¹ www.petronas.co.my/about-us

However, it seems the effect of further reduction of oil price is expected in 2015.

*Article in Financial Times, March 12th, 2007, named 7 state-owned companies of oil producing countries; Saudi Arabia, Russia, China, Iran, Venezuela, Brazil, Malaysia as New Seven Sisters.

The source: JETO "Petronas, unknown high profit company " April 2014 (Japanese)

(5) Public Financial Management: governance (EITI)

Regarding the assessment of governance of the mining sector, in accordance with RGI⁷², Malaysia got a score of 46 (max. 100) and was ranked 34 out of 58 countries. This result seems to reflect that the state-owned company, Petronas, dominates the oil and gas sector. With respect to 'Reporting Practice' which is one of scoring components, RGI pointed out that licensing process and contract terms are not available to the public. Although development licenses of gas and natural gas are given by Petronas, information about auction rules and qualifications of applicants are not published. In addition, as Petronas announces the award of licenses through press releases, it does not include contracts and licensing terms.

In terms of other components 'Institutional and Legal Setting', RGI pointed out an inadequate legislative framework. The disclosure of information is restricted because there is no freedom of information law and the Official Secrets Act. Furthermore, it is a negative factor that the country is not a member of EITI.

With regard to the third component, 'Safeguards & Quality Controls', inadequate checks on licensing authorities decrease the score of Malaysia. Petronas is accountable only to the prime minister, and the parliament has no function to monitor licensing decision. Moreover, although the Auditor General's Office reviews the account of the Finance Ministry, this is not specified as oil revenue.

RGI also assesses governance of state-owned companies themselves. Petronas received a score of 61, ranking 20th out of 45 countries. The annual report of the country includes data on reserves, production volumes, prices, export values, investment in the sector, production costs, and the names of subsidiaries. Although the company is audited on the quarter basis, the accounts of subsidiary companies are not included.

As mentioned in Chapter 2, in order to improve the quality of governance within public financial management in the mining sector, it is obvious that EITI has initiatives that are internationally recognized. Although Malaysia is not a member of EITI, the EITI secretariat which has been promoting the adoption of EITI internationally, has also held the discussions with Petronas⁷³.

(6) Public Financial Management: Expenditure Management

1) Development and Operating Expenditure and Resource Revenue

As has been explained, the resource revenue paid by Petronas to Malaysian government is being incorporated into consolidated budget resource, through which the resource revenue is utilized as a part of

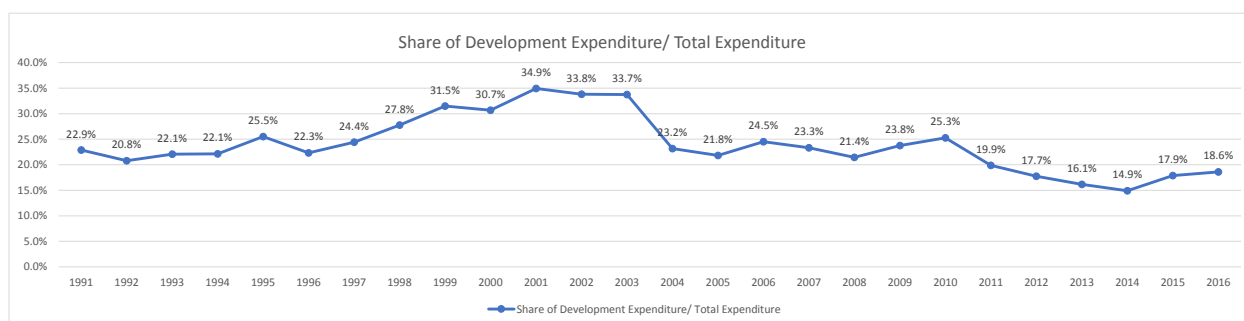
⁷² Natural Resource Governance Institute (NRGI), <http://www.resourcegovernance.org/resource-governance-index>

⁷³ The Star

(<http://www.thestar.com.my/Business/Business-News/2014/06/10/EITI-hopeful-of-msia-adopting-transparency-standards/?style=biz>)

general budget with no specific distinction by the fund sources. Therefore, it can be said that the resource revenue is outlaid according to the share of development and operating expenditure of the general budget execution.

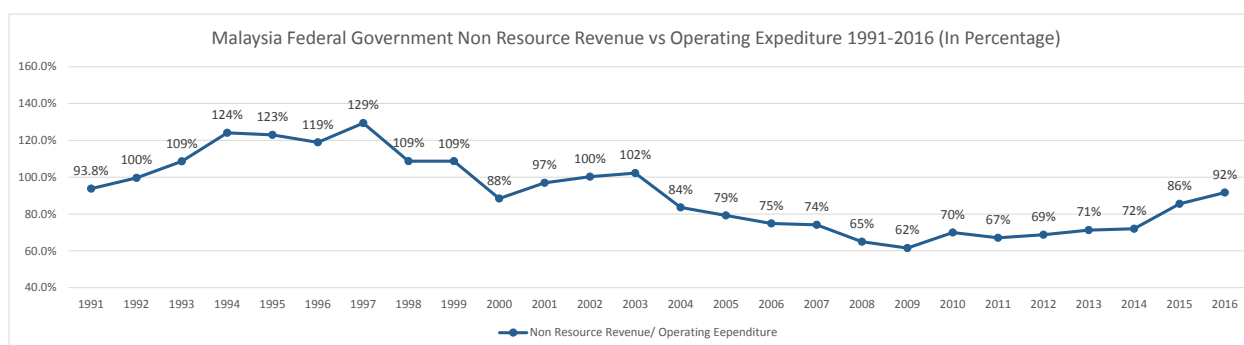
The trend of the share of development expenditure to the total expenditure peaked in 2001 at 34.9%, then descended to 17.9% in 2015. This trend does not seem to be correlated with the trend of resource revenue share, and the resource revenue does not seem to influence for the amount of development investment.



Source: JICA Study Team based on data from Ministry of Finance

Figure 3-14: Trend of Share of Development Expenditure in Total Expenditure

On the other hand, the following figure shows the ratio of the non-resource revenue and the operating expenditure whose large part is personnel expenses, salaries for government officials. The value in percentage is non-resource revenue divided by operating expenditure, so that if the value exceeds 100%, the non-resource revenue covers all the recurrent cost for operation. During 1990s and up to 2003, most of those years have recorded more than 100%, however, the ratio started to decline along with resource boom, down to 62% in 2009, then it recovered to 92% by increase of non-resource tax revenue of GST in 2016.



Source: JICA Study Team based on data from Ministry of Finance

Figure 3-15: Trend of Ratio for Non-resource Revenue to Operating Expenditure

2) Sovereign Wealth Fund (SWF)

There are several government-affiliated funds or foundations in Malaysia. In this section, National Trust

Fund based on resource revenue and government owned Kazanah Nasional (Trust Fund) are introduced.

National Trust Fund (KWAN)

National Trust Fund (In Malay: Kumpulan Wang Amanah Negara, KWAN) was established in 1988 by National Trust Fund Act, and under management of Bank Negara Malaysia (Malaysian Central Bank, BNM). The Act allows a private enterprise related with resource sector to transfer its part of the profit to KWAN in a form of grant, and KWAN is obligated to use/operate the fund for future generation, assuming accountability to the Diet.

The current fund size of KWAN is RM 9.5 billion and the funding source is Petronas⁷⁴. While Petronas pays its income tax, royalty and dividend to the government, but contribution to KWAN is being made directly. A fund transferred to KWAN by the private enterprise is considered as a donation and is exempted from income tax calculation.

The Act also allows KWAN fund to be loaned to the government which was applied once in 2009 when the government is facing shortage of fiscal revenue. In 1999, KWAN fund was used for the wetland reserve project, which is the only case for project financing. KWAN fund is saved and operated in several currencies, RM, USD and Euro, and US Treasury Bond as one of the assets.

According to Institute for Democracy and Economic Affairs (IDEAS)⁷⁵, NPO and a think tank in Malaysia, the total resource revenue, total of petroleum tax, the royalty and dividend, Petronas paid to the government from 1988 to 2013 is RM 621.1 billion. On the other hand, the amount of asset balance at KWAN is RM9.5 billion, which is equivalent to 1.5% of the total amount from Petronas.

Table 3-7: Share of KWAN Contribution to the Total Resource Revenue

	RM Billion	Share (%)
Total Amount of Income Tax, Royalty and Dividend paid to the government. (1988-2013)	621.1	98.5%
KWAN Asset (As of end 2013)	9.5	1.5%
Total	630.6	100.0%

Source: JICA Study Team based on IDEAS (2015)

Kazanah Nasional Berhad

Kazanah Nasional Berhad (Kazanah) was established in 1993, as a public limited company⁷⁶, based on 1965 Company Act. Kazanah is a strategic investment fund of Malaysian government with Board of Directors consists of key government officials including Ministry of Finance, Bank Negara Malaysia, National Statistics Office and Prime Minister as the Chairman of Board. The current number of

⁷⁴ The Act allows any resource related organizations and individuals to grant or donate to KWAN, Petronas is the only fund source up to the present.

⁷⁵ Institute for Democracy and Economic Affairs (IDEAS), F4 Taman Tunku, Bukit Tunku, 50480, Kuala Lumpur, Malaysia. (www.ideas.org.my)

⁷⁶ Public Limited Company is a publicly listed company with limited liability status which is characterized by small number of employees, unlimited period of directors, and less restricted regulations compared with a joint stock corporation.

employees is around 400. Kazanah is a type of Sovereign Wealth Fund whose main function is investment activities. Unlike KWAN under the central bank with grant by Petronas, Kazanah creates its fund by issuing interest-bearing bonds, Kazanah Bond, in the domestic as well as foreign market. The large part of the fund is oil revenue sourced from Middle East countries.

Kazanah's investment is involved in companies in various sectors such as power, telecommunications, financial institutions, healthcare, aviation, infrastructure, leisure and tourism, property, creative and media, education and innovation technology. The number of companies invested is 70 including government linked corporations (GLC) for improving management of GLC. In 2014, Kazanah bought shares of ailing Malaysian Airline System following the government strategy to protect the national airline industry. The portfolio of investment is 85% for Malaysian companies and 15% for foreign companies, but their business activities are 59% in domestic and 41% in overseas. The investor's overseas activities extend to the countries and area such as Singapore, Indonesia, North America, China, Turkey, India and the Philippines. The total asset of Kazanah is about RM145 billion equivalent to USD18 billion.

(7) Medium Term Fiscal Plan

Under Fiscal Policy Committee established in Ministry of Finance, Medium Term Fiscal Framework (MTFF) has been prepared for three years from 2016 to 2018. In this plan, the government will set up Consolidated Fund for resource (petroleum) revenue which is a mechanism to save all kinds of resource related industry revenue such as income tax (in which the share of Petronas is about 80%), oil export tax, royalty and dividend.

The average amount of fiscal revenue, in three period of MTFF, is projected to be 18% of GDP, which is lower than 21%, recorded in 2013, suggesting that MOF estimates that even with fiscal revenue boosted by introduction of GST, the negative impact of oil price drop to the fiscal revenue cannot be fully covered.

3.2 Case Study 2: Papua New Guinea

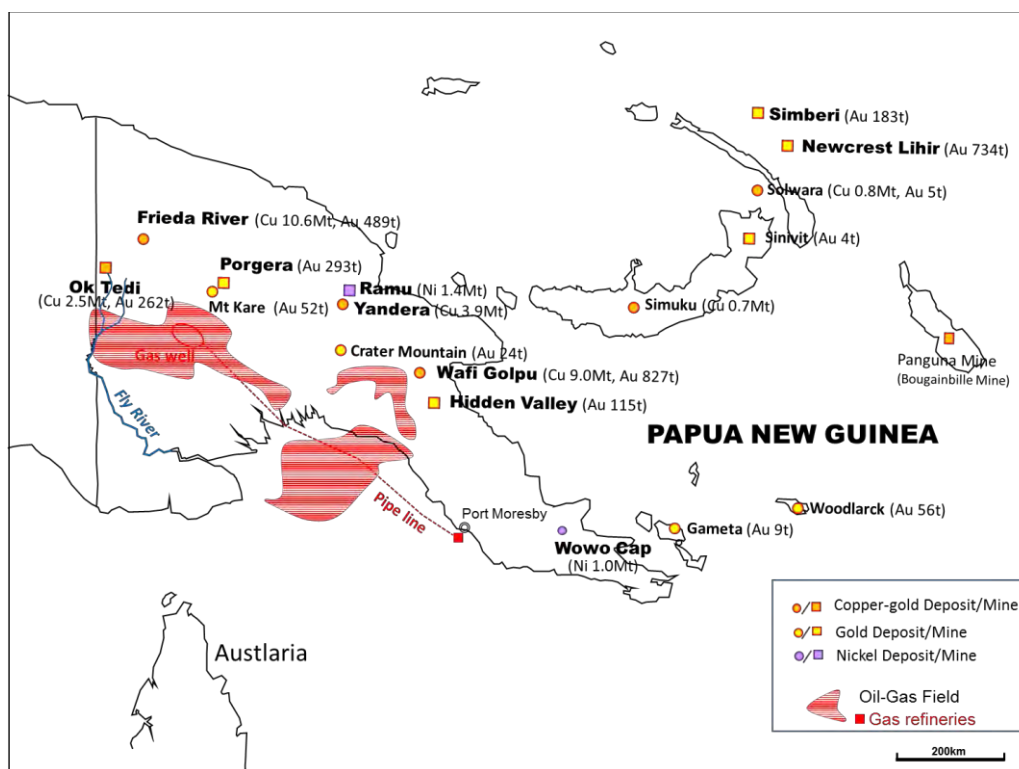
3.2.1 Resource Sector

(1) Natural resources and major projects for developing them

Papua New Guinea (PNG) has a wealth of mineral resources such as copper, gold, silver, and nickel, and it is also blessed with energy resources such as oil and natural gas. The mining industry plays a major role in the PNG economy. In 2015, mineral resource exports accounted for 87.0% of the country's total exports. LNG made up 41% of the exports, gold made up 26%, oil & copper made up 7% and others made up 26%. In late 1990, operations at the Bougainville Mine were halted due to mine pollution and conflicts with local residents. In its place, other mines became the focus of production, such as the Ok Tedi copper and gold mine, and gold mines at Porgera, Lihir, and elsewhere. Besides copper and gold, there is the Ramu nickel and cobalt mine, which commenced production with Chinese investment participation in 2012.

Large exploration projects for large-scale undeveloped deposits include Frieda River (overseen by

Glencore) with known and estimated mineral reserves of 1.19 billion tons, with a copper grade of 0.49% and 0.25g/t of gold, and Mafi-Golpu, with known mineral reserves of 810 million tons, including 0.64g/t of gold and 0.92% copper. There is also the undersea Solwara sulfide deposit project.



Source: Created by the survey team based on various materials

Figure 3-16: Locations of major mines and resource projects in Papua New Guinea

Pollution issues caused by waste from the Ok Tedi Mine resulted from the fact that mining operations were conducted without having a place to store waste and tailing originating from the mine, and about 2 billion tons of tailings and waste ore were dumped directly into streams. The original plan had called for a tailings dam, but it was destroyed by an earthquake in 1984 while it was still under construction. As a result, BHP Billiton cited cost concerns as a reason for shelving the dam. Monitoring by the original operator BHP Billiton indicated there was no problem, but it was restricted to the upper reaches of the contaminated stream (Fly River) where there was little dumping. However, it was determined that sediments of pollutants had expanded to middle and downstream reaches covering a distance of 1000km, making it a serious problem. In 1999~2000, local residents brought a class action lawsuit against BHP, and while a partial settlement was reached on payment of compensation, today there is still no policy to deal with the source of the pollution. It is said that it will take 200~300 years for the pollution to return to its original condition.

The Ok Tedi Mine, (100% of the rights to which were transferred to the PNG government in 2013) halted operations in August 2015 due to a water shortage, but it is planning to restart operations in February or March 2016. With BHP withdrawing from the project due to the pollution problem coming to the public's attention, the government began to set up a mining closure bond and a closure trust to prepare for closing

the mine. However, the PNG government does not have a system in place for mining closure bonds/closure trusts, and it will not be able to manage the environmental load after the mine closes. The government cannot make the mine operators pay compensation for the environmental load around the mine and towards downstream areas. Although the PNG government had set up an account in Singapore for a Finance Assurance Fund that was to be supported by funds from the developer of the Ok Tedi Mine, BHP Billiton, to maintain infrastructure and monitor pollution for 30 years after mine closure, but the guidelines for using this fund are unclear and have been the subject of litigation and lost court cases. The PNG government has not been able to withdraw any funds from this account, and it is engaged in a contentious debate with BHP Billiton about this matter.

In 1992, oil production commenced in PNG, but production has been declining, and future developments will focus on gas, especially LNG projects. Exploration is being undertaken on an on-going basis. The PNG LNG project is being overseen by Exxon-Mobil, construction of the No. 1 and No. 2 trains was completed in 2014, and the project has moved to the LNG production stage (annual production: 6.9 million tons). Exports of LNG were commenced in May 2014, and long-term sales contracts have been signed with Tokyo Electric Power Company, Osaka Gas, the Chinese company Sinopec, and CPC of Taiwan. Incidental business issues that have arisen during operations such as contract conditions, employment of local workers, road development, etc., have become important elements of these projects.

Table 3-8: List of major mines and projects

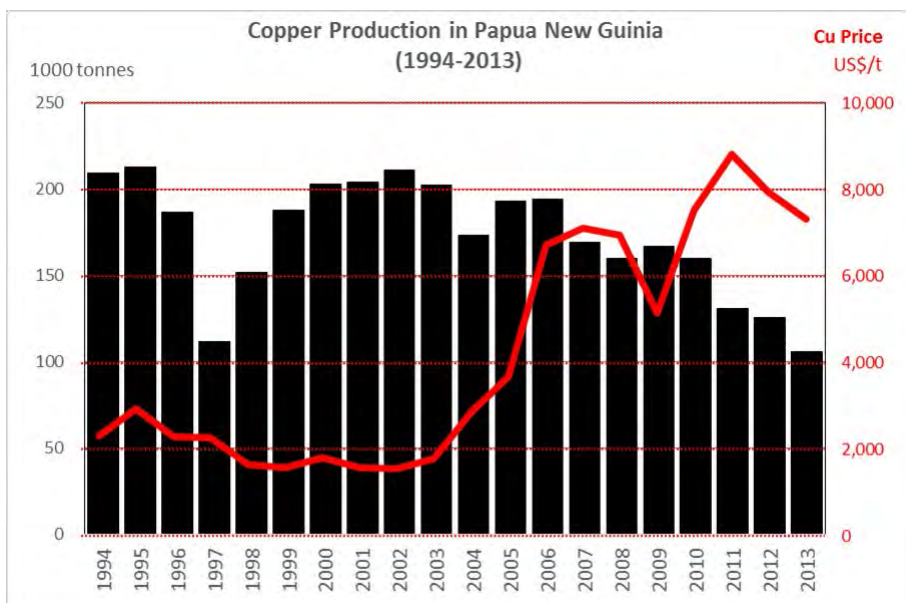
OPERATIONAL MINES					
MINES	Ore Type	Reserve	Interest		Note
			Company	Country	
Ok Tedi	copper, gold	Cu 2.5 Mt, Au 262 t	Gov. of PNG (100%)	-	transferred to Gov. in 2013 former operator: BHP-Billiton
Newcrest Lihir	gold	Au 734 t	Newcrest Mining (100%)	Australia	
Porgera	gold	Au 293 t	Barrick Gold (95%) Govt. of PNG (5%)	Canada -	
Hidden Valley	gold	Au 115 t	Harmony Gold (50%) Newcrest Mining (50%)	South Africa Australia	
Simberi	gold	Au 183 t	St. Barbara (100%)	Australia	
Ramu	nickel cobalt	Ni 1.4 Mt	Metallurgical Corp. (85%) Highland Pacific (9%) Govt. of PNG (6%)	China Australia -	

ADVANCED EXPLORATION PROJECTS					
DEPOSITS	Ore Type	Metal in Reserve	Interest		Note
			Company	Country	
Frieda River	copper, gold	Cu 10.6 Mt, Au 489 t	Glemcore (82%) Highlands Pacific (18%)	Switzerland Australia	
Wafi Golpu	copper gold	Cu 9.0 Mt, Au 827 t	Harmony Gold (50%) Newcrest (50%)	South Africa Australia	
Yandera	copper	Cu 3.9 Mt	Merengo Mining (100%)	Australia	
Simuku	copper	Cu 0.7 Mt	Copper Quest (51%) Barrick Gold (49%)	Australia Canada	
Solwara 1,2	copper, gold	Cu 0.8 Mt, Au 5 t	Nautilus Minerals (85%) Govt. of PNG (15%)	Canada -	Sea-floor hydrothermal deposit
Wowo Cap	nickel cobalt	Ni 1.0 Mt	Resource Mining (100%)	Australia	

Source: Created by the survey team based on data from PNG Mineral Resources Authority, Mining and Exploration Bulletin 2014 and other materials

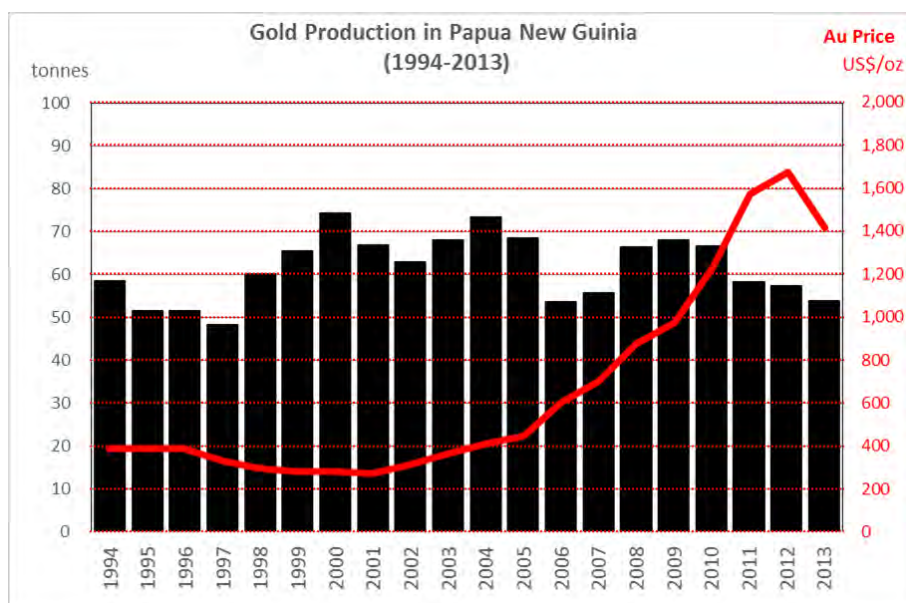
(2) Resource price fluctuations and production volume (1994~2013)

The following figure shows trends in the production of PNG’s main minerals, copper and gold, over the past 20 years.



Source: Created by the survey team based on data from PNG Mineral Resources Authority, Mining and Exploration Bulletin and other materials

Figure 3-17: Trends in the price and production volume of PNG copper ore



Source: Created by the survey team based on data from PNG Mineral Resources Authority, Mining and Exploration Bulletin and other materials

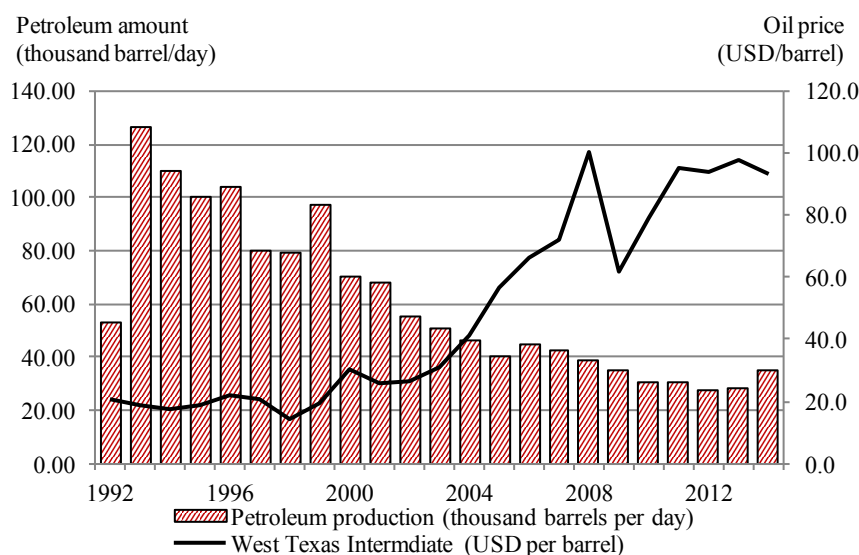
Figure 3-18: Trends in the price and production volume of PNG gold ore

Recent production of copper in PNG had been at the only operating mine, Ok Tedi, but due to the drought caused by abnormal weather, there was a shortage of water for mining operations and hydroelectric power

generation, and the river level became too low for shipping ore out and bringing in fuels, materials, etc., needed for operations from the supply port. Therefore, operations were temporarily halted in 2015. Therefore, there will likely be a dramatic decrease in production for a while after that. However, there are still 10 years of reserves at Ok Tedi, and if Frieda River, which is at the final feasibility stage, is developed, and if the Panguna (formerly Bougainville) mine, which is currently closed, is reopened, then copper production will recover. Most of PNG's copper deposits are large-scale and also contain high-grade gold, so direct operating costs will be low, even from a global perspective, and it is known that the gross margin rate will be extremely high.

Besides gold occurring with copper, there are numerous large-scale, high-grade exclusive gold deposits, and the annual production of 60t accounts for about 2% of world gold production and ranks PNG as the 12th largest gold producer in the world⁷⁷.

The following figure shows trends in crude oil production in PNG and crude oil prices (WTI) from 1992 to 2014. As reported earlier, the Oil Search Company began commercial development of the Kutubu oil field in PNG in 1992, but crude oil production has been showing a decreasing trend⁷⁸.



Source: Created by the survey team based on data from the U.S. Energy Information Administration and BP

Figure 3-19: Trends in the price and production volume of PNG crude oil

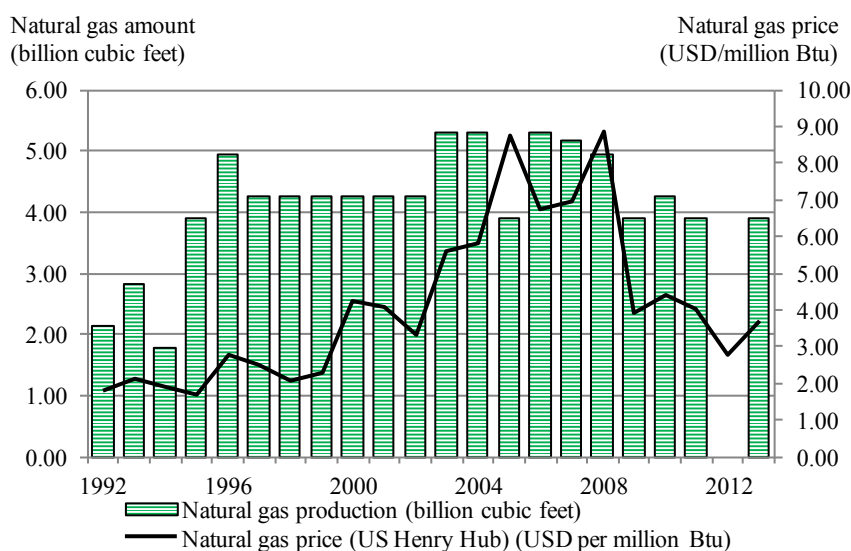
In addition, exports of LNG were commenced in 2014, but production of natural gas itself dates from 1991, when the Oil Search Company commenced production at the Hides oil and gas field. Natural gas that is produced at that gas field (gas that occurs with petroleum) is sold to the Porgera Consortium to generate electricity which is used at the Porgera Mine⁷⁹. The following figure shows trends in the production of natural gas in PNG, and the natural gas price (US Henry Hub) from 1992 to 2013. This was production at the abovementioned Hides gas field. Because the PNG LNG project commenced operations

⁷⁷ USGS Mineral Commodity Summaries 2015

⁷⁸ Oil Search (<http://www.oilsearch.com/Our-Activities/Operated-PNG-Production-Overview/Kutubu.html>)

⁷⁹ Oil Search (<http://www.oilsearch.com/Our-Activities/Operated-PNG-Production-Overview/Hides-GTE.html>)

in 2014, it is believed that this will dramatically increase production compared with the current numbers in the figure. (Because the PNG LNG project will supply 9 trillion cubic feet of gas during the 30-year life of the project, it is estimated that from 2015 on this will increase annual production by more than 3 million cubic feet⁸⁰.



Source: Created by the survey team based on data from the U.S. Energy Information Administration and BP
Note: Natural gas production data for 2012 have been lost.

Figure 3-20: Trends in the price and production volume of PNG natural gas (1992~2013)

(3) Resource development businesses

In PNG, many major foreign corporations such as BHP Billiton, Rio Tinto, Glencore, and Barrick Gold are involved in the development of large-scale copper and gold ore deposits, while Exxon Mobil and others are involved in oil and gas production, and they hold a monopoly on activities from survey development to operations. In addition, not only the executive officers but also technical managers at work sites (such as the Porgera Mine) are almost exclusively Caucasian engineers from major foreign corporations. So even though PNG is a resource country, very little resource technology is being transferred to PNG citizens. Moreover, all of the operating mines that major foreign companies are involved with are expected to be, from a global perspective, high-grade, large-scale, low-cost operations. That, coupled with generous incentives such as tax holidays, suggests an extremely high profitability rate for resource companies that have made investments there.

