

MPRA

Munich Personal RePEc Archive

Lao PDR Resource-Led Export Growth

Lord, Montague J.

1 November 2011

Online at <https://mpra.ub.uni-muenchen.de/61062/>
MPRA Paper No. 61062, posted 03 Jan 2015 12:58 UTC

Lao PDR Resource-Led Export Growth

Prepared by

Montague Lord

November 2011

Table of Contents

EXECUTIVE SUMMARY	iv
1. INTRODUCTION.....	1
1.1. Overview	1
1.2. Purpose and Scope of Report	1
1.3. Coverage	2
2. PRESENT STRUCTURE AND TRENDS.....	3
2.1.1. Natural Resource in the Global Economy	3
2.2. The Hydropower Industry	5
2.3. The Mining Industry	6
2.4. Medium-Term Perspectives.....	8
3. STRUCTURAL CHANGES AND SECTORAL IMPACTS.....	9
3.1. Overview	9
3.2. The Lao PDR World Bank Development Report 2010	9
3.3. Dutch Disease.....	11
3.4. Recommendations for Improving Export Competitiveness.....	13
4. RESOURCE SECTOR LINKAGES.....	16
4.1. Overview	16
4.2. Offshoot Industries	16
4.3. Scope for Value Addition	16
4.4. Recommendations for Improving Linkages.....	17
5. EXPORT DIVERSIFICATION AND VALUE ADDITION	19
5.1. Introduction	19
5.2. Trends and Opportunities in Export Diversification	19
5.3. Sustaining Export Diversification	24
5.4. Recommendations for Improving Diversification	25
6. CONCLUSIONS AND RECOMMENDATIONS	27
6.1. Summary of Major Findings.....	27
6.2. Recommendations	28
6.3. Action Plan.....	30
6.4. Detailed Project Descriptions.....	34
ANNEX A: CONSULTATIONS.....	37
ANNEX B: REFERENCES.....	38

ABBREVIATIONS

BDS	Business Development Services
BOL	Bank of Lao PDR
CAR	Compensation and Resettlement
CBTA	Cross-Border Trade Agreement
CEPT-AFTA	Common Effective Preferential Tariff of the ASEAN Free Trade Area
DTIS	Diagnostic Trade Integration Study
EdL	Electricité du Laos
ERIT	Economic Research Institute for Trade
ESIA	Environmental and Social Impact Assessment
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GMS	Greater Mekong Subregion
GSP	Generalized System of Preferences
HH	Hirschman-Herfindhal
ICMM	International Council on Mining and Metals
IMF	International Monetary Fund
LDC	Least Developed Country
MEM	Ministry of Energy and Mines
MEPAS	Mineral Exploration and Production Agreements
MOE	Ministry of Education
MOIC	Ministry of Industry and Commerce
MPI	Ministry of Planning and Investment
NERI	National Economic Research Institute
NPSH	Environmental and Social Sustainability in Hydropower Development
NSEDP VII	Seventh National Social Economic Development Plan
NT2	Nam Theun 2
NUOL	National University of Laos
PPA	Power Purchase Agreements
RCA	Revealed Comparative Advantage
ROO	Rules of Origin
SPS	Sanitary and Phytosanitary
TA	Technical Assistance
UNDP	United Nations Development Programme
WREA	Water Resources and Environmental Administration
WTO	World Trade Organization

EXECUTIVE SUMMARY

This report on resource exports serves as an input to the Diagnostic Trade Integration Study (DTIS) Update. Building on earlier studies such as that of the World Bank's *Lao PDR Development Report 2010*, it evaluates the potential impact of resource-led export growth on the external sector as a whole and its feed-through effects on the production of domestic goods and the services industries. Of particular importance is the implications of those resource exports on the development of offshoot activities for the mineral and electricity industries, along with the possible broad-based diversification of the economy into high-value export products. To that end, the report explores a broad range of opportunities and offers recommendations both for generating more domestic value added activities and for strengthening linkages between resource-based industries and the wider economy. The recommendations are presented as possible technical assistance initiatives and policy actions that could assist the Lao PDR to achieve high and sustainable broad-based export growth, building on the Government's current development strategy under the Seventh National Social Economic Development Plan (NSEDV VII).

Summary of Major Findings

Copper and electricity currently contribute more than 60 percent of the Lao PDR's total export earnings. That share is expected to rise to 67 percent in 2015 and 70 percent in 2020. International commodity price volatility greatly impacts on the Lao PDR's foreign exchange earnings. In the last two decades, copper prices have experienced price variations that are six times greater than those of manufactured exports. Under the Lao PDR's current export structure, the volatility of primary commodity prices affects nearly two-thirds of total exports, while 17 percent of the total are electricity exports and therefore subject to much less volatility. These movements will necessitate careful expenditure management policies on the part of the Government.

In the coming years the Lao PDR economy will largely be driven by the natural resource sector, which is expected to contribute between 3.0 and 3.5 percentage points to the projected 7.6 percent average annual growth of real GDP in 2011-2020. In the non-resource sector, the forecast is for agriculture to grow in real terms by 3 percent a year during the period, while the growth of the non-tradable sector (construction and services) will average 6.8 percent a year. Based on these projections, mining and hydro-based activities will contribute one-quarter of GDP, and the non-resource sector will contribute the remaining 75 percent by 2020.

Some of the major benefits of the Lao PDR's resource-led growth are (a) the support for rapid and sustainable growth and poverty reduction in the country; (b) the large increase in fiscal revenues; (c) substantial infrastructural improvements, income enhancements and localized poverty reductions in project sites for mining and hydropower generation; and (d) improvements to environmental legislation and implementation of rules and regulations supporting quality projects. Possible downside risks are (a) the shift of large investments to resource-based projects and away from industry and services; (b) the possible lack of compatibility of mining and hydroelectric power investments with the country's socioeconomic objectives; (c) environmental risks from degradation of the existing natural resource base; (d) social risks from the relocation of people away from the mining or hydroelectric power sites and inflows of people into the sites being developed; and (e) the public sector's inability to effectively manage the large demand for natural resource utilization.

The best opportunities for offshoot activities associated with the mining industry are machinery maintenance services, training of technical personnel in a wide range of capacities, including business services, accounting and safety standards. Over the longer run, there are possibilities for high-value agricultural activities like organic fruits and vegetables and agri-processing industries whose products are in demand by local mining companies. In large hydroelectric power projects there are even more opportunities for offshoot industries. In addition to the opportunities that exist in mining, such as maintenance services for machinery and equipment, business and accounting activities, safety-related work practices and the food service industry, the dams of the hydroelectric power plants provide . There are also large resettlement activities associated with the building of dams, which involve the establishment of new socially cohesive and integrated communities.

The possibility of adding value in the mining industry through downstream activities has been a subject of discussion between the Government and the mining companies. Among the most important prerequisites are (a) the availability of particular inputs for smelting operations, (b) sufficiently large smelting and refining processing activities to make the operations economically viable, (c) proximity to markets for semi-fabricated products of copper, and (d) the ability of smelters to operate on small margins. For the first requirement, the Lao PDR has the necessary inputs for sustaining high value additions to mining operations, namely electricity and water availability from the Mekong River and its tributaries. For the third one, the planned construction of a railway link to China could provide the country with a comparative advantage for bulk shipments to that market. These conditions still leave the issue open for debate and without final resolution. For that reason, it is likely that further analysis will be needed to assess the viability of developing downstream activities in the sector.

Recommendations

In the resource sector, the following recommendations have been made to mitigate possible downside risks from the country's resource-led growth (see Chapter 3, Section 3.2):

- design and implement a comprehensive strategy for hydropower and mining development;
- implement and enforce regulations that ensure the environmental sustainability of natural resources;
- strengthen national and local public sector institutions to better manage the growing number of hydropower and mining projects in the pipeline; and
- mitigate the risk from volatile fiscal revenue flows caused by price swings in international mineral markets.

In the non-resource sector there are six major recommendations for improving the country's competitiveness (see Chapter 3, Section 3.4):

- strengthen private sector-government coordination in the non-resource sectors;
- reduce the regulatory burden on exporters;
- improve trade facilitation;
- bolster the investment climate;
- strengthen intermediation by the financial sector; and
- remedy existing low worker productivity, insufficient skills, and education inadequacies.

Specific recommendations for building linkages and value addition to resource exports are as follows: (see Chapter 4, Section 4.4):

- conduct an in-depth and independent-based assessment on the possibility of adding value to the mining industry through downstream activities;
- for the development of service industries that can support resource-based industries, design and implement a national strategy for long-term technical and vocational training of the labor in those industries;
- for the development of services supporting the resource-based industries, provide incentives for companies to offer on-the-job training;
- for development of new activities in the areas where large-scale mining and hydroelectric projects are located, strengthen business development services (BDS) capacity and, where needed, establish BDS centers that are self-sustainable over the medium to long run; and
- for development of non-resource sectors throughout the country to supply needed goods and services in the resource sector, implement human resource development policies and programs to improve technical skills and education levels in a broad range of industries.

Areas of comparative and competitive advantages: The analysis of the Lao PDR's export performances in specific products or product groupings, and the likely implications of different product-specific export growth rates on the country's overall trade patterns suggests that traditional exports like wood, textiles and clothing, vegetables, and coffee and tea will remain important export products for the country in the coming years. In addition to electrical energy and copper exports, some of the most important emerging exports are live animals, cereals, other base metals, cement, oil seeds and various grains, silk and footwear. Products with dynamic growth rates for both exports and markets are pharmaceuticals, fertilizers, rubber, essential oils and wood pulp. Additionally, the following industries and sectors have been identified as being especially important to strengthening and diversifying the country's export portfolio: (a) food process; (b) high-value agricultural products, especially organic vegetables; (c) tourism; and (d) handicrafts. Textiles and clothing along with wood products are also likely to continue as important exports for the country. While the Lao PDR faces large challenges in diversifying exports into higher value added products, there is greater scope for expanding value added activities into land-intensive activities, such as those originating from agriculture, rather than from labor-intensive activities.

Areas of support for non-resource exports: To support traditional and emerging non-resource exports, the Government will need to continue efforts towards trade reforms, including accession to the World Trade Organization (WTO), and greater interventions to improve trade facilitation, including that affecting trade with neighboring countries under the Cross-Border Trade Agreement (CBTA). Second, improvements are needed in the incentive environment for non-resource exporters as a means of compensating for the high cost of investment in what is often an underdeveloped business environment. Thirdly, targeted interventions by public entities could support a general export discovery process in sectors where returns to learning are high or agglomeration effects particularly strong. Finally, a business-friendly environment will need to encourage and reward innovation and risk-taking on the part of both domestic and foreign investors. For that to occur, the business climate will need to have a stable macroeconomic environment and transparent laws and regulations that ensure a level playing field for all businesses.

Types of broad-based support for non-resource exports: The strategy to expand and diversify exports should ensure that the measurable results of any targeted intervention rewards an export discovery process that has the broadest impact on the non-resource sector. As explained by the World Bank, broad support is less risky than direct support to

narrowly defined product producers, which carries the risk of missing potential future champion activities that have not yet emerged. The NSEDP VII has identified some sectors as priorities, for example, food processing and handicraft industry with targeted growth rates of 12-13 percent for the former and 14 percent for the latter. Instead, the World Bank recommends that intervention be in the form of delivery of targeted public goods in the form of core infrastructure, research, productivity and skills training, assistance towards compliance with international standards for major emerging champion sectors with dynamic export markets. Favored or preferential treatment to a sector should be avoided, as should the adoption of any sector or industry-level interventions that go further than the provision of public goods. It is preferable that interventions support the natural discovery of the country's comparative and competitive advantages.

Sector-specific areas of intervention: Where non-resource sector-specific assistance is believed to be necessary as a way of increasing competitiveness of some emerging industries, then support of non-discriminatory public goods should be provided through activities like business development services, skills training, and research. At the same time, policymakers should continue to lower regulatory burden for exporters to ensure their competitiveness with foreign suppliers. They should also implement behind-the-border trade regimes such as those required to meet international sanitary and phytosanitary (SPS) standards by agribusinesses to enable them to become part of fast-growing international supply chains. As mentioned earlier, some of the possible industries that can support the country's export diversification are conventional and organic vegetables, coffee and tea, cereals, base metals, cement, oil seeds and various grains, silk, footwear, pharmaceuticals, fertilizers, rubber, essential oils, wood pulp, food process, tourism, handicrafts, textiles and clothing, and wood products. However, some of these and other newly emerging products have limited scope for providing greater value added in the future, so caution should be exercised in extending specific support or preferential treatments

1. INTRODUCTION

1.1. Overview

1.1.1. The Lao PDR has an abundance of natural resources in its land, mineral deposits, water and forests. With appropriate policies and oversight, the country's natural resource wealth can contribute to rapid and sustainable growth along with poverty reduction. Much of that growth is expected to be driven by the country's two major tradable resources, mining and hydroelectricity. But, while energy is a renewable resources with possibly permanent income generating possibilities, the economic growth-generating capability of exhaustible mineral resources has a finite time horizon. Development of the tradable non-resource sector is therefore essential to the Lao PDR's sustainable growth and development.

1.1.2. Recognizing this need, the Government of the Lao PDR is preparing an action plan to facilitate development of the country's non-resource sector. Through this plan it intends to establish the implementation mechanism for achieving the goals set forth in the Seventh National Social Economic Development Plan (NSEDV VII).¹ In support of that effort, the DTIS Update provides the basis for a strategic action plan for the attainment of the trade and private sector development goals envisioned by the NSEDV VII. It recognizes the positive and potentially negative effects of the fast growing resource sectors on the whole economy, the importance of strengthening the competitiveness of the non-resource sectors, and the need to establish a clear roadmap on how the country can maximize the benefits from the resource sector and a broader diversification into non-resource based activities.

1.2. Purpose and Scope of Report

1.1.3. This section of the Diagnostic Trade Integration Study (DTIS) Update on resource exports evaluates internal and external factors impacting on the Lao PDR's sector-specific evolution and cross-cutting activities. The analysis builds on earlier studies such as that of the World Bank's *Lao PDR Development Report 2010*, which showed that these types of exports have both positive and negative implications for the country.² Dutch disease is a particular risk, and linkages from the resource sector to the rest of the domestic economy are currently weak. Overcoming these downside effects and strengthening their positive aspects will need to be carefully managed by both the public and private sectors if the Government's goal of achieving export diversification is to succeed.

1.1.4. The present report focuses on the potential impact of resource-led export growth on the external sector as a whole and its feed-through effects on the production of domestic goods and the services industries. Of particular importance is the implications of those resource exports on the development of offshoot activities for the mineral and electricity industries, along with the possible broad-based diversification of the economy into high-value export products. To that end, the report explores a broad range of opportunities and offers recommendations both for generating more domestic value added activities and for strengthening linkages between resource-based industries and the wider economy. The recommendations are presented as possible technical assistance initiatives

¹ Ministry of Planning and Investment (2010), 'Seventh National Socio-Economic Development Plan, 2011-2015'. Vientiane Capital.

² World Bank (2010a), 'Lao PDR Development Report 2010. Natural Resource Management for Sustainable Development: Hydropower and Mining'. Washington, DC. Report No. 59005-LA.

and policy actions that could assist the Lao PDR to achieve high and sustainable broad-based export growth, building on the Government's current development strategy under the NSEDP VII.

1.3. Coverage

1.1.5. This report is divided into the following chapters:

- Following this introductory chapter, *Chapter 2* describes the situation of the Lao PDR economy in the context of key global trade themes in natural resources.
- *Chapter 3* examines structural changes in the economy and their likely sectoral impact, especially in the external sector where resources are important catalysts of national economic growth.
- *Chapter 4* analyzes the potential for offshoot industries and opportunities for value additions to the resource sector; recommendations are then made on how to strengthen linkages between the non-resource and resource sectors, as well as ways to support the development of offshoot industries.
- *Chapter 5* explores the potential for export diversification and sustaining new activities; it also identifies the major challenges to diversification and ways to overcome existing constraints.
- *Chapter 6* sets forth recommendations for the Action Matrix on methods to improve linkages between the resource sector and the broader domestic economy, and on the needs for further investigation and possible near-term support for potential new export sectors.

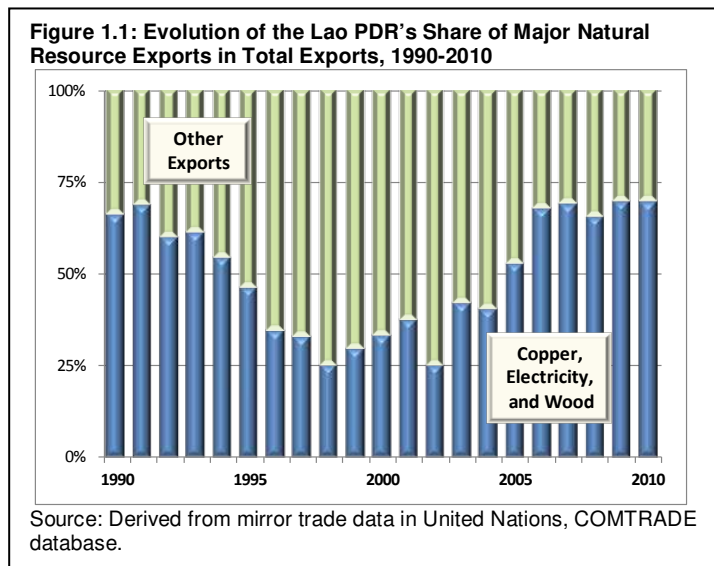
2. PRESENT STRUCTURE AND TRENDS

2.1.1. Natural Resource in the Global Economy

2.1.1. There are five key global trade themes in natural resources that directly impact on the Lao PDR's perspectives of its natural resource wealth:³

- (i) The value of natural resource trade has expanded rapidly in recent years, due primarily to the sharp rise in commodity prices, which has tended to further concentrate resource-rich countries' trade in basic commodities and encourage over-specialization in primary activities;
- (ii) Price volatility of natural resources have created external shocks on economies and given rise to large swings in fiscal revenues and expenditures, while adversely affecting investment decisions;
- (iii) Trade in natural resources tends to occur across regions, that is, Southeast Asian countries ship their resources to other regions rather than trading intra-regionally;
- (iv) Gains from natural resource trade are generally static because they have few feed-through effects to the domestic economies and can even harm economic performance through 'Dutch disease', corruption and internal conflicts of interests; and
- (v) Spillovers and externalities can have environmental consequences with long-term negative consequences on growth and development, unless controlled and carefully managed by governments.

2.1.2. In the case of the Lao PDR, natural resource exports from mining, electrical energy and wood accounts for about 70 percent of the country's total exports (Figure 1.1). However, the composition of those exports has changed in the last two decades. Wood exports, which in the early 1990s contributed to nearly two-thirds of the country's total exports, now account for less than 10 percent of all exports. In contrast, copper and electricity exports have expanded their contribution from less than only 2 to 4 percent in 2003-04 to over 60 percent by 2010, largely due to the



introduction of large-scale mining and hydropower operations in recent years. The World Bank has projected an expansion of the country's export reliance on mining and electricity exports to 67 percent in 2015 and 70 percent in 2020.

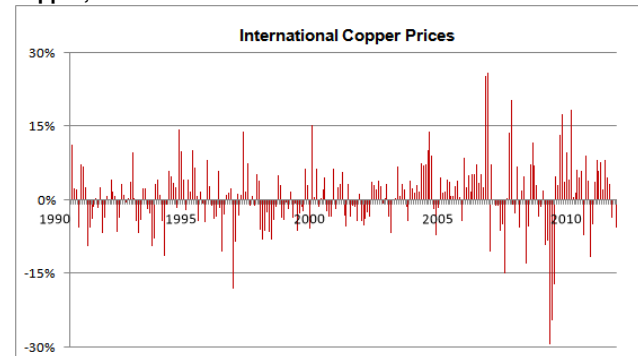
³ World Trade Organization (2010), "World Trade Report 2010: Trade in Natural Resources". Geneva. Available:

http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf

2.1.3. In 2010 the Lao PDR's exports grew by nearly 43 percent. They are expected to grow by almost 27 percent in 2011 because of larger resource exports, driven by the growth in electricity generation and higher mineral export earnings associated with international price hikes. Non-resource exports particularly from the manufacturing sector also are expected to grow by 36 percent in 2011, whereas agriculture exports have slowed as a result of severe flooding in the region. Notwithstanding the overall gains in foreign exchange earnings, imports are expected to have outpaced exports as a result of strong demand for capital goods in the natural resource sector, the rise in fuel prices, and an acceleration in non-fuel, non-resource imports from last year's growth. As a result of these developments in the trade account, along with profit and dividend repatriation from the resource sector, the current account deficit will increase from 7 percent of GDP in 2010 to more than 11 percent of GDP in 2011.⁴ While the present balance of payments outlook for 2011 remains positive, an excessive concentration of foreign investment and exports in a few natural resource-based products makes the country highly susceptible to foreign exchange earnings uncertainty in the coming years.

2.1.4. International price volatility of commodity exports has impacted on the Lao PDR's foreign exchange earnings and necessitated careful public expenditure management policies on the part of the Government. Copper prices, in particular, have had large month-to-month variations, ranging as much as from -30 percent to 26 percent (Figure 1.2). On average, annual price variations of copper have been six times greater than those of manufactured exports in the last two decades. Because of its high degree of concentration in a relatively few primary products for the bulk of its foreign exchange earnings, the Lao PDR remains highly susceptible to external shocks from large short-term commodity price swings. The market for hydroelectricity, however, is much less volatile because of the fixed-price structure of contracts. Under the Lao PDR's current export structure, volatility of primary commodities affects nearly two-thirds of total exports, while 17 percent of the total are electricity exports and therefore subject to much less volatility.

Figure 1.2: Monthly Percent Change in International Price Copper, 1990-2010



Note: The copper price reference is the London Metal Exchange (LME), grade A, minimum 99.9935% purity, cathodes and wire bar shapes, settlement price.
Source: World Bank, Commodity Price Data, monthly reports.

2.1.5. The Lao PDR's resource exports are generally directed to regional markets, which differs from the global pattern in which trade occurs across regions. Overall, nearly 60 percent of all exports are shipped to the neighboring countries of Thailand, Vietnam and China, with only about 10 percent of exports going to the EU and US markets. The geographic concentration of natural resource exports is much greater: in copper, Thailand, China and Vietnam absorbs over 90 percent of copper and copper ores, with some significant amounts being shipped to Malaysia and the Republic of Korea. In electrical energy, Thailand is the sole market.

2.1.6. The country's rapid growth of mineral and electrical energy exports could have long-term negative consequences for overall growth and development unless government policies support diversification, regulatory transparency and conservation measures, fiscal

⁴ World Bank (2011a), Lao PDR Economic Monitor. November 2011.

policies to smooth revenue swings from commodity price volatility, and trade policies such provide broad non-discriminatory support to sectors targeted by the NSEDP VII.

2.2. The Hydropower Industry

2.2.1. The Lao PDR has large hydropower potential, and a major portion of existing hydropower capacity is for power exports. The fast-growing hydropower industry is developing new hydro power plants for domestic consumption and export of power, transmission lines and distribution networks to electrify consumers countrywide. The Government's key energy sector objectives are, first, to earning foreign exchange by setting up export-oriented hydropower projects and exporting electricity and, second, to provide electricity to the nation by expanding and improving the main grid or, where cost effective, by off-grid electrification.⁵

2.2.2. Government revenue from hydropower exports are expected to grow 20 times their present level of US\$17 million to US\$ 350 million by 2020 and to exceed US\$ 700 million by 2025 (World Bank, 2010). Hydropower export are mainly directed to Thailand and Vietnam and, to a lesser extent, Cambodia. Two IPPs, Theun-Hinboun (210 MW) and Houay Ho (150 MW), are connected to the Thai system through dedicated transmission lines and are dispatched by the Thai power utility EGAT.