In order to rectify this situation, the PNG government is working to revise its mining law. One of the revised provisions will involve raising the ratio of PNG’s ownership of stock in mining projects from the current 30% to 50% without making any capital expenditures.

3.2.2 Economic and Fiscal Characteristics

(1) Price Volatility of Natural Resources and Macro-economy

⁸⁰ Exxon Mobil (<http://news.exxonmobil.com/press-release/exxonmobil-ships-first-cargo-png-lng-project>)

PNG currently belongs to the low middle income country with GDP per capita of US\$ 2,100 and the population of about 7 million. The country is comprised of twenty two (22) provinces and about 85% of the population PNG is native tribes and decentralized in local regions. PNG is ranked 156 (2012) out of 186 nations according to Human Development Index (composite index number of life expectancy, education and income etc) of UNDP. About 28% of the nation is below the poverty line.

After 2000, the PNG economy shows a steady growth but natural resources sector has been under negative growth until the year of 2012. The sector's economic growth has suddenly risen in 2013 due to natural gas production and export.

Table 3-9: Real Economic Growth Rate (Percent Change from the Previous Year)

Unit: %

	2000	2008	2009	2010	2011	2012	2013	2014	2015
Growth rate	-1.2	6.6	6.1	7.7	10.7	8.1	5.5	8.5	9.0
Resources	-0.5	-1.4	-1.7	-2.0	-11.8	-7.4	7.2	134.2	60.2
Non-resource	-0.5	7.6	7.0	8.7	12.8	9.2	5.4	0.7	1.5

Source : Prepared by Study Team based on the IMF Article IV Consultation Reports 2004, 2010, 2014, 2015

Remark : Statistics of 2014 are estimate while those of 2015 are projection.

Natural Resource Sector

PNG is one of RRCs endowed with crude oil, copper, gold and nickel. Crude oil production was at peak in the middle of 1990s, and then gradually decreased to about a fourth of 1996 production in 2010. Mineral resources in several mines including Ok Tedi (copper, gold)⁸¹ have not been produced steadily. As a result, economic growth of the natural resources sector has been negative until the year of 2012.

Non-resource sector

Non-resource sector being comprised of agriculture, construction, manufacturing, services and public utilities (electricity/water supply) has virtually led PNG's economic growth until 2013.

Petroleum/natural gas is featured by a gradual decline of oil production/export in 2000 onwards and upheaval of oil prices from \$40 per barrel in the early 2000s to \$80-\$100 in 2007/8. The composition ratio of real GDP in petroleum/natural gas sector was 3.3% in 2007 and then decreased to 1.6% in 2011. Nevertheless its GDP's share increased at 7.3% again in 2014 and 16.2% in 2015 due to LNG production.

Mining sector is nevertheless projected to decrease its share due to closure of the Ok Tedi Mine. Agriculture used to be the largest share (36.1%) in 2002 but will decrease its share to 22% in 2015. Thanks to LNG plant construction, the construction sector shows a steady increase of its share while the service sector remains to be at around 30-35% of GDP share.

⁸¹ The Oke Tedi Mine has transferred 100% of interests to the government and stopped its operation.

Table 3-10: Real GDP Composition by Economic Sector

Unit: %

	2002	2007	2011	2014	2015
Oil/gas	3.5	3.3	1.6	7.3	16.2
Mining	8.7	7.6	5.1	4.7	4.6
Agriculture	36.1	36.6	31.7	26.6	23.8
Construction	10.4	12.6	18.9	20.1	18.0
Manufacturing	7.2	7.6	7.7	7.5	6.8
Services	34.1	32.3	35.0	33.8	30.6
Total	100.0	100.0	100.0	100.0	100.0

Source : Prepared by Study Team based on GDP projection by Department of Treasury (DoT)

Remark : GDP has not been published officially. Instead DoT estimates GDP by economic sector. GDP composition rate is based on real GDP

Exports of PNG were largely shared by petroleum/gas and agricultural primary products. Petroleum/gas shares about 75% of total exports between 2002 and 2010, and its share increased up to 87% of total exports due to LNG in 2015. Though exports of petroleum decreased in volume, their export amounts increased owing to upward movement of resources prices.

Table 3-11: Exports of Agricultural Primary Products and Petroleum/Gas

Unit: Million Kina

	2002	2007	2010	2015
Agricultural products	1,085	2,295	2,961	2,329
Timber	366	568	706	677
Marine products	94	222	92	366
Agriculture sub-total	1,545 (24.6)	3,085 (22.2)	3,759 (24.3)	3,372 (13.0)
Petroleum	1,431	2,984	2,225	1,576
Gold	2,295	3,674	6,380	5,759
Copper	1,019	4,173	3,089	1,611
LNG	0	0	0	9,205
Mining sub-total	4,745 (75.4)	10,831 (77.8)	11,694 (75.7)	22,499 (87.0)
Exports total	6,290 (100.0)	13,916 (100.0)	15,453 (100.0)	25,871 (100.0)

Source : Prepared by Study Team based on Pulaap et al. (2012) and the Department of Treasury

PNG enjoyed trade account surplus when resources prices remained to be high, but a sudden decrease of resources prices gave rise to reduction of trade account surplus in 2013, causing increase of current account deficit (Kina 7.7 billion in 2013) while FDI for LNG plant construction increased financial account surplus in 2013. After LNG plant construction was complete in 2014, current account turned positive while financial account turned negative. Deficit on overall balance was at peak accounting for Kina 1.6 billion in 2013, and then gradually narrowed to Kina 63 million in March 2015. Foreign exchange reserve was Kina 9.3 billion in 2011, and then decreased to Kina 5.7 billion in March 2015.

Table 3-12: Balance of Payments (PNG)

Unit: Kina million

	2011	2012	2013	2014	March 2015
Current account	-407	-4,793	-7,746	5,876	3,912
Trade balance	6,343	3263	1,195	11,693	4,770
Service	-6,024	-6,783	-7,789	-5,111	-624
1 st income	-1,305	-1,520	-1,448	-988	-418
2 nd income	579	247	-1,535	282	184
Capital transfer	73	32	35	5	0
Financial account	1,526	3,938	6,155	-6,799	-3,977
Overall balance	1,096	-850	-1,574	-861	-63
Foreign reserve	9,266	8,416	6,842	5,980	5,770

Source : Prepared by Study Team based on Quarterly Economic Bulletin, Bank of PNG, March 2015

After 2009, the Bank of PNG (central bank) took monetary relaxation policy by keeping policy rate (Kina Facility Rate) at around 6-7% and assisted the government in fiscal expansion by buying government bonds in the open market. The government expanded development expenditure for infrastructure, education and healthcare in return for LNG exports, which increased public debt outstanding in 2011 onwards. The Department of Treasury in consultation with IMF set the public debt-GDP ratio at 30%⁸² and determined fiscal anchor (fiscal deficit) allowable within the ceiling of public debt-GDP ratio. An easy monetary policy by keeping policy rate at around 6% increased consumer price index (CPI), which accelerated depreciation of Kina exchange rate in 2015. Foreign reserve continues to decrease, which puts further pressure on depreciation of Kina exchange rate.

(2) Fiscal Revenue/Expenditure

Fiscal revenue consists of tax and non-tax revenue components. Internal Revenue Commission is responsible for collection of tax revenues such as corporate/individual income taxes, mining/petroleum taxes (corporate income taxes charged to mining/energy companies), goods & service tax. The Customs Office collects customs duties. Department of Finance collects non-tax revenues (dividends and royalties⁸³ from petroleum/natural gas companies, real estate tax). In PNG, resource revenue corresponds to corporate income tax and dividends paid from petroleum/natural gas production companies. Both tax and non-tax revenues are transferred to a treasury account the Department of Treasury administers.

⁸² Public debt-GDP ratio was initially set at 30 % and raised at 35 % later.

⁸³ In PNG, royalties from the oil/natural gas sector are transferred to a treasury account, but those from mining companies are paid to local communities and state governments.

Table 3-13: Fiscal Revenue and Expenditure

Unit: Kina million

	2014	2015
Tax revenue	9,596	9,204
Income taxes	5,717	5,801
Mining/petroleum taxes	794	400
Customs duties	798	819
GST	2,287	2,184
Non-tax revenue	1,135	2,178
Revenue total	11,497	11,382
Development expenditure	6,117	7,067
Current expenditure	8,651	9,132
Saving	-279	-
Expenditure + net lending	14,489	16,199
Overall balance	-2992	-4,817

Source : Prepared by Study Team based on statistics of Department of Treasury
Remark : The 2014 fiscal data are actual while the 2015 data are estimates as of November 2015

Total revenue accounted for Kina 11.5 billion in 2014. Development expenditure was about 70% of current expenditure in 2014. The ratio of overall balance deficit to GDP turned out to be 5.8%. For the 2015 budget plan, Department of Treasury initially estimated fiscal revenue of Kina 12.3 billion and expenditure of Kina 16.1 billion. Since revenue collection of mining/petroleum taxes turned out to be far lower than initially estimated as of November 2015 irrespective of increase of non-tax revenue, the authority adjusted revenue projection down to Kina 11.3 billion. But expenditure remained to be initial plan. The authority then decided to make a supplemental budget plan consisting of additional revenue of Kina 1.1 billion and expenditure cut of Kina 1.4 billion. As a result, revenue is projected to be Kina 12.4 billion while expenditure to be Kina 14.8 billion. The ratio of overall balance deficit to GDP is estimated to be 4.5%, which will be budget deficit in compliance with public debt-GDP ratio (35%) agreed by the authority and IMF.

3.2.3 Economic Policy

(1) Inflation/Exchange Control Policy by Central Bank

The pro-cycling fiscal expansion associated with increase of resources' prices (2008~2013) brought about symptom of domestic inflation and the resultant depreciation of Kina exchange rate. The government then shifted to the counter-cycling fiscal plan (the 2015 supplemental budget and 2016 budget plan) and put its emphasis on the scenario boosting macro-economy by stimulating domestic demand. Under such circumstances, central bank needs to take a balanced monetary policy between counter-inflation and monetary relaxation. In the beginning of 2000s when PNG faced resource boom, central bank had experience of managing a stable macro-economy by controlling domestic inflation rate at around 4-5% through Kina exchange rate management associated with tight monetary policy, in collaboration with the government's counter-cycling fiscal policy.

Foreign reserve is projected to further decrease to Kina 5.39 billion in the end of 2015 from Kina 5.77 billion in March 2015. PNG economy is currently in a difficult position of being dependent on LNG export while PNG will have little chance of expanding non-resource sector's export. Central bank monitors foreign currency deposits at foreign accounts and foreign currency outflow through the Exchange Control Directives introduced in March 2015. The Bank is currently recommended to accurately project domestic demand (both public and private) for money and then to continue tight monetary policy by increasing policy rate and controlling market operation (issuance of government and central bank's bonds) within the ceiling of foreign reserve⁸⁴.

(2) Industrial Policy (Resource/Non-resource industries, avoidance of Dutch Disease)

In view of PNG economy in the past 10 years, there exist little symptoms and evidences that PNG had the Dutch disease. Nevertheless real effective exchange rate (REER) had been in the tendency of appreciation in the latter half of 2000s decade. The supposed symptoms of Dutch disease was increase of services (including wages) of the non-tradable sector in Port Moresby, the government pro-cyclical fiscal expansion and over valuation of nominal Kina exchange rate. In this sense, PNG might be affected by the Dutch disease. Decrease of GDP's share in agriculture and manufacturing sectors would be partially ascribed to the Dutch Disease but the main cause of it may be transformation of economic structure of PNG.

In the near future, the Bank's policy of domestic inflation control and Kina exchange rate management (allowing a little Kina exchange rate depreciation) will be the primal measurement for avoidance of the Dutch disease. The Bank had experience of controlling domestic demand for imports by permitting mining/oil development companies to set off shore accounts and could resultantly avoid Kina exchange rate depreciation. Improvement of business environment and investment on infrastructure development could contribute to avoidance of the Dutch disease⁸⁵.

3.2.4 Fiscal Policy and Public Financial Management

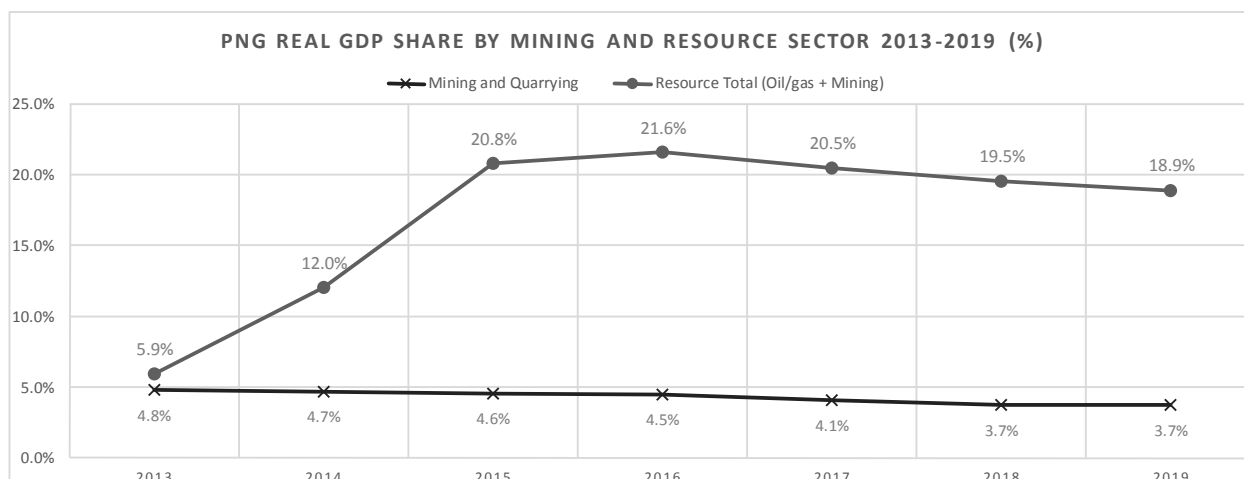
(1) Dependency on Resource Revenue

The Resource Revenue Share in GDP

The share of resource sector in GDP has been increasing from 5.95% in 2013 to 12% in 2014, estimated to be 20.8% in 2015 and expected to remain at 20% level onwards. The rapid increase in 2014 is influenced by the production and shipment of LNG, started in April 2014, after completion of the plant.

⁸⁴ The Monetary Policy Statement by the Governor of the Bank of PNG, Sep 2015

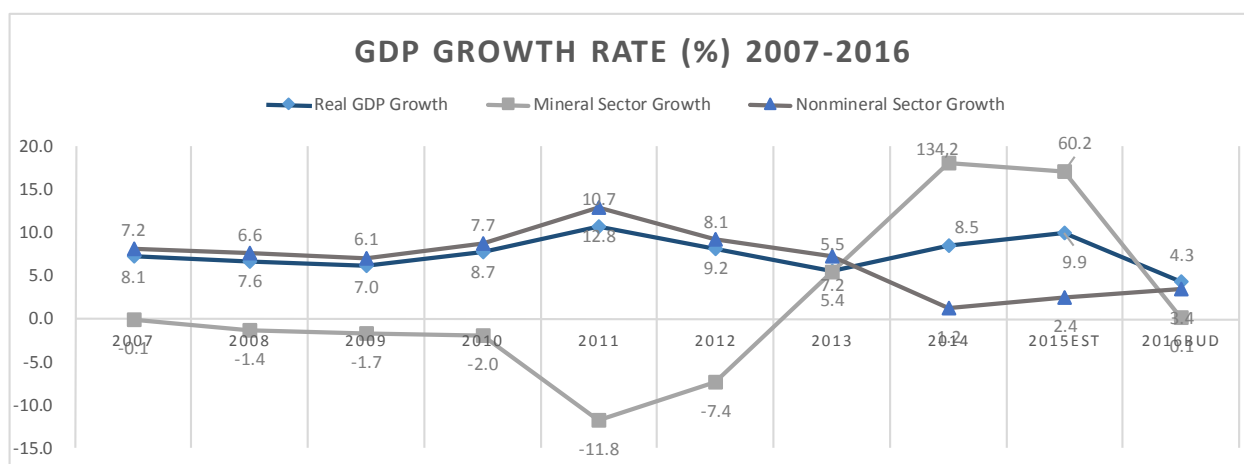
⁸⁵ PNG Economic Briefing, 2013, World Bank Group in PNG



Source: JICA Study Team based on 2015 Budget, Department of Treasury

Figure 3-21: Share of Resource Sector in GDP (2013-2019)

GDP growth rate was between 5% and 10% during the past 5 years, and estimated to be increased to 9.9% in 2015. The sector growth rate for resource sector was 134% in 2014 and 60% in 2015, while that of non-resource sector is estimated to 2.4% in 2015⁸⁶. In terms of employment generation, agriculture sector shares 80% of total employment, and it is considered to be important to shift to stable and sustainable economy, which is included in the long term vision⁸⁷.



Source: JICA Study Team based on data from IMF Article IV Consultation Report (2011, 2013, 2015) and 2016 Budget by Department of Treasury

Figure 3-22: Share of Resource Sector in GDP Growth (2013-2019)

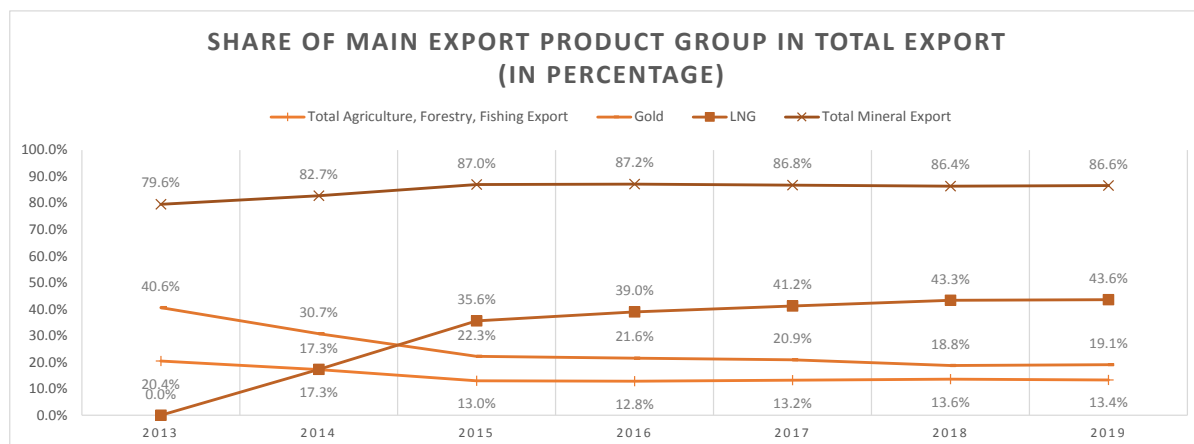
Share of Resource in Export

The start of LNG production, in 2014, also influenced share of resource sector in export. The export share of LNG in 2015, 35.6%, surpassed that of gold (22.3%) which was the highest until 2014. These two

⁸⁶ GDP growth rate in 2015 is sourced from 2016 Budget (Department of Treasury), while growth rate of resource sector is by IMF (Article IV Report, November 2015)

⁸⁷ Based on Study Team interview at Department of National Planning and Monitoring

products are pushing up the resource sector share, and this trend is expected to be continued in coming years.



Source: JICA Study Team based on PNG Statistics Office

Figure 3-23: Share of Resource Products in Export (2013-2019)

Fiscal Dependency on Resource Revenue

The fiscal revenue structure of PNG is easily affected by resource price fluctuation, and the dependency on resource revenue ranged between 6% and 25% in the past 5 years. In November 2015, along with budget for 2016, revision for downsizing 2015 budget as supplemental budget, has been approved⁸⁸, which is largely affected by the recent commodity price downturn. In the 2015 budget, the revenue shortfall is estimated as Kina 2.5 billion, in which Kina 1.7 billion (71%) is originated by decrease in corporate income tax due to reduction of oil, copper and gold prices. The expected amount for this part was K 1.7 billion in the original budget, but it fell to K 0.3 billion⁸⁹.

The resource revenue for the central government consists of Mining and Petroleum Taxes, which is corporate income tax to mining and energy resource companies, and Mining and Petroleum Dividends and LNG Dividends which is a part of non-tax revenue. The table below shows comparison of original and supplemental budget for 2015, indicating resource revenue reduction by Kina 2.1 billion, including tax revenue reduction by Kina 1.4 billion. The share of resource revenue was 19% in the original budget but in the supplementary budget, it has declined to 2.4%.

Table 3-14: Revision of Resource Revenue in 2015 Supplemental Budget

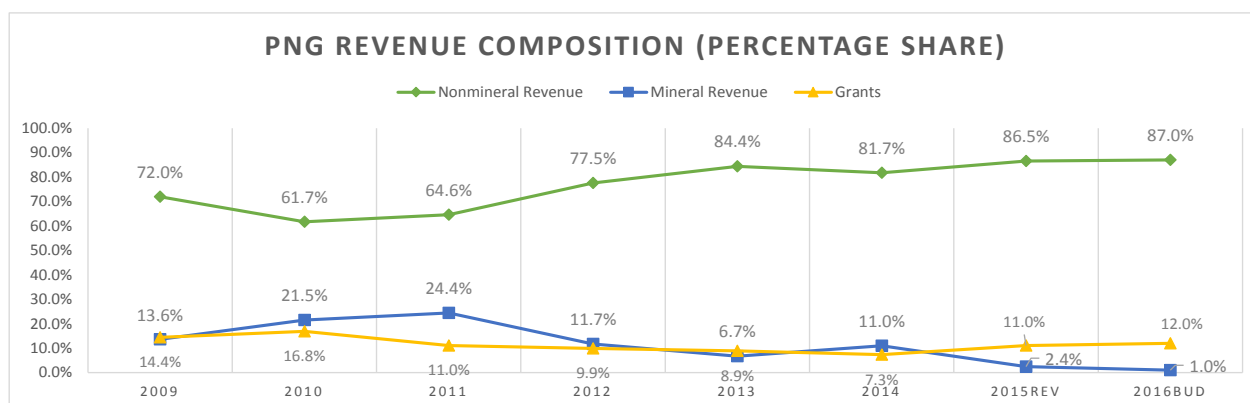
Unit: Kina million

	Taxes	Dividends	Total
2015 Original Budget	1,749	699	2,448
2015 Supplemental Budget	300	5	305
Gap (Original - Supplemental)	1,449	694	2,143

Source: JICA Study Team based on data from Department of Treasury

⁸⁸ Parliament approved the budget bill for 2016 and 2015 supplemental budget on November 3, 2015

⁸⁹ Based on Study Team interview at Department of Treasury

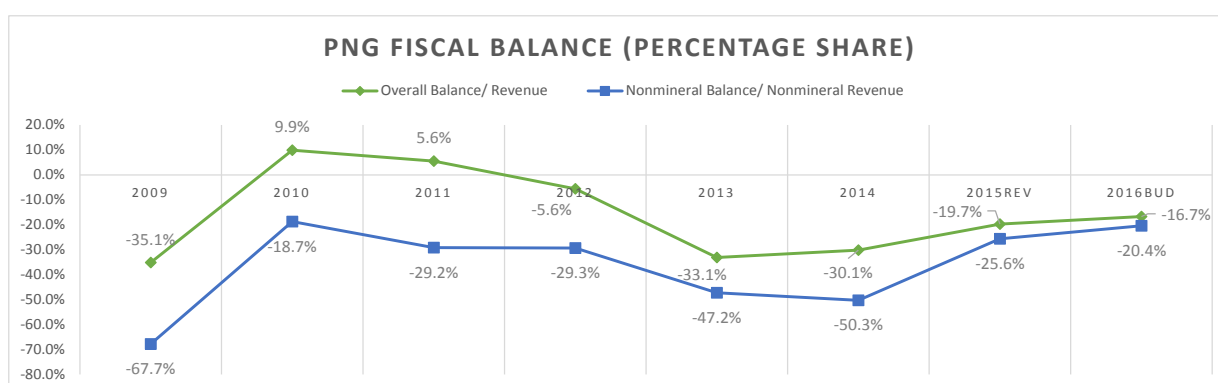


Source; JICA Study Team based on data from 1) IMF "Staff Report for the 2013 Article IV Consultation", December, 2013, and 2) 2015 Budget, Department of Treasury (data for 2013-2015)

Figure 3-24; Share of Resource Revenue in Fiscal Revenue

(2) Fiscal Rules: Ratio of Fiscal Deficit to GDP

The accumulated debt of PNG government reached 72% of GDP in 2002. Since then, following recommendations by IMF, the debt level has been gradually decreased by setting the debt ceiling at 35% of GDP. The annual budget deficit is being set to keep this debt level, and for medium term to achieve balanced budget (zero deficit) is targeted. However, PNG government is not adopting Non Resource Primary Balance (NRPB) Rule which is a fiscal anchor recommended by IMF⁹⁰. The major portion of fiscal revenue is income tax (individual and corporate) which is a stable resource not affected directly by resource price fluctuation. The share of income tax in 2015 budget is 52%, nevertheless, it should be noted that income tax includes corporate income tax from resource related corporations. As a process for budget preparation, DOT prepares estimation of production amount of domestic resources along with resource price projection, referring other organization's estimation such as IMF. For example, as for the oil price estimation for 2015, IMF estimation was USD 100 per barrel, but DOT made more conservative estimation at USD 89, but in reality, the price became lower than USD 50. As for 2016 budget, DOT sets the oil price estimation as USD 54 per barrel⁹¹.



Source: JICA Study Team based on data from: 1) IMF "Staff Report for the 2013 Article IV Consultation", December, 2013, and 2) 2015 Budget, Department of Treasury (data for 2013-2015)

Figure 3-25: Trend of Fiscal Balance (2009-2015)

⁹⁰ Based on interview with DOT regarding NRPB Rule.

⁹¹ 2016 Budget Vol 1 Table 13 Major Assumptions Underlying the Budget

(3) Issues Related with Fiscal Stability

Investment Environment and Credit Rating

There are several issues related with non-resource fiscal revenue. Goods and Service Tax (GST) in PNG is 10%, however, since the tax base is narrow, GST does not bring large tax revenue to the government, according to INA⁹². Likewise, coverage and collection rate of corporate income tax is not sufficient to reach the expected revenue to the government. The chronic shortage of fiscal revenue hampers investment for infrastructure such as road and electric power, which lowers quality of public services. As a result, an investing company has to build its own infrastructure such as power supply, pushing up cost for investment.

As of October 2015, the weather in PNG is experiencing drought caused by El Nino phenomenon, which is affecting operation of some of the mines to halt their producing because of the water shortage. For example, Ok Tedi Mine stopped its operation with the reason of water shortage, in addition to the shortage of new investment fund. As for the credit rating (outlook) for the largest commercial bank in PNG, Bank South Pacific (BSP) by Standard and Poor's as of October 26th, 2015, is lowered to < B+/Negative > from < B+/Stable >⁹³.

Debt Issues

The PNG government debt, as of October 2015, consists of domestic debt in a form of domestic bond and foreign debt in concessional loan by international donors such as ADB, which seems to bear less risk as a country's debt (ADB). However, there seems a possibility that PNG government will issue sovereign bond in overseas market. According to an expert, the issuance is likely to be in Singapore, the size will be USD 1 billion and the premium would be about 10%, although the conditions vary by the market.

Foreign Reserve

One of the causes of the recent depreciation of PNG currency, Kina, is said to be depletion of the country's foreign reserve. This situation is being exacerbated by the policy⁹⁴ to allow resource developing companies to deposit its sales in offshore bank accounts, which prevent their foreign currency from domestic circulation. This policy could be effective to prevent Dutch Disease when there is sufficient foreign currency reserve, however, in the tight foreign currency condition, it brings a problem of foreign reserve shortage⁹⁵.

(4) Public Financial Management: Revenue Management

Public Financial Management

In PNG, there are the following four government organizations in charge of public financial management with the main tasks as listed below. Among these, the major role is played by Department of Treasury (DOT).

⁹² Based on Study Team interview to Institute of National Affairs (INA)

⁹³ Bank South Pacific

(http://www.bsp.com.pg/Investor-Relations/Investor-Resources--Stock-Information/Credit-Rating-Documents/27-10-15-BSP--S--P-Ratings-Direct_Analysis.pdf)

⁹⁴ The central bank allows off-shore bank account to be used for exchange control.

⁹⁵ Based on Study Team interview with ADB PNG Office

- Department of National Planning and Monitoring (DNPM): Planning
- Department of Treasury (DOT): Allocation of Budget
- Department of Finance (DOF): Monitoring of Budget
- Internal Revenue Commission (IRC): Collection of Tax

Revenue Management

The resource revenue paid to the central government of PNG is composed of the mining/petroleum tax, the dividend (accordingly to the shares owned by the government) and dividend source tax paid by those companies. The mining/petroleum tax is the corporate income tax collected from the mining/oil/gas companies by IRC⁹⁶, and IRC transfers to the state treasury. The composition of mining/petroleum tax, in 2013 for example, is 8% by gold, 8% by copper and 84% by petroleum which shares the largest among resources. The dividend is not collected by IRC, but paid directly to the state treasury.

There is a high expectation for resource revenue increase by PNG LNG project which started production in 2014; however, the revenue to the government is likely to be smaller than expected. This is due to the tax holiday granted to the gas developing company which pays no income tax for 10 years, and also the company can enjoy accelerated depreciation to minimize the profit which also minimizes the dividend to be paid.

The stock owned by PNG government, as of March 2014, is 10% of Oil Search Corporation (OS) which owns 29% of PNG LNG project. But since PNG government borrowed funds from the bank, UBS of Switzerland, to buy the stock of the OS, the dividend received has to pay back to the bank for principal and interest, for the time being.

Reliability of the Budget (2015 Supplemental Budget)

According to the Mid-Year Economic and Fiscal Outlook released in July 2015, it was reported that the government would face revenue shortage by Kina 2.5 billion, due to the influence of primary commodity price downturn including petroleum, water shortage caused by El Nino phenomenon, and temporary closure of Ok Tedi Mine, and DOT had to prepare both expenditure cut and revenue increase to fill the gap. The effort has been taken to increase revenue by Kina 1.1 billion and expenditure cut by Kina 1.4 billion, which makes the supplemental budget's total revenue for Kina 12.3 billion and expenditure for Kina 14.8, with budget deficit of Kina 2.35 billion. In terms of ratio to GDP, this deficit level is equivalent to 4.5%, with the debt being lower than 35% which is the upper limit under the Finance Law.

As it has been described, the financial authority is compelled to reduce expenditure due to the impact of lower-than-expected resource prices under the constraint of fiscal discipline, the expenditure of a 2015 supplemental budget has decreased by 8.5% compared with the initial one.

⁹⁶ Internal Revenue Commission

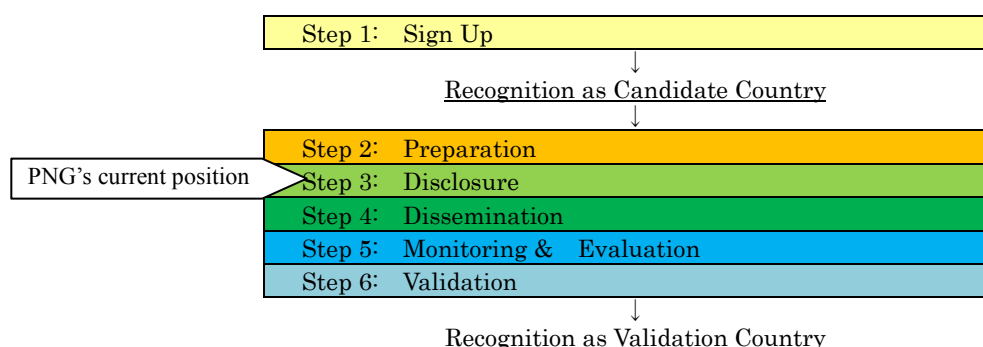
Table 3-15: Outline of 2015 Supplemental Budget

Unit: Kina Million						
	Original	Change		Revised	GDP Ratio	
Revenue	11,370	Addition	1,102	12,472		
Expenditure	16,199	Reduction	1,377	14,822	Debt	Total Debt
Balance	27,569	Total	2,479	-2,351	4.50%	35%

Source: JICA Study Team based on 2016 Budget Speech by Prime Minister

(5) Public Financial Management: governance (EITI)

One reason for becoming EITI member is for countries to apply for loans from international organizations and bilateral donors. PNG started to consider entering EITI on the grounds that ADB requested the country to do that as a condition of loan in 2006. Through the necessary procedure including forming Multi-stakeholder group (MSGs)⁹⁷, the country was recognized as candidate in March 2014. According to Figure 3-26, PNG is currently preparing the first EITI report.



Source: the Study team prepared based on information from JOGMEC, 2010

Figure 3-26: the process for implementing EITI

According to PNG EITI, one issue to be addressed is that there is a big gap between payments reported by the government and companies because companies pay royalties to landowners, not the government, and then it is difficult for the government to identify the amount of that revenue. In addition, it is also an issue that there are multiple entities collecting revenues and this situation makes it difficult for the EITI secretariat to gather information efficiently: e.g. taxes collected by the International Revenue Commission (IRC), and non-tax revenue for mineral resources collected by the Department of Finance. It can be said that issues are different country by country, depending on related laws and regulations, and institutional organizations.

Regarding the assessment of governance, PNG received a score of 43 from RGI, ranking 39th out of 58 countries as the most critical among the three countries for the case study. The reasons for this score are firstly about ‘Reporting Practices’; contracts with companies are not published and the details of negotiation are not available to the public. Furthermore, although RGI pointed out that information about

⁹⁷ As a step to be taken before becoming EITI candidate, countries have to form MSGs among governmental organizations, private sectors, and civil society, which are responsible for agree and implement Country Workplans. (JOGMEC, http://mric.jogmec.go.jp/public/current/10_24.html)

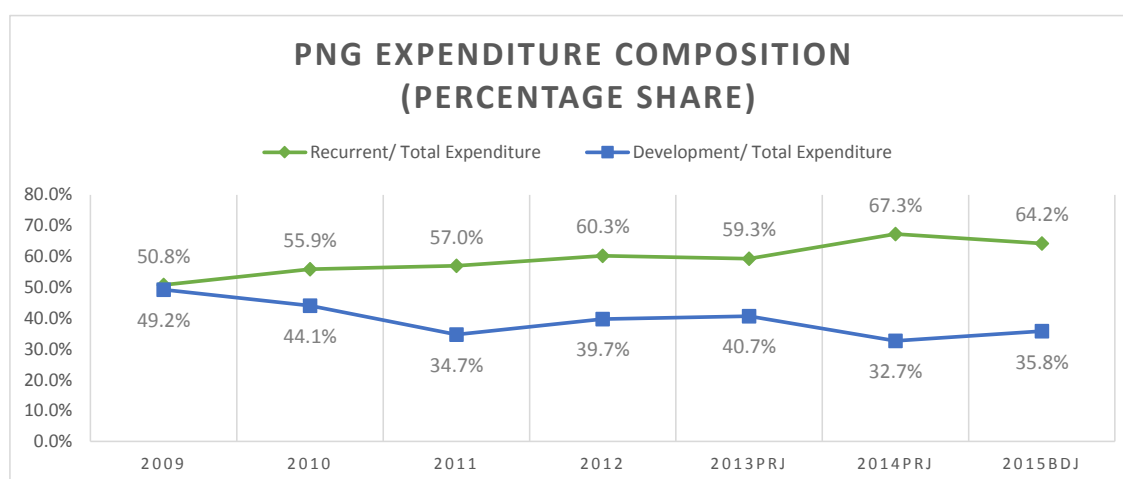
resource revenues is not disclosed by Mineral Resource Authority and IRC, this issue could be solved once an EITI report is published.

With regard to another component, ‘Safeguards and Quality Controls’, lacks of monitoring function for licensing decisions and revenue collecting systems seem to be a negative factor.

(6) Public Financial Management: Expenditure Management

Fiscal Expenditure

The fiscal expenditure has been categorized by Operating Expenditure⁹⁸ and Development Expenditure⁹⁹. However, this categorization will be changed to “Unified Budget” following advice by IMF, which will be started from 2016 released in Volume 2 and 3 of 2016 Budget documents¹⁰⁰.



Source: JICA Study Team based on data from; 1) IMF "Staff Report for the 2013 Article IV Consultation", December, 2013, and 2) Bank of PNG

Figure 3-27: Trend of Fiscal Expenditure Composition (2009-2015)

Sovereign Wealth Fund (SWF)

Due to the resource boom in the latter years of 2000s decade, the fiscal balance has recorded surplus in PNG in 2010 and 2011. Initially the PNG government did not set up a fund at central level to absorb the surplus, but allowed to set up Trust Account at ministry level to utilize extra revenue, since the resource boom is considered as a temporary phenomenon. The Trust Account is the system to allow un-used single year budget to be outlaid for the following fiscal years, and it is used as an instrument to reserve the increased budget at the middle of fiscal year by supplemental budget. The use of funds from Trust Account, in principle, has been limited for investment purpose, however, it was also spent for operating (recurrent) expenditure, which brought extra liquidity in the economy and added inflation pressure¹⁰¹.

⁹⁸ In 2016 Budget, there is no categorization as “Operating Expenditure”, but items under this category has been indicated such as; Compensation of Employees, Use of Goods and Services, Interest, Grants Other Expense.

⁹⁹ In 2016 Budget, this is categorization is re-named as Net Acquisition of Nonfinancial Assets.

¹⁰⁰ Based on Study Team interview with Department of Treasury

¹⁰¹ The inflation rate recorded 8.4% in 2011 but declined to 2% in 2012 (IMF), and 6% in 2015, controlled by the central bank to a single digit.

The establishment of SWF in PNG has been long discussed. The government (DOT) studied the cases in Mongolia, Chile and Norway with technical support by IMF and applied internationally accepted Santiago Principle. The Act of establishment, Organic Law of SWF, was approved in 2012 and a public announcement was made in February 2013. But after that, it had to go through political debate and consideration, until the final decision was made in July 2015, to get ready to start operation in 2016 budget. The SWF is designed to consist of two funds, Stabilization Fund and Saving Fund. The source of these funds is from corporate income tax and dividend paid by mining/petroleum corporations, 100% of income tax and 75% of dividend for Stabilization Fund and 25% of dividend for Saving Fund.

Table 3-16: Source of SWF in PNG

	Mining and Petroleum Tax	Mining, Petroleum and Gas Dividends
SWF-Stabilization Fund	100%	75%
SWF-Savings Fund	0%	25%

Source: JICA Study Team based on 2016 Budget, Department of Treasury

Starting from 2016, all mining/petroleum tax and 3/4 of dividends are paid-in to Stabilization Fund, but under the current international resource price level, the revenue will not be accumulated in the Fund, but transferred to the general budget account. As the rule for Stabilization Fund accumulation, only the extra revenue, surpassing the average price (moving average) of resources in the past 15 years, is to be paid-in¹⁰². Unlike SWF in East Timor which save large part of resource revenue for saving, PNG considers to utilize more for the development needs of the people, for infrastructure and human resource development, according to DOT.

As of November 2015, the government is preparing establishment of management organization for SWF, by setting up a committee to select members of Executive Board of SWF. It is likely that the board members include professional financial experts. The secretariat will be initially run by DOT and central bank, and will be set up in the central bank which has more independence from the government and political influence.

(7) Medium Term Fiscal Plan

As has been explained, PNG government set a ceiling of accumulated public debt to be 35% of the GDP as a fiscal rule. Due to fluctuation of resource price it is difficult to control under this fiscal rule, so the government tries to achieve its goal under the medium term fiscal plan.

3.3 Case Study 3: Mongolia

3.3.1 Resource Sector

(1) Produced resources and projects for developing major resources

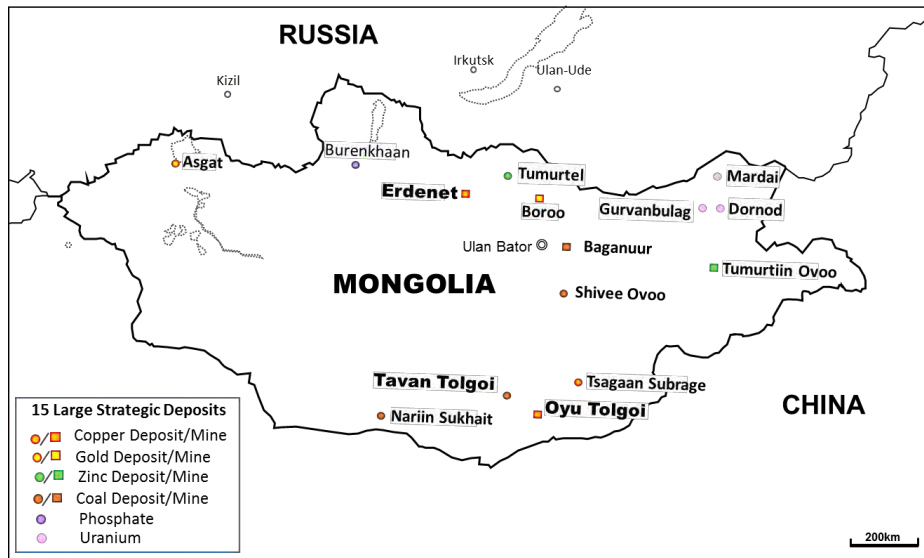
¹⁰² According to 2016 Budget, the resource revenue will be paid in to Stabilization Fund Account, but all the paid-in amount is transferred to the general budget during 2016 to 2020. There is no particular note regarding the usage of the fund transferred.

Occupying a belt in Central Asia, the Altaids Unit is known for its world-class mineral deposits. Mongolia, which is in the center of the Altaids Unit, contains mineral deposits of base metals, rare metals, iron ore, fluorite, etc., as well as energy deposits of coal, oil and uranium. Nearly all of Mongolia's foreign exchange reserves are obtained from mineral exports. In 2014, for example, the country had export revenues of US \$5.78 billion, of which minerals (coal, copper concentrate, molybdenum concentrate, iron ore, zinc concentrate, oil, fluorite, feldspars, etc.) accounted for \$5.13 billion, or 89%. (Frontier Securities, 2015)

At one time, the Erdenet Mine, which was operated jointly with the Russia (51% Mongolia, 49% Russia) from 1978 had been famous as Mongolia's only world-class working copper mine. However, recently in the southern Gobi Desert the mining of coal beds created from high-value, high-quality coking coal in such places as Taban Tolgoi has begun, and in 2013 joint production (34% Mongolian government, 66% Rio Tinto) started at Oyu Tolgoi, one of the world's leading high-grade, high-volume deposits of copper and gold. Besides these, there is also the large-scale Tsagaan Suvarga copper deposit, which is being planned for full-scale development. These and other mineral resources make Mongolia one of the leading mineral resource countries in Asia.

However, the mineral resource processing industry is not well-developed in Mongolia, and minerals are exported as concentrate. Because Mongolia is a landlocked country sandwiched between China and Russia, there are quite a few obstacles to transporting materials to countries outside of Russia and China. Because much of the mineral products are exported to neighboring China, the Mongolian resource industry is greatly affected by the Chinese economy. Since the latter 2000s decade, beginning with the resource exploration and development boom, there has been rising resource nationalism, restrictions on foreign investment, and an apparent lack of transparency in the law. What's more, since after the Lehman Brothers crisis, and the decision of the national legislature in 2010 to limit new applications for mine concessions, there had been a dramatic decline in direct foreign investment. However, with the 2014 recent revision of the mining law, which clarifies the procedures from applying for concessions to receiving approval, and the lifting of the moratorium on concession applications, the number of applications for concessions began to increase dramatically in 2015, 98 new applications for concessions in 2014 versus 1,472 applications in the 3rd quarter of 2015.

The Oyu Tolgoi deposit was first noted in 1957 when a regional survey by the USSR government confirmed occurrences. From 1990 to 2000, JV surveys by the Mongolian government and private companies found that it had mineral potential. Through exploration beginning in 2000 by the Canadian company Ivanhoe that had acquired the concession, an investment agreement was signed by the Mongolian government, Ivanhoe and Rio Tinto in 2006. In 2010, development work was begun with Rio Tinto as operating manager, and in 2012 open pit mining and concentrate production (Phase 1) were commenced. In June 2015, an agreement was reached to mine the main ore body in the deep section of this deposit (accounting for 80% of total ore value) with an underground mine, and mine development began to take shape. There is plenty of room for exploring the deep section ore bodies, and there is a possibility that the life of the mine could be 100 years or more.

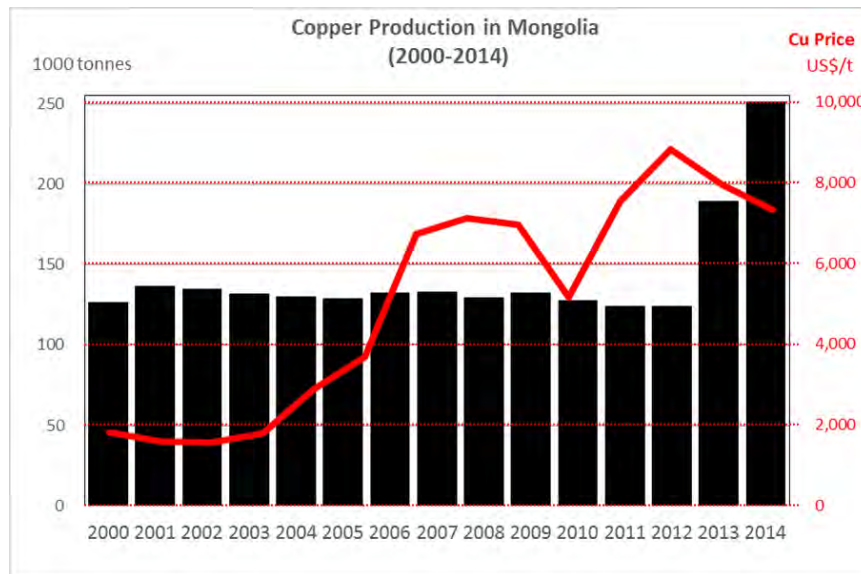


Source: Created by the survey team based on various materials

Figure 3-28: Major Underground Resources in Mongolia

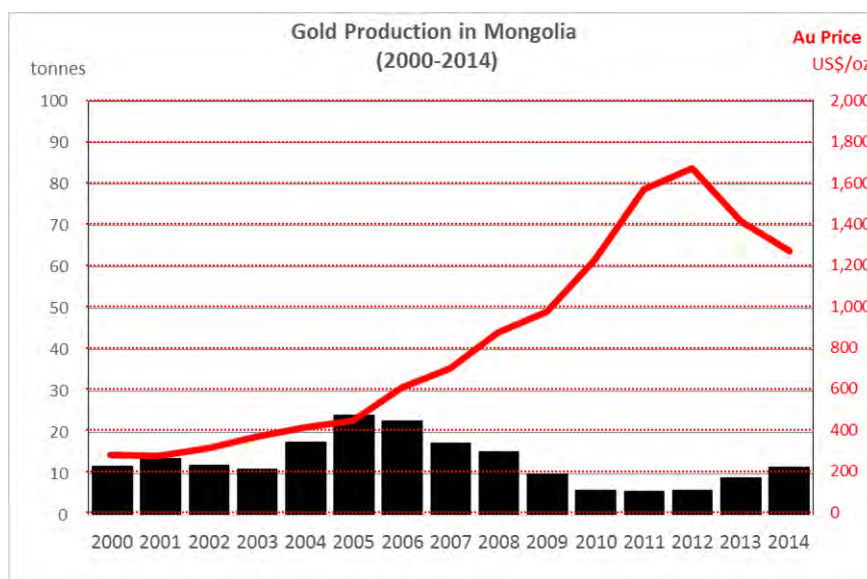
(2) Resource price fluctuations and production volume (1990~2014)

The figure below shows trends in the production volume of three of Mongolia’s main minerals (copper, gold, and coal) over a 15-year period.



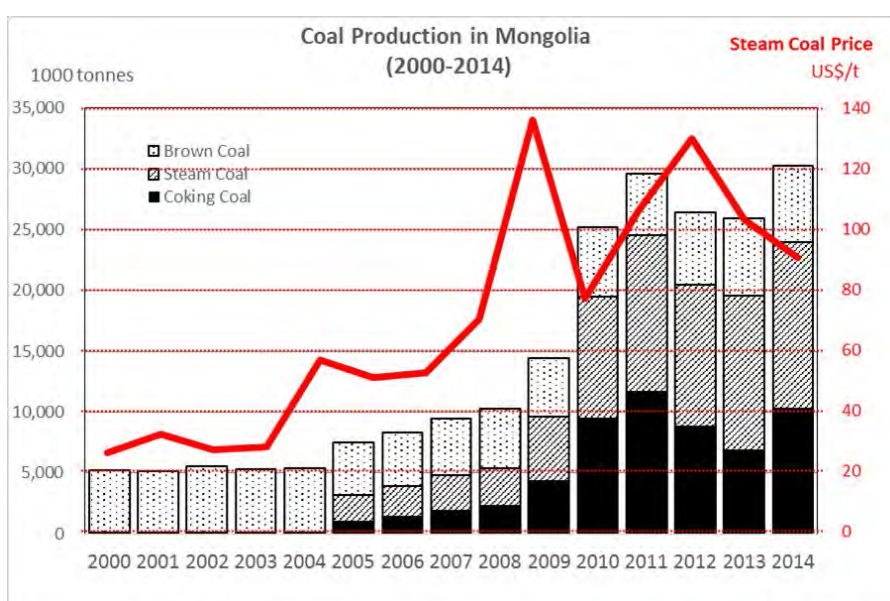
Source: Created by the survey team based on data from World Metal Statistics Yearbook and other sources

Figure 3-29: Trends in the production of copper ore in Mongolia and metals prices



Source: Created by the survey team based on data from World Metal Statistics Yearbook and other sources

Figure 3-30: Trends in the production and price of gold in Mongolia



Source: Created by the survey team based on data from JCOAL Energy Center

Figure 3-31: Trends in the production volume, quality, and price of coal in Mongolia

In conjunction with the start of operations at Oyu Tolgoi, copper production in Mongolia has been increasing dramatically since 2013. When this trend is viewed in connection with the operating life of the mine, then it can be expected to last for several decades. In addition, if development of the deep section of Oyu Tolgoi (Phase II), which is rich in gold, can go according to plan, then the current gold production of about 10 tons may double.

Although earlier focus had been on conventional brown coal, we can see that beginning in 2000 there was a dramatic increase in the proportion of high-quality, high-value coking coal and steam coal. Most of this high-quality coal -is exported. If full-scale operations begin at Ban Tolgoi (mainly coking coal), then the

importance of coal in the Mongolian economy will likely increase.

(3) Resource development businesses

The Mongolian government has been signing original operating contracts with foreign companies to develop large-scale deposits.

The following describes a typical contract example, of the Oyu Tolgoi copper and gold deposit (contract approved by the national assembly on 16 July 2009, signed on 6 October 2009, and put into effect in March 2010).

- Signed on 6 October 2009 (approved by the national assembly on 16 July 2009, put into effect in March 2010)
- Shareholders: Mongolian government 34%, Turquoise Hill (51% funded by Rio Tinto) 66%
- Three of the directors are from the Mongolian government, and 6 are from Turquoise Hill (total of 9)
- The Mongolian government owns 34%, and Turquoise Hill owns 66% (Rio Tinto owns 51% of Turquoise Hill).
- As a stockholder, the Mongolian government can, in addition to dividends, acquire royalties, income taxes (although not currently in effect), value-added taxes, and customs and other taxes. According to IMF estimates (2010), the Mongolian government receives 55% of the pre-tax cash flow of a mine, but an NPV evaluation put the total figure at 71%.
- In addition, investors are obligated to sell concentrate at the international market price, give proper consideration to local development, the environment, and water, build infrastructure, and ensure employment (at least 90% of workers should be Mongolian. As of October 2015, the actual figure was 95%), and provide worker training.
- In Phase II (underground mining plan) that was agreed to in June of 2015, a total investment of 400 million - 1 billion dollars is required for building a trunk tunnel and a 2 km transport tunnels as well as vertical shafts. The Mongolian government will be responsible for providing 140 million dollars (in the form of a loan from Rio Tinto). These conditions are still in the final adjustment stage, and though plans had called for operating costs to be set in December of 2015, it is not clear whether or not the matter has been resolved.

Geological surveys in Mongolia were conducted primarily by the former Soviet Union, and by the 1970s basic surface data had been acquired for the entire country. The high potential of underground resources has long been known, but because Mongolia is a landlocked country, it would not be worthwhile to develop them as a source of Japanese resources. With the emergence of a huge market in neighboring China, it can be said that in terms of investment return, there is very high potential for resource development.

As shown by the fact that the world-class Oyu Tolgoi copper-gold deposit was newly “discovered” in 2000, in the southern Gobi Desert where detailed surveys have not been conducted, the discovery of as yet unknown deposits using state-of-the-art exploration technology may hold the key to the future of Mongolia’s mining industry.

3.3.2 Economic and Fiscal Characteristics

(1) Resource Price Volatility and Macro economy

Mongolia has achieved enormous economic growth and boosted its GDP by 6 times in the past 10 years although it suffered from severe recessions two times during the period (2008 and 2014). One of the driving factors of this rapid economic growth is the development of the mining industry. GDP per capita has reached \$4,000 in 2012 from \$1,000 in 2005, and as a result, the country came into middle income countries.

Table 3-17: GDP and GDP growth

	2005	2010	2011	2012	2013	2014
GDP (current price, billion MNT)	3,041	9,757	13,174	16,688	19,174	21,975
GDP growth (%)	7.3	6.4	17.3	12.3	11.6	7.6
GNI per capita (USD)	900	2,000	2,600	3,670	4,360	4,280

Source: the Study team prepared based on Statistical Yearbook of Mongolia (GDP, GDP growth), The World Bank (GNI)

1) Characteristics of Industrial Structure

According to Table 3-17 showing GDP by main sectors during the last decade, while the mining sector including coal, copper, and gold decreased its share of GDP from 21% in 2005 to 17% in 2014, and also the agriculture sector decreased its share from 20% to 13.5%, the share taken by the manufacturing sector expanded from 5.8% to 8.2%.

Regarding the mining sector, the share of GDP hit a peak around 28% in 2006-2007. Although production increased twofold in the last 5 years, the international market has been in downtrend, and the share of GDP fell. In the meantime, the wholesales sector expanded from 7.5% to 11%, and the service sector has been stable at around 30%.

Table 3-18: GDP by sector

	2005	2010	2011	2012	2013	2014
Mining	21.1	22.7	21.0	18.0	18.5	17.2
Agriculture	19.8	14.3	12.3	14.1	14.4	13.5
Manufacturing	5.8	6.4	6.0	5.9	6.3	8.2
Wholesales	7.5	8.3	9.2	10.5	10.9	11.0
Services	31.3	28.8	28.1	31.3	31.3	31.2
Others	6.3	10.0	9.2	10.6	10.5	10.1
Total	100	100	100	100	100	100

Source: the Study team prepared based on Statistical Yearbook of Mongolia (NSO)

Note: the figures for 2014 are provisional

Note: Services include construction, transportation, energy, finances, hotel, information, real estate, etc.

In terms of employment by sector, although the agriculture sector had 40% of total employment in 200, its ratio decreased to 28% in 2014. While the employment in the service sector expanded from 21% to

28%, the mining sector seems to bring less impact to employment than it does for GDP.

Table 3-19: Employment by sector

	(%)					
	2005	2010	2011	2012	2013	2014
Mining	4.1	3.3	4.3	4.4	4.6	3.7
Agriculture	39.9	33.5	33.0	35.0	29.8	28.0
Manufacturing	4.7	6.3	6.3	6.1	7.3	7.7
Wholesales	14.7	14.1	14.7	12.4	14.1	15.3
Services	20.8	24.4	24.1	23.8	26.1	27.6
Others	15.9	18.4	17.5	18.1	18.0	17.7
Total	100	100	100	100	100	100

Source: the Study team prepared based on NSO (www.1212.mn)

2) Balance of Payments

For the last 7 years, the trade balance had shown consecutive deficits until 2013, and hence this had caused the situation that the current account balance has remained in deficit for the whole period. On the other hand, the financial account balance has been in the black over the period as much as the deficits in the current account were recovered until 2012. However, overall balance turned into the deficit in 2013.

With respect to trade balance, the import surplus during the period from 2009 to 2013 can be seen. It could be explained in way that consumer goods heavily rely on imports and the income rise could lead to further increases in the amount and values of imports. In addition, as the rapid development of natural resources in the country have promoted huge FDI inflows, which require the large amount of imports of industrial goods. However, there seems to be a time lag from FDI to goods import; FDI surged in 2010-2011 while imports followed behind it. Although the share of the mining export to total exports was around 35% in 2000, as the resource boom went on, the share expanded to 90% in 2011-2012. It is currently 83% in 2014.

As for capital account, main factors are FDI inflows and foreign debt. For instance, the significant deterioration in capital account balance in 2013 seems to be the result that Oyu Tolgoi copper and gold mine project Phase 1 completed the major capital investment, which has been contributing substantially to FDI inflows in Mongolia, although a huge amount of loans, including Chinggis bond, was a positive factor at the same time. As a consequence of this deterioration in capital account balance, overall balance has got worse considerably in 2013.