2.2.3. One important way to diversify electricity exports is through grid-to-grid power trading within the Greater Mekong Sub-region (GMS). The GMS Planning Group, which is made up of the planning departments of GMS national utilities, has completed a regional system planning for 500 kV and 220 kV links among grids of different GMS countries. This system will eventually allow greater flexibility of electricity trading arrangements among GMS member countries. However, the Lao PDR has difficulties in participating in the GMS grid-to-grid scheme because its large-scale hydropower plants are being developed by international investors who need to secure a power purchase agreement from creditworthy utilities such as EGAT for power purchase agreements (PPAs). They are unable to rely on EdL because of weak technical and financial capacity. In particular, EdL lacks the financial capacity to build the high voltage and it lacks experience in high voltage electrical power systems (Fraser, 2010). Yet participation in the GMS grid-to-grid power trading system is essential for the Lao PDR to open possibilities for alternative markets in the medium to long run.

2.2.4. Domestic electricity consumption has become more affordable and reliable as a result of hydropower developments. The Government aims to reach 80 percent electrification of the country by 2015 and 90 percent by 2020. Four sub-grids supply the country: (a) the Northern Grid; (b) Central Grid 1; (c) Central Grid 2; and (d) Southern Grid. They are all connected to the Thai grid, but not with each other. Because the country is almost entirely dependent on hydropower for its power generation mix, supply shortages arise in the dry season and electricity has to be imported from Thailand. Electricité du Laos (EdL) is the state-owned power utility responsible for operating the four national power grids. It is the exclusive power supplier to the domestic market. The Government's Power Development Plan 2010-2020 maps out future development strategy for EdL's network development (Somvichith, 2011). A recent workshop on the plan (Baño, 2011) identified some of the most important challenges: (a) identifying financing sources for the various

⁵ Details of the Lao PDR's Lao Government's hydropower development are maintained in the *Powering Progress* website maintained by the Department of Energy Promotion and Development (EPD), Ministry of Energy and Mines (MEM). Available: <http://www.poweringprogress.org>.

transmission projects; (b) integrating the Lao PDR into the GMS grid system; and (c) achieving the goal of 90 percent electrification by 2020.

2.2.5. The Law on Promotion of Foreign Investment, approved by the National Assembly in 2004, provides the overall framework for concessions in the hydropower sector. Implementation difficulties arise from (a) confusion in mandates of the various institutions involved; (b) lack of clear standards and procedures for investors; and (c) lack of capacity within government agencies. The Ministry of Planning and Investment (MPI) is the lead agency for negotiations of concession agreements, while the departments of the Department of Electricity and Department of Energy Promotion and Development, Ministry of Energy and Mines (MEM), is responsible monitoring and enforcement. Fraser (2010) points out that the full details of concession agreements, particularly large or sensitive ones, are sometimes not disclosed to MEM, which makes enforcement difficult, if not impossible. Lack of coordination between government agencies is compounded at the provincial and lower levels of government where capacity is often at its weakest.

2.2.6. A number of improvements have been made in the regulation of the industry. First, GOL adopted the National Policy on Environmental and Social Sustainability in Hydropower Development (NPSH) in 2005 to ensure sustainability and equitable benefit distribution of hydropower developments, as well as replicate relevant lessons from the Nam Theun 2 (NT2) Project in other investments (Porter and Shivakumar, 2011). Second, the line ministry was reorganized in 2007 from Ministry of Industry and Handicraft to the current Ministry of Energy and Mines, with explicit emphasis and mandates on these sectors. Third, the Electricity Law was revised in December 2008. The approval of these laws signals more streamlined decision procedures in the hydropower industry. Fourth, besides internal strengthening in MEM, the Water Resources and Environmental Administration (WREA) was created in 2007 as part of the Prime Minister's Office with the intention to assume the role as the environmental and social regulator, responsible for implementation and oversight of the Compensation and Resettlement (CAR) Decree adopted by the GoL in 2005 and the new Environmental and Social Impact Assessment (ESIA) Decree which approved in 2010.

2.2.7. The following are the major institutional and capacity building recommendations that have been made for improving the sector (Fraser, 2010; Komany, 2008; and ADB, 2010): (a) apply a holistic approach to through an integrated energy policy, and the emerging environmental and social issues; (b) for the GMS-wide power system, harmonize standards for transmission regulations, grid codes and other metric systems; (c) build up the institutional base to improve management capacity for the concessioning process and compliance with minimum social and environmental safeguards; (d) improve inspection procedures and monitoring for compliance, particularly at the local level where actual projects and compensation programs are implemented; (e) improve procedures for management and tracking of revenue and benefit streams to match the surge in tax income; and (f) strengthen the logistical resources for supervision of the sector by the Ministry of Energy and Mines (MEM).

2.3. The Mining Industry

2.3.1. The mining sector has only recently emerged as a major driving force for the Lao PDR economy. The production value of mining increased from only US\$8 million in 2002 to US\$600-700 million in 2008. Key minerals are copper, gold and silver. Copper dominates mineral exports with an estimated value of US\$1.3 billion in 2011, followed by gold at US\$0.24 billion in that year (International Monetary Fund, 2011). Government

revenue from taxes, royalties, and fees equaled about US\$90 million in 2008, representing roughly 20 percent of total government receipts. By 2020 mining production could account for 20 to 30 percent of government revenues and it could contribute 10 percent to its GDP (World Bank, 2010).

2.3.2. The two large-scale mines operating in the Lao PDR account for over 90 percent of the country's total mining production. They are the PBM Phu Kham copper-gold operation, located 120 kilometers north of Vientiane capital, and the MMG Sepon gold and copper mine, located near Sepon in Savannakhet province. It is estimated that these two mines will contribute around 10 percent of annual GDP annually over the coming decade (ICMM, 2011). However, new investment in exploration and development will be needed to sustain mineral exports to prevent production, export and tax revenues from falling as mine closures near.

2.3.3. Exports are mainly directed to the neighboring countries of Thailand (65 percent of total copper exports), Vietnam (17 percent), China (7 percent), and Malaysia and the Republic of Korea (5 percent each). Transportation of minerals is currently limited to shipments or transshipments to the neighboring countries of Thailand and Vietnam. A planned railway system between Laos and China would provide both high speed passenger travel and slower cargo shipments that would tend to dominate the transport system.⁶

2.3.4. The new Minerals Law replacing the 1997 Mining Law was passed into legislation in 2009. Under the previous law, a system of Mineral Exploration and Production Agreements (MEPAs) or "concession agreements" was used. Under the 2009 Mineral Law, new mining applications are handled through legislation, with approval required at each stage of the mining process through the Ministry of Planning and Investment (MPI), and large projects requiring approval by the National Assembly. To the extent that the concession agreements provide comprehensive details on the specific terms of operation by the mining agreement, those concession agreements supersede all other laws and regulations of the country. Yet confusion still arises among ministries between the laws and regulations that are generally applicable to businesses and those that apply to the mining companies under the concession agreements (World Economic Forum, 2010, and interviews with mining companies by the author). The problem stems from the fact that while the Mineral Law has been promulgated, detailed regulations to clarify the legal text have not been drafted. As a result, the existing legislation appears as a major obstacle to the development of the mining sector (Larsen, 2010). A technical assistance (TA) project TA for the mining and hydropower sectors supported by IDA and AusAID is intended to address numerous areas of operational procedures, ranging from performance and investment requirements for prospecting and exploration work to requirements for environmental and social safeguards, emission standards, and other procedures (World Bank, 2010).⁷

⁶ The 400 kilometer (216 mile) rail project will link major Lao cities (Luang Namtha, Luang Prabang, and Vang Vieng) with Kunming, capital of Yunnan province. Later project phase would link Vientiane to Vietnam through Khammouane province, and through the Laobao border checkpoint in Savannakhet.

⁷ There are four components to the project. The first component is joint hydropower and mining learning program that aims to build capacity and generate public awareness on the hydropower and mining sectors. The second component of the project is hydropower sector development and aims at capacity building to support sustainable hydropower development in the country. Activities will cover the entire value chain, from planning, concessioning, construction, and operation to revenue management. The third component of the project is mining sector development and it aims to

2.4. Medium-Term Perspectives

2.4.1. The medium-term outlook for the Lao PDR's resource sector is favorable.⁸ Uncertainty in the global economy, however, will affect mineral exports more than electrical energy exports. The reason is that the flow of electricity exports will mainly be determined by the existing timetable for the development of hydropower stations, while copper export earnings will continue to be subject to volatile prices in the international market. The International Monetary Fund's *World Economic Outlook* (2011b) projects copper prices to soften over the medium term. As a result, Lao PDR's copper exports are expected to average about US\$1 billion a year through 2015. For gold, production of the two main mining companies is projected to peak at 338,000 ounces in 2014. With gold prices expected to rise in the coming years (IMF, 2011b), the forecast is for Lao PDR's export revenue from gold to expand to almost US\$0.56 billion by 2016.

2.4.2. The World Bank's (2010a) projects for the mining sector consider three scenarios. In the first, the price of copper is assumed to be that officially projected by the World Bank (2010c), where copper prices are assumed to remain around US\$5,000 a ton. Under the currently planned expansion of existing mines, the volume of copper exports is assumed to reach 210,000 metric tons by 2020. The second scenario assumes a 10 percent lower price and a lower volume of copper, while the third one assumes a 20 percent higher price and an annual export volume of 340,000 metric tons by 2020. For the hydropower sector, it is assumed that by 2025 electricity exports will reach close to 65,000GWH, valued at over US\$3.5 billion dollars, which would generate about US\$800 million dollars in government revenues.

2.4.3. For the non-resource sector, the World Bank assumes that real economic growth of around 7.5 percent a year will be sustained through 2020. That growth will stimulate an expansion of around 3 percent a year in agriculture between 2011 and 2020. It is further anticipated that the non-tradable sector (construction and services) will grow by over 7 percent a year between 2011 and 2015 and then slow to 6.6 percent a year between 2016 and 2020. Based on these assumptions, growth will largely be driven by natural resources and the non-tradable sectors, especially from the recovery in the tourism sector.

2.4.4. By 2020 the World Bank expects the contribution of mining and hydro resources to reach one-quarter of GDP, with the non-resource sectors will contribute the remaining 75 percent. Non-resource sector activities will be an important contributor to employment, but repatriation of profits from foreign investment in the resource sector may prevent poverty from being reduced. Because of this possibility it will be all the more important that the Government's revenue from natural resource-based activities be directed towards improving non-resource sector activities in order to meet the targets established by NSEDP VII.

provide funding for three subcomponents in the mining sector: (a) improving sector governance and the enabling environment; (b) strengthening of government oversight capacity; and (c) promoting minerals development. The fourth component of the project is project administration and management, supporting consultancy services for the project office established within Ministry of Energy and Mines (MEM) for coordination and management of the project implementation and acquisition of logistical and equipment.

⁸ The material in this section summarizes the forecasts of the World Bank (2010a) and International Monetary Fund (2011a), unless otherwise noted.

3. STRUCTURAL CHANGES AND SECTORAL IMPACTS

3.1. Overview

3.1.1. This chapter examines structural changes in the economy and their likely sectoral impact, especially in the external sector where resource exports are playing an increasing role in national economic growth. These structural changes can have widely differing effects on the economy. The World Bank Lao PDR Development Report 2010's findings that show that resource exports have both positive and negative implications, and that growth in the resources sector must be managed carefully, particularly if export diversification is to occur (World Bank, 2010). One possibly negative impact can occur when the exploitation of natural resources undermines the competitiveness of manufacturing and other value added activities by raising factor input costs and causing an appreciation of the real exchange rate, that is, the creation of a so-called 'Dutch disease'. It creates a particular risk when linkages from the resource sector to the rest of the domestic economy are weak. The chapter also reviews the findings of economic models of the Lao PDR showing structural changes that are occurring over the medium term and how those changes impact on the likely contribution of various sectors of the Lao economy. The impact of those structural changes on the availability and price of labor and other factors of production for industries are also investigated.