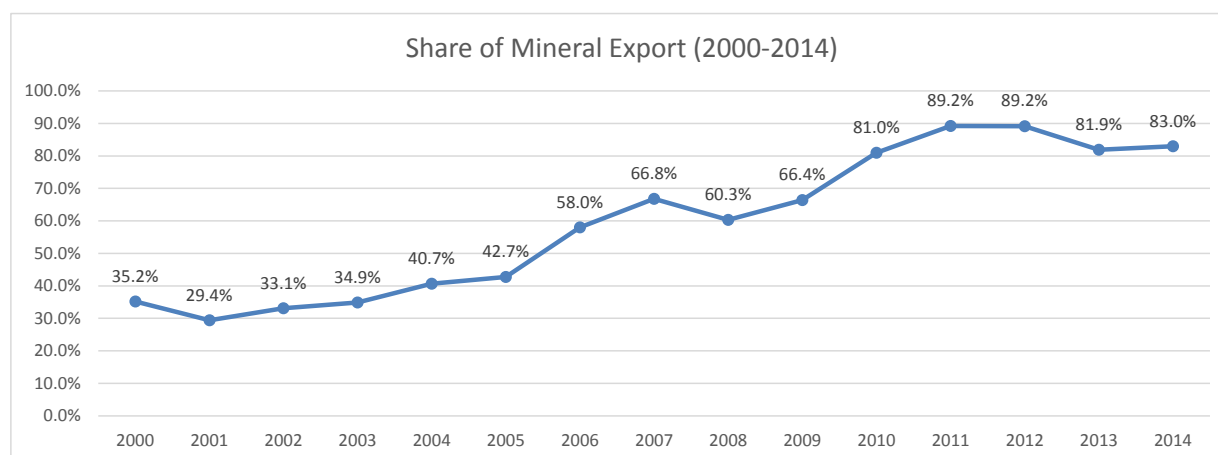
Table 3-20: Balance of Payment

(million USD)

Items	2009	2010	2011	2012	2013	2014	2015
I. Current account	-341.8	-886.7	-2758.6	-3362.3	-3192.0	-1405.0	-412.7
A. Goods and services	-332.0	-474.9	-2153.4	-2653.6	-2634.7	-559.3	317.1
Goods	-188.8	-180.4	-992.9	-1553.3	-1320.5	993.9	950.0
Services	-143.2	-294.5	-1160.5	-1100.3	-1314.2	-1553.2	-632.9
B. Revenue	-195.4	-598.8	-843.4	-948.1	-699.1	-988.6	-849.4
C. Current transfers (net)	185.7	187.0	238.2	239.4	141.8	143.0	119.6
II. Capital account	768.8	1743.7	2864.2	4929.5	1438.1	1062.0	345.3
A. Capital account	160.5	152.2	113.9	120.4	125.8	100.0	80.6
B. Financial account	608.3	1591.5	2750.3	4809.1	1312.3	962.0	264.7
Direct investment	569.8	1629.7	4620.1	4407.8	2098.1	276.0	10.1
Other investment	120.6	-932.4	-1946.8	-1924.1	-629.7	408.1	-58.8
Assets	-144.8	-1040.2	-2383.8	-2483.6	-1460.3	-886.8	-598.7
Liabilities	265.5	107.8	437.0	559.4	830.6	1294.9	540.0
Loan	230.7	113.5	495.0	472.3	740.3	752.1	117.5
III. Net errors and omissions	128.5	16.1	-77.8	137.8	-113.4	-128.1	-105.0
IV. Total amount of BOP (I+II+III)	555.5	873.1	27.8	1705.0	-1867.3	-471.1	-172.4
IV. Changes in foreign reserves	-555.5	-873.1	-27.8	-1705.0	1867.3	471.1	172.4

Note: the figure in 2015 is up to September

Source: The Study team prepared based on the data from Bank of Mongolia



Source: The Study team prepared based on the data from Mongolian Statistical Information Service (www.1212.mn)

Figure 3-32: Share of the Mining Sector to Total Export (2000-2014)

(2) Fiscal Balance

On the revenue side, the dependency on resource revenues reached peak in 2008 (30.8%), and has decreased to be 16.4% in 2014. As natural resources in Mongolia are mainly copper, gold and coal, their resource revenues decreased according to international market downtrend from 2012. Then since 2014, the increase in the production of copper in the country after the commencement of Oyu Tolgoi production seems to contribute the national revenues, and however, since the market trend of copper is still low, that impact seems to be limited.

Next, on the expenditure side, current expenditure takes a 61% share of total amount in 2014, of which personnel expenses account for a large portion (30%). Total expenditures have trended upward, and one of the factors is that rises in resource revenues in the period 2006-2011 have led to the increase in the budget expenditure. Moreover, according to an official of the Ministry of Finance, it is another factor that

spending for social benefits, such as pension and social insurance, increased.

In addition, the Development Bank of Mongolia's (DBM) spending for social infrastructures has significantly grown since 2012. This spending had been outside the budget, and IMF has however suggested that DBM's spending should be brought on budget. Although the fiscal deficit to GDP in 2014 was -4%, it would be 11% by including DBM spending according to the IMF report.

Table 3-21: Fiscal Balance

(in billion MNT)

	2011	2012	2013	2014est	2015prj	2016prj
Total revenue	4,472	4,973	5,983	6,119	6,187	6,785
Resource revenues	1,028	834	975	1,005	802	759
Resource revenues (%)	23.0%	16.8%	16.3%	16.4%	13.0%	11.2%
Total expenditure	4,997	6,493	7,689	8,518	8,562	8,925
Current expenditure	3,236	4,428	4,553	5,227	5,848	6,711
Capital expenditure and net lending	1,761	2,065	3,136	3,292	2,715	2,214
Overall balance	-525	-1,520	-1,706	-2,399	-2,375	-2,140
Overall balance (%GDP, excl. DBM spending)	-4.0%	-6.2%	-0.9%	-4.2%	-4.0%	-4.1%
Overall balance (%GDP, incl. DBM spending)	-4.0%	-9.1%	-8.9%	-11.0%	-9.8%	-7.9%

Source: the Study team prepared according to IMF 2015 Article IV Consultation Report

As for external debt, since Mongolia has to depend on borrowing due to consolidated fiscal deficit, as Table 3-22 shows, outstanding debt has notably increased during such a short period as a result of the issuance of a great amount of government bonds. The ratio to GDP reached 55%, which far exceeds the debt ceiling 40% enshrined in the Fiscal Stability Law (FSL)¹⁰³. In the meantime, IMF defines public debt differently by including other items, like debt state enterprises, and as a result, public debt reached 76.5 percent of GDP in 2014, and moreover is expected to peak at 92.5% in 2017.

Table 3-22: External Debt

(billion MNT)

	2012	2013	2014
External debt outstanding (nominal)	6,300	8,892	12,084
External debt outstanding (%GDP)	45%	51%	55%
GDP (nominal)	14,013	17,550	21,937

Source: the Study team prepared based on data from Budget Management Division, Ministry of Finance

Table 3-23: Composition of External Debt

(billion MNT)

	2012	2013	2014
Government external debt	2,936	3,613	3,979
Government external bond outstanding (Chinggis bonds)	2,088	2,481	2,828
Government debt guaranteed debt	807	1,160	2,545
Debt of Central Bank swap agreements	469	1,638	2,732
Total	6,300	8,892	12,084

Source: the Study team prepared based on data from Budget Management Division, Ministry of Finance

¹⁰³ This law was established in 2013 for the purpose of fiscal stabilization. It defines the fiscal deficit ceiling (2% to GDP) and the debt ceiling (40%)

3.3.3 Economic Policies

Mongolia faces the difficult fiscal management as it is a resource-rich country and susceptible to commodity price volatility. This section explores economic policies the country has taken, by referring not only short-term anti-recession policies but also long-term structural reforms.

(1) Macroeconomic Policies

The country has been in the recession for two years. As for the past macroeconomic policies that the government has taken, this section makes a summary by referring to the IMF report, which seems quite comprehensive.

1) IMF suggestions in the 2013 IV consultation report

The urgent macroeconomic issues to be addressed in Mongolia are currently balance of payments deficit and fiscal deficit, and debt issue. In 2013 Article IV Consultation Staff report, IMF provided six suggestions, assuming that these issues would occur. Mongolia has taken these suggestions into account to implement necessary measures as follows.

Table 3-24: IMF Suggestions and Implementations

Suggestion	Implementation
1. To tighten fiscal policy in order to cut fiscal deficit down to the ceiling set forth by FSL	The government made efforts to achieve this, but DBM spending was a major issue.
2. To maintain debt ceiling of 40% and cut debt ratio down to this level.	The government amended FSL to increase the ceiling and passed a new Debt Management Law.
3. To Phase out unconventional easing programs at the MOB	<ul style="list-style-type: none"> ➤ The BOM scaled back Price Stabilization Program (PSP) lending accordingly. ➤ The BOM plans to continue implementing the mortgage program.
4. To tighten monetary policy	The BOM increased the policy rate twice to be 14.5% currently.
5. To maintain exchange rate flexibility	The nominal exchange rate depreciated by 14% in 2014, and however, REER appreciated even more due to high inflation and the BOM's FX intervention.
6. To strengthen bank supervision and to restrict FX loans	<ul style="list-style-type: none"> ➤ IMF's provided TA for strengthening bank supervision. ➤ The BOM restricted FX loans so as to enhance bank credibility

Source: The Study team prepared based on the IMF Article IV Consultation Staff Report (2015)

Note: public debt defined by the Mongolian government does not include the sectors of energy, railway, and natural resources, and meantime IMF includes these to their definition of public debt. Therefore, there is a great gap between statistics of debt published.

2) IMF Suggestions and Evaluation in 2015 IV Consultation Report

In 2015, two years after the previous report, the fiscal deficit and the deficit in balance of payments have expanded. Focusing on extremely high debt outstanding and inflation above target, IMF provided the following more practical suggestions.

- Fiscal balance and DBM:
To bring fiscal deficit to 4.5% of GDP in 2015, and reach around of 2% by 2017; and to reflect DBM spending in the budget and enhance governance within the bank
- Monetary: to slow credit growth
- Exchange rate: to maintain exchange rate flexibility and restrict exchange intervention
- Investment: to implement structural measures to boost investment; to improve the investment climate; and to promote the major mining projects
- Social protection: to ensure protection of most vulnerable in society, including cash delivery
- Banking: to enhance provisions and capital; and to Strengthen supervisory framework

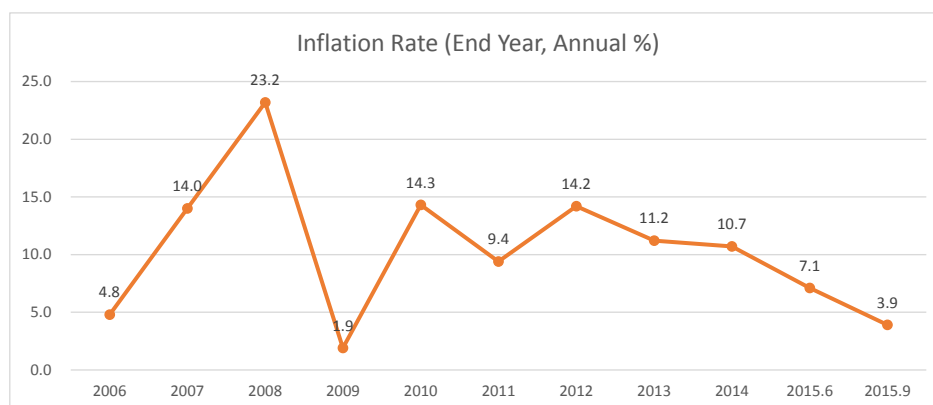
In the comparison between suggestions in 2013 and in 2015, although there is no major change in their contexts, they seem more practical in 2015 by setting clear targets. In this sense, it can be said that the situation became more severe and Mongolia is required to take practical measures.

3) Economic Policy Measures taken by the Government

The Mongolian government has taken measures to tackle the issues, such as inflation, fiscal deficit and deficit in balance of payment, and debt issue, within FSL and the Budget Law. While the following section mentions the fiscal policies which are the most significant point to be discussed, this section states about policy measures on balance of payments and monetary policy taken by the government including BOM, based on the result of the field study conducted by the JICA study team.

First of all, with regard to policy measures on balance of payments which aim to bring current account balance into surplus, it is necessary a) to promote exports and import substitution, b) to encourage FDI, and c) to promote PPP for infrastructure development. In particular, the government focuses on value-add exports of mining commodities and the development of non-resource sectors. As for the former, the government is obligated to remove impurities from coal exported to China, which could increase FOB price. Furthermore, in respect of oil sector, the government prioritizes the investment in the downstream sector while Mongolia currently exports crude oil and imports oil products. Next, regarding the development of non-resource industries, the government pays attention to SME development. In doing so, Mongolia established the SME law and has provided financial supports through the SME fund and TSL. Also, the promotion exhibition in China was organized to promote SME's exports. The development of logistics seems important, such as roads, warehouses, accommodations, and catering.

With regard to monetary policy, BOM has played a leading role, and however, it is politically independent. For instance, regarding restrictive monetary policy, BOM has hiked the policy rate in 2014 at last whereas IMF made that recommendation even earlier. In addition, BOM continues lending operations for price stabilization of energy, food, and construction industries, based on PSP, while IMF recommends limiting such quasi-fiscal operations. Nevertheless, BOM and IMF work together on inflation control and bank supervision. As a consequence, the inflation rate decreased to 3.9% as of September 2015, from 28% in 2008.



Source: the Study team prepared based on Monthly Statistical Bulletin (Bank of Mongolia)

Figure 3-33: Inflation Rate (2006-2015)

(2) Industrial Policies

1) Mining Sector

The government fully recognizes the mining sector as the most important among all, and makes the development of the sector the most important. In particular, prioritizing value-added export of mining commodities, the country makes effort to encourage capital investment which would lead to FDI inflows in the country. In addition, the development of transportation infrastructure which is vital for mining exports, such as roads and railways, is one of the most important for Mongolia. In this regard, PPP has been playing an important part to bring investment capital and management know-how.

2) Non-resource Sector

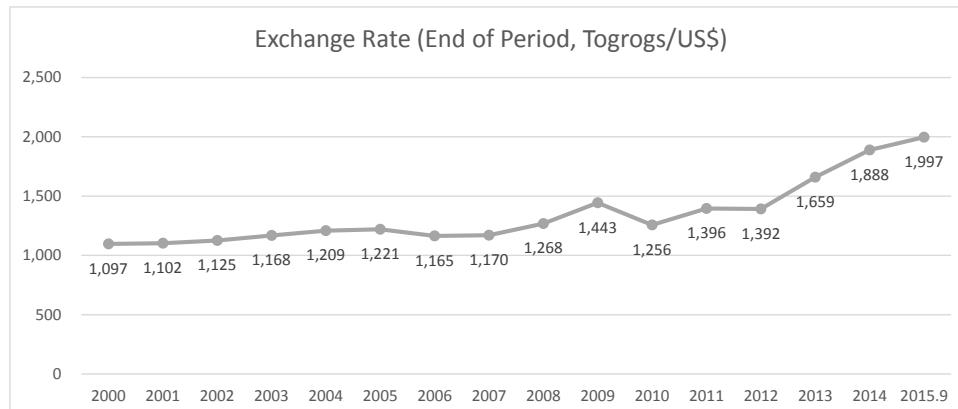
The development of non-resource sectors is also regarded as important in Mongolia. This is the result that the country learned about the risks behind the heavy dependency on the resource sector, from the experiences of recession in 2009 and after 2012. Although generally non-resource sectors, such as agriculture, manufacturing, construction, and services, are a large share of GDP, the share of manufacturing industry in Mongolia is relatively small. This seems to be because population is small and sparsely distributed, and it is difficult for the industry to secure adequate labor forces and to expect sufficient market demand. Therefore, the country has to rely highly on imports for foods and daily necessities, and the industrial development has not been so impressive. In the meantime, the income level increased, and population density in urban area rose, and as a consequence, the expectation of the development of light industries is soaring. As most of manufacturing in the country are SMEs, the government has been promoting supports for them. They include financial support and non-financial ones, such as provision of information and technical assistance. Light industries in Mongolia are very diverse: traditional exporting industries (cashmere and leather goods), cutting-edge building material, environmentally-friendly products, and energy-efficient goods.

3) Dutch Disease

In Mongolia, symptoms of Dutch disease had been seen between 2003 and 2006, during which resource commodity prices surged¹⁰⁴. Nevertheless, after that, inflation rate has decreased and the national

¹⁰⁴ Ueno (2008) "Dutch Disease and Resource Dependency of Mongolian Government Revenues: Its Tax System and Tax Revenues," in Japanese, *Nanzan Keizai Kenkyu*

currency has been depreciated. Furthermore, as a result that a large part of resource revenues have been saved for future generations or spent for non-resource sectors, the symptoms does not appear as of November 2015



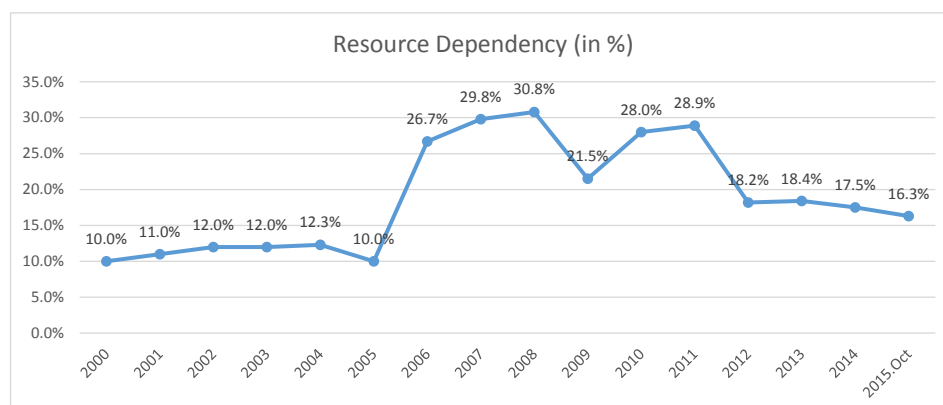
Source: the Study team prepared based on the data from Bank of Mongolia Monthly Statistical Bulletin

Figure 3-34: Exchange Rate (2000-2015)

3.3.4 Fiscal Policies and Public Financial Management

(1) Resource Dependency: Fiscal Revenue, Export, and GDP

As mentioned above, the Mongolian economy relies heavily on natural resources; 21% of GDP in 2014 (max. 28% in 2006), 90% of exports in 2014, and regarding budget revenues, 30.8% in 2008 and 17.5% in 2014. Although the export dependency is especially notable, the destination of the mining export depends mostly on China (90%).



Source: the Study team prepared based on data from Fiscal Revenue Department, Ministry of Finance

Figure 3-35: Resource Dependency (2000-2015)

(2) Fiscal Discipline and Related Policies

In general, fiscal policies aim to maximize national revenues, and optimize and minimize expenditures. In Mongolia, the recent mega mining project development brought a windfall revenue, which seemed to make the fiscal management and the fiscal discipline weakened. In the meantime, commodity prices of natural resource began to decrease, and the country has suffered from a severe financial situation as a result of accumulated debt.

In terms of fiscal discipline, this section mentions related three laws and one implementation plan.

Thereafter, it explains about governmental policies for introducing foreign capital and repayment.

1) Fiscal Stability Law (FSL)

This law, which came into force in 2010, regulates the following three things: a) structural surplus in fiscal balance and definition of deficit, b) fiscal deficit ceiling at 2% of GDP, c) debt ceiling at 40% of GDP.

2) Budget Law (2011)

The government established the law to follow FSL and make fiscal discipline stricter. In doing so, firstly, the law defines the coverage of national budget, in particular, that of government guarantees. Government guarantees include contingent liabilities. Secondly, it requires the integration of off-budget items into the central budget. Especially, as being fully guaranteed by the government, DBM's external borrowing is required to be treated as a part of the national budget and to be brought into government expenditures. Finally, in addition to annual budget planning, the law emphasizes the necessity of medium-term fiscal strategy, and requires the provision of its framework in which investment plans are included.

3) Debt Management Law (2015)

The law which is subject to public debt defines in detail about repayment of debt. Additionally, it redefines public debt to exclude government guarantees, and authorizes the parliament to set their ceilings. As already mentioned, the parliament is currently arguing about the IMF's advice for integration of DBM's borrowing guaranteed by the government into the central budget.

4) Comprehensive Macroeconomic Adjustment Plan (CMAP)

The plan, which was also established under the current regime, aims to address the fiscal issues, by including short-term policy measures on the balance of payment, the integration of off-budget expenditures into the central budget, and long-term structural reforms. Nevertheless, this plan would be able to work with governmental commitment on annual budget and medium-term strategies.

5) Introducing foreign capital and repayment

Regarding foreign capital, it seemed to be a great achievement due to resource-rich country that the country borrowed 1.5 billion dollars at a stroke by issuing government bonds, including Chinggis bonds. On the other hand, there was a political pressure for the use of the resource revenue which has lead to weaken fiscal discipline. Furthermore, as commodity prices have decreased since then, the repayment of those bonds will impose a heavy burden on the fiscal situation, especially when those bonds mature.

Currently, Mongolia would consider further concessional loans from international donors as a policy for the introduction of foreign capital as the country faces the quite severe financial situation with twin deficits. As a result, the proportions for main donors drastically changed; Japan used to take the most shares (41%) of total lending, and China replaced by accounting for 68% in 2015. Furthermore, the government has fostered PPP for infrastructure projects so that private capital could lift the initial cost burden on the government.

(3) Issues Related to Fiscal Stabilization

1) Fiscal discipline

Since 2010, Mongolia enjoyed a resource boom in terms of expenditures as well as revenues, and as a consequence fiscal discipline was neglected. Although FSL established in 2010 and the Budget law followed in 2011, they are still not well complied with. As of November 2015, the government is working in accordance with IMF's advice, and there are some positive signs, such as the integration of DBM spending into the central budget and the considerable reduction on BOM's fiscal operations. It is worth noting to what extent the current regime expanded its effort.

2) Consistency and sustainability of policies

Every regime in Mongolia launches an economic plan, and the consistency of policies could be an issue. In addition, since laws and regulations related to economy are often established during terms of office as well, it could be difficult to maintain the sustainability and the consistency of policies. For example, the government of Prime Minister Altankhuyag, which came to power in 2012, established the Ministry of Economic Development that took over the responsibility from the Ministry of Finance to coordinate with international donors for development aids.

With respect of monetary policy, although expansionary policies had been adopted in spite of the economic recession, the policy interest rate was raised in January 2014. Finally, the fiscal tightening started in November 2014 when the government of Prime Minister Saikhanbileg took office.

3) Financial assistance

The debt issue is the most serious issue that the country faces in current years, especially, financing for repayment of Chinggis bonds. In doing so, the government requests for a policy loan as already mentioned. In general, IMF is, however, not involved in the arrangement of this kind of loan, and requesting countries are required to make the arrangement, with conditions on economic operations, based on IMF's surveys. The negotiation by the Mongolian government goes on.

(4) Public financial management: Management of resource revenues

Resource revenues in Mongolia consist of mainly royalty, dividend, and corporate income tax and other related taxes. As for the flows of revenues, 30% of royalty and taxes are brought to the general account as government budget, and the uses of those resource revenues are not specified. On the other hand, 70% of royalty and dividend are allocated into Human Development Fund. The explanation about the Fund is provided later.

With respect to resource revenues included into the national budget, royalty accounts for 58% on average in the last 7 years. Royalty to be paid by mining companies is, in accordance with the Mineral Law, calculated, based on annual sales volume. Furthermore, as benchmark price is monthly decided by the committee organized by related organizations, in the case that the market price is higher, the rate of royalty would be lowered and vice versa. However, in the case of coal, since benchmark price refers to the international long-term contract price and hence is influenced by China and Australia mainly. Although corporate income tax has generally the largest share among resource revenues, in Mongolia it rarely exceeds royalty due to the low income tax rate (10%).

Although the payment from Oyu Tolgoi LLC is the largest among mining companies, it is exempt from

corporate income tax and dividends at the moment because it bears the repayment of loan used for the initial investment. According to an executive member of the company, the time when it starts to pay income tax and dividends is not decided yet and depending on the market trend of commodities (copper and gold), it is expected to contribute even more to the Mongolian resource revenues once those payments commence.

(5) Improvement of governance (EITI)

In order to improve transparency and governance in the resource sector's financial management, especially, on the revenue side, Mongolia became a member of EITI in 2006, and was recognized as compliant country in 2010 through the implementation of its action plan. Since the first publication of EITI report in December 2007, the country has released the report annually, and currently the 9th report which includes 2014 is being prepared towards the publication in the end of 2015.

According to Mongolian EITI (MEITI), the activities of EITI have been playing a role as a deterrent to corrupt behaviors in the financial management of the Mongolian mining sector. While implementing countries are required to report information in accordance with EITI Standard, MEITI includes information, in order to improve transparency even more, which is not mandate into the EITI report. One is the terms of contracts concluded between companies and governments.

Nevertheless, MEITI has difficulties in its activities. Firstly, information about payment from companies tends not to match requirements; especially, many SMEs are reluctant to cooperate due to administrative burden of preparing information. Since MEITI assumes that SMEs are more likely to be involved in corrupt practices, it focuses more on information collection from them.

Secondly, on the government side, it is usually difficult to grasp resource revenues that the provincial governments receive. It seems because the revenues are not well managed within provincial governments, especially donations paid by companies directly to local communities. It is obvious that information of those revenues outside their controls is not transferred to the central government.

With respect of assessment of the governance within the resource sector, Mongolia received a RGI score of 51 in 2013, ranking 26th out of 58 countries¹⁰⁵. Among governance components used for scoring, the score of "Reporting Practices" is relatively low; RGI explains that it is because information disclosure of the mineral deposits to be licensed is insufficient. In addition, it seems to be the reason for the poor score because contracts are rarely released and environmental impact assessments are available only for on-going projects. As a component decreasing the country's score, state-owned companies are critically evaluated in terms of governance because financial reports are not published, although it was subject only to Erdenes MGL¹⁰⁶

The Table3-25 compares some governance indices about Mongolia before and after becoming an EITI member¹⁰⁷. Although WGI and CPI assess the governance of the nation as a whole, not focusing on the

¹⁰⁵ NRGI, <http://www.resourcegovernance.org/countries/eurasia/mongolia/overview>

¹⁰⁶ This assessment was made in 2013 and hence seems not to include Oyu Tolgoi

¹⁰⁷ Since WGI and CPI assess the governance of the nation as a whole, not focusing on the mining sector, it is hard to say that the scores are improved due to EITI activities.

mining sector, it seems that the country has eliminated corruption to some extent.

Table 3-25: Governance Indices of Mongolia

Index	Before EITI	Current Situation
Worldwide Governance Indicator	<u>2004</u> Score: -0.38 (Range:-2.5~2.5) Rank: 44.88 (max. 100)	<u>2014</u> Score: -0.47 (Range: -2.5~2.5) Rank: 38.46 (max. 100)
Corruption Perception Index	<u>2006</u> Score: 2.8 (max. 10) Rank: 99 (out of 163 countries)	<u>2014</u> Score: 39 (max. 100) Rank: 80 (out of 175 countries)
Resource Governance Index	N/A	<u>2013</u> Score: 51 (max. 100) Rank: 26 (out of 58 countries)

Source: the Study team prepared based on WGI¹⁰⁸, CPI¹⁰⁹, RGI¹¹⁰

(6) Management of expenditure (expenditure for development, off-budget expenditure, sovereign wealth fund)

Expenditure reduction

As external debt outstanding is currently expanding and huge government bonds mature in 2017, it is absolutely necessary in Mongolia to reduce the budget expenditures.

Although there are several factors to increase expenditures in current years, it is one of the biggest that DBM spending to social infrastructure development has substantially risen. While FSL set ceiling at 2% of GDP, the fiscal deficit reached 5% by including DBM spending (except for commercial spending) which used to be off-budget.

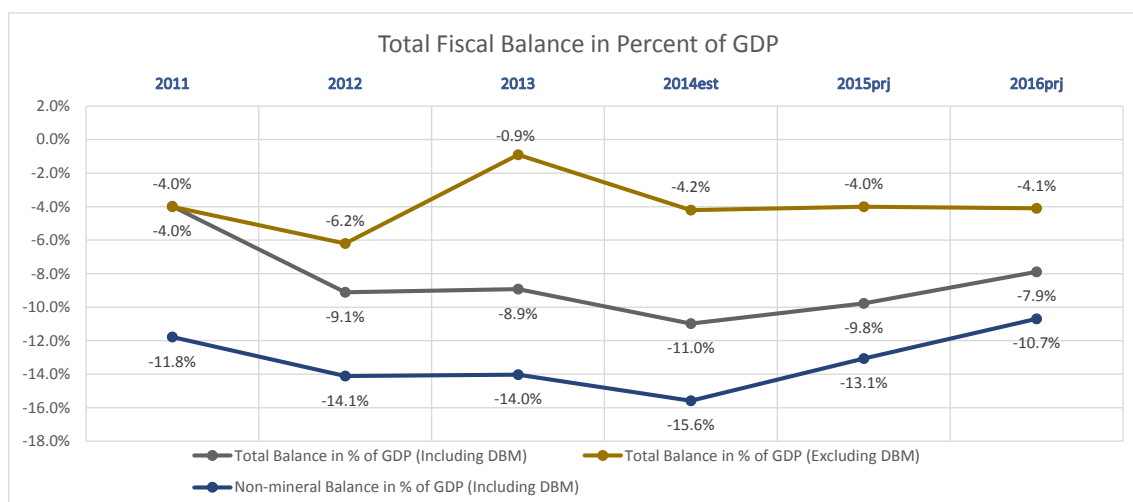
In the 2016 budget approved on 5th November 2015, the fiscal deficit is 3.4% of GDP as a result of reductions on both revenue and expenditure side. Furthermore, in a 2015 supplementary budget which was approved on 30th October, revenue was cut from 6.6 trillion MNT to 6.1 trillion MNT, and expenditure was also reduced from 7.8 trillion MNT to 7.2 trillion MNT. Nevertheless, the fiscal deficit rather increased by 0.1 trillion MNT.

Expenditure consists of current expenditure and capital expenditure, and in case that revenue falls, capital expenditure is subject to reduction first. Besides this classification, in order to reduce expenditure more efficiently, expenditure began to be managed in ministries and authorities since 2012, by categorizing into two groups: Economic Operating Expense and Program Budget.

¹⁰⁸ The World Bank (<http://info.worldbank.org/governance/wgi/index.aspx#home>)

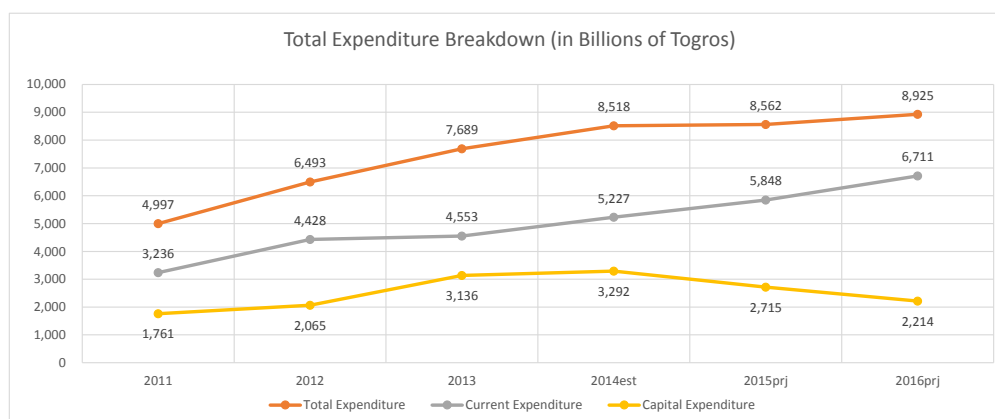
¹⁰⁹ Transparency International (<http://www.transparency.org/cpi2014>)

¹¹⁰ Resource Governance Institute (<http://www.resourcegovernance.org/countries/eurasia/mongolia/overview>)



Source: the Study team prepared based on the data from Ministry of Finance

Figure 3-36: Overall Fiscal Balance and its Ratio to GDP (2011-2016)



Source: the Study team prepared based on the data from Ministry of Finance

Figure 3-37: Compositions of Expenditure (2011-2016)

Sovereign Wealth Fund (SWF)

In 2007, Mongolian Development Fund (MDF) was established to spend resource revenues for the development of the country. The Fund, supported by windfall revenues of copper and coal and budget surplus, has been used for the child money program and buffering budget deficits, and storing petroleum and grain. In 2009, Human Development Fund (HDF) was then created by replacing MDF. With the revenues including 70% of mining royalties and dividends from state-owned companies, HDF is available for the child money program and social benefits, such as tuition support and health insurance.