3.2. The Lao PDR World Bank Development Report 2010

3.2.1. The World Bank's *Lao PDR Development Report 2010* finds that Lao PDR's natural resource wealth has both positive and negative implications.⁹ On the positive side, natural resource development provides the following:

- support for rapid and sustainable growth and poverty reduction in the country;
- a large increase in fiscal revenues;
- substantial infrastructural improvements, income enhancements and localized poverty reductions in project sites for mining and hydropower generation; and
- improvements to environmental legislation and implementation of rules and regulations supporting quality projects.

These positive effects need to be balanced with the following possible downside risks:

- the allocation of large investments in resource-based projects can take place at the expense of industrialization activities and employment;
- mining and hydroelectric power investment may not be compatible with the country's socioeconomic objectives;
- environmental risks from degradation of the existing natural resource base;
- social risks from relocation of people away from the mining or hydroelectric power sites and inflows of people into the sites being developed; and

⁹ World Bank (2010), "Lao PDR Development Report 2010. Natural Resource Management for Sustainable Development: Hydropower and Mining". Washington, DC., Department for Poverty Reduction and Economic Management, East Asia and Pacific Region, Report No. 59005-LA.

- the public sector's inability to effectively manage the large demand for natural resource utilization.

3.2.2. The Government of the Lao PDR has committed to mitigating the downside risks of resource-led growth and to supporting the upside gains from developing the country's natural resources. At present, however, the growth in the country's projects supplying those resources far exceeds the Government's capacity to monitor and implement those projects. To overcome these limitation, the World Bank (2010) report recommends the following actions:

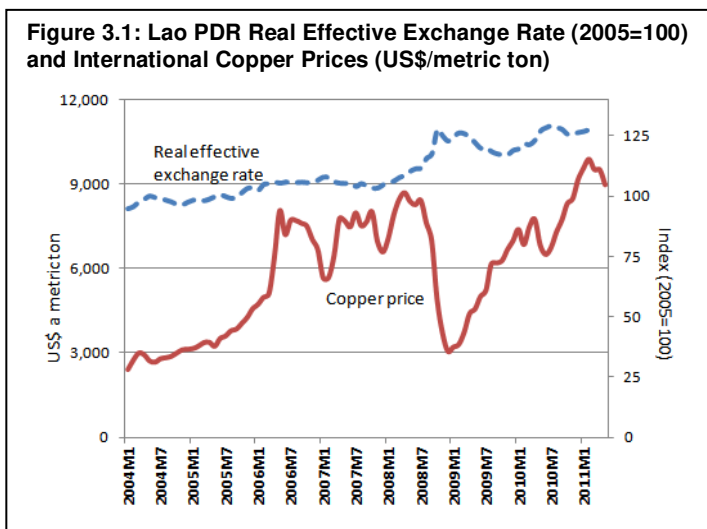
- Design and implement a *comprehensive strategy for hydropower and mining development*. A comprehensive strategy has the advantage of offering an operational framework under which to manage the cumulative effects of individual projects. It also ensures that projects within a group are prioritized in such a way as to maximize the overall social and economic benefits from natural resource utilization. Neither of these benefits are possible under a project-by-project approach to managing resources. The overarching objective of the strategy should be to maximize the positive macroeconomic, fiscal, and poverty-reduction outcomes while minimizing negative outcomes and managing risks.
- Implement and enforce regulations that ensure the *environmental sustainability of natural resources*. Recommended actions include (a) separating of public sector management of environmental protection from that dealing with the exploitation of natural resources; (b) strengthening the Government's financial and human resource capacity to protect the environment; (c) bolstering the capacity of national and local government agencies to improve safeguards screening, monitor compliance, and toughen enforcement; (d) providing a method for payment for eco-services that rewards projects benefiting ecosystems; and (e) supporting Strategic Environmental Assessments of the mining and hydropower sectors to identify their long-term, cumulative environment effects.
- Strengthen *national and local public sector institutions* to better manage the growing number of hydropower and mining projects in the pipeline. Recommended actions are (a) improve coordination between ministries and clarify responsibilities within each line ministry; (b) improve transparency and administrative capacity to manage the use of natural resources; (c) ensure that line ministries have sufficient resources to manage natural resource projects, and provide each with revenue sharing arrangements.
- Mitigate the *risk from volatile fiscal revenue flows* caused by price swings in international mineral markets. Recommended actions to avoid possible fiscal crises from volatile revenue flows are (a) delinking mineral resource revenues from recurrent fiscal expenditures; (b) establishing rules for limiting public debt as a percentage of gross domestic product (GDP); (c) applying non-discriminatory fiscal regimes to hydro and mining sector projects; and (d) using taxation methods to generate revenue from hydro and mining sector projects.
- Improve the *investment environment in the non-resource sector* to encourage the development of manufacturing activities. Recommended actions are (a) review and eliminate anti-competitive regulations to encourage cross-border transportation and logistics services; (b) implement and strengthen sanitary and phytosanitary (SPS) measures and capabilities of agencies; (c) upgrade the education and technical skills of the labor force; (d) simplifying procedures in licensing and taxation; (e) streamline the taxation system and accelerate implementation of new legislation; (f) deepen the

financial sector and by reform state banks to improve access and reduce the cost of accessing investment finance.

3.3. Dutch Disease

3.3.1. The mineral and hydroelectric export boom along with the sharp rise in copper prices between early 2009 and February 2011 have greatly contributed to the Lao PDR's strong growth performance in recent years. Despite weak links to other sectors in the economy, the expansion of the natural resource sector can negatively impact on other sectors through inflation and an exchange rate appreciation. The so-called Dutch disease occurs when are large and sustained capital inflows into the natural resource sector increase demand in the non-traded goods sector relative to the traded non-resource sector. First, there is a 'spending effect' as the increased demand causes inflation to accelerate and the real exchange rate to appreciate. Higher prices for domestic and foreign inputs raise the cost of production in the agricultural and manufacturing sectors and thereby give rise to a contraction or stagnation of other tradable sectors in the economy. Secondly, a 'resource-movement effect' occurs because the booming resource sector draws mobile factor inputs away from other sectors. The greater the amount of factors inputs used by the resource sector, the greater the drawdown of those factors on the traded non-resource sector and the non-traded sector.¹⁰

3.3.2. There is some evidence of a 'spending effect' in the Lao PDR economy since the since the beginning of the mineral and hydroelectric export boom. The real effective exchange rate has appreciated by nearly 30 percent since early 2005, while copper prices have surged 200 percent in the same period (Figure 3.1).¹¹ The appreciation stems mainly from lower foreign to domestic prices caused by higher domestic



that fuels inflation, and by the monetary authority's policy to stabilize exchange rate movements. The Bank of Lao PDR (BOL) maintains a managed floating exchange rate system, with the objective of limiting currency fluctuations within ± 5 percent a year relative to major currencies. The International Monetary Fund (2011) estimates that the currency is overvalued, between 8 and 26 percent depending on the estimation method, but the misalignment is also due to the large volume of imports being financed by foreign direct investment (FDI). To overcome the misalignment, the IMF has recommended tighter fiscal and monetary policy alongside structural reforms aimed at improving the business climate and trade integration with a view to narrowing the non-resource current account deficit.

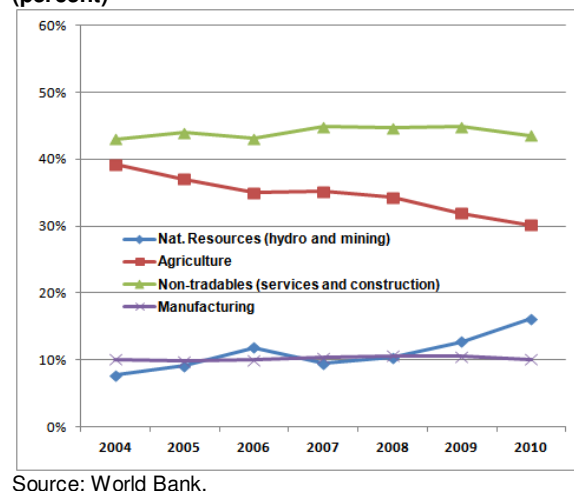
¹⁰ The explanation of the Dutch Disease and decomposition into the spending and resource-shift effects are due to W. M. Corden and P. Neary (1982), "Booming Sector and De-Industrialization in a Small Open Economy", *Economic Journal*, 92: 368.

¹¹ Figures 3.1 and 3.2 are updates of those that appear in Brahmhatt and Vostroknutova (2010).

While the impact of an overvalued currency has been found to be fairly negligible in the short run, Kyophilavong and Toyoda (2008) found a possible longer run structural stagnation in the non-resource tradable sectors (manufacturing and agriculture in particular).

3.3.3. There is less support for a possible ‘resource-movement effects’. Figure 3.2 shows the increasing contribution of the natural resource sector to GDP and the declining importance of the agricultural sector, possibly associated with a crowding out effect. The contributions of both manufacturing and the non-tradables

Figure 3.2: Lao PDR Sectoral Contributions to GDP (percent)



sectors have stable. Brahmhatt and Vostroknutova (2010) point out that the relative movements of these sectors within the overall economy may have been caused by other factors than those associated with the ‘resource-movement effect’. For example, growth in the manufacturing sector has been driven by the food processing and small assembly industries; the expansion in the construction industry was due to large government spending; and the growth of the tourism was largely associated with the surge in international tourism travel to Southeast Asia. Moreover, Insisienmay (2008) has observed that the mining sector employs less than 1 percent of the country’s labor force, so it is unlikely that an expansion in that sector will have a significant impact on the agricultural sector, where 80 percent of the labor force is employed.

3.3.4. To offset these negative effects, stronger linkages between the natural resource sector and agricultural and manufacturing activities are needed to offset the currency appreciation. Improved market efficiency and an increased emphasis on higher-value agricultural products can help to maintain the country’s non-resource export competitiveness. Government policies can facilitate the process by reducing obstacles to investment and export-oriented activities in the non-resource sectors to ensure that favorable benefits from the resource boom also befall the traded non-resource sectors. The loss of export competitiveness due to the overvaluation of the currency needs to be considered. To counter further appreciation of the currency, tighter macroeconomic policies would help to control inflation, while productivity-enhancing structural reforms would improve the competitiveness of the economy in general and the non-resource sectors in particular.

3.3.5. The country’s low ranking in the World Bank’s Doing Business Survey (World Bank, 2011b) suggests areas where improvements could be made. These areas include protecting investors (where the Lao PDR ranks 182 out of 183 countries), carrying out business across borders (ranked 168), resolving insolvencies (ranked last at 183), getting credit (ranked 166), getting electricity (ranked 138), and paying taxes (123). For exports, IMCC (2011) points out that “it currently requires nine procedures, takes an average of 50 days and costs the equivalent of 2.4 times the GNI per capita (in 2008 values – US\$760) to export from the Lao PDR. Similarly, it requires 10 procedures, takes 50 days and costs the equivalent of 2.7 times GNI per capita (in 2008 values) to import a container. Overall,

the cost per container, either to export or to import, is more than double that of any of the comparator Asian countries.

3.4. Recommendations for Improving Export Competitiveness

3.4.1. While considerable progress has been made since the DTIS (2006) in overcoming impediments to the Lao PDR's export competitiveness, several obstacles remain. Others have emerged as a result of the recent surge of resource exports. The recommendations made for overcoming some of the emerging obstacles are as follows:

- Strengthen private sector-government coordination in the non-resource sectors.
- Reduce the regulatory burden on exporters.
- Improve trade facilitation.
- Bolster the investment climate.
- Strengthen intermediation by the financial sector.
- Remedy existing low worker productivity, insufficient skills, and education inadequacies.

3.4.2. *Strengthen private sector-government coordination in the non-resource sectors:* Improvements in the competitiveness of non-resource sectors requires the joint efforts of businesses and government. While the evidence on diversification, survival rates and success rates clearly demonstrate that picking winners is likely to be counterproductive, the Government has an essential role to play in supporting new and emerging non-resource based activities. To this end, the DTIS (2006) recommended that support be given to the formation of industry cluster groups where businesses working together could design and implement strategic initiatives covering a range of initiatives to boost export competitiveness. They included improving market linkages, encouraging product innovation and branding, development of value chains and management of supply chains, supporting development of special economic zones (SEZs).

3.4.3. *Reduce the regulatory burden on exporters:* The government recently simplified and streamlined the country's regulations in the Enterprise and Investment Promotion Laws. However, exporters, especially those in the agricultural production industry, still spend more than twice as much time as non-exporters dealing with regulators. On average, exporters are inspected more times every year than non-exporters (Record and Nghardsaysone, 2010b). More importantly, while the recent reforms have diminished the regulatory burden on non-exporters, the time that exporters had to spend dealing with regulators still increased between 2006 and 2009 (see Record and Nghardsaysone, 2010b). Some recommendations to address these obstacles and improve export competitiveness are:

- modernize border procedures, especially by introducing a risk-based approach to screening imports and exports, ensuring consistency in the application of procedures, and making rules, regulations, and procedures more transparent by publishing requirements in a user-friendly manner (World Bank, 2010a); and
- More broadly, shift the focus of private sector and trade facilitation reforms from legislative action to the practical implementation of the existing laws and the adoption of international good practices (Record and Nghardsaysone, 2010b).

3.4.4. *Improve trade facilitation:* Cross-border trade facilitation continues to undermine the competitiveness of exports. The Lao PDR ranks 118 out of 150 economies on the

World Bank's Logistics Performance Index, (World Bank, 2011d). Although the country's ranking on timeliness in reaching a destination is relatively low at 89, its ranking is particularly poor in logistics competence (137), infrastructure quality (132), ability to track and trace shipments (113), and the efficiency and effectiveness of its customs and other border procedures (113). The country also continues to perform poorly in its ranking on easy of doing business across borders, where its ranking is 168 out of 183 countries (World Bank, 2011b). It takes twice as long (44 days) to export or import a product as other East Asia and Pacific countries; the cost of shipping a container is also twice as high as the regional average. The World Bank is currently undertaking a Transport and Trade Facilitation Assessment that will highlight and prioritize the key issues and suggest priority reforms to improve the country's situation. According to Record and Nghardsaysone (2010b), anti-competitive regulations, including restrictions on cabotage, are a major part of the problem. These regulations prevent there being a level playing field between domestic and foreign trucking firms and results in significant costs to Laos-based traders. The Lao PDR's freight logistics sector is already facing difficulties because it is in the early stages of development, and these regulations only serves to undermine their ability to emerge as important players in the industry. Record and Nghardsaysone (2010b) also point out that the lack of a cost-effective, secure, and integrated regional transit system with a single integrated transit document and guarantee regime is another heavy constraint on cross-border trade operations. There is also much work needed for the successful implementation of a modern ICT system, and there remain problems of coordination between key border management agencies. To address these obstacles and improve export competitiveness, the World Bank (2010a) makes the following recommendations:

- Eliminate the anti-competitive and inefficient regulations in the transportation;
- Introduce a domestic protection system for SPS compliance;
- Improve SPS regulations and infrastructure for agribusiness exports; and
- encourage public-private partnerships in creating near-border storage facilities.

3.4.5. *Improve the investment climate:* The World Bank's Investment Climate Assessment (2011c) identifies or taxation, access to finance and an inadequately educated workforce as the investment constraints for the non-resource sector. The Unified Investment Promotion Law of 2010 improves on the previously separate domestic and foreign investment laws and eliminates the need for new investors to apply for an investment license. It helps to create a level playing field for both domestic and foreign investors by harmonizing business entry procedures and investment incentives. Foreign investors in general business activities can now proceed straight to registration under the Enterprise Law. However, a lack of full transparency and the inconsistent interpretation and implementation of sector-level regulations still create problems for investors.

3.4.6. Access to credit and excessively high costs of financing still represent one of the largest constraints to businesses. In fact, the Lao PDR's ranking for ease of getting credit has fallen from 155 out of 183 countries in 2010 to 166 in 2011 (World Bank, 2011b). To address these obstacles and improve export competitiveness, the Davading (2010) and the World Bank (2010a) have recommended that the Government help to increase the capacity of the private banking sector to serve SMEs and other local enterprises by:

- reforming collateral requirements and procedures as well as the institutional arrangements for exercising creditors' rights;
- upgrading the bankruptcy law;

- improving loan screening procedures and collateral requirements;
- promoting formal microfinance and other financial institutions to diversify and improve financial products and services, especially for small businesses; and
- helping banks move away from administered interest rates to an environment with more competition, better prudential regulations, and more effective supervision.

3.4.7. Recommendations for improving the tax system, raising labor force productivity and skills, and generally strengthening the investment climate and improving export competitiveness are:

- increase access of exporters to domestic and international markets by (a) investing in business infrastructure such as rural roads, electricity, logistics, and communications; (b) continuing policy reforms to facilitate the movement of goods within and across borders; and (c) helping the private sector to build its capacity to comply with market standards such as SPS and technical barriers to trade (World Bank, 2010a);
- fully implement all recently approved legal and regulatory instruments for business, including the Enterprise Law, the Unified Investment Promotion Law, the Customs Law, bankruptcy laws, and regulations to simplify procedures for international trade (World Bank, 2010a);
- overcoming labor shortages and skill mismatches by strengthening technical vocational education and training initiatives (World Bank, 2010c);
- providing incentives for firms to invest in in-service skill development activities and on-the-job training in key industries, such as garments, tourism, and other sectors (Davading, 2010);
- carrying out an in-depth analysis of skill mismatch to guide policy in this area (World Bank, 2010c);
- developing a national strategy for the long-term technical and vocational training needs of the labor force in close collaboration with the private sector and producing a plan for developing the institutional capacity to deliver the training (Davading, 2010);
- regularly monitor labor force trends to better understand structural market changes (World Bank, 2010c);
- improve the tax administration by lowering the VAT threshold and moving towards a unified accounting system while gradually eliminating the dual-track accounting and lump-sum taxation system (Davading, 2010; World Bank, 2010a); and
- introduce unified minimum tax rates and accounting and financial statement requirements, while also streamlining tax administration for small firms (World Bank, 2010a).

4. RESOURCE SECTOR LINKAGES

4.1. Overview

4.1.1. This chapter examines how the possibly negative effects from resource dependence can be ameliorated by strengthening linkages. The potential for offshoot industries are investigated, as are value additions to the resource sector. Recommendations are made on how to strengthen linkages between the non-resource and resource sectors, as well as ways to support the development of offshoot industries.

4.2. Offshoot Industries

4.2.1. Large-scale natural resource exploitation has the potential to improve local living standards and support the Government's overall poverty reduction strategy. In communities where resource-based projects are underway, communities can benefit from employment and income-generating opportunities. Demand for goods and services generated by the large mining and electrical energy projects can also support the development of offshoot industries from which local and national sourcing of products and services occur. In mining the largest ongoing operating expenses are for (a) fuel used in machinery and equipment, (b) earth moving machinery, (c) utilities, (d) food services, and (e) machinery and maintenance services. Of these, electricity is the only one that is currently sourced entirely from within the Lao PDR. Fuel supplies are wholly imported, as are earth moving and other machinery. Most of the food supplies are also imported, despite efforts to source from domestic suppliers. In the short to medium term, the best opportunities for the development of domestic activities to service the mining companies are machinery maintenance services, training of technical personnel in a wide range of capacities, including business services, accounting and safety standards. Over the longer run, there are possibilities in high value agricultural activities like organic fruits and vegetables and agri-processing industries whose products are in demand by local mining companies.

4.2.2. Large hydroelectric power projects are likely to create greater opportunities for the creation of offshoot industries than mining companies. Like mining companies, they generate demand for maintenance services for machinery and equipment, business and accounting activities, safety-related work practices, and the food service industry. Additionally, the dams of the hydroelectric power plants provide fishing, new farming activities along the shoreline, tourism and recreational activities in the areas. There are also large resettlement activities associated with the building of dams, which involve the establishment of new socially cohesive and integrated communities.

4.3. Scope for Value Addition

4.3.1. The main area for value addition in the natural resource sector is in the mining sector. The 2011-15 target for the mining sector established by the NSEDP VII (Ministry of Planning and Investment, 2011) is to “process important minerals to transform them into finished products or semi-finished products, like copper plates (340,000 tons/year), gold bars (24 tons/year), coal (728,000 tons/year), and gypsum (600,000 tons per year).

4.3.2. In other sectors, the NSEDP VII “aim is to select sectors and regions having the conditions for growth” (Ministry of Planning and Investment, 2011). The emphasis is, first, the development of main sectors, namely, agriculture, agro-processing, hydropower industry, tourism, mining and the building material industry; second, on areas related to

human resources and technological development to raise the value of products produced within the country, especially in processing industries and export-oriented activities; and, third, on infrastructure and services.

4.3.3. The possibility of adding value to the mining industry through downstream activities has been a subject of discussion between the Government and the mining companies.¹² A report by the International Council on Mining and Metals (ICMM, 2011) lays out four conditions that need to be considered for copper smelting to be economically feasible:

- The availability of particular inputs for smelting operations.
- The ability to carry out large scale smelting and refining processing activities to make the operations economically viable.
- Proximity to markets for semi-fabricated products of copper to prevent long delivery times.
- The ability to operate on small margins since, as a proportion of the overall ‘value added, the proportion going to the operator of a smelter or refinery as compared with a miner has fallen from 32.5 percent to 9 percent between 1998 and 2009.

4.3.4. A present a large part of the world’s capacity for semi-fabricates of non-ferrous metals is located in China and other East Asian countries to meet their dramatic increase in demand. As a result of this shift, excessive smelting and refining capacity relative to mining capacity has arisen in other parts of the world where smelters have stayed open after the mines have closed. The large smelters that are presently located in large copper consuming countries like China and other Asian countries enjoy a competitive advantage because of their proximity to markets. The ECMM (2011) report also points out the small developmental impact of smelters because of their capital-intensive operations and small employment effects. Moreover, large smelters can bring with them other less desirous impacts on the environment and immediate surroundings. These conditions suggest that there is little, if any, reason for supporting the introduction of downstream activities in the Lao PDR’s mining sector.

4.3.5. On the positive side, Larsen (2010) has pointed out that the Lao PDR has the necessary inputs for sustaining high value additions to mining operations. In particular, electricity and water availability from the Mekong River and its tributaries offers potential for sustaining processing industries that could add value to the primary resource value and generate additional economic activity along the value chain. The recent commissioning of a copper wire manufacturer is cited as an example of one of the first steps towards extending the value chain. Moreover, the planned construction of a railway link to China could provide the Lao PDR with a comparative advantage for bulk shipments to that market.

4.4. Recommendations for Improving Linkages

4.4.1. There still remains controversy over whether value addition is possible in the mining sector. It is likely that the debate will continued unresolved until an independent in-depth study is conducted to assess the possibilities of developing downstream activities in the sector.

¹² See, for example, 24 February 2011 workshop on “Utilizing Mining and Mineral Resources to Foster the Sustainable Development of the Lao PDR”, in which the Government of the Lao PDR and the International Council on Mining and Metals (ICMM) discussed the role of mining and mineral resources in the country’s sustainable development. Among the topics discussed by the 150 participants was the issue of adding value to the industry through downstream activities.

4.4.2. In offshoot activities, demand for services is expected to grow rapidly and parallel the expansion of hydroelectric power and mining activity. To take advantage of these opportunities, the country will need to develop a strong and broad-based skilled labor force. Investment in education and technical training should be guided by projected skills needs within service industries. The DTIS (2006) recommended the adoption of a cluster approach to improve competitiveness. Building those competitive clusters starts with an understanding of the demand for products and services in key markets, and then investing in factors inputs through training and education of a skilled labor force to meet the needs of the market. Those same principles can be applied to building linkages to hydroelectric and mining activities.

4.4.3. There are also opportunities for local agricultural development to supply resource-based activities. Attempts are already being made by mining companies to source food supplies locally, albeit with mixed success. In other countries, local industries like that of furniture have been established around mining sites to supply furniture for offices and housing for the staff and workers (Danish Institute for International Studies, 2011). Nonetheless, stimulus of large-scale commercial mining linkages with the broader economy is imperative for a small country like the Lao PDR. Without a broader expansion of non-resource sectors, it will be unable to translate the increased economic gains from mining and hydropower into sustainable development. Interventions by government and development partners should therefore be designed to improve linkages between resource-based industries and investments in high value non-resource activities such as organic agriculture and the agri-processing industry.