These funds tend to be, however, used for political purpose in the past; in the elections of 2004 and 2008, redistributions of resource revenues through the Fund to citizens have been guaranteed. This seems to be one of the factors which caused the current severe fiscal situation in Mongolia.

Then, the necessity of fiscal discipline was advocated, and the Fiscal Stability Law went into effect in 2010. The law was designed to provide the limit of resource dependency on fiscal revenues and the method of setting up commodity prices on budget planning, and furthermore, established the Fiscal

Stability Fund (FSF). As source of revenues, margins above benchmark prices of core-commodities¹¹¹ are brought into FSF. Although the Fund has accumulated up to 400 billion MNT, it was spent (25%) for buffering the fiscal balance in 2014 for the first time, and ended up with 300 billion MNT at the moment. The following three items are defined as the conditions for the transfer of the Fund to the general account for fiscal stabilization.

1. The fiscal deficit is 4% of GDP or more
2. The market price of commodities is below benchmark prices
3. The prices of core-commodities is 20% less than expected prices set up for budgeting



Source: the Study team prepared based on Bank of Mongolia's Monthly Statistical Bulletin

Figure 3-38: Accumulation of FSF (2011-2015)

As a new fund replacing HDF, the bill concerning the Future Heritage Fund (FHF) was submitted to the parliament in June 2015. This new fund will be available to reserves for future generations, whereas HDF has been used for social benefits of the current generation. It is scheduled that 90% of the fund will be managed as assets in foreign currencies and the balance will be transferred to the general account. The human resource development program which has been funded by HDF will be managed within that 10% of FHF, and HDF is scheduled to close in 2017.

The source of revenues for FHF is 65% of mining royalties (after allocating to the Fiscal Stability Fund), 100% of dividends and 20% of excess revenues from mining taxes. As for the scale of the fund in the future, revenues is planned to be 2.1 trillion MNT per year until 2030, and annual revenue will decrease down to 0.5 trillion MNT until 2060 and end up with nothing in 2077. Accumulated amount of the fund is estimated to increase to 18 trillion MNT in 2030, 180 trillion MNT in 2060, and 560 trillion MNT in 2077¹¹².

¹¹¹ In the 2011 Budget Law, commodities taking a 3% of shares of budget revenues are designated as 'core-commodity': copper and coal. When annual budgets are approved in the parliament, Budget Law is established.

¹¹² These figures are equivalent to be 1.1 trillion JPY (18 trillion MNT), 11.1 trillion JPY (180 trillion MNT), and 34.6 trillion JPY (560 trillion MNT) based on the exchange rate: 16.61MNT/JPY, Bank of Mongolia Official Rate Nov 17, 2015

Table 3-26: The Scale of the Future Heritage Fund

	2030	2060	2077
Annual revenues (Tog Trillion)	2.1	0.5	0
Accumulated amount of the fund (Tog Trillion)	18	180	560
Transfer to the general account (Tog Trillion)	0.11	1.2	3.4

Source: the Study team prepared according the interview with Financial Asset Management Division, MOF

(7) Medium-term Fiscal Plan

An election for members of parliament takes place every four years in Mongolia and a new government starts accordingly and launches the long-term fiscal plan. Although the current regime announced the long-term plan, as the Mongolian economy has been quite unstable in the last four years, the large gap appeared between the reality and the preconditions on that plan. Therefore, this section outlines about IMF's and the current government's prospects of the economy.

Firstly, IMF projects growth rate of GDP for the period until 2020, and there are two kinds: one is the baseline scenario predicted based on the current situation, and the other is the adjustment scenario predicted with assumption of IMF's advice being adopted. In the comparison between two predictions, it is notable that mining exports will increase by 35% for the next five years in both predictions, and imports will increase by 32% in the adjustment and by 26% in the baseline (mining-related imports are predicted to increase by only 13% for both scenarios). In addition, for capital account, FDI is expected to recover considerably.

With respect of GDP growth, the real GDP growth rate is projected to be, on average in the coming five years, 5.0% in the baseline and 4.8%¹¹³ in the adjustment on the ground that the mining sector is expected to recover in 2019-2020, and meantime non-resource sector could make great contribution during the recession of the mining sector until then. These predictions show IMF's strong recommendation for structural reforms together with the growth.

In terms of fiscal balance, although the prediction is made up to 2016, the final year of the current regime, both kinds of predictions mentioned were launched in April 2015. According to these predictions, the fiscal deficit is expected to improve from 9.8% of GDP to 4.6% in 2015, and then from 7.8 of GDP to 2.7% in 2016. According to a 2015 budget amendment published in October 2015, expenditures is very close to the target in the adjustment, and it is based on the assumption that Mongolia would take the IMF advice. The 2016 budget approved in November 5th, 2015 states that both revenues and expenditures are decreased from the previous year. Furthermore, the fiscal deficit is 3.4% of GDP, which is 1.6% less than the deficit ceiling 5% set by FSL.

¹¹³ After the publication of the IMF IV report 2015, IMF decreased the real GDP growth rate of Mongolia within World Economic Outlook (2015.10) because of continuous downtrend of commodity prices and economic recession in China. The growth rate during the same 5 years is newly predicted to be 4.7 on average, and especially the rates in 2015 and 2016 were greatly decreased..

Table 3-27: Medium-term Fiscal Plan

		(million USD)					
Adjustment scenario	2015	2016	2017	2018	2019	2020	
real GDP growth (%)	2.9	4.2	3.9	6.5	6.6	9.3	
Trade balance	1,147	268	-303	-225	267	1,454	
Mining exports	4,615	4,385	3,984	4,313	5,087	6,258	
Imports	-4,008	-4,648	-4,794	-5,021	-5,302	-5,297	
mining related	-2,485	-2,743	-2,750	-2,804	-2,921	-2,807	
Capital account	266	1,993	2,354	2,466	2,286	1,757	
Direct investment	1,069	2,326	2,487	2,315	2,245	1,181	
Overall balance	-768	38	21	91	295	861	
On-budget plus DBM balance (%GDP)	-4.6	-2.7					
Base line	2015	2016	2017	2018	2019	2020	
real GDP growth (%)	4.4	4.2	3.8	6.2	6.4	9.2	
Trade balance	844	-9	-406	-372	117	1,338	
Mining exports	4,615	4,385	3,984	4,313	5,087	6,258	
Imports	-4,310	-4,924	-4,898	-5,167	-5,452	-5,413	
mining related	-2,485	-2,743	-2,750	-2,804	-2,921	-2,807	
Capital account	-23	2,008	597	2,760	2,601	2,100	
Direct investment	1,069	2,326	1,901	2,580	2,525	2,184	
Overall balance	-1,403	-260	-1,851	221	437	1,063	
On-budget plus DBM balance (%GDP)	-9.8	-7.8					

Source: The Study team prepared based on the IMF Article IV Consultation Staff Report (2015)

CHAPTER 4 ECONOMIC AND FISCAL POLICIES TO OVERCOME ISSUES CAUSED BY DEPENDENCY ON NATURAL RESOURCES

In this chapter, Study Team summarizes the economic and fiscal policies and public financial management to overcome above-mentioned issues in resource-rich countries (hereinafter referred to as “RRC”) by referring to actual cases in some countries. We introduce these cases as guidance for RRC to manage the issues caused by dependency on natural resources.

4.1 Economic Policies to Avoid Dutch Disease

Study Team explained Dutch Disease as an issue unique to RRC in Chapter 1 and 2. The history and current situation on Dutch Disease in three case-study countries are summarized in Table 4-1 (as of November 2015). Malaysia appears to be a successful case to avoid Dutch Disease.

Table 4-1: History and Current Situation on Dutch Disease in Three Countries

Countries	History	Current Situation (as of November 2015)
Malaysia	Resources prices were in slump in 1980s. After the Plaza Accord in 1985, the government established the capabilities of manufacturing industries by attracting foreign investments, and avoided Dutch Disease	In 2000s, exchange rate of Malaysian ringgit got higher. There was concern about Dutch Disease, but it is reduced at present.
Papua New Guinea	As PNG Kina had been pegged to USD until 1993, real exchange rate was kept high. Although PNG adopted floating exchange rate system, competitive export commodities are limited, other than by natural resources.	While Kina is being depreciated, this excess depreciation raises inflation. As consumable goods depend on imports and are expensive, it appears to be structural Dutch Disease. In order to prevent negative impact caused by foreign currency inflow, SWF will be established in 2016.
Mongolia	While resource export accounts for 35% in 2000, the exports increase to 80% due to resource boom in 2010. One time the Mongolian tugrik appreciated, but it has declined since 2000.	Mongolian tugrik is now depreciated against USD from 1,097 tugrik/USD in 2000 to 1,994 tugrik/USD in September 2015. Although Dutch Disease has not appeared in Mongolia yet, it is necessary to take prevention measures considering long-term resource development.

Source: Prepared by Study Team

In this section, we summarize economic policies to avoid Dutch Disease in three sections: non-resource industry promotion in section 4.1.1, resource-related industry promotion in section 4.1.2, and better target setting of economic growth rate in section 4.1.3 by referring to experiences in case-study countries. These economic policies are expected to be countermeasures against the slowdown of resource sector caused by decreasing resource price at present (as of November 2015).

The box article below describes effect of currency policies to Dutch Disease which is usually under control of central banks in each country, based on literature survey.

Dutch Disease and Currency Policy

Foreign Exchange Policy

Under the two different regimes; fixed exchange and variable (float) exchange, the effects of resource revenue inflow are being summarized as the following¹¹⁴.

1. Under the fixed exchange regime, the in-flowed foreign exchange will be converted by the central bank to the domestic currency, which increases domestic money supply. This makes inflation pressure to domestic prices, making the real exchange rate (RER) appreciated, even under the same nominal exchange rate.
2. Under the variable exchange rate regime, foreign currency inflow increases amount of foreign currency in balance with domestic currency, which makes nominal exchange rate appreciated as well as RER.

As described above, an appreciation of RER is inevitable regardless of exchange rate regime, with the difference in domestic price increase or exchange rate appreciation. The IMF document¹¹⁵ suggests a depreciation of currency, under the fixed exchange rate regime, will temporarily assist to recover export competitiveness, but this policy is inadequate to restore sunset industry's growth.

Foreign Currency Reserve Policy

Regarding the policy measures to curtail foreign exchange inflow into domestic market, the followings are being discussed¹¹⁶.

1. Savings in foreign currency account such as Sovereign Wealth Fund: There will be no Dutch Disease effect.
2. The central banks to accumulate the foreign exchange, as a part of its reserves: While there will be no effect on the exchange rate, an increase in domestic currency supply will induce inflation.

Furthermore, there is a case in PNG that the central bank allows resource developing companies to open their foreign exchange account off-shore to receive their revenue, to control influx of foreign exchange into the domestic market. However, this measure poses a risk for the monetary authority not able to monitor and control the foreign exchange flows.

4.1.1 Non-resource Industry Promotion

As mentioned in chapter 2, it is empirically demonstrated that the promotion of non-resource industries such as agriculture and manufacturing with comparative advantages is valid for RRC to avoid Dutch Disease¹¹⁷. Tax revenues from non-resource sector is also expected to be alternative fiscal revenue in the slowdown of resource prices. This section shows economic policies on non-resource industry promotion.

¹¹⁴ "Macro-Development Economics" by Sayuri Shirai (in Japanese)

¹¹⁵ IMF Working Paper on "When and Why Worry about Real Exchange Rate Appreciation", December 2010

¹¹⁶ IMF "Macroeconomic Policy Framework for RRDC", 2012

¹¹⁷ Promotion of agriculture, especially rice, through infrastructure investments and subsidies in Indonesia, diversification to agroprocessing (such as rubber, palm oil and lumber processing) and manufacturing in Malaysia, and diversification to fishery (salmon farming) and agro processing (wine) are successful case to avoid Dutch Disease. For other case examples, please refer to Lenor (2011).

(1) Preparation of Non-resource Industry Promotion Strategy

Outline of Policy

As the first step to promote non-resource industries, it is critical to prepare a strategy on which industries are to be promoted and how to promote these industries. It is recommended to identify industries with comparative advantages among non-resource sectors such as agriculture, forestry, fishery, manufacturing and services, and to conduct selective allocation of resources, namely, capital and human resources, and privilege measures. (For detailed measures, please refer to items (2) and (3) below.)

Case Example: Industrial Strategy to Get Out of Resource Dependency by Malaysian Government

Malaysian economy had been dependent on plantation agriculture, such as raw rubber and crude palm oil, and mineral resources since colonial era. After 1980s, the government had included the policies to get out of resource dependency consistently, and has implemented the measures to diversify to manufacturing including rubber processing and service industries. The 11th National Development Plan released in May 2015 continues this policy, and includes the promotion of knowledge-intensive service and manufacturing industries with high productivity and high added-value, such as healthcare and tourism¹¹⁸.

(2) Introduction of Investment Incentive and Infrastructure Development for Attracting Foreign Investments

Outline of Policy

Attraction of Foreign Investments is one of valid ways to promote underdeveloped or developing non-resource industries including manufacturing and service industries in RRC. The following measures are valid considering the experiences in Asian countries: tax incentive measures such as tax reduction and holidays in certain period, establishment of Free Trade Zone (hereinafter referred to as “FTZ”) and Special Economic Zone in which provide trade transaction simplification and customs, and infrastructure development.

Case Example: Attracting Foreign Investments by Malaysian Government

Malaysian economy was faced with downturn of commodity price from the middle of 1980s, and changing environment of exchange rate due to the Plaza Accord in 1985. Malaysian government established the manufacturing industry, mainly electric and electronics industry, by attracting foreign investments through tax incentives and FTZ. For example, the government achieved to attract Japanese companies to Penang Island by its initiative. In this process, resource revenue significantly contributed to financial resources for infrastructure development¹¹⁹.

(3) Investments and Loans by Governmental Development Financial Institution and Fund

Outline of Policy

As it is of concern that the private capital concentrates on resource sector due to Dutch Disease in RRC, it is necessary to allocate capital on non-resource sector by the government’s initiative. In some RRCs including case-study countries, these governments promote non-resource industries through establishing

¹¹⁸ Interview to Economic Planning Unit (hereinafter referred to as “EPU”) of Malaysian government

¹¹⁹ Interview to EPU of Malaysian government

governmental development financial institutions/funds and providing investments and loans.

Case Example 1: Investments by Khazanah Nasional Berhad in Malaysia

Khazanah Nasional Berhad (hereinafter referred to as “Khazanah”), established as a public limited company by Malaysian government in 1993, invests in equities of various companies covering infrastructure (such as highway), public services, communication, biochemical, healthcare, real estate, media and airline. While investing 41% of total assets to foreign profitable projects, Khazanah invests the remaining 59% to domestic ones. Khazanah supplements the government’s industrial policy by investing to politically important industries/companies such as Malaysian Airline facing a business crisis, Proton for the production of domestic cars, and public hospitals.

Case Example 2: Investments and Loans by Mongolian Development Bank and Two-Step Loan for Capital Investment of Small and Medium Enterprises

Mongolian Development Bank (hereinafter referred to as DBM) set 30% ceiling of total investment and loans to a specific sector. DBM promotes non-mineral sectors by allocating 47% of investment and loan portfolio to manufacturing and 35% to other industries including infrastructure, real estate, healthcare and education. Ministry of Finance of Mongolia provides Two-Step Loan to Small and medium enterprises (hereinafter referred to as “SMEs”) by using Yen Loan in order to develop SME development in Mongolia. In this scheme, the long-term loans with low interest rate are provided to SMEs, mainly manufacturing companies, for their capital investment through commercial banks.

4.1.2 Resource-related Industry Promotion

Resource-related industries also contribute to avoiding Dutch Disease by export increase and job creation through diversification/upgrade and value-addition of resource downstream industries (such as petrochemical industries) and surrounding services industries. Although petrochemical products have a correlation with oil price, the price of petrochemical products does not necessarily link to resource price because of their chemical application (such as plastic products) and no speculative trading like oil. Therefore, it is expected to underpin domestic industries in RRCs especially in the slowdown of resource price like today (as of November 2015). This section shows economic policies to promote resource-related industries.

(1) Preparation of Plan and Vision to Promote Resource-related Industries

Outline of Policy

Natural resources have wide range of applications including exporting raw materials, processing/treatment and making use of them as feedstocks to produce value-added products. It is possible to establish value chain domestically by promoting the resource downstream industries. It should be noted that the range of domestic value chain is determined in accordance with various factors including the development stage of the country, policy objectives of each time, commercial point of view, strategic decisions of investors¹²⁰. Therefore, it is necessary to prepare plan and vision to promote

¹²⁰ For example of gas-producing countries, exportation of natural gas through LNG and pipeline is the most efficient for foreign currency acquisition. On the other hand, promotion of gas chemical industry is suitable for the policy to create domestic value

resource-related industries. The range of domestic value chain needs to be examined according to the types of resources because oil and gas downstream industries are expected to create value addition while only smelting may not be beneficial in mineral downstream industries.

Case Example 1: Resource Downstream Industry Promotion Plan by Malaysian Government

While Malaysia had been exporting crude oil at the beginning of development of energy resources, it has shifted toward value-added petroleum products since 1990s. In 2014, petroleum products accounted for 7.9% of total export while crude oil accounted for 4.3%. In order to accelerate this policy, Malaysian government and Petronas plans to construct integrated oil and gas complex, namely, oil refining and petrochemical plants, in southern part of Johor province based on Economic Transformation Program started in 2010.

Case Example 2: Resource Downstream Industry Promotion Plan by Papua New Guinea Government

PNG government plans to promote agriculture and resource-related manufacturing industries with comparative advantages according to Development Strategy Plan 2010-2030. The government intends to establish domestic value chain by promoting highly value-added gas chemical industries in addition to the exportation of LNG. As of November 2015, state-owned petroleum company and Japanese trading company have started the feasibility study of methanol project in PNG¹²¹.

(2) Establishment of State-owned Resource Company as Investor

Outline of Policy

In order to promote resource-related sectors, it is apparently efficient that the resource developers in upstream strategically allocate natural resources (as feedstock) and resource revenue to downstream industries. Petronas in Malaysia is successful case of establishment of state-owned resource company as investor for the promotion of resource-related industries. Such state-owned company decides how to utilize their natural resources (such as export or feedstock for downstream), and invest resource revenue in the promotion of downstream industries. State-owned investor, like above-mentioned Khazanah in Malaysia, is expected to provide capital to publicly important resource-related projects. Petronas plays a role as investor for oil and gas related sectors as well as a supervisor of oil and gas reserve in Malaysia.

Case Example: Petronas, Malaysian State-owned Resource Company

Petronas is a giant business group with 91 wholly-owned subsidiaries, 39 equity-participating companies, and 20 corporate companies. Petronas utilizes resource revenue for investment to related-industries covering exploration, refining, gas distribution, pipeline, petrochemistry, real estate, trade, IT, venture capital, foreign businesses and so forth. In 2014, Petronas also announced its final investment decision for the development of the Pengerang Integrated Complex comprising above-mentioned Refinery and Petrochemical Integrated Development in the southern part of Johor province¹²².

addition and job.

¹²¹ The article of Nikkei (Japanese newspaper) on October 14th, 2015

¹²² Economic Transformation Program's website

(http://etp.pemandu.gov.my/Oil,_Gas_and_Energy-@-Oil,_Gas_and_Energy_-_EPP_13-;_Increase_Petrochemical_Outputs.aspx)

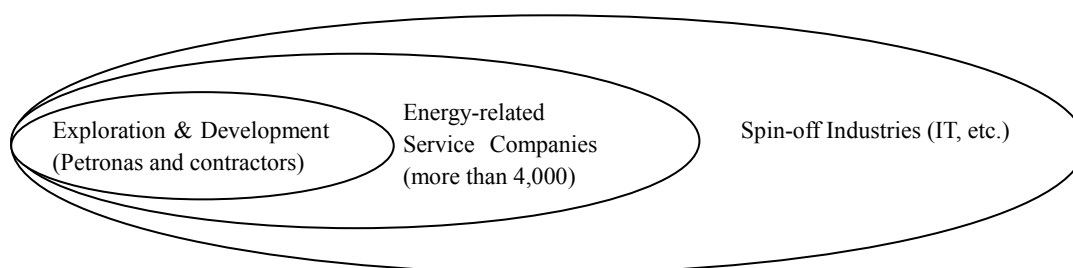
(3) Human Resource Development and Job Creation in Resource-related Sectors

Outline of Policy

Malaysia is a typical case of expanding its oil and gas business toward high value-added and energy-related service industries even in foreign countries. It is necessary to establish human resource development system to transfer resource-related technology and know-how and train national human resource by the initiative of the government.

Case Example: Human Resource Development for Resource-related Industries in Malaysia

In Malaysia, Petronas contributes to education for Malaysia people and technology development by establishing the university (UTP, Universiti Teknologi PETRONAS) and the research center. Malaysian technicians who have technology and know-how of oil and gas related industries work for Petronas's foreign projects as managers. This is a kind of high value-added service exports. As shown in the Figure below, Petronas's oil and gas exploration and development business is a core to expand to more than 4,000 energy-related service companies, further expanding to spin-off industries such as IT. This ripple effect significantly contributes to job creation in Malaysia¹²³.



Source: Prepared by Study Team based on the presentation by Petronas

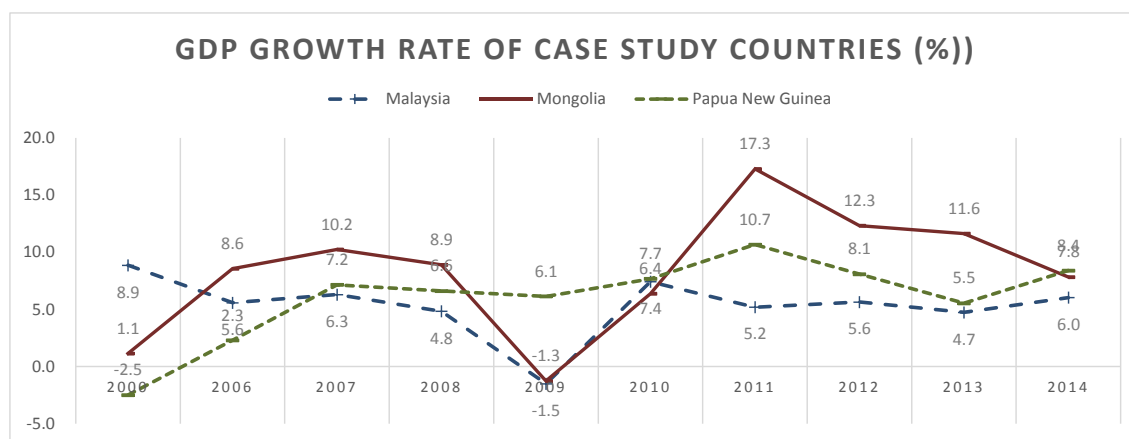
Figure 4-1: Ripple Effect to Resource-related Sectors

4.1.3 Long-term Resource Development Policy and Strategy

(1) Appropriate Economic Growth Rate

The graph below shows trend of economic growth rate of three countries visited during the case study. It indicates that growth rate of Mongolia (solid line) recorded the most significant up and down movement. In the case of Mongolia, its resource dependency in export was only 35% in 2000, but along with resource boom, its economy recorded around 10% growth in later years in 2000s. Although there was a temporary drop in 2009, its growth sharply increased to over 17% in 2011, affected by investment in Oyu Torgoi Copper Mining Development. In 2014, Mongolia's share of resource export is 90%. In comparison to Mongolia, Malaysia's economic dependence on resource is comparatively low, and the impact by resource boom seems to be also limited.

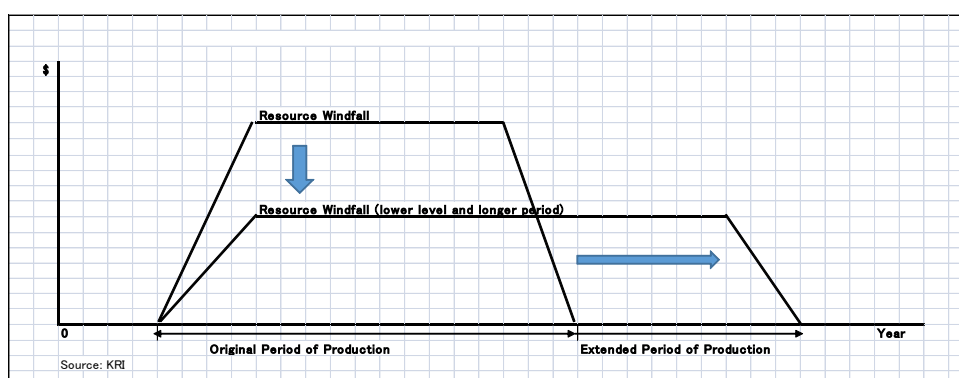
¹²³ Interview to Petronas



Source: JICA Study Team based on The World Bank data

Figure 4-2: Trend of GDP Growth Rate in Case Study Countries

Resource development brings a temporary boom by increased resource revenue, but it also generates negative impact to the economy such as domestic currency appreciation and inflation. As a counter measure, if the pace of resource development is controlled to be slower, the impact to the economy could be at modest level, at the same time be more sustainable. In the case of Norway, the resource development strategy to control development pace for the future generation is considered, and there are cases in developed resourc-rich countries to restrain underground resources exploitation for the purpose of environment protection. On the other hand, resource development projects always seek higher efficiency to maximize their profit, and the project feasibility is affected by resource price fluctuation and limited durability of the facility if the production period is to be prolonged. For this issue, resource-rich countries have the possibility to set up a long term strategy with priority setting for their resources underground, with a view to control the development speed at moderate level. The figure below is a concept for resource development speed control.



Source: JICA Study Team

Figure 4-3: Concept of Resource Development Speed Control

(2) Resource development companies (resource majors) and setting development conditions
In order to average the collection of unstable mining taxes, especially in the case of large-scale developments, leading mining countries sometimes require investments to be made at the development

stage to the socio-economy outside of mine development. Conditions are set among companies and central and local governments for each project before contracts are signed.

In the case of the Oyu Tolgoi copper mine in Mongolia, the Mongolian government, as a 34% shareholder, receives dividends, royalties, corporate taxes, and value-added taxes although dividends and corporate taxes have not begun to be paid. In addition, the investor, which is a major foreign company (Rio Tinto), is signing a development contract which gives it obligations regarding community development, which include local infrastructure development, the environment, and securing employment, among other things. For reference, let's look at examples from two resource countries in South America: Peru and Chile.

In Peru, where resource development has been proceeding since the 1990s due to the introduction of foreign investment and privatization, in addition to the usual mining tax system (value-added tax, corporate tax, royalties, special mining taxes, special mining levies, concession taxes, etc.), investing companies are also required to contribute to public projects such as local infrastructure training from the perspective of their "social responsibility for sustainable development which gives consideration to the environment". This system was established by Supreme Decree N° 059-96-PCM in 1996¹²⁴.

In bidding for the Michiquillay deposit in 2006, which was Peru's largest-scale proposal for privatizing copper development, the South African non-ferrous major Anglo American won with a bid of US\$ 403 million. As part of its investment obligations, Anglo American would contribute \$1 million to a community development fund, and devote another \$215 million (about half of the amount of its bid) to a Private Investment Promotion Fund for social and economic development in areas that would be affected by the project.

In addition, to promote regional development, all mining royalties were to be given to local governments. Furthermore, in order to promote the effective return of corporate taxes paid to the central government to local areas, half of the income tax from mining activities (tax rate, 30%) would be given to the local government that owned the mine to contribute to poverty alleviation and community development, as stipulated by the Canon Minero that was established in 2001¹²⁵. Moreover, at the exploration stage as well, investors are required to bear costs for infrastructure development such as local roads, provide support for health and education, and give consideration to the environment based on discussions with local governments where there is potential for ore resources.

Also, as a system for taxing windfall profits during times of exceptionally high prices, there is a special progressive mining tax (windfall mining profits tax) that has been implemented by both Chile and Peru since 2010 when metal prices were on their way to peaking.

4.2 Fiscal Policy

4.2.1 Expansion of Resources related Revenues

IMF recommends fiscal anchors according to resources reserve horizon and capital accumulation¹²⁶. This

¹²⁴ http://www.investinperu.pe/RepositorioAPS/1/0/arc/SD_059_96/D%20S%20%2059-96-PCM.pdf

¹²⁵ http://www.mincetur.gob.pe/TURISMO/Productos_turisticos/CANON_MINERO.pdf

¹²⁶ Fiscal Frameworks for Resource Rich Developing Countries May 16, 2012

Study focuses on RRCs with fiscal dependency of more than 25% and reserve horizon of more than 35 years so that the Study selected Malaysia, PNG and Mongolia¹²⁷ as the case study countries. Nevertheless it is observed that fiscal dependency in the case study countries tends to decrease owing to price decrease of resources in the latter half of 2013 onwards. Those countries need to increase tax revenues in compensation for decrease of resources related revenues. Fiscal anchors applied to a single year might not always be appropriate for fiscal policy of the countries. IMF's policy advice continues to be core for fiscal policy of RRCs, but lessons learnt from the Study will be properly reviewed. This section deals with securing of resources related revenues, expansion of non-resources related revenues and public debt management under fiscal discipline in the middle-term. The last item implies that fiscal anchor would be managed in the framework of the mid-term public debt management.