4.4.4. Specific recommendations for building linkages and value addition:

- conduct an in-depth and independent-based assessment on the possibility of adding value to the mining industry through downstream activities;
- for the development of service industries that can support resource-based industries, design and implement a national strategy for long-term technical and vocational training of the labor in those industries;
- for the development of services supporting the resource-based industries, provide incentives for companies to offer on-the-job training;
- for development of new activities in the areas where large-scale mining and hydroelectric projects are located, strengthen business development services (BDS) capacity and, where needed, establish BDS centers that are self-sustainable over the medium to long run; and
- for development of non-resource sectors throughout the country to supply needed goods and services in the resource sector, implement human resource development policies and programs to improve technical skills and education levels in a broad range of industries.

5. EXPORT DIVERSIFICATION AND VALUE ADDITION

5.1. Introduction

5.1.1. The Lao PDR's greatest trade challenge is to maintain its overall high export growth rates in the coming years. Since a large proportion of its foreign exchange earnings now originate in finite mineral and electrical energy reserves, the only way to achieve sustainable export growth into the future is through export diversification into other activities. Development of new product exports is particularly important in view of the fact that proven copper reserves are expected to last 10 to 15 years, implying that mineral earnings could begin to decline in 2020 (Leung, Bingham and Davies, 2010). Moreover, mining revenues are significantly vulnerable to commodity price shocks.

5.1.2. Notwithstanding the country's concentration on a few natural resource products for the bulk of its export earnings, the number of products exported has risen greatly in the last few years. In an update to their study on Lao PDR exports, Record and Konesawang (2011) found that the number of 4-digit HS products exported has risen from less than 200 in 2006 to nearly 600 products in 2009. Moreover, they found that the Hirschman-Herfindhal (HH) index of export concentration had decreased from 0.20 in 1997 to 0.15 in 2009. Notwithstanding, the country's continued high level of commodity concentration suggested by the recent HH index, it was found to be within the expected range for a low-income economy.

5.1.3. In the coming years, the challenge will be all the more great as production and investment strategies will need to change and adapt to the rebalancing of economies within the Asian region. Already the Lao PDR exports 80 percent of its goods to nearby China, Thailand and Vietnam, compared with roughly half that percent a decade earlier. The country's much stronger geographic concentration of exports may be in line with ASEAN efforts to redirect Asian trade intra-regionally, but the present reliance on trade with neighboring countries can also make the country highly exposed to external shocks from those economies. This chapter considers export diversification opportunities in the Lao PDR and investigates the potential for offshoot industries and value addition in resource export, particularly minerals and electricity.

5.2. Trends and Opportunities in Export Diversification

5.2.1. One way to assess a country's export diversification opportunities is to examine the export performances of specific products or product groupings, and the likely implications of different product-specific export growth rates on changing in the country's overall trade patterns. Measurement of those export performances can be undertaken by calculating the revealed comparative advantage (RCA), which measures a product's export performance in terms of relative changes in its global market shares.¹³ The results can then be classified into the following four categories:¹⁴

¹³ In particular, the RCA is calculated as a country's share of world exports in a given product, divided by that country's share of total world exports.

¹⁴ Based on V. Chandra and I. Osorio Rodarte (2009), "A Conceptual Framework for Export Diversification and Sustainable Growth". Washington, DC, Economic Policy and Debt Department, The World Bank.

- *Traditional products*, which have demonstrated a high and stable RCAs over time;
- *Disappearing products*, which have experienced high but declining RCAs over time;
- *Emerging products*, which have experienced rising RCAs over time; and
- *Marginal products*, which have never experienced significant RCAs.

5.2.2. Table 5.1 shows the product classification for the Lao PDR. As expected, wood, textiles and clothing, vegetables, and coffee and tea are traditional exports, whose importance to the economy has remained strong throughout the last two decades. Among the most important emerging exports are electrical energy and copper. Others are live animals, cereals, other base metals, cement, oil seeds and various grains, silk and footwear. Disappearing exports are various types of gums, resins and vegetable extracts, raw hides and leather, and iron and steel.¹⁵

5.2.3. A more detailed study by Record and Konesawang (2010) has found similar results for the same product groupings as in Table 5.1, but it provides a more disaggregated breakdown of product performances. A notable finding of their work is that many of the newly emerging products being exported by the Lao PDR have a relatively low income potential. While diversification offers benefits of reduced risk associated with highly concentrated exports, there is considerable scope for broadening the exports into those having high income potentials both within the region and in global markets. They

Table 5.1: Lao PDR's Traditional, Emerging and Disappearing Export Products

		RCA			
Product Category		HS Code	1990-2010	High	Low
Traditional Products	Wood and wood products	44	26.8	45.2 (1992)	12.0 (2010)
	Vegetable products	14	20.8	66.4 (2001)	3.2 (2000)
	Coffee and tea	09	15.3	35.1 (1998)	1.1 (1991)
	Clothing and textiles	61-62	10.5	17.9 (2002)	1.9 (1990)
		RCA			
Product Category		HS Code	2005-2010	High	Low
Emerging Products	Electrical energy	2716	42.6	69.1 (2010)	20.3 (2008)
	Copper and copper ores	26 & 74	19.4	33.7 (2008)	9.4 (2005)
	Cereals.	10	3.6	6.6 (2009)	1.5 (2008)
	Live animals.	01	2.9	5.3 (2006)	0.7 (2010)
	Cement	25	1.8	3.5 (2009)	0.8 (2010)
	Other base metals	81	1.7	5.5 (2010)	0.0 (2006)
	Oil seeds and various grains	12	1.7	2.3 (2005)	0.9 (2008)
	Silk.	50	1.7	8.1 (2005)	0.2 (2009)
	Footwear	64	1.1	1.6 (2005)	0.9 (2009)
		RCA			
Product Category		HS Code	1990-99	High	Low
Disappearing Products	Gums, resins and vegetable extracts	13	8.9	31.3 (1990)	2.2 (2008)
	Raw hides and leather.	41	2.4	5.1 (1991)	0.1 (2009)
	Iron and steel	72	1.0	6.0 (1990)	0.0 (2010)

Note: HS refers to Harmonized System nomenclature for classification of internationally traded goods.

Source: Calculated from total world trade data and Lao PDR mirror trade data for the Lao PDR in Comtrade database.

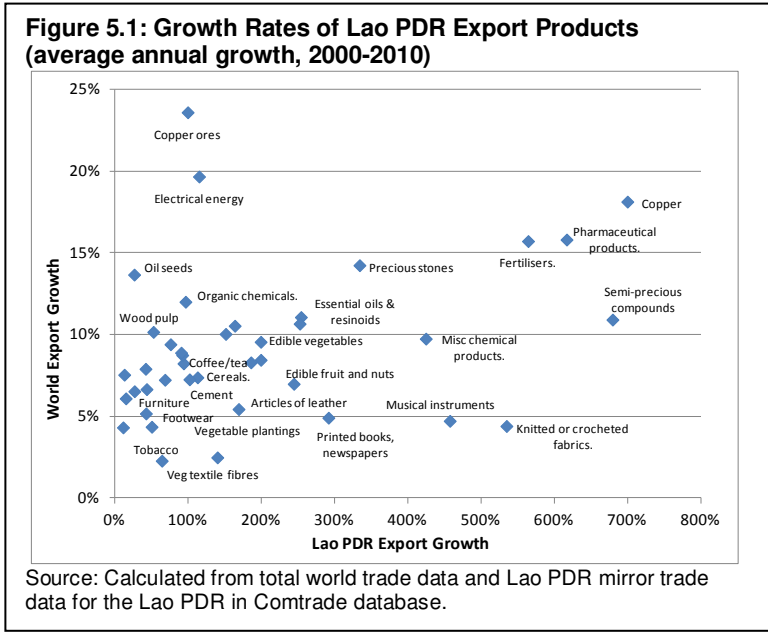
¹⁵ Marginal products are not shown. For an analysis of the cement and steel industries, see Montague Lord (2010), "Implications of WTO Accession for Selected Domestic Industries of Laos". Vientiane, Ministry of Industry and Commerce, United Nations Development Programme (UNDP). Capacity Building and Technical Support to Laos in the World Trade Organization Accession Negotiation.

5.2.6. There are also a large number of fast growing export products with more moderate growth in their international markets. Notable among these is textiles and clothing, which together with wood and wood products, has contributed greatly to the country's total foreign exchange earnings. Together these two product categories contributed nearly 80 percent of total export earnings between 1990 and 2004. Although their contribution to total export earnings has fallen sharply as a result of the rising importance of mining and electrical energy exports, the value of textiles and clothing exports has continued to climb in recent years, while that of wood and wood products did not decline significantly until 2010.

5.2.7. The Lao PDR textile and garment industry benefits from the country's status as a Least Developed Country (LDC) under the Generalized System of Preferences (GSP). Nevertheless, most clothing factories are unable to take full advantage of this preferential market access because of strict rules of origin (ROO) on local content requirements. In order to fulfill the GSP requirements of the European Union, which is the Lao PDR's largest market by far, factories must have local content worth more than 50 percent of the total production costs.

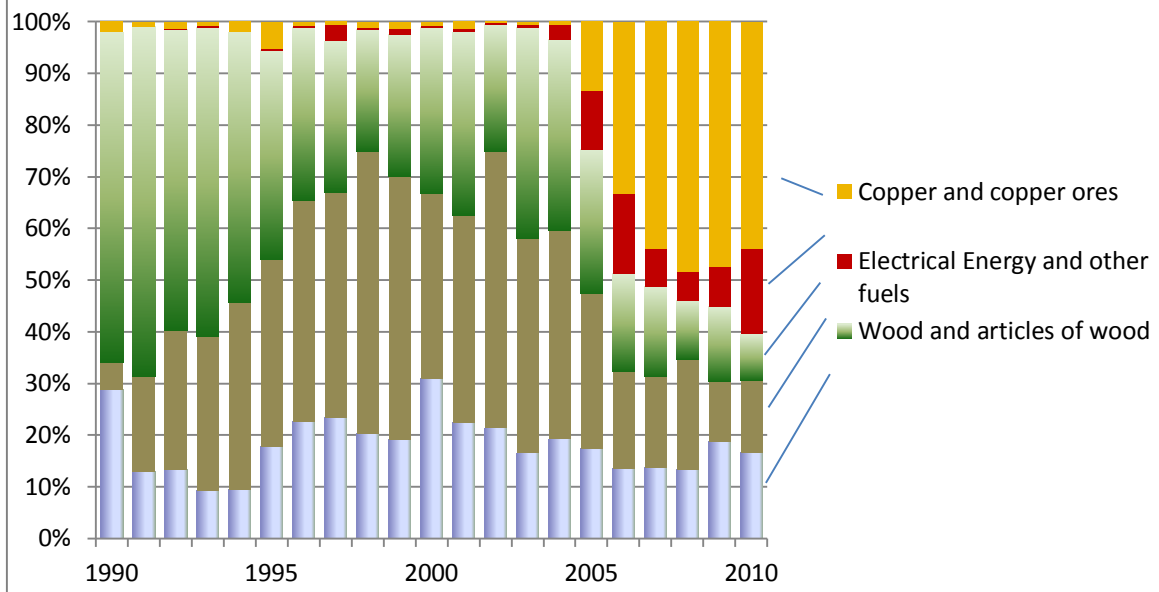
Moreover, the industry is highly dependent on imported fiber, yarn, and fabric for assembling finished products. As a result, it has little, if any, capacity to add value to products. The challenges for the industry are (a) to more fully integrate its activities into the ASEAN production based in order to allow it to specialize; (b) to improve the productivity of the labor force, which is currently below that of competitors like Cambodia, China, India, and Bangladesh; (c) to upgrade the machinery and equipment of its textile factories; (d) to reduce the currently high lead time for delivery of finished products to markets because of the lack of supporting industries and inefficient transport facilities.¹⁷

5.2.8. The contribution of all other exports (excluding copper, electricity, wood and wood products, and textiles and clothing) remains relatively small at 17 percent of total merchandise export in 2010. Despite their strong 35 percent average annual growth in the last two decades, year-to-year variations in the growth of those exports have been varied greatly. If the country's exports are diversify into non-resource intensive products in the future, it will be important to ensure that they sustain stable growth rates in the medium to long term. Several industries and sectors are especially important to strengthening and diversifying the country's export portfolio:



¹⁷ ASEAN Federation of Textile Industries (2011), "Laos Textile and Garment Industry Profile". Kuala Lumpur, Malaysia.