(1) Introduction of Resource Super Profits Tax/Progressive Rate of Royalties

Mining/energy development companies make various payments to the governments of RRCs. They are called resource revenues in general, consisting of license fees for exploration /development, royalty, corporate income tax, dividend, and export tax. Resource revenues except license fees are usually transferred to a treasury account and budgeted as part of fiscal revenue. Financial authority administers corporate income tax, dividends and export tax while royalty rate and its payment method are usually under management of mining/energy development agencies. Royalties are different among RRCs in terms of rate, payment method and allotment to recipients (central government, local government, residents in project area) according to kinds of resources and legislation of RRCs. Royalties are generally expensed to render benefits to residents people where mining/energy development projects are implemented. In this end, royalty is interpreted as the sort of tax fulfilling specific purpose.

Resource Super Profits Tax (RSPT) originated in Australia was introduced to fulfill the purpose of royalty, that is, to render benefits to RRCs or residents in project areas. RSPT charged on operating profits earned by mining/energy development companies is levied prior to corporate income tax which is charged on net income. RSPT is observed in the case study countries, i.e. Windfall Tax (tax rate of 68% was charged on operating profit of mining companies when market prices of copper/gold soared in 2006, but abolished owing to rejection of foreign mining companies and underreporting of income by small/medium sized mining companies) in Mongolia, and Additional Profit Tax (Additional Profit Tax proposed by Tax Committee has been suspended) in PNG. RSPT gives tax payer bad image of double taxation of corporate income tax. Royalty is charged on gross sales (FOB price) in case study countries. The rate of royalty is usually in the range of 5-10%. Progressive royalty with rate of 15% was introduced in Mongolia when copper price soared in 2008, but currently suspended. RSPT and progressive royalty turned out to be finally rejected or suspended in the case study countries since they were introduced by the government in a haphazard way without ample discussion between the government and taxpayers (mining/energy development companies).

RSPT introduced in Australia faced strong rejection from big mining companies. The following article

¹²⁷ Fiscal dependency ratios of RRCs in the above IMF's reference are calculated as average ratio between 2006 and 2010.

shows how Mineral Resource Rent Tax was introduced in place of rejected RSPT¹²⁸.

RSPT and Mineral Resource Rent Tax(MRRT) in Australia

The Labor Party Administration established in December 2007 set up the Tax Commission in order to cope with severe fiscal circumstance and prepared the Henry Report named after Vice Minister of Finance. Based on the Report, the federal government made public RSPT in which tax rate of 40% is charged on operating profit earned by mining companies. The reason for introduction of RSPT was to compensate for reduction of corporate income tax rate from 30% to 25% so that RSPT was scheduled to be applied to all mining companies. Nevertheless the federal government had to abandon RSPT due to strong rejection of it from mining companies.

The federal government then proposed Mineral Resource Rent Tax (MRRT) in place of RSPT. The contents of MRRT are: i) to lower tax rate from 40% to 30%, ii) to permit extraction allowance of 25%, as a result, an effective rate ($22.5\% = 30\% \times 75\%$) of MRRT, iii) to target mining companies extracting iron ore and coal, iv) to target big mining companies, and v) to be able to exempt royalty paid to state governments. Reduced tax rate on operating profits makes MRRT appear to be more attractive than RSPT. The proposal of MRRT was accepted by the target companies. Nonetheless MRRT proved to be not able to compensate for reduction of corporate income tax. MRRT is criticized in the House of Representatives.

Introduction of RSPT forces mining companies to pay the double taxes of RSPT and corporate income tax. The clear reasons for rejection of RSPT are attributed to: i) taxable payment turns out to be more than three times as large as corporate income tax only, and ii) RSPT with its purpose of compensating for reduction of corporate income tax is the unfair taxation charged on mining companies only.

In view of the term “super profits”, RSPT should be imposed on net income after income tax rather than operating profits since super profits implies that tax payer earns profits more than net income. However it is difficult to prove super profits of more than net income. In this sense, if RRCs introduce a super profits tax taking into account lessons learnt from the Australian case, the following approaches are conceivable.

- In the first place, RRCs should make clear use of super profits tax. Super profits tax should not be incorporated into fiscal revenue but a special account financial authority administers.
- Net income after income tax is usually appropriated for saving of profits, dividends and directors’ remuneration. Discussion and consultation about use of super profits should be necessary between the government and tax payers. The government needs agreement about use of super profits from tax payers.
- A super profits tax should not be imposed on net income after income tax with a certain rate, but paid on taxable amount needed for its use.
- The government is requested to report expenditure of super profits tax.

¹²⁸ RSPT and Australian Mining, 2011 Yamanaka Otemon University

In view of primary purpose of super profits tax, it should be returned to resident people in project areas. Negative environment impact brought about by closure of Ok Tedi Mine is beyond control of the PNG government without legislation of trust/contract for mine closure. Taking into account lessons from Ok Tedi Mine in PNG, a super profits tax could be appropriated for monitoring and countermeasure against mining pollution.

(2) Enhancing negotiating capacity with foreign resource development companies

Up to now, resource countries that are lacking domestic capital and technologies have been promoting mine development by luring investment capital from foreign countries through investment incentives such as preferential tax policies. For example, the Foreign Investment Law implemented by Chile in 1976 attracted much foreign investment to Chile through favorable conditions for investors, but because of tax evasion through accelerated depreciation and profits that were sent disguised as interest payments (tax on interest payments was 4%, tax on profits was 35%), this was a time when almost no taxes were collected from mining companies.

However, under the resource development boom situation that was caused by recent tightening of supply and demand that began in the latter 2000s decade, resource-rich countries began to have an advantageous situation, and they began to consider ways to increase revenues by, for example, abolishing foreign investment incentives and introducing special mining taxes (progressive taxation).

Such ad hoc changes to mining policy and tax systems, which had provided incentives during recessions (unfavorable for tax collection) and special tax levies during boom times, created undesirable conditions for resource development, which requires long lead times until development as well as a long time to recover investment. For resource companies, “consistency of mining policy” is a very important factor for the investment climate. Governments need to think of this as being linked to stable sources of revenue.

What is suggested by the discussion of these examples is that it is important to formulate policies and systems for resource development from a global perspective that is based on a longer-term perspective and on the experiences of other countries. It is also considered important to strengthen the ability to negotiate with majors and other resource development companies in an internationally reliable institutional environment.

4.2.2 How to Increase Non-Resource Fiscal Revenue

(1) Expansion of Tax Base under the Current Tax System

In order to increase non-resource fiscal revenue, the effective approach is to increase tax base of general tax collection already in practice¹²⁹. IMF document¹³⁰ provides empirical evidence of four major tax resources, personal income tax (PIT), corporate income tax (CIT), goods and service tax (GST¹³¹) and trade tax (TT), for comparison between resource and non-resource countries. (see Figure below)

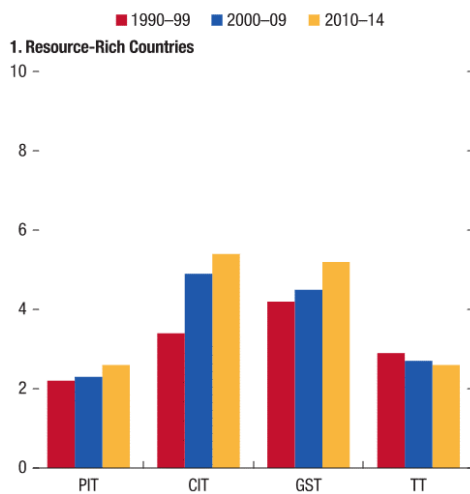
¹²⁹ “Fiscal Monitor: The Commodities Roller Coaster, A Fiscal Framework for Uncertain Times”, IMF, October 2015

¹³⁰ “Fiscal Monitor” by IMF (2015)

¹³¹ Same as consumption tax in Japan

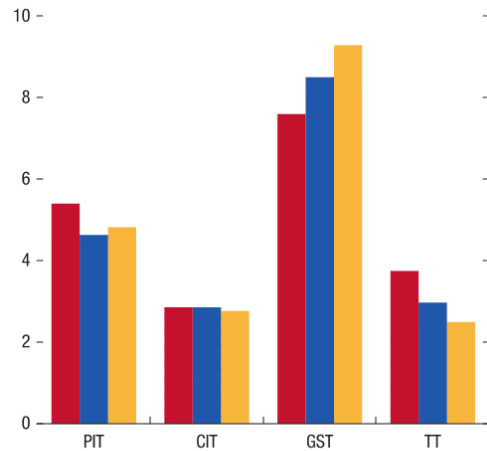
Figure 1.21. Revenue Shares from Taxation in Resource-Rich Countries, 1990–2014
(Percent of 2015 GDP)

Resource-rich countries have lower revenue shares from personal income tax and goods and services tax.



Source: IMF (2015)¹³² (Page 20, Fig 1.21)

2. Non-Resource-Rich Countries



Source: IMF staff estimates.

Note: Personal income taxes (PIT), corporate income taxes (CIT), goods and services taxes (GST), and trade taxes (TT) as a share of GDP for resource-rich and non-resource-rich countries.

Figure 4-4: Comparison of Resource and Non-resource Countries for Tax Source

According to this comparison, non-resource-rich countries (right side) have generally higher non resource tax ratio to GDP, compared with resource-rich countries (left side), especially for personal income tax (PIT) and goods and service tax (GST). On the other hand, the corporate income tax (CIT) is higher in resource-rich countries, reflecting tax revenue from resource development companies recording higher share after the resource boom in 2000. PIT and GST are tax system with wide tax base, collected from wide range of tax payers, so that expanding coverage of tax payers is a key to increase tax revenue. In addition, these tax systems have tendency to have increased revenue along with economic growth, and heavier burden share by higher income group rather than poor population. Therefore, widening coverage of PIT and GST is considered to be a pro-poor measure for increasing non-resource fiscal revenues in resource-rich countries.

Among the case study countries, Mongolia is making efforts to enhance tax base by increasing capture ratio of the value-added tax (VAT), as described in the box below. This case could be a good reference for other countries in need for widening tax collection base.

Enhancing Non-resource Fiscal Revenue in Mongolia

Mongolian government will start the following four measures in 2016 budget, to increase non-resource tax revenue.

- 1) Implementation of Economic Transparency Law which makes companies' financial report to be more transparent, to enhance capturing corporations' profit for income tax.
- 2) In order to increase coverage of VAT (10%), consumer reporting system with refund (2%) is to be started from January 2016. This refund system encourages consumers to voluntarily report about

¹³² "Fiscal Monitor" by IMF (2015)

<p>business entity they have paid VAT.</p> <p>3) By implementing Meat Program to promote export of beef and mutton meat to China and Russia.</p> <p>4) To ease fiscal burden by selling state owned enterprises (SOE) to the private sector.</p> <p>Source: JICA Study Team's interview to Fiscal Revenue Division, Ministry of Finance</p>

(2) Introduction of GST¹³³ or VAT

According to the IMF data cited in the preceding section, the ratio of GST to GDP, in the non-resource-rich countries, is more than 8% which is higher than PIT, CIT and TT. It is considered to be effective for increasing non-resource revenue by introduce and thorough implementation of GST (or VAT) by widening tax collection base.

The table below is an international comparison of GST (VAT), with categorization by resource and non-resource countries. GST is a tax system started to be applied first in Europe, e.g., 1954 in France and 1973 in UK. In USA, the sales tax is charged by each State Government for the range of 0% to 7%, but not by federal government. There is a general tendency that the rate is higher in developed countries, and there is no GST tax system applied in Middle East oil producing countries including Saudi Arabia, Qatar and Kuwait.

Table 4-2: International Comparison of GST (VAT or CT) Rate

	Country	Tax Rate	Food Rate	Name		Country	Tax Rate	Food Rate	Name
Resource-rich Countries	Norway	24	12	MOV	Non Resource-rich Countries	Germany	19	7	MwSt
	Canada	5	0	GST		France	20	5.5	TVA
	Australia	10	0-10	GST		UK	20	0	VAT
	Saudi Arabia	0	0			Thailand	7	7	VAT
	Malaysia	6	6	GST		Indonesia	10	10	PPN
	PNG	10	10	GST		Singapore	7	7	GST
	Mongolia	10	10	VAT		South Korea	10	10	VAT
	Russia	18	10	NDS		Japan	8	8	CS

Source: JICA Study Team based on North Sapporo Custom Office (Consumption Tax in the World, in Japanese) and reference to each country

Among those countries in the table above, the share of GST in the total fiscal revenue is highest, 47%, in France, 34% in Germany and 24% in UK. In the case of Malaysia, GST was newly started from April 2015, charged by 6%, and its share is projected to be 17.3%, higher than resource revenue, 12.6%, in the 2016 budget.

4.2.3 Fiscal Discipline and Public Debt Management

Public debt (debt outstanding) of RRCs is reported in Debt Sustainability Analysis (DSA) of IMF's Article IV Consultation Report. Table 4-3 shows public debt and contributions (factors) to change of

¹³³ Goods and Service Tax (GST), value added tax (VAT), consumption tax (CT) in Japan and sales tax (ST) in USA are same kinds of tax system.

public debt expressed in percent of GDP (2012 and 2013) in case study countries. Public debt in percent of GDP is one of the major indicators so that financial authority regularly sets up its ceiling in the mid-term in consultation with IMF. Financial authority controls contributions to public debt in order for the public debt-GDP ratio not to be more than the target ceiling. Fiscal deficit is the largest contribution to change of public debt. Real interest affects debt repayment cost while real economic growth does denominator of the public debt-GDP ratio. Change in real exchange rate influences repayment cost of external debt (RRCs having high share of external debt in public debt particularly). Contingent liability increases debt of central government in case government corporations go into default. Change in government financial assets affects liability cost of them in case they are purchased by public debt.

Table 4-3: Public Debt and Contributions to Change in Public Debt in Percent of GDP

Unit: %

	Malaysia		PNG		Mongolia	
	2012	2013	2012	2013	2012	2013
Public debt	53.3	54.8	26.7	34.0	51.3	67.3
External debt	8.9	8.8	7.3	8.1	43.7	50.1
Factors to change in public debt	1.7	1.5	3.8	7.3	18.6	16.0
Fiscal deficit	3.1	2.2	2.1	8.6	8.2	6.2
Real interest	1.7	2.1	0.0	-0.3	-0.3	1.2
Real GDP growth	-2.7	-2.4	-1.7	-1.4	-3.6	-5.4
Real exchange rate	-0.1	0.1	-1/3	0.0	-2.2	7.7
Contingent liability	-0.6	-0.3	0.0	0.0	0.0	0.0
Financial assets	0.3	-0.2	4.8	0.4	16.5	6.2

Source: Prepared by Study Team based on IMF Article IV Consultation Report
Remark: (-) indicates reduction of public debt.

Public debt management in case study countries is summarized below.

Malaysia: Fiscal strategy in transition period

Public debt in percent of GDP was 44.4% on an average in 2000s and increased up to 54% in 2012~2013. The public-GDP ratio nearly reached at the upper limit of 55% which the federal government sets. Under such circumstance, the federal government plans achievement of primary balance until the year of 2020. However the federal government faces the difficult situations. One is the decreasing trend of fiscal dependency (the ratio of fiscal revenue accounted for by resource revenue is projected to decrease to 15% in 2020). The other is increase of interest payments of deficit-covering government bonds due to tight monetary policy in 2012 onwards. Such bonds are largely purchased by foreign investors so that change in external circumstances suddenly make investors sell bonds, resulting in increase of redemption costs of bonds and outflow of foreign money.

Malaysia aims to become an advanced economy by the year of 2020 according to the country's Vision. Public debt management is the primary condition for entry into the advanced economy. In order to achieve primary balance, the federal government makes the mid-term fiscal strategy¹³⁴ and puts emphasis

¹³⁴ IMF Article IV Consultation Report 2014

on expansion of goods & services tax (GST) and individual income tax on fiscal revenue side, and reduction of subsidy for foods (rice, wheat, cooking oil) following fuel subsidy, cut of personnel expenses of government officials and efficiency of development expenditure on fiscal expenditure side.

PNG: Mid-term fiscal plan

The advantage of the mid-term fiscal plan (4-5 years) is that fiscal deficit on a single year basis can be flexibly managed under the mid-term target ceiling of public debt to GDP ratio. In short, fiscal expenditure can be adjusted according to change of fiscal dependency (share of resource revenue in total fiscal revenue) on a single year basis. The ratio of public debt to GDP increased to 34% in 2013. This was because fiscal deficit in percent of GDP jumped to 8.6%. Though the ratio of public debt to GDP further increased to 45.3% in 2014, the Department of Treasury (DoT) makes an effort to decrease its ratio down to 35% which is the upper ceiling agreed between IMF and DoT. IMF recommends “non-resource primary balance” as fiscal anchor on a single year basis for fiscal balance. However financial authority (DoT) decided to manage fiscal deficit on a single year basis in the framework of mid-term fiscal plan¹³⁵. External debt shared in public debt is largely fixed liabilities from international organizations or bilateral ODA so that public debt sustainability plan is easy to make.

Mongolia: Comprehensive policy adjustment

Ministry of Finance (MoF) issued Chinggis bonds in overseas financial market in 2012, which increased the government financial assets in percent of GDP to 16.5% and the fiscal deficit-GDP ratio to 8.6% in the same year. The share of public debt accounted for by external debt reached to 43.7% which is far higher than those of Malaysia and PNG. The ratio of public debt to GDP further increased to 67.3% in 2013 from 51.3% in 2012. Further increase of the ratio was attributed to fiscal deficit (6.2% in percent of GDP) and depreciation of effective exchange rate of domestic currency (MNT depreciation of 7.7% in percent of GDP). This implicates the absence of financial discipline which means financial plan based on conservative revenue forecast and debt sustainability. In 2014 the ratio of public debt to GDP jumped to 76.5%, which means that Mongolia would become a highly risked debt country if financial authority does not reduce fiscal deficit. In this sense, Mongolia definitely needs the comprehensive policy adjustment of fiscal deficit, monetary policy, foreign exchange and balance of payments. Fiscal deficit needs to be reduced to 2% in percent of GDP, which was proposed in the Fiscal Stabilization Law. The other adjustment policies are tight monetary policy, appreciation of effective exchange rate and reduction in balance of payments¹³⁶.

In view of public debt management in the case study countries, the followings are some lessons regarding fiscal discipline and public debt management.

(1) Public Debt Management

Financial risks inherent in issuance of Chinggis bonds (the government security) will be increase of bonds' interest (decrease of bonds' price) due to instability of resource revenues, incompliance with financial discipline, and sluggish economy, particularly decrease of production and exports in non-resource sectors.

¹³⁵ The World Bank Group in Papua New Guinea, Papua New Guinea Economic Briefing, 2013

¹³⁶ IMF Mission, Mongolia Staff Report for the 2015 Article IV Consultation, 2015

The ratio of external debt in public debt is very high, reaching 85% in 2013. In order to avoid such risks, the following approaches will be recommended including comprehensive policy adjustments IMF proposes.

Control of raised funds for expenditure

Chinggis bonds raised are expensed for funds for Development Bank of Mongolia (DBM) and the government guarantee for DBM's finance in Mongolia. Those expenses are sources of public debt under off budget management. DBM is indebted to China by borrowing a large amount of Yuan from the Chinese Exim Bank on the commercial basis. If DBM goes into default on its loan, the government would run the risk of contingent liability, resulting in high probability of sharp decrease of Chinggis bonds' price. IMF strongly recommends consolidation of DBM liabilities into public debt under the government management. This is the minimum requirement for risk control and further there will need a check system of assessing financial feasibility of projects to be financed by DBM.

To lessen underwriting of government bonds by foreign investors

A large part of deficit-covering government bonds is purchased by foreign investors in Malaysia. These bonds are statistically categorized into domestic debt but increase of interest rate in overseas financial markets may make foreign investors sell bonds, resulting in outflow of foreign currency. To lessen underwriting of government bonds by foreign investors, the government is requested to make an effort to achieve fiscal primary balance, and to execute revenue-generating infrastructure projects through public-private-partnership (PPP) and implement social development projects (public healthcare/education) in collaboration with the Khazanah Trust Fund where projects with high return on investment are usually financed.

(2) Mid-term Debt Management Strategy

From the viewpoint of public debt management, financial authority finds it difficult to apply fiscal anchor to fiscal balance on a single year basis because of its rigidity. Instead it would be more flexible to control fiscal anchor in the framework of the mid-term debt management strategy. As a matter of fact, financial authorities in PNG and Malaysia control a single year-based fiscal deficit in the framework of the mid-term public debt management plan. A single year-based fiscal anchor would be less important as a tool of public debt management.

(3) Prospect for Resource Revenue and Public Debt Management

Actual prices of natural resources turn out to be far lower than price forecast according to the IMF's reference¹³⁷. Because of unstable resource revenues, the higher fiscal dependency is, the larger fiscal deficit is. Financial authority usually forecast resource revenue based on a past trend of price movement so that the sharp decrease of resources' prices would be beyond control of financial authorities. From the viewpoint of public debt management, resources prices can be treated as one of risks and prices forecasted might be referred to the lowest price in the past or a long-term contract price. For Malaysia and

¹³⁷ IMF (2015)

PNG where fiscal dependency is comparatively low, it would be a turning point for financial authorities to shift to fiscal revenue plan based on tax revenues. Expansion of income tax base and GST will be the core policy for increase of fiscal revenue.

4.3 Public Financial Management

4.3.1 Improvement of transparency within resource revenue flow

(1) Information sharing among collecting organizations of resource revenues

As compositions of resource revenues, such as royalty, taxes, and dividends, vary country by country, the collecting system of revenues is also diverse. In Malaysia, Petronas takes charge of bringing petroleum tax, royalty, and dividends to the government. In the case of PNG, corporate income tax and dividends are collected by the central government to be part of the national budget. In the meantime, royalty from the oil sector collected by the central government and that from the mineral sector is however collected by either landowners or provincial governments and is not brought into the national budget. In Mongolia, the resource revenues are collected by the central government, but part of royalty and 100% of dividends are transferred to the Human Development Fund (HDF). Table 4-4 summarizes the collecting organizations of each main resource revenues across three countries.

Table 4-4: Revenue Collecting Systems of Three Countries

Country	Royalty	CIT	Dividend
Malaysia	➤ Collected by Petronas and brought into federal and state governments	➤ Inland Revenue Board	➤ Paid mainly by Petronas to Ministry of Finance
PNG	➤ Provincial States ➤ Land owners	➤ Collected by IRC and brought into treasuries	➤ Ministry of Finance
Mongolia	➤ Collected by MRA and brought into treasuries *70% transferred to HDF	➤ Ministry of Finance	➤ Ministry of Finance *transferred to HDF

Source: the Study team prepared

As collecting entities, at the central government, it is common that ministries of finance take charge of tax collection, and mining-related ministries or authorities under those are in charge of collecting non-tax revenues. Moreover, with regard to information sharing over entities at the central level, ministries of finance tend to receive information about resource revenues comprehensively from other collecting entities because resource revenues at that level are mostly brought into treasuries, which are a part of ministries of finance. Nevertheless, at the provincial level, the collecting system, especially for royalty, varies depending on nations because land owners could have the right for that resource revenue. As mentioned before, in the mining sector of PNG, since royalty is collected by either landowners or provincial states, the information about that revenue, especially one collected by landowners, is unlikely to reach the national government. Similarly, according to Mongolia EITI, donations paid by companies to local communities tend not to be disclosed.

(2) Improvement of resource revenue flows

One of the reasons why it tends to be difficult for the central governments to share the information of resource revenues is because the revenue flow can be complicated because there are multiple collecting agents and collecting revenues take place widely from centrals to provincials. Improving revenue flows is expected to make it possible for the central government to grasp the whole pictures of natural resource and collect revenues more properly. In addition, it could contribute to enhance transparency within managements of revenues and prevent corrupt behaviors. On the other hand, the private companies could benefit, which means that the procedures for their payment become simpler with less collecting entities, and their administrative works could be reduced. In particular, it could be an incentive for new investors.

(3) Central control/grasp of revenue information

If central governments are the only entity for revenue collection, the revenue flows could be quite simple, and there is no need to share information across organizations. Nonetheless, since the development of natural resource causes some conflicts between governments and landowners, it is necessary to distribute related profits to provincial governments or local communities, and the compensation for environmental damages by the development of natural resources should be also considered. In tackling these issues, it could be a solution to distribute a certain portion of resource revenues, collected by the central government, to provincial governments or local authorities. In fact, many African countries take this method by which the central governments collect mining taxes and distribute some revenues to the local level through budget process of future years¹³⁸. However, there are some problems in this system; the central government would have more administrative work and it is difficult for entities to agree upon the ratio of revenues to be delivered. In PNG, although this distribution system was adopted with the agreement between the central government and the local one, and as a result the local government was authorized to collect the mineral royalty. In this sense, it can be said that decentralization of revenue collection would be possible if the provincial governments have enough institutional capability to manage resource revenues. Among other resource-rich countries outside the case study, Argentine, Australia, and Canada are the countries where the provincial governments collect royalties directly from mining companies¹³⁹.

Next, with regard to the fact that multiple entities, not only ministries of finance, are responsible for collecting revenues even at the central level in many countries, it seems to be because there are some administrative works requiring special skills and knowledge, and those roles should be allocated into different ministries or authorities. For example, calculations of royalty and license fee should be taken charge of by mining-related ministries or authorities, rather than ministries of finance. Therefore, multiple collecting entities tend to be responsible for different kinds of resource revenues, depending on their functions and expertise.

Although it seems difficult for the national government to centrally collect and manage resource revenues for the reasons mentioned, it should be possible to grasp how the whole system of resource revenues occurs within a country. Furthermore, this could make it possible to collect resource revenues properly.

¹³⁸ Pietro, *How to Improve Mining Tax Administration and Collection Frameworks*, The World Bank, 2013

¹³⁹ Natural Resource Governance Institute, *Subnational Revenue Distribution*, *NGRI Reader*, 2015

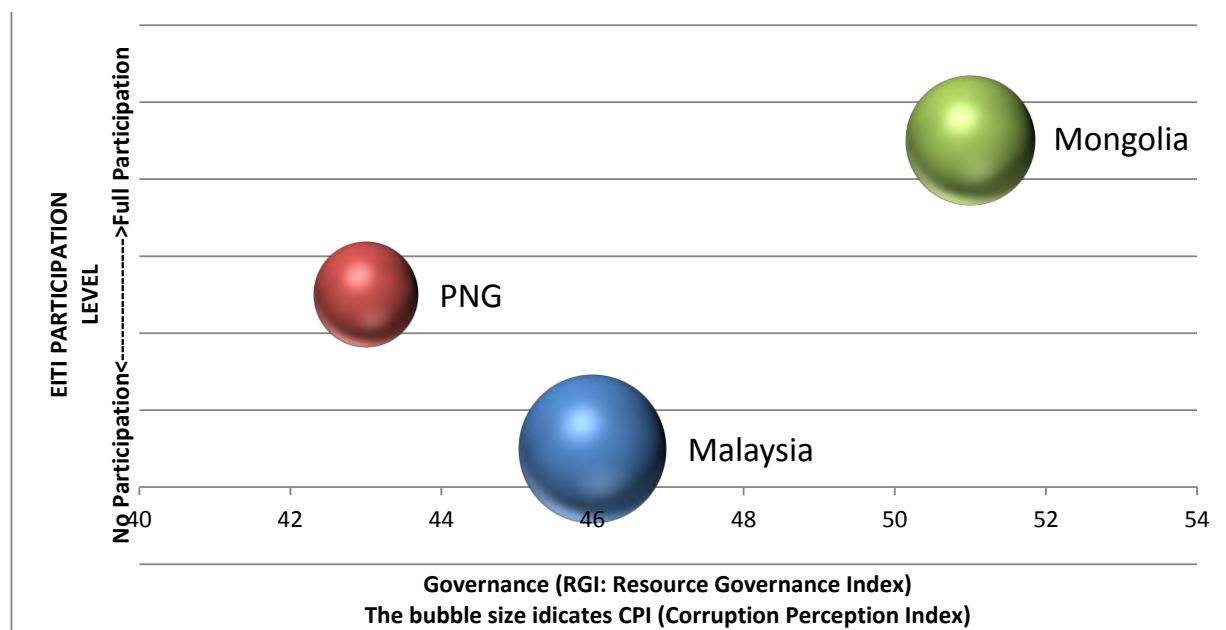
Especially, for countries relying heavily on resource revenues, grasping the system of resource revenues entirely is significant for more efficient economic and fiscal policies.

In order for the central government to grasp the system of resource revenues, information sharing among collecting entities has to be handled appropriately so that all information could be gathered up to the national level. In particular, local governments and authorities are likely to have poor infrastructures and insufficient human resource for revenue management, compared with the central government. Then, it seems to be certain that enhancing such institutional capabilities at the provincial level is vital for the central government to grasp the whole system of resource revenues in a country.