Figure 5.2: Contribution of Lao PDR's Major Export Products to Total Merchandise Export Earnings (2000-2010)



Source: Calculated from total world trade data and Lao PDR mirror trade data for the Lao PDR in Comtrade database.

- *Food Processing:* The food processing industry is in the early stages of development. The NSEDP VII establishes food and beverage processing industries as one of the priority industries for the country. Development of the industry would not only generate large export revenue and employment growth, but it would help with the development of offshoot industries supporting the mining and electrical energy industries. Processed agricultural products are currently limited to coffee, tea, processed fruits and vegetables, beer and tobacco. Coffee in particular has been a success story for the economy. The export earnings from this sector has grown from less than US\$13 million in 2006 to US\$40 million in 2010, the majority of which is destined for the EU market. With the growth in demand for organic coffee, the industry has the potential to support the country's export diversification into high-value agro-processing activities.
- *High-Value Agricultural Products:* Organic agriculture is a rapidly growing activity in parts of the country, which have large regional market potential. Much of the motivation by consumers in the region comes from concerns about 'food safety', pesticides usage, environmental degradation and the spread of chronic diseases. In Thailand, for example, consumption of organic foods increased three-fold in 2005-2010, yet the country remains heavily dependent on overseas sources for about 40 percent of its supplies. There are therefore enormous cross-border trade opportunities for Lao producers. World-wide organic food consumption has grown at double-digit rates in all but one year in the last ten years. Organic foods are now a mainstream industry in Europe and North America, whose combined market has reached over US\$57 billion in annual sales. Countries like Australia also have huge markets and currently import 60 percent of their total consumption. By 2015 the global organic foods market is expected to reach US\$105 billion, up from US\$60 billion this year. For Lao farmers, the opportunity to earn higher incomes are strong because organic

prices in countries like Thailand, Europe and the United States are over 140 percent higher than conventional agricultural produce.¹⁸

- *Tourism*: in 2010, there were 2.5 million visitors to Laos and the tourism sector generated US\$400 million in revenue, second only to the mining sector. The industry's growth has been dramatic, since revenue only reached US\$147 million in 2005. By 2020 the Government has established a revenue target of US\$1 billion for the industry, which represents a nearly 10 percent annual compounded growth rate for 2011-2020.¹⁹ The advantage of developing this sector is the strong linkages to manufacturing and agricultural activities, its forward and backward linkages within the sector, and its broad geographic impact and ability to assist in poverty alleviation in local communities through eco-tourism and the promotion of cultural and heritage tourism development.
- *Handicrafts*: The industry handicraft industry has been an important catalyst for empowering women workers and helping to alleviate poverty, along with helping the country to maintain its cultural heritage. For this reason, the NSEDP VII also establishes handicrafts as one of the priority industries for the country. The Government has set a target growth rate of 12-13 percent annual volume growth in 2011-2015 to promote family businesses and small enterprise activities in rural areas. There is considerable potential to develop upstream linkages with supporting industries that provide raw materials and intermediary supplies, while value added additions to the industry could occur through production of higher end goods and marketing activities. Development of the industry will require improved networking and clustering activities, training of skilled workers, investment in technology and efficient industries, and improved marketing strategies and product design.

5.3. Sustaining Export Diversification

5.3.1. Successful export diversification require not only entry into new export products and markets, but also the survival and growth of exporters. An analysis of firm-level export transactions in the Lao PDR by Stirbat, Record and Nghardsaysone (2011) shows a number of useful lessons about survival patterns. First, survival rates among Lao firms are higher among those that focus their activities on a relatively few products and geographic markets. Experience in exporting certain products to specific markets strengthens the chance of export survival. Secondly, there are survival benefits from the agglomeration of exporters serving the same markets with the same products, suggesting that there are gains to be had from competition within an industry. A third finding is that firm survival rates are inversely related to activities in which the Lao PDR has a comparative advantage, suggesting that firms engaged in new types of activities were more likely to remain in operation than those involved in traditional products and market activities. The explanation for this phenomenon may be due to the growing dominance of large firms in traditional activities, which tend to squeeze out new entrants into markets. There could also be scale economies that make it difficult for new entrants to penetrate the market.

5.3.2. Further research will be need to identify the reasons why entry into traditional activities is difficult. What is clear from the results is that introducing new products appears to be a successful strategy for Lao firms. Finally, the authors found that firm-level survival

¹⁸ Montague Lord and Pawat Tangtrongjita (2011), "Mapping the Organic Vegetable Value Chain along the East West Economic Corridor". Bangkok, Asian Development Band Thailand Resident Mission.

¹⁹ Vientiane Times (2011), "Laos aims for billion dollar tourism industry by 2020", 17 May 2011.

rates were positively related to exports destined to nearby countries, a phenomenon associated with other landlocked countries as well. The authors concluded that export promotion activities should focus on helping successful exports diversify into new markets, along with helping them to maintain their presence in those markets.

5.4. Recommendations for Improving Diversification

5.4.1. While there are already ample opportunities for diversification into products having a robust international markets, the Lao PDR has a number of challenges to overcome its dependence on a limited number of natural resource-based exports:

- First, continued efforts towards trade reforms are needed. The Lao PDR is not yet a member of the World Trade Organization (WTO) and hence its exports are not automatically subject to MFN treatment. It is therefore not surprising that the bulk of its exports are concentrated in the ASEAN region, where it benefits from low intra-regional tariffs and the elimination of non-tariff barriers to trade under the Common Effective Preferential Tariff of the ASEAN Free Trade Area (CEPT-AFTA). Even so, high value perishable agricultural products, including those like organic vegetables that have fast growing regional and global markets, suffer disproportionately from high trade costs. In these products, more interventions are needed to improve trade facilitation, including that affecting trade with neighboring countries under the Cross-Border Trade Agreement (CBTA). For extra-regional exports, the Lao PDR relies heavily on preferential treatment granted under the country's Least Developed Country (LDC) status, including various industrialized country Generalized System of Preferences schemes, the EU's "Everything but Arms" initiative, and a bilateral agreement with the United States.
- Second, improve the incentive environment for non-resource exporters as a means of compensating for the high cost of investment in what is often an underdeveloped business environment. To compensate for the higher regulatory burden of exporters relative to those faced by non-exporters, Record and Nghardsaysone (2010) have argued that a conducive regulatory environment needs to be put into place to minimize business environment transactions costs to support existing exporters, encourage investment by new exporters, and promote a wider export discovery process.
- Third, targeted interventions by public entities could support a general export discovery process in sectors where returns to learning are high or agglomeration effects particularly strong. Support could then be given to research, skills development and technical education to support efforts by universities and enterprises in targeted industries as a means of bringing the country's activities in the sector up to international standards. As a first step in that process, in-depth sector analysis should be carried out to identify the types of intervention that could deliver targeted public goods in the form of core infrastructure, research, productivity and skills training, assistance towards compliance with international standards for major emerging champion sectors with dynamic export markets. Such interventions should not, however, provide favored or preferential treatment to a sector, especially at the cost of another one having an equally favorable outlook and with wide-ranging benefits to the improvements in the living standards of the population. The Government's strategy under the NSEDP VII recognizes that higher growth is a means to an equitable and sustainable economic development of the country's population. The strategy to increase and diversify exports should therefore support that goal and ensure that the

measurable results of any targeted intervention rewards an export discovery process that has the broadest impact on the population.

- Fourth, a business-friendly environment will need to encourage and reward innovation and risk-taking on the part of both domestic and foreign investors. It will also need to provide transparent laws and regulations and a stable macroeconomic environment aimed at improving the general business climate.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Summary of Major Findings

6.1.1. *Natural resource export earnings and price volatility:* Copper and electricity currently contribute more than 60 percent of the Lao PDR's total export earnings. That share is expected to rise to 67 percent in 2015 and 70 percent in 2020. International commodity price volatility greatly impacts on the Lao PDR's foreign exchange earnings. In the last two decades, copper prices have experienced price variations that are six times greater than those of manufactured exports. Under the Lao PDR's current export structure, the volatility of primary commodity prices affects nearly two-thirds of total exports, while 17 percent of the total are electricity exports and therefore subject to much less volatility. These movements will necessitate careful expenditure management policies on the part of the Government.

6.1.2. *Perspectives for resource-led growth:* In the coming years the Lao PDR economy will largely be driven by the natural resource sector, which is expected to contribute between 3.0 and 3.5 percentage points to the projected 7.6 percent average annual growth of real GDP in 2011-2020. In the non-resource sector, the forecast is for agriculture to grow in real terms by 3 percent a year during the period, while the growth of the non-tradable sector (construction and services) will average 6.8 percent a year. Based on these projections, mining and hydro-based activities will contribute one-quarter of GDP, and the non-resource sector will contribute the remaining 75 percent by 2020.

6.1.3. *Benefits and downside risks:* Some of the major benefits of the Lao PDR's resource-led growth are (a) the support for rapid and sustainable growth and poverty reduction in the country; (b) the large increase in fiscal revenues; (c) substantial infrastructural improvements, income enhancements and localized poverty reductions in project sites for mining and hydropower generation; and (d) improvements to environmental legislation and implementation of rules and regulations supporting quality projects. Possible downside risks are (a) the shift of large investments to resource-based projects and away from industry and services; (b) the possible lack of compatibility of mining and hydroelectric power investments with the country's socioeconomic objectives; (c) environmental risks from degradation of the existing natural resource base; (d) social risks from the relocation of people away from the mining or hydroelectric power sites and inflows of people into the sites being developed; and (e) the public sector's inability to effectively manage the large demand for natural resource utilization.

6.1.4. *Potential for offshoot industries:* The best opportunities for offshoot activities associated with the mining industry are machinery maintenance services, training of technical personnel in a wide range of capacities, including business services, accounting and safety standards. Over the longer run, there are possibilities for high-value agricultural activities like organic fruits and vegetables and agri-processing industries whose products are in demand by local mining companies. In large hydroelectric power projects there are even more opportunities for offshoot industries. In addition to the opportunities that exist in mining, such as maintenance services for machinery and equipment, business and accounting activities, safety-related work practices and the food service industry, the dams of the hydroelectric power plants provide . There are also large resettlement activities associated with the building of dams, which involve the establishment of new socially cohesive and integrated communities.

6.1.5. *Potential for value addition to resource exports:* The possibility of adding value in the mining industry through downstream activities has been a subject of discussion between the Government and the mining companies. Among the most important prerequisites are (a) the availability of particular inputs for smelting operations, (b) sufficiently large smelting and refining processing activities to make the operations economically viable, (c) proximity to markets for semi-fabricated products of copper, and (d) the ability of smelters to operate on small margins. For the first requirement, the Lao PDR has the necessary inputs for sustaining high value additions to mining operations, namely electricity and water availability from the Mekong River and its tributaries. For the third one, the planned construction of a railway link to China could provide the country with a comparative advantage for bulk shipments to that market. These conditions still leave the issue open for debate and without final resolution. For that reason, it is likely that further analysis will be needed to assess the viability of developing downstream activities in the sector.

6.2. Recommendations

6.2.1. *Recommendations for overcoming possible negative effects in resource sector:* In the resource sector, the following recommendations have been made to mitigate possible downside risks from the country's resource-led growth (for details, see Chapter 3, Section 3.2):

- design and implement a comprehensive strategy for hydropower and mining development;
- implement and enforce regulations that ensure the environmental sustainability of natural resources;
- strengthen national and local public sector institutions to better manage the growing number of hydropower and mining projects in the pipeline; and
- mitigate the risk from volatile fiscal revenue flows caused by price swings in international mineral markets.