(4) Becoming EITI members

Improvement of revenue flows could lead to the prevention of corruption, and in this sense, it is one measure to join EITI. With respect of transparency enhancement in finance management, especially revenue management within the mining sector, EITI has been internationally promoted and increased its member countries, in particular developing countries which are likely to have weak governance in financial management. The ultimate purpose of EITI is to eliminate corruption. Besides, implementing countries could additionally notice systemic weaknesses to be improved about financial management in the mining sector, through implementing their action plans. PNG EITI actually said that it was found there is a gap between payments reported by the government and companies, and this allowed PNG to realize what to improve in terms of financial management. In general, by including the data about resource revenues from the local governments, which tend to have poor fiscal management capability, discrepancies could easily occur in the comparison between payment reported by governments and companies. Therefore, although EITI aims to tackle the corruption issue, countries could notice their own problems within the managements of resource revenues, and hence work on the improvement efficiently.

Within the case study, Mongolia is the only compliant country among those, and PNG is currently a candidate country which aims to meet EITI requirements to be a compliant country. Malaysia is not a member of EITI. According to Figure 4-5 showing the correlation between the assessment of the countries' governance and their status of EITI, RGI score of Mongolia is the highest as the country is the only compliant country.



Source: the Study team prepared based on EITI, Resource Governance Index (RGI), and Corruption Perception Index (CPI)

Figure 4-5: Comparison of Governance Index from the Case Study

Next, regarding the prevention of corruption which is the main aim of EITI, Table 4-5 summarizes the impacts that EITI could put in place.

On table 1-4 which maps corruption risks over resource revenues, and table 4-5 adds the measures of EITI related to each corruption risk, as well as the expected effects.

Table 4-5: Corruption Risks within Public Financial Management and EITI

Resource revenues	Corruption risks	Impacts on revenues	Measures of EITI and effects
Bonus	Embezzlements or bribe for illegal political donation	Reduction on related revenues	<ul style="list-style-type: none"> ➤ Disclosure of tender systems (selection criteria) and reconciliation of payments from companies and to governments ➤ Effects are limited in case government officers receive through their personal, overseas bank account.
Royalty	Underreporting of production and values	Reduction on royalty which could be collected	<ul style="list-style-type: none"> ➤ Royalty paid by each individual company are disclosed through EITI ➤ Although the amount of royalty is available to the public, the effect would be limited in case that sales amount underreported by companies is approved by corrupt officers with bribery.
Corporation Income Tax	Inflating operation costs/ illegal tax exemption and rebated matters	Reduction on tax revenues	<ul style="list-style-type: none"> ➤ CIT paid by single companies are disclosed as a requirement of EITI, and this would prevent tax evasion to some extent. ➤ Nevertheless, there is still a risk that amount of tax would decrease by inflating operation costs.
Production Sharing	Underreporting of production and values/ inflating operation costs	Reduction on production to be shared	<ul style="list-style-type: none"> ➤ Contracts term between the government and companies are published, and allocation ratios are disclosed. ➤ Nonetheless, risks mentioned at the left side (i.e. underreporting and inflating costs) are difficult to be prevented.

Source: the Study team prepared by referring to Anti-Corruption Resource Centre (2011)¹⁴⁰

¹⁴⁰ Bill (2011), 'Extractive sectors and illicit financial flows: what role for revenue government initiatives?', *Anti-Corruption Resource Centre*

It seems that meeting EITI requirements does not completely eliminate the corruption risks within revenue management. However, it seems to be the case that EITI could contribute partially to the prevention of corruption while resource-rich countries and international communities have paid great attention to the negative effects of corruption. Mongolia EITI stated that politicians should hesitate to be involved in corrupt practices, under the situation that the country is recognized internationally as EITI compliant country, and has to publish EITI report every year.

Besides the effect on corruption prevention, entering EITI could bring additional effects on government's financial management and economic development. In terms of the former, the status of an EITI member could contribute to gaining credits with the international community. As mentioned in Chapter 1, generally resource-rich countries which have poor governance and rely largely on resource revenues are likely to be affected by corruption. In this sense, working on requirements of internationally recognized EITI could send a positive message by which the international community would regard implementing countries' intention for corruption prevention. As a result of gaining credit with the international society, implementing countries, especially developing countries, could request loans more easily. PNG was actually required by ADB to become a member of EITI, as a financing condition.

Implementing countries could benefit from the status of EITI in terms of economy; entering EITI would be a positive sign for investors that investment environment will be improved, and this could result in that FDI inflows increase. As corruption is a risk for foreign investors by causing unnecessary costs, it can be assumed that investors select less corrupt markets. In this sense, as transparency of the public service and government's accountability are regarded as factors of improving the investment environment¹⁴¹, implementing action plans for EITI requirements can be one of the measures for that purpose. In addition, even the status of candidate which has not been recognized as compliant country yet could also gain credit to some extent from foreign investors on the grounds that they are thought to have their strong wills to improve the governance¹⁴².

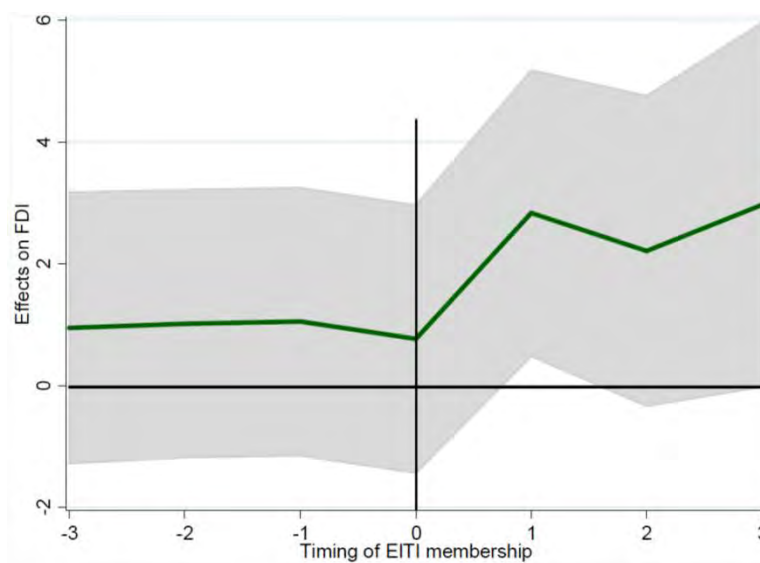
There is a study supporting that theory, in which 81 developing countries including EITI members are examined about the impact of EITI on FDI during the period from 2004 to 2011.¹⁴³ Figure 4-6 is one of its findings to show the effect of becoming EITI candidate on FDI inflows from three years before to three years after becoming candidate. A considerable increase in FDI inflows can be observed from the year of becoming candidate to the first year after¹⁴⁴.

¹⁴¹ EITI, Extractive Industries Transparency Initiative Source Book, 2005

¹⁴² Pitlik et al., The Demand for transparency: An Empirical Note, *The Review of International Organizations*, 5(2), 177-95, 2010

¹⁴³ Schmaljohann, Enhancing Foreign Direct Investment via Transparency? Evaluating the Effects of the EITI on FDI, Discussion Paper Series No. 538, University of Heidelberg, 2013

¹⁴⁴ This study also concluded the same result by including control variables which possibly affect FDI inflows, such as trade openness, GDP growth, population, country risk, natural resource rents, and corruption

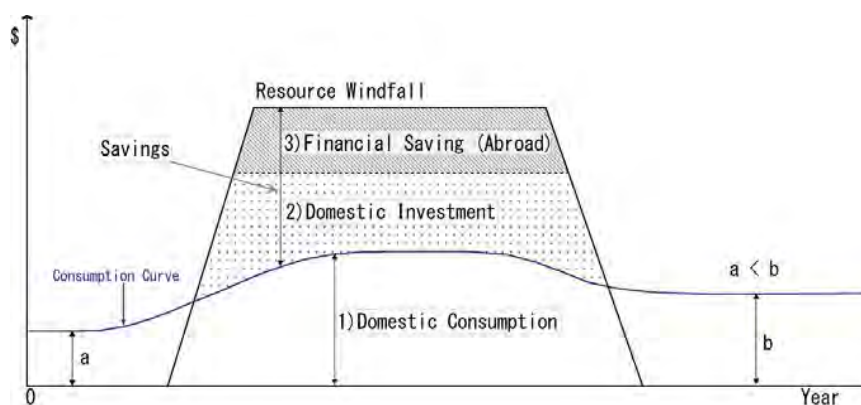


Source: Schmaljohann (2013)

Figure 4-6: The Effect of Becoming EITI Candidate on FDI Inflows

4.3.2 Optimum Allocation of Resource Revenue

In Chapter 2, an optimum allocation of resource revenue was presented with a conceptual figure re-presented below, however, the actual situation in the three countries seems different from this ideal concept. In each of these countries, the resource revenue has been allocated as a part of consolidated fiscal source for general budget, and resource revenue is not separately managed with other non-resource tax and non-tax revenue. However, a part of profit from state oil/gas company, Petronas, is saved as National Trust Fund managed by the central bank in Malaysia, and there are plans for saving resource revenue in the special funds to be created in cases of PNG and Mongolia.



Source: JICA Study Team based on Figure 4 of IMF (2012)

Figure 4-7: Optimum Allocation of Resource Revenue

Nevertheless, the concept of optimum allocation above has been widely shared and understood through discussion held with relevant government organizations during each case study country visit and workshop presentations. It was also found out that in each country, the authorities are trying to introduce a

management system to separate resource revenue from general budget sources, e.g. by establishing SWF. In this section, lessons learnt for the resource revenue allocation are to be presented based on IMF literature and findings from case study visits.

(1) Allocation for Operating Expenditure

For the developing countries endowed with rich natural resources, additional inflow of fiscal revenue from natural resource brings opportunity to increase welfare of the people and reduce poverty level. The resource revenue allocation to operating or recurrent expenditure is supported by IMF literature¹⁴⁵, which indicates a shift from the saving oriented approach to focusing more on the economic value of enhanced consumption by low income population. However, this does not support current expenditure which have comparatively more benefit to higher income group (such as fuel subsidy) nor employing additional number of government officials with low efficiency, which have sometimes been observed in resource-rich countries.

In 2007, Mongolia started to use resource revenue for cash distribution for families with children, which has been the subject for political commitment during general election held in 2004 and 2008. During election campaign, the parties competed for larger amount of the cash distribution which hampered fiscal balance after decline of resource prices. This case suggests that politicizing allocation of resource revenue would lead to inefficient outlay of fiscal expenditure.

On the other hand, PNG government started free primary education and primary health care program in 2014, along with start-up of LNG export. Despite of the government expectation, the LNG export does not bring immediate fiscal revenue contribution, so far in 2015, however, the government is committed to maintain these programs which have economic impact worth for people’s welfare, by issuing sovereign bond to ease its cash flow in 2016.

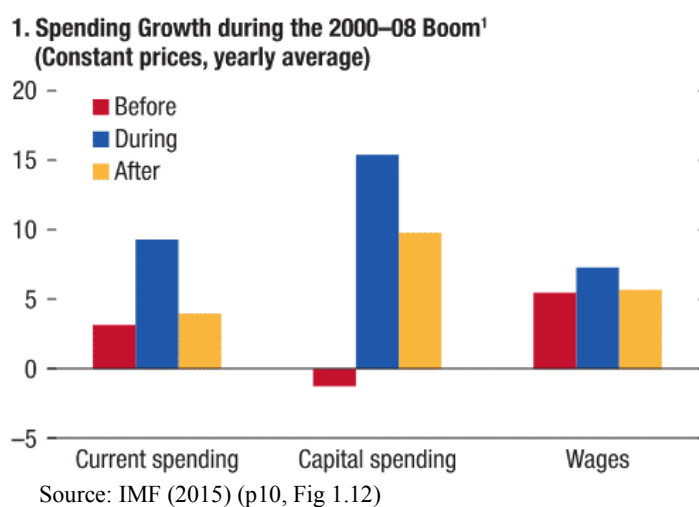


Figure 4-8: Growth Rate of Fiscal Expenditure in RRDC (% , 2000-2008)

¹⁴⁵ IMF (2012)

(2) Allocation for Development Investment

The capital spending for development by resource-rich developing countries expanded by 15% every year, during resource boom period from 2000 to 2008, which recorded higher growth rate compared to the current spending during the same period, as shown in Figure 4-8. However, in order to have those investment spending effectively lead to the results in non-resource sector growth, resource-related industry development, social infrastructure building, human resource development and other asset building for the future development of the countries, the conditions listed below are required. (IMF¹⁴⁶)

- **Macroeconomic Environment:** The development projects initiated by investment are enabled to be continued with sufficient resource supply, with less impacted by resource price fluctuations.
- **Microeconomic Environment:** The capacity of organization to implement public investment is sufficient for selecting investment projects and efficient implementation.
- **Political Environment:** The institutional and organizational framework is less affected by political intervention which might face risks for politicizing the benefit from the investment.

The development investment spending in the three case study countries is being observed as described below.

Malaysia

- The average growth rate was 9.2% during 2000 to 2008, and its ratio of development spending in general budget is; 26% for average of 2000 to 2008, 15% in 2014 and 18% in 2015.
- A part of resource revenue is being reserved in Petronas for their investment for resource-related business as well as non-resource sector development, human resource development and overseas ventures.

PNG

- The average growth rate was 15% during 2000 to 2008, and its ratio of development spending in general budget is; 34% for average of 2000 to 2008, 33% in 2014 and 36% in 2015.
- The free primary education and primary health care program started from 2014.

Mongolia

- The average growth rate was 27% during 2000 to 2008, and its ratio of development spending in general budget is; 28% for average of 2000 to 2008, 39% in 2014 and 32% in 2015.
- The portfolio of loan and investment by Development Bank of Mongolia is being provided for non-resource sector by 82%.

These cases suggest that in each country, under their institutional environment, the development investment is planned and implemented for their socio-economic development. However, the above-mentioned three conditions (macroeconomic, microeconomic and political) are required to be taken into consideration for their implementation.

(3) Establishment of Fiscal Stabilization Fund

¹⁴⁶ IMF Fiscal Monitor (2015/10)

A stabilization fund is widely used not only for extractive underground resources but also for other primary products for exports such as agriculture products, for the purpose of protecting producers from price fluctuations. In RRC, fiscal stabilization fund is established for the purpose of fiscal stability due to the volatility of resource prices in the international market.

Among the case study countries, PNG has finally established legal environment for SWF, and will start its operation in 2016. In PNG, SWF has two component; Stabilization Fund and Saving Fund. The rule of resource revenue inflow to Stabilization Fund is based on 15-year moving average price of the resource, and under the current international market condition, there will be no fund accumulation into Stabilization Fund, but continued to be used as a part of general budget.

In Mongolia, Stabilization Fund has been started since 2011, and a part of the accumulated fund was disbursed in 2014, as to fill the fiscal gap. The Mongolian case can be a good reference for those resource countries planning establishment of a fiscal stabilization fund. (Refer to the box below)

Fiscal Stabilization Fund in Mongolia

Mongolian government defined “core commodity” as a commodity with more than 3% share in the fiscal revenue in the 2011 Budget Law*, and currently two kinds of commodities, copper and coal, are recognized under this definition. For each core commodity, a benchmark price is calculated based on the past and future estimated prices, and extra fiscal revenue over this benchmark price is to be pooled in Fiscal Stabilization Fund. The benchmark price is calculated every year by prices in the past 12 years, current price and 3 years future projection.¹⁴⁷ In 2016 Budget, the calculation of the past prices is to be changed from 12 years to 20 years, in order to ease impact of the price hike around 2011.¹⁴⁸

Fiscal Stabilization Fund in Mongolia has been functioning since 2011 by accumulating extra revenue surpassing benchmark prices, and its balance reached MT 400 billion in 2013; however, in order to fill the fiscal gap in 2014, MT 100 billion (25%) was disbursed into the general budget account. As of 2015, the balance is around MT 300 billion. The disbursement of the fund into the general budget can be done when all three conditions below are satisfied, and the amount of disbursement is limited to the difference between benchmark and current price.

- 1) The fiscal deficit is more than 4% of GDP
- 2) The current market price is lower than structure (benchmark) price
- 3) The current market price is lower than the budget estimation price, by more than 20%

*Note: In Mongolia annual budget is approved in the parliament in a form of law.

Source: Based on Study Team interview at Fiscal Revenue Division

(4) Savings for the Future Generation (Sovereign Wealth Fund: SWF)

The following status of SWF for each case study countries as references includes lessons learnt.

Malaysia

In Malaysia, National Trust Fund was created under the central bank, which is in operation with foreign

¹⁴⁷ Data from Bloomberg, released every March, is adopted to be ‘current price’ and ‘3 years projection’.

¹⁴⁸ 9,880 USD/ton (LME spot price) in February 2011

currencies (mainly in US\$ and Euro), and Malaysian Ringgit. As of October 2015, the asset amount is US\$ 3.1 billion which is about 1.5% of the total of tax and other transfers from Petronas during the same period, considered to be rather small compared to the whole resource revenue. In Malaysia, there are several government affiliated funds not based on resource revenue, such as Kazanah Trust Fund which also conducts investment activities supporting the government policy, e.g. taking over shares of Malaysian Airline System when it has faced with financial difficulty.

In the case of Malaysia, investment funding is more active at professionally organized and independently managed funds such as Kazanah for domestic and overseas investment project, rather than resource-based fund managed under the central bank.

Papua New Guinea

PNG's fiscal balance recorded surplus during fiscal year 2010 and 2011, boosted by resource boom in later years in 2000. However, SWF was not established during those period to absorb surplus fund in the budget, but used "Trust Account" instrument to utilize unspent budget for the next fiscal years. The Trust Account enabled was a system to pool the surplus funds to be used up to three years, used for bridging over the fiscal years. Although the funds in Trust Account were supposed to use only for investment purpose, it was also used for financing recurrent cost which brought inflation pressures due to increased liquidity¹⁴⁹.

In 2012, PNG government established an organic law for SWF based on Santiago Principle, with reference from cases of Norway, Chile, Mongolia and other countries, being assisted by IMF. However, after that, it took long time in political debate for details in implementation, and finally it will start its operation in 2016. SWF in PNG consists of two kinds of funds: Stabilization Fund and Savings Fund. Stabilization Fund is sourced 100% of income tax from resource corporations and 75% of the dividend, and Savings Fund with 25% of the dividend.

Table 4-6: Funding Source of SWF in PNG

	Mining and Petroleum Tax	Mining, Petroleum and Gas Dividends
SWF-Stabilization Fund	100%	75%
SWF-Savings Fund	0%	25%

Source: JICA Study Team based on 2016 Budget, Department of Treasury

In the case of PNG, SWF was not created during resource boom, but established afterwards by IMF recommendations. It took long time in the political consensus, and will finally start in 2016, after the resource boom was over.

Mongolia

In Mongolia, two kinds of fund were established in 2007 and 2009 based on mining revenue as listed on Table 4-7. Among these, Mongolian Development Fund (MDF) established in 2007 has been abolished,

¹⁴⁹ The inflation rate was recorded as 8.4% in 2011, but subdued in 2012 for 2%. As of November 2015, it is about 6%, being managed at single-digit by the central bank. (IMF(2013) and Bank of PNG)

and as of November 2015, Human Development Fund (HDF) established in 2009 is still in operation, but HDF has some issues described below.

Table 4-7: Funds Sourced by Mining Revenue in Mongolia

	Mongolian Development Fund (MDF)	Human Development Fund (HDF)
Purpose	Economic development, SME promotion and fiscal support	Mining revenue to be evenly distributed to people
Source	Windfall Tax revenue from gold and copper, and surplus from fiscal balance	70% of Royalties from mining corporations and dividend from state-owned shares.
Use	Child support, fiscal balance gap support, reserve funds for agriculture products and fuel.	Cash distribution to people, subsidies for health and education.

Source: JICA Study Team interviews at Ministry of Finance

Among these funds, MDF has been discontinued since the expected revenue from Windfall Tax was limited, which makes it difficult to balance the revenue and expenditure, and price stabilization function for fuel and agriculture products was transferred to Price Stabilization Program being managed by the central bank.

On the other hand, HDF is still in operation but it is mainly functioning as cash distribution program to all Mongolians as a part of populist policy committed by politicians. During general election campaign in 2004 and 2008, the opposing parties competed for the higher amount of cash distribution by HDF. As a result, the committed cash distribution could not be financed by HDF and the government has to use other tax resource and bank loan at interest rate of 15% to 16%. In 2011, the political parties agreed not to compete the HDF cash distribution amount, in response to criticism by people. HDF is still in operation as of 2015, but its size is gradually being reduced¹⁵⁰.

Based on above-mentioned unsuccessful experience for fund formation, a new fund, “Future Heritage Fund”, targeting savings for the future generation is currently under discussion within government (MOF) and Parliament, for the planned establishment in 2017. The resource of this fund is 65% of royalty after transfer to Stabilization Fund, all amount of dividend and 20% of Windfall Profit. With this mechanism, substantial part of future resource revenue will be accumulated in the event of price increase.

Table 4-8: Fund Sources of Future Heritage Fund in Mongolia

Sources	Ratio
Royalty	65%
Dividends	100%
Excess Revenue	20%

Source: JICA Study Team based on interview with Ministry of Finance

¹⁵⁰ “Sovereign Wealth Fund: Case of Mongolia”, Principal Asset Management Division, Financial Policy Department, MOF (Presentation Material on the JICA Workshop on 19 November 2015)

The main resource revenue in Mongolia comes from three major mines, Oyu Tolgoi (copper and gold), Tavan Tolgoi (coal) and Erdenet (copper and gold). It is assumed that growth of the fund will be started in 2018, since dividend from Oyu Tolgoi will be paid out for repayment of the loan for investment fund. Once it is started, 90% of the fund will be saved in foreign currency and 10% will be transferred to the general budget support.

SWF in Other Countries

As for further reference, the table below outlines SWFs in Norway, Chile and East Timor, in comparison with Malaysia's KWAN. SWF in Norway, frequently introduced as a model, has its purpose only as pension fund, while Chile has dual function, pension and fiscal stabilization, and Petroleum Fund of East Timor is for fiscal stabilization and savings in foreign currency.

Table 4-9: Comparison of Funds Based on Resource Revenue

Country	Malaysia	Norway	Chile	Chile	East Timor
Fund Name	National Trust Fund (KWAN)	Global Pension Fund	Pension Reserve Fund	Economic and Social Stabilization Fund	Petroleum Fund
Year Established	1998	1990	2006	2006	2005
Purpose	- National Development - Support to Federal and State Budget	Pension	Pension	- Stabilization of government budget for copper price fluctuation	- Stabilization of government budget - Foreign currency savings to insulate domestic economy
Total Wealth	USD 3.1 billion (2013/12)	USD 670 billion (2013/7)	USD 7.01 billion (2013/8)	USD 15.21 billion (2013/8)	USD 15.21 billion (2013/8)

Source: JICA Study Team based on Murniati (2015)

4.3.3 Introduction of Special Account System

As an accounting system to allocate development investment from resource revenue, outline of Special Account system applied in Japanese government is introduced for a reference for consideration for application in resource-rich countries.

In Japan, Special Account system was utilized as a powerful tool to support the country's economic recovery period after the World War II, as a system with separate account from ordinary budget, for the purpose of building economic infrastructure, energy and industrial development and export promotion. The Special Account is required with accountability to the Diet, by responsibility of the government, in a same way as ordinary budget¹⁵¹. On the other hand, Fund system, such as SWF, is to be operated as the independent entity to manage the fund to create profit for the nation, and will be operated detached from government framework, once it is approved for its creation and allocation of the fund from fiscal resources. In addition, the large-scale fund management requires specialized financial knowledge, skill and experience, and how to maintain governance for its management is an issue for careful consideration for countries with limited exposure to international finance.

¹⁵¹The obligation for reporting is for investment expenditure more than five years.

For resource-rich countries to properly manage the resource revenue in the best interest of the country, starting from separation of account by resource and non-resource, an institutional arrangement and management of its revenue, expenditure and accumulated fund management, with effective governance, have to be considered under the environment and conditions surrounding each country. In this regard, application of special account system could be an option for consideration, for the country's domestic infrastructure building and industrial development.

In order for the resource-rich countries to avoid Dutch disease by non-resource industry development, it might be useful to consider the use of resource fund management system such as Special Account and Sovereign Wealth Fund (SWF). It is necessary to assess and find opportunities for the country's potential and endowment for industries and business other than resource-related, or resource-related peripheral service business to have higher value added. Then in the next step, a long-term national strategy is to be established to bring up industry and enhance the competitiveness by utilizing domestic as well as foreign investment resources. This will enable the country to avoid Dutch disease in medium term and lead to a self-driven economy after the end of resource boom in the long run. Strategic investment to potential industry is a key to success, and fiscal tools such as Special Account and/or SWF will be useful for realizing the policy objectives.

CHAPTER 5 LESSONS LEARNT FOR JICA PROJECTS

In this chapter, Study Team summarizes the lessons learnt for JICA to draft Country Aid Strategy and Analysis Paper, to formulate technical and/or financial assistance, and to formulate and manage the projects in natural resource development sector for Resource-rich Developing Countries (hereinafter referred to as “RRDC”). The lessons learnt are summarized in accordance with the following five items.

1. Price volatility
2. Avoidance of Dutch Disease
3. Debt management
4. Resource revenue management
5. Optimal distribution of resource revenue

5.1 Cooperation for Price Volatility Countermeasures

Empirical evidence shows that resource price estimation is never accurate and the volatility of resource price has been getting wider in recent years¹⁵². The countermeasures taken by each country to minimize effect of volatility to fiscal revenue and balance are summarized as follows.

- To increase non-resource fiscal revenue such as general tax, in order to reduce dependency on resource related fiscal revenue.
- To secure additional revenue during resource boom period by charging windfall profit tax, then accumulating it into a fiscal stabilization fund.
- To support fiscal balance gap by fiscal stabilization fund on the occasion of resource price downturn.

The technical cooperation corresponding to these subjects is discussed below.

(1) Technical Cooperation to Increase Non-Resource Tax Revenue

JICA has been conducting technical cooperation in the area of tax revenue increase and tax collection system reinforcement to ministry of finance and central government fiscal policy organizations of recipient countries. Technical cooperation is purposed with enhancement of policy making, and capacity building in enforcement and management of tax collection of fiscal revenue agencies¹⁵³. For example, there are cases of technical cooperation projects such as; “Analytical Survey of Preferential Taxation Systems” in the Philippines, “Capacity Development in Regional Custom System” in East Africa, “Capacity Development of General Tax Office” in Cambodia and “Tax Policy Strengthening Project” in Mongolia. In the case of Mongolia, a study to cover several subjects in economic policies, including transition to market economy, taxpayer information system and tax education system development, and established a framework for the project in strengthening tax collection system. The technical cooperation project covers activities for: 1) Human resource development and training, 2) Tax collection system

¹⁵² According to IMF (2105) (Fig 1.3 Poor Record of Forecasting Oil Prices), any of oil price forecasts attempted was not successful based on observation of 15 years period from 1990 to 2005.

¹⁵³ JICA Web Site: Home/Our Work/Thematic Issues/Economic Policy (www.jica.go.jp)

improvement, and 3) Service improvement to taxpayers.

In order to increase non-resource tax revenue in a resource-rich country, the following points need to be taken into consideration.

- In resource-rich countries, the incentive to strengthen general tax revenue such as income tax, VAT and corporate tax tends to be weak, since resource revenue is able to finance the budget. However, the importance of increasing general tax revenue should be widely understood for fiscal stability to prepare for resource price fluctuation in medium term and resource extinction in long term.
- Regarding the distribution of the wealth by resources development, the enforcement and the implementation of a fair taxation system needs to be incorporated to mitigate the widening gap along with economic growth led by resource development. For example, IMF suggests that fuel subsidy, frequently applied in resource countries, tends to benefit more for the high income group rather than poor population, and is not an effective measure to correct income disparity¹⁵⁴.
- The individual income tax and VAT (GST) are tax systems with wide tax base and charged accordingly to the income and consumption, which are considered to be a pro-poor tax system. In addition these tax systems bring higher tax revenue as the economy grows, which is suitable for the countries with growth potential.

(2) Technical Cooperation for Fiscal Stabilization Fund Establishment

A stabilization fund is established for a financial measure for price fluctuation of primary products such as agriculture and mining products in many countries, for the purpose of protecting producers and consumers as well as fiscal balance from volatility in international markets. However, establishment and operation of stabilization fund sometimes faces challenges. Mining Resource Stabilization Fund in PNG is a case of unsuccessful experience. The Fund was established in 1974 with the purpose of stabilizing resource revenue to the government account. But after its establishment, a part of operation rules was changed for the Fund to be able to borrow loans from external sources with the fund as collateral, which has led to the bankruptcy and collapse due to deviation of fund management from its original purposes¹⁵⁵. In PNG, the SWF, sourced with resource revenue, will start operation in 2016, with institutional design based on IMF advice. In the case of Mongolia, Fiscal Stabilization Fund is already in operation since 2011, and it supported to fill fiscal gap in 2014 utilizing a part of the Fund. These experiences can be a good reference and provide lessons to be learnt. For formulation of a fiscal stabilization fund in resource-rich countries, the following points need to be taken into consideration.

- Since the size of fund, including fiscal stabilization and saving fund, established will be large in scale, it has a risk to be used for different purposes such as politically motivated objectives. Technical assistance is required to focus on supporting the recipient country's finance authority, while paying attention to the relationship between the government and parliament for their possible risk in deviation of the fund usage.

¹⁵⁴ IMF (2015)

¹⁵⁵ David, An analysis of the PNG Sovereign Wealth Fund's process of formulation and progress towards establishment, The National Research Institute, 2014

- For establishing fiscal stabilization and other types of resource revenue based funds, IMF recommends to take into consideration the fund’s institutional rulings, independence, authority and supervisory function by parliament and financing authority.

5.2 Cooperation for Avoidance of Dutch Disease

As mentioned in Chapter 4, the following economic policies are considered to be valid: promotion of non-resource industries and resource-related industries such as diversification and upgrade of downstream industries. Study Team proposes the following three lessons learnt for JICA to implement technical and/or financial assistance for the purpose to boost these economic policies in RRDCs:

(1) Technical Assistance for Preparation of Industrial Policy

Survey and technical assistance on preparation of cross-sectoral industrial policy and regional development plan is one of JICA’s strong points as JICA has a long track record in this kind of assistance¹⁵⁶. Technical assistance for preparation of cross-sectoral industrial policy/strategy is considered to correspond to RRDC’s needs because resource dependency is a common issue for them (even in Malaysia) at all times. While there is concern for RRCs to have Dutch Disease due to resource development, it is necessary for them to consider the measures to manage and utilize existing natural resources for industrial development. Therefore, the following points should be paid attention for technical assistance for industrial policy preparation in RRCs:

- Size of population and economy compared to impact brought by resource development (e.g. GDP and export share of resource sector, FDI, etc.)
- Industrial and employment structure including both resource and non-resource sectors
- Resource types and horizon

(2) Technical and/or Financial Assistance for Non-resource Sector Promotion (including Agriculture, Manufacturing, Tourism, etc.)

JICA has been assisting non-resource sector promotion in the various fields and methods as shown in the Table below.

Table 5-1: JICA’s Cooperation on Non-resource Sector Promotion

Field	Technical Assistance	Financial Assistance
Agriculture	Preparation of rural development plan Agricultural technology development/dissemination Enhancement of farmers organizations	Rural infrastructure (irrigation, farm roads, etc.)
Manufacturing	Preparatio of industrial development masterplan Institutional enhancement of SME Promotion Development of human resources for industries	Transportation infrastructure (port, high way, etc.) Development of industrial park Two-step Loan (for capital investment by SMEs)

¹⁵⁶ For example, “Technological innovation and dissemination in Cote d’Ivoire: industrial policy development support” (2015-2017), “Data Collection Survey on Industrial Policy Formulation Assistance in Cambodia” (2012), and so forth.

Tourism	Preparation of tourism promotion strategy Institutional enhancement of tourism management Development of human resources for tourism	Tourism infrastructure (road, landscape, waste management, museum, etc.) Tourism marketing and promotion
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Source: Prepared by Study Team based on JICA's website

The above-mentioned assistances can be adopted not only in RRDCs but also other countries. The following points should be paid attention for assistance in RRDCs:

- Identification of industries with comparative advantage (other than natural resources), and consideration of possibilities to establish value chain (e.g. rubber and palm oil in Malaysia, cashmere in Mongolia, etc.)
- Consideration of both import substitution and export promotion (e.g. foreign currencies acquired through exporting natural resources in Mongolia and PNG are consumed for importing daily necessities. Industrial development aiming for import substitution contributes to domestic funds flow.)

(3) Technical Assistance for Finding the Potential Resource-related Sector

As mentioned in Chapter 4, resource-related sector also contributes to avoidance of Dutch Disease by export increase and job creation through diversification and upgrading of downstream and surrounding service industries. JICA is not so active in assistance for resource-related sector promotion except for a few cases¹⁵⁷ so far. However, Japan has sufficient experiences in petrochemical industry in spite of being a non-resource country, and it is meaningful for us to assist RRDCs to find potential resource-related sector covering from export of raw material to domestic downstream industry development. The following points should be paid attention for assistance in RRDCs:

- Socioeconomic impact brought by resource-related sector (e.g. value-addition, job creation, etc.)
- Possibilities of in-house development of resource-surrounding industries through human resource development

5.3 Cooperation to Public Debt Issues

Prior to lending of yen loan to borrowing countries, JICA makes an analysis of borrowing countries in various aspects: 1) macro-economy (GNP, industrial structure, financial markets, inflation, balance of payments, employment, poverty condition, natural resources), 2) development policy (development goal, budget for investment/sector development projects, evaluation of achievement level of development goal), and 3) macroeconomic policy (fiscal performance, monetary policy). In particular, an analysis is made on impact of macroeconomic policy on implementation and operation of projects for borrowing countries where structural adjustment is implemented¹⁵⁸. The Investigation Department of JICA focuses on downside risks, the risk of securing resource revenue, impact of balance of payments on fiscal

¹⁵⁷ There are few cases except for surveys such as "Data Collection Survey on Utilization of Natural Gas in Tanzania" (2014-2015).

¹⁵⁸ Operational Guidance for Preparation of Lending of Yen Loan, Japan Bank of International Cooperation

performance, and whether debt swap agreement is included in public debt or not¹⁵⁹.

As the lessons learnt from the case study countries, it is observed that actual resource revenue turns out to be lower than forecast due to the difficulty in forecast of resources' prices. The preferential tax measures given to mining/natural gas development companies hampered the Department of Treasury to collect resource revenue as forecast in PNG. The ratio of resource revenue in total fiscal revenue was initially estimated to be 21.5% for the 2015 budget plan, and decreased to 18% for the 2015 supplemental budget in Malaysia. The same ratio is projected to decrease to 12.6% for the 2016 budget plan. Depreciation of Tugrig associated with sharp drop in resources' prices after issuance of Chinggis bonds increased public debt in Mongolia.

Given the above situations, the following points need to be borne in mind when making the risk analysis of public debt in relation with lending of yen loan.

- Forecast of resource revenue should be conservative, referring to lower band of resources' prices in the past.
- A risk analysis of public debt should include rating of government bonds and country risk particularly for RCCs having high ratio of public debt to GDP.
- Contingent liability should be included in a risk analysis by focusing performance of public corporations and financial institutions to which financial authority re-lends.

A comprehensive analysis of impact of macro-economy (balance of payments, monetary policy, effective exchange rate) to public debt should be included in the risk analysis. A balance of payments analysis contains financial accounts including domestic and external debt of private sector.

5.4 Cooperation for Resource Revenue Management

The challenges in resource revenue management are divided into two subjects: proper revenue management in accounting procedure, and governance in resource revenue fund flow. The following are points of consideration in designing cooperation with resource-rich countries.

- In general, resource revenue consists of several kinds of charges, including corporate income tax, royalty, dividend and license and other fees, collected and managed by different government agencies, which requires for proper accounting management. JICA has experience in improving public accounting system, for example, technical assistance project for Ministry of Agriculture in Ghana. Although resource revenue, in general, is large in its amount, and complex charging systems applied for royalty, dividend for state-owned shares and operating license fees calculated by each concession, methodology applied in accounting and auditing does not vary from ordinary public accounting system. Since there are international accounting and auditing firms already providing services in each country, the cooperation projects need to be based on international accounting system.
- Regarding governance aspect of resource revenue flow, international cooperation provided by EITI is providing system to enhance transparency in resource revenue flow, and participation to EITI is

¹⁵⁹ Interview to JICA Credit Risk Analysis and Environmental Review Dept. on Oct. 6th, 2015

effective to improve the governance. Especially, for small size countries such as Mongolia and PNG, where major resource companies have a strong voice in conditions and procedures, EITI system provides a quite effective tool which reconciles resource related payment and revenue. In addition, governance rating of resource-rich countries conducted by international NPO is also a good reference to grasp the governance level and needs.

- With respect of technical assistances for EITI implementing countries, EITI Multi-donor trust fund (MDTF)¹⁶⁰ plays a main role to provide supports including making EITI advisers and consultants available to governments to assist them in implementation, sharing international best practices, and providing grants to governments to help support EITI implementation. Besides the supports through MDTF, many bilateral donors also provide bilateral funds and technical assistance. Especially, United Kingdom, Switzerland, Germany, and Australia have provided assistance to EITI implementing countries. For instance, in Peru, Germany sent some experts to the government, and also, when Peru faced the shortage of funds for payment to a validation authority, Switzerland provided financial assistance¹⁶¹. Furthermore, international NPOs provide technical assistance to civil society group engaged in EITI implementation¹⁶².

5.5 Cooperation for Optimum Allocation of Resource Revenue

As has been explained in the previous chapters, the optimum allocation of resource revenue is to manage the revenue into three outlays: 1) Consumption, 2) Development investment, and 3) Savings. In the case of case study countries, however, it was found that there is no system to separately manage the resource revenue from other fiscal revenue, except for Fiscal Stabilization Fund in Mongolia and National Trust Fund in Malaysia.

IMF is providing technical assistance for establishment of SWF in calculation of baseline price, applying Santiago Principle and other relevant technical issues¹⁶³. Regarding the institutional setup of SWF, it is considered to be operated by an autonomous entity independent from government fiscal authority, managed by financial professionals. This is appropriate in the case of pension fund which is purposed mainly for saving and portfolio investment of financial asset, and in the case of Japan, the pension fund has been re-established as an independent body conducting portfolio investment in the market, since 2001¹⁶⁴.

However, in developing countries, there are acute needs in investment for development such as infrastructure and human resources, and it is considered appropriate that the government to manage these investment activities. There is a possibility to apply Special Account system used in Japan. In the current practice in developing countries, development investment spending such as infrastructure, human resources and environment protection is being covered by general budget allocation. Special Account

¹⁶⁰ This fund was established in 2004 with the purpose of providing grants and technical assistance to the EITI implementing countries, and is administered by the World Bank. The donor countries supporting the fund financially are; Australia, Belgium, Canada, Denmark, EU, Finland, France, German, Japan, Netherland, Norway, Spain, Switzerland, United Kingdom, and Untied States. Japan started the support since 2011. (<http://www.worldbank.org/en/programs/eitimdtf>)

¹⁶¹ The World Bank, Building on Progress to Implement the EITI Standard, 2013

¹⁶² <http://www.worldbank.org/en/programs/eitimdtf#3>

¹⁶³ IMF(2012)

¹⁶⁴ Government Pension Investment Fund, Japan (GPIF) (www.gpif.go.jp)

system is a separate accounting from general budget with particular purpose with specific resources, which is under the government management subject to report and approval at parliament for governance check.

The cooperation for optimum allocation of resource revenue needs to be considered with the current fiscal structure and management system in the target country.

Table 5-2: Special Account and SWF

	Special Account	SWF
Management Body	Government (Ministry of Finance, and each ministry)	Independent special purpose entity (apart from government)
Financial Management	Based on execution of government budget	Based on decision and regulations of the entity
Reporting and Governance Monitoring	Duty to report to parliament	Report to regulatory agencies

Source: Prepared by Study Team

5.6 Risk Check for JICA Projects in Resource-rich Countries

Study Team prepared “Risk check sheet for JICA Projects in Resource-rich Countries” (Attachment 1) as reference material to summarize the issues in RRCs in this chapter and to formulate and manage future JICA projects in RRCs. The check sheet is a table of risk items and check points following the categories below:

- Risk on Economic Conditions: Macro-economy, Industrial Structure, Resource Sector, and Employment and Income Structure.
- Risk on Fiscal Conditions: Revenue Structure, and Debt Management.
- Risk on Public Financial Management: Resource Revenue Management and Governance, Financial Balance Management, and Distribution of Resource Revenue.

CHAPTER 6 CONCLUDING REMARKS

This study has been conducted since August 2015 in order to prepare reference material for Resource-rich Countries (RRCs)' policy making and JICA's assistance formulation/management through analyzing and summarizing economic and fiscal characteristics and policies including public financial management in RRCs. This report is the outcome of our study: namely, review of existing research and case study in three countries.

The theme of this study is well-timed as RRCs' economies are faced with increasingly severe fiscal conditions due to slumping resource prices. The three case-study, namely, Malaysia, Papua New Guinea and Mongolia, are not exceptions because they also have energy and mineral resources. We confirmed the necessity of this study from hearing great interest in the contents and experiences in other countries from interviewees in these case-study countries, even in Malaysia which is a successful case to avoid economic dependency on natural resources through industrial diversification.

In Chapter 1 and 2, Study Team summarized the characteristics of RRCs through the review of existing research, and identified the key issues for case study. We reported the facts clarified through field survey in Chapter 3, and summarized the recommended economic and fiscal policies in RRCs through the existing research review and the field survey in Chapter 4. In Chapter 5, we summarized and proposed the lessons learnt for JICA's projects in RRCs in order to correspond to the issues unique to these countries.

As this report is an introductory material to understand economic and fiscal policies including public financial management in RRCs, further study and analysis will be necessary to investigate each policy deeply. This report is expected to be read by a wide range of concerned persons including JICA staff, consultants and experts, Ministry of Finance, Central Banks, universities, research institutions in RRCs and so forth.

Finally, Study Team would like to express our heartfelt gratitude to interviewees of governmental and related institutions in three case-study countries for kind cooperation in this study. We wish this study outcome will be useful for each country as a reference.

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JICA Study Team for the Study on "Economic and Fiscal Policies in Resource-rich Countries"

1. Team Leader/ Public Finance Management: Hidekazu TANAKA, KRI International Corp.
2. Natural Resource Sector Analysis: Noboru FUJII, Mitsui Mineral Development Engineering Co., Ltd
3. Economic and Fiscal Analysis: Munenori TADA, KRI International Corp.
4. Assistant for Public Finance Management: Ryota SAI and Masayuki SAKATA, KRI International Corp.

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Attachment 1 – Risk Check Sheet for JICA Projects in Resource-rich Countries

	Category	Sub-Category	Risk	Check Points
1. Risk on Economic Conditions in RRCs				
1-1.	Macroeconomy	Population and Economic Indicators	Economic impact caused by large investment amount of resource development projects, especially in the countries with small population and economy.	<ul style="list-style-type: none"> ➤ Population ➤ GDP, and GDP per capita ➤ GDP growth
		Investment Share	Economic impact caused by resource development when the investment share of resource is high.	<ul style="list-style-type: none"> ➤ Trend of investment share in GDP
		Economical Resource Dependency	Volatility risk caused by resource price and development trend in resource dependent economy.	<ul style="list-style-type: none"> ➤ Resource sector share in GDP ➤ Resource export share
		Dutch Disease	Impact caused by foreign currency inflow through increasing resource export.	<ul style="list-style-type: none"> ➤ Exchange rate appreciation/Inflation rate increase ➤ Decline of non-resource sector share in GDP
1-2	Industrial Structure	Trend of Industrial Structure	Volatility risk caused by resource price in resource dependent industrial structure, namely, mono-culture economy.	<ul style="list-style-type: none"> ➤ Trend of GDP share by industrial sector ➤ Trend of share between resource and non-resource sector
		Competitiveness of Non-resource Sector	Volatility risk caused by resource price in resource dependent industrial structure, namely, mono-culture economy.	<ul style="list-style-type: none"> ➤ Agricultural sector ➤ Manufacturing sector ➤ Service sector
		Resource-related Sector	Volatility risk caused by resource price in resource dependent industrial structure, namely, mono-culture economy.	<ul style="list-style-type: none"> ➤ Mid- and long-term road map for resource industry ➤ Development of resource downstream industries ➤ Development of resource-related industries

	Category	Sub-Category	Risk	Check Points
1-3	Resource Sector	Types of Resources	Characteristics of price volatility by type of resources (metal and energy).	<ul style="list-style-type: none"> ➤ Type of metal, and outlook of price trend and demand-supply balance ➤ Type of energy resource, and outlook of price trend and demand-supply balance
		Resource Horizon	Resource depletion risk estimated by resource horizon	<ul style="list-style-type: none"> ➤ Proven resource horizon and exploration potential of metal ➤ Proven resource horizon and exploration potential of energy resource
		Impact of Resource Development	Impact on economy and balance of payments caused by resource development projects (by scale)	<ul style="list-style-type: none"> ➤ Investment amount ratio against size of economy ➤ Impact of FDI on balance of payment
1-4	Employment and Income Structure	Employment	<p>Risk of decreasing employment in resource production stage after increasing temporary employment in construction stage.</p> <p>Risk of decreasing employment in non-resource sector in the long run.</p>	<ul style="list-style-type: none"> ➤ Sudden increase and decrease of employment in resource development ➤ Employment shift from non-resource to resource sector. ➤ Employment of foreign engineer, and education for national engineer
		Income Gap	Income gap risk caused by shift of production elements, namely, capital and human resource, toward resource sector.	<ul style="list-style-type: none"> ➤ Increase of GDP per capita ➤ Trend of average income by sector
		Human Resource Development	Risk of dependency on foreign engineer, manager and worker	<ul style="list-style-type: none"> ➤ Employment of foreign engineer in resource sector ➤ Human resource development policy and program for national labor in resource sector
2. Risk on Fiscal Conditions in RRCs				
2-1.	Revenue Structure	Dependency on resource revenue	Risk of decreasing resource revenue caused by resource price volatility	<ul style="list-style-type: none"> ➤ Share of resource revenue in total revenue ➤ Share of resource revenue in total tax revenue
		Resource Revenue	Risk of volatile resource revenue (corporate tax and dividend) caused by profit of resource developer.	<ul style="list-style-type: none"> ➤ Corporate tax amount, and its share in total revenue ➤ Royalty amount, and its share in total revenue ➤ Dividend ➤ Exploration fee ➤ Commercial development license fee

	Category	Sub-Category	Risk	Check Points
		Non-resource Revenue	Risk caused by lower tax captivity.	<ul style="list-style-type: none"> ➤ Introduction of GST (VAT) ➤ Share of individual income tax ➤ Share of other general tax and non-tax revenue
2-2.	Debt Management	Public Debt	Default risk as a result of volatile fiscal revenue caused by resource price volatility.	<ul style="list-style-type: none"> ➤ Ratio of debt outstanding against GDP ➤ Types of public debt (short-, mid- and long-term) ➤ Sovereign debt outstanding (domestic and foreign) ➤ Debt Service Ratio (DSR)
		Private Debt	Risk on foreign reserve caused by private debt.	<ul style="list-style-type: none"> ➤ Types of private debt (short-, mid- and long-term)
		Credit Rating	External credit risk.	<ul style="list-style-type: none"> ➤ Sovereign rating ➤ Interest rate of sovereign debt ➤ Credit rating on major domestic financial institutions
3. Risk on Public Financial Management in RRCs				
3-1.	Resource revenue management and gavanance	Resource Revenue Management	Risk of revenue decrease.	<ul style="list-style-type: none"> ➤ Types of resource revenue and management body ➤ Resource revenue management by central and local governments ➤ Monitoring of whole resource revenue flow by Ministry of Finance
		State-owned Resource Management Enterprise	Risk on off-budget operation.	<ul style="list-style-type: none"> ➤ Management structure of state-owned resource enterprise ➤ Governance by the govermemnt
		Gavanance	Corruption risk.	<ul style="list-style-type: none"> ➤ Monitoring structure of resource revenue ➤ Participation in EITI ➤ Resource-related corruption
3-2.	Fiscal balance management	Fiscal Balance	Risk of expanding fiscal deficit.	<ul style="list-style-type: none"> ➤ Perfomance of yearly fiscal balance ➤ Application of fiscal anchor
		Fiscal Stabilization	Fiscal deficit risk as a result of volatile revenue caused by resource price volatility.	<ul style="list-style-type: none"> ➤ Stabilization Fund ➤ Saving rate of resource revenue
3-3.	Distribution of Resource	Distribution to Current	Risk on unefficient expenditure.	<ul style="list-style-type: none"> ➤ Fical rule to transfer resource revenue to general account ➤ Distribution to social sector

	Category	Sub-Category	Risk	Check Points
	Revenue	Expenditure		
		Distribution to Development Expenditure	Risk of lack of investment to infrastructure and human resource.	<ul style="list-style-type: none"> ➤ Public investment plan ➤ Performance of public investment ➤ Share of public investment in total fiscal expenditure
		Distribution to Saving	Fiscal deficit risk as a result of volatile revenue caused by resource price volatility.	<ul style="list-style-type: none"> ➤ Sovereign Wealth Fund (SWF) ➤ Share of saving in total resource revenue ➤ Fund formulation by using other revenue sources

Attachment 2 - Reference Documents to Understand Economic and Fiscal Policies in Resource-rich Countries

1) Basic Documents

Basic Literature	
1.	<p>Title: IMF Staff Discussion Note: Fiscal Frameworks for Resource Rich Developing Countries</p> <p>Author: Thomas Baunsgaard, Mauricio Villafuerte, Marcos Poplawski-Ribeiro, and Christine Richmond</p> <p>Release: May, 2012</p> <p>Access: IMF's website (www.imf.org) (final access: December 16th, 2015)</p> <p>Remarks: Covers the wide range of knowledge to analyze fiscal conditions of RRCs including definition of RRDCs and application of fiscal framework.</p>
2.	<p>Title: Macroeconomic Policy Frameworks for Resource-Rich Developing Countries</p> <p>Author: IMF staff team led by Dhaneshwar Ghura and Catherine Pattillo</p> <p>Release: August, 2012</p> <p>Access: IMF's website (www.imf.org) (final access: December 16th, 2015)</p> <p>Remarks: Summurizes on Macroeconomic issues of RRDCs, and explains economic and fiscal policies to utilize resources as assets for sustainable growth.</p>
3.	<p>Title: Fiscal Monitor: The Commodities Roller Coaster "A fiscal Framework for Uncertain Times"</p> <p>Author: IMF</p> <p>Release: October, 2015</p> <p>Access: IMF's website (www.imf.org) (final access: December 16th, 2015)</p> <p>Remarks: Summurizes the lessons learnt of attempts to accelerate economic growth in RRDCs during resource boom at the beginning of 2000s, and difficulties in price downturn after the boom.</p>

2) Reference Documents by Theme

Economic Policies in Resource-rich Countries

Reference Documents on Economic Policies in Resource-rich Countries	
1.	<p>Title: Beyond the Curse: Policies to Harness the Power of Natural Resources</p> <p>Author: Amadou N. R. Sy ; Rabah Arezki ; Thorvaldur Gylfason</p> <p>Release: January, 2012</p> <p>Access: IMF's website (www.imf.org) (final access: December 16th, 2015)</p> <p>Remarks: Thesis collection on economic policies to overcome "Resource Curse". Reccomends to refer especially to Chapter 2 "Natural Resource Endowment: A Mixed Blessing?" and Chapter 4 "Economic Diversification in Resource-Rich Countries"</p>
2.	<p>Title: The Resource Curse and Fiscal Policy</p> <p>Author: Leonor Coutinho, Cyprus Economic Policy Review, Vol.5, No.1</p> <p>Release: 2011</p> <p>Access: University of Cyprus's website (www.ucy.ac.cy) (final access: December 16th, 2015)</p> <p>Remarks: Proposes six categories of "resource curse" including Dutch Disease, and analyzes "resource curse" cases (such as Nigeria) and successful ones (such as Malaysia).</p>

Fiscal Policies in Resource-rich Countries

Reference Documents on Fiscal Policies in Resource-rich Countries	
1.	<p>Title: IMF Working Paper “Financial and Sovereign Debt Crises: Some Lessons Learned and Those Forgotten”</p> <p>Author: Carmen M. Reinhart and Kenneth S, Rogoff</p> <p>Release: December, 2013</p> <p>Access: IMF’s website (www.imf.org) (final access: December 16th, 2015)</p> <p>Remarks: Analyzes national-level debt crisis from the beginning of 20th century. Explains difficulties to prevent debt crisis not only in developing countries but also developed countries.</p>
2.	<p>Title: CSAE Working Paper “Public Capital in Resource Rich Economies: Is there a Curse?”</p> <p>Author: Bhattacharyya and Paul Collier (University of Oxford)</p> <p>Release: August, 2011</p> <p>Access: Centre for the Study of African Economies, University of Oxford’s website (www.csae.ox.ac.uk) (final access: December 16th, 2015)</p> <p>Remarks: Clarifies the inverse between distribution to development expenditure and resource richness by analyzing past cases of fiscal expenditure distribution in RRCs.</p>

Public Financial Management in Resource-rich Countries

Reference Documents on Public Financial Management in Resource-rich Countries	
1.	<p>Title: Public Financial Management Performance Measurement Framework</p> <p>Author: Public Expenditure and Financial Accountability (PEFA) Secretariat</p> <p>Release: January, 2011</p> <p>Access: PEFA Secretariat’s website (www.pefa.org) (final access: December 16th, 2015)</p> <p>Remarks: Explanatory material edited by OECD/DAC and PEFA Secretariat on evaluation framework and 28 evaluation indicators on PFM.</p>
2.	<p>Title: Sovereign Asset-Liability Management – Guidance for Resource Rich Economies</p> <p>Author: Samar Maziad and Martin Skancke</p> <p>Release: June, 2014</p> <p>Access: IMF’s website (www.imf.org) (final access: December 16th, 2015)</p> <p>Remarks: Explanatory material on the method of Sovereign Asset-Liability Management (SALIM) in RRCs.</p>
3.	<p>Title: The EITI Standard</p> <p>Author: EITI International Secretariat</p> <p>Release: January, 2015</p> <p>Access: EITI’s website (https://eiti.org) (final access: December 16th, 2015)</p> <p>Remarks: Explains the requirements, including required reporting items in annual report, in order to be approved as EITI Compliant</p>

3) Reference Documents by Country

Malaysia

Reference Documents on Malaysia	
1.	<p>Title: Malaysia Staff Report for the 2014 Article IV Consultation</p> <p>Author: IMF Mission</p> <p>Release: January, 2015</p> <p>Access: IMF's website (www.imf.org) (final access: December 16th, 2015)</p> <p>Remarks: Report on IMF's review on economic and fiscal conditions of Malaysia. Reviews and publishes every year.</p>
2.	<p>Title: The New Face of KWAN; Proposal to improve Malaysia's Natural Resource Fund</p> <p>Author: Institute for Democracy and Economic Affairs (IDEAS)</p> <p>Release: 2015</p> <p>Access: IDEAS's website (www.ideas.org.my) (final access: December 16th, 2015)</p> <p>Remarks: Analyzes current situation, and suggests more effective use of Natinal Trust Fund in Malaysia.</p>

Papua New Guinea

Reference Documents on Papua New Guiea	
1.	<p>Title: Papua New Guinea Staff Report for the 2014 Article IV Consultation</p> <p>Author: IMF Mission</p> <p>Release: November, 2014</p> <p>Access: IMF's website (www.imf.org) (final access: December 16th, 2015)</p> <p>Remarks: Report on IMF's review on economic and fiscal conditions of Papua New Guinea. Reviews and publishes every year.</p>
2.	<p>Title: The Economic Society of Australia Economic Paper Vol 29, No.2 "Effect on the PNG Economy of a Major LNG Project"</p> <p>Author: Peter B. Dixon, Gae Kauzi and Maureen T. Rimmer</p> <p>Release: 2010</p> <p>Access: Bank of Papua New Guinea</p> <p>Remarks: Analyzes and estimates impact of LNG Project on PNG's economy. (Mr. Gae Kauzi, one of authors, is now Assistant Governor of Bank of PNG)</p>
3.	<p>Title: The National Research Institute "An analysis of the PNG Sovereign Wealth Fund's process of formulation and progress towards establishment"</p> <p>Author: David Osborne (Australian National University)</p> <p>Release: October, 2014</p> <p>Access: National Research Institute's website (www.nri.org.pg) (final access: December 16th, 2015)</p> <p>Remarks: Reviews and suggests the establishment process of SWF in PNG.</p>

Mongolia

Reference Documents on Mongolia	
1.	Title: Mongolia Staff Report for the 2015 Article IV Consultation
	Author: IMF Mission
	Release: April, 2015
	Access: IMF's website (www.imf.org) (final access: December 16 th , 2015)
	Remarks: Report on IMF's review on economic and fiscal conditions of Mongolia. Reviews and publishes every year.
2.	Title: Mongolia Public Financial Management Performance Report
	Author: The World Bank
	Release: April, 2015
	Access: The World Bank's website (www.worldbank.org) (final access: December 16 th , 2015)
	Remarks: Report on evaluation result of current PFM in Mongolia in accordance with 28 evaluation indicators including budget reliability, integrity, transparency, budget cycle.
3.	Title: Mongolia Eighth EITI Reconciliation Report 2013
	Author: Mongolia Extractive Industries Transparency Initiative (MEITI)
	Release: December, 2014
	Access: MEITI's website (www.eitimongolia.mn) (final access: December 16 th , 2015)
	Remarks: Annual report on analysis on discrepancy between payment amount (tax, loyalty, and other expenses) by resource developers and governmental resource revenue in 2013.

4) Others Reference Documents

Others Reference Documents	
1.	Title: Sekiyu/Tennengasu Kaihatsu no Shikumi [Oil and Gas Development Process]
	Author: The Institute of Energy Economics, Japan, and Japan Oil, Gas and Metals National Corporation (JOGMEC)
	Release: April, 2013 (first version)
	Access: The Chemical Daily Co., Ltd.
	Remarks: Summarizes the wide range of knowledge on oil and gas development projects including outline of oil and gas industry, contract on exploration and development, technology, economic valuation, and recent trend.
2.	Title: Hitetsu Kinzoku Shigen Kaihatsu Gijyutsu no Shiori [Guide for Development Technology of Nonferrous Metal Resources]
	Author: Oil, Gas and Metals National Corporation (JOGMEC)
	Release: August, 2014
	Access: JOGMEC's website (mric.jogmec.go.jp) (final access: December 16 th , 2015)
	Remarks: Introductory material on basic information, development and use of nonferrous metal.
3.	Title: Sekitan Kaihatsu to Riyo no Shiori [Guide for Coal Development and Use]
	Author: Japan Coal Energy Center (JCOAL)
	Release: -
	Access: JCOAL's website (www.jcoal.or.jp) (final access: December 16 th , 2015)
	Remarks: Introductory material on use and development of coal.

Others Reference Documents	
4.	Title: Mineral Commodity Summaries 2015
	Author: USGS
	Release: 2015
	Access: USGS's website (minerals.usgs.gov) (final access: December 16 th , 2015)
	Remarks: Covers reserve, production and market trend of 83 mineral resource including ferrous and nonferrous metal (industrial raw material) in the United States of America and around the world.