6.2.2. *Recommendations for improving competitiveness of non-resource sector:* In the non-resource sector there are six major recommendations for improving the country's competitiveness (for details, see Chapter 3, Section 3.4):

- strengthen private sector-government coordination in the non-resource sectors;
- reduce the regulatory burden on exporters;
- improve trade facilitation;
- bolster the investment climate;
- strengthen intermediation by the financial sector; and
- remedy existing low worker productivity, insufficient skills, and education inadequacies.

6.2.3. *Recommendations for developing offshoot industries and value addition:* Specific recommendations for building linkages and value addition to resource exports are as follows: (see Chapter 4, Section 4.4):

- conduct an in-depth and independent-based assessment on the possibility of adding value to the mining industry through downstream activities;

- for the development of service industries that can support resource-based industries, design and implement a national strategy for long-term technical and vocational training of the labor in those industries;
- for the development of services supporting the resource-based industries, provide incentives for companies to offer on-the-job training;
- for development of new activities in the areas where large-scale mining and hydroelectric projects are located, strengthen business development services (BDS) capacity and, where needed, establish BDS centers that are self-sustainable over the medium to long run; and
- for development of non-resource sectors throughout the country to supply needed goods and services in the resource sector, implement human resource development policies and programs to improve technical skills and education levels in a broad range of industries.

6.2.4. *Areas of comparative and competitive advantages:* The analysis of the Lao PDR's export performances in specific products or product groupings, and the likely implications of different product-specific export growth rates on the country's overall trade patterns suggests that traditional exports like wood, textiles and clothing, vegetables, and coffee and tea will remain important export products for the country in the coming years. In addition to electrical energy and copper exports, some of the most important emerging exports are live animals, cereals, other base metals, cement, oil seeds and various grains, silk and footwear. Products with dynamic growth rates for both exports and markets are pharmaceuticals, fertilizers, rubber, essential oils and wood pulp. Additionally, the following industries and sectors have been identified as being especially important to strengthening and diversifying the country's export portfolio: (a) food process; (b) high-value agricultural products, especially organic vegetables; (c) tourism; and (d) handicrafts. Textiles and clothing along with wood products are also likely to continue as important exports for the country. While the Lao PDR faces large challenges in diversifying exports into higher value added products, there is greater scope for expanding value added activities into land-intensive activities, such as those originating from agriculture, rather than from labor-intensive activities.

6.2.5. *Areas of support for non-resource exports:* To support traditional and emerging non-resource exports, the Government will need to continue efforts towards trade reforms, including accession to the World Trade Organization (WTO), and greater interventions to improve trade facilitation, including that affecting trade with neighboring countries under the Cross-Border Trade Agreement (CBTA). Second, improvements are needed in the incentive environment for non-resource exporters as a means of compensating for the high cost of investment in what is often an underdeveloped business environment. Thirdly, targeted interventions by public entities could support a general export discovery process in sectors where returns to learning are high or agglomeration effects particularly strong. Finally, a business-friendly environment will need to encourage and reward innovation and risk-taking on the part of both domestic and foreign investors. For that to occur, the business climate will need to have a stable macroeconomic environment and transparent laws and regulations that ensure a level playing field for all businesses.

6.2.6. *Types of broad-based support for non-resource exports:* The strategy to expand and diversify exports should ensure that the measurable results of any targeted intervention rewards an export discovery process that has the broadest impact on the non-resource sector. As explained by the World Bank (2010a), broad support is less risky than direct support to narrowly defined product producers, which carries the risk of missing

potential future champion activities that have not yet emerged. The NSEDP VII has identified some sectors as priorities, for example, food processing and handicraft industry with targeted growth rates of 12-13 percent for the former and 14 percent for the latter. Instead, the World Bank recommends that intervention be in the form of delivery of targeted public goods in the form of core infrastructure, research, productivity and skills training, assistance towards compliance with international standards for major emerging champion sectors with dynamic export markets. Favored or preferential treatment to a sector should be avoided, as should the adoption of any sector or industry-level interventions that go further than the provision of public goods. It is preferable that interventions support the natural discovery of the country's comparative and competitive advantages.

6.2.7. Sector-specific areas of intervention: Where non-resource sector-specific assistance is believed to be necessary as a way of increasing competitiveness of some emerging industries, then support of non-discriminatory public goods should be provided through activities like business development services, skills training, and research. At the same time, policymakers should continue to lower regulatory burden for exporters to ensure their competitiveness with foreign suppliers. They should also implement behind-the-border trade regimes such as those required to meet international sanitary and phytosanitary (SPS) standards by agribusinesses to enable them to become part of fast-growing international supply chains. As mentioned earlier, some of the possible industries that can support the country's export diversification are conventional and organic vegetables, coffee and tea, cereals, base metals, cement, oil seeds and various grains, silk, footwear, pharmaceuticals, fertilizers, rubber, essential oils, wood pulp, food process, tourism, handicrafts, textiles and clothing, and wood products. However, as noted by Record and Nghardsaysone (2010a), some of these and other newly emerging products have limited scope for providing greater value added in the future, so caution should be exercised in extending specific support or preferential treatments.

6.3. Action Plan

6.3.1. To improve linkages of resource sector and the broader domestic economy, the following four interventions are proposed:

- (i) Conduct an in-depth and independent-based assessment on the possibility of adding value to the mining industry through downstream activities.
- (ii) For the development of service industries that can support resource-based industries, design and implement a national strategy for long-term technical and vocational training of the labor in those industries.
- (iii) For the development of services supporting the resource-based industries, examine options and opportunities to provide incentives for companies to offer on-the-job training.
- (iv) For development of new activities in the areas where large-scale mining and hydroelectric projects are located, strengthen existing business development services (BDS) capacity and, where needed, establish BDS centers that are self-sustainable over the medium to long run.

6.3.2. To further investigate possible near term support for traditional, emerging and potentially new non-resource exports, the following interventions are proposed:

- (i) Research supporting the general export discovery process in sectors where returns to learning are high or agglomeration effects particularly strong. While considerable

work has been carried to identify new and emerging exports at the detailed product level, there still remains considerable work to be done. Useful areas of future work should explore the reason for survival rates, and there are low survival rates for some of the new entrants in sectors where the Lao PDR is known to have has a comparative advantage. Identification of the causes of low survival rates in areas where high ones are expected could help identify obstacles and constraints to diversification in areas where the Lao PDR could develop a strong competitive advantage in regional and global markets.

- (ii) Improvements in the incentive environment for non-resource exporters to compensate them for high cost of investment in what is often an underdeveloped business environment.

Another four areas of intervention would be needed to support export diversification of non-resource sector. However, these actions have probably been addressed in other chapters of the DTIS Update. They are (a) trade policy reforms, including those undertaken as part of the process of accession to the World Trade Organization (WTO); (b) trade facilitation, including that affecting trade with neighboring countries under the Cross-Border Trade Agreement (CBTA), and which are already being addressed in the World Bank's *Transport and Trade Facilitation Assessment*; (c) promotion of a business-friendly environment that encourages and rewards innovation and risk-taking on the part of both domestic and foreign investors, and reduces the regulatory burden on exporters to ensure that they are competitiveness with foreign suppliers; and (d) behind-the-border trade regimes such as those required to meet international sanitary and phytosanitary (SPS) standards by agribusinesses to enable them to become part of fast-growing international supply chains.

6.3.3. Table 6.1 summarizes the proposed interventions for the Action Matrix, while section 6.4 below provides the project details.

Table 6.1: Proposed Interventions for Action Matrix

Recommendation	Justification	Expected outcome	Agency responsible	Priority, timeline and deadline	Donor, if relevant	Estimated cost if relevant	Risks
Study on Value Addition to Mining Industry	Controversy remains over whether value addition is possible in the mining sector.	Possible value addition to mining industry through the development of downstream industries	MOIC with support of ERIT, NERI and NUOL.	High priority; implementation in 2012 with possible follow-up activities on action plan	Trade Development Facility	US\$111,000	Lack of acceptance by Government unless the study is conducted by independent group.
Technical and Vocational Training for Service Industries Supporting Mining and Hydropower Industries	Demand for goods and services generated by the large mining and electrical energy projects can support the development of offshoot industries from which local and national sourcing of products and services occur.	Support for development of offshoot activities from mining and hydropower industries	MOIC with support of MOE, ERIT, NERI and NUOL	Medium priority; implementation in 2012 with possible follow-up on specific technical training activities.	Trade Development Facility	US\$144,791	Possible difficulty of inter-agency coordination.
Incentives System for Resource-Based Companies to Offer On-the-Job Training in Support Services	Opportunities for improvements in employment and living standards through on-the-job training in the mining and hydropower companies	Development of locally based support services to bolster employment opportunities and living standards	MOIC with support ERIT, NERI and NUOL	Medium priority; implementation in 2012 with possible follow-up on specific technical training activities.	Trade Development Facility	US\$92,416	Lack of sufficient incentives for companies and inability to find local staff to train.
Pilot Projects for BDS Centers for Offshoot Activities	Support for businesses in emerging industries and export products has been fragmented, and business development services (BDS) are at an infant stage of development. What BDS products that do exist are limited to skills-related training courses that do not necessarily induce entrepreneurial activity.	Development of offshoot activities supporting mining and hydropower sectors would upgrade technical skills of local population, raise employment and improve local livelihoods.	MOIC with support ERIT, NERI and NUOL	High priority; implementation in 2012-15, with follow-up activities to be determined by action plan.	Trade Development Facility	US\$302,416	Difficulty of identifying development bank and Credit Guarantee Facility (CGF).
Research on General Export Discovery Process for Diversification of Non-Resource Sector	While considerable work has been carried to identify new and emerging exports at the detailed product level, there still remains considerable work to be done to support diversification in non-resource sector.	Improved understanding of general export discovery process would help design trade reforms and legal and regulatory actions to support new and emerging non-resource exports and help identify existing obstacles to business activities.	MOIC with support ERIT, NERI and NUOL	High priority; implementation in 2012-14.	Trade Development Facility	US\$352,416	Lack of sufficient information to identify some of the causes of low survival rates.

Improvements in Incentive Environment for Non-Resource Exporters	Incentives will serve to compensate non-resource exporters for high cost of investment in what is often an underdeveloped business environment	Expanded investment and export diversification in non-resource sector.	MOIC with support from MPI	Medium priority; implementation in 2012 with possible follow-up on specific technical training activities.	Trade Development Facility	US\$91,041	Possible difficulty of inter-agency coordination, and implementation of incentive system.
--	--	--	----------------------------	--	----------------------------	------------	---

6.4. Detailed Project Descriptions

Project Name	<i>Activity 1.1: Value Addition to Mining Industry</i>	
Summary Description & Justification	Assessment on the possibility of adding value to the mining industry through downstream activities. Controversy remains over whether value addition is possible in the mining sector; it is likely that the debate will continued unresolved until an independent in-depth study is conducted to assess the possibilities of developing downstream activities in the sector.	
Specific Activities	<ul style="list-style-type: none"> (i) Examine availability of particular inputs for smelting operations and whether electricity and water availability from the Mekong River and its tributaries offers potential for sustaining processing industries that could add value to the primary resource value and generate additional economic activity along the value chain; (ii) Examine the country's ability to carry out large scale smelting and refining processing activities to make the operations economically viable. (iii) Analyze whether there is proximity to markets for semi-fabricated products of copper to prevent long delivery times, and whether the planned construction of a railway link to China could provide the Lao PDR with a comparative advantage for bulk shipments to that market. (iv) Investigate the ability and willingness of potential investors to operate on small margins since, as a proportion of the overall 'value added. 	
Cost Estimate	1. Consultants	\$109,500
	a. Remuneration and Per Diem	\$101,500
	i. International Consultants	\$74,500
	ii. Domestic/Regional Consultants	\$27,000
	b. International and Local Travel	\$6,500
	c. Reports and Communications	\$1,500
	2. Equipment + Training + Seminars + Misc	\$1,500
	Total	\$111,000
Implementation	Technical assistance in the form of international, regional and local consultants will be provided to MOIC, with support from the Economic Research Institute for Trade (ERIT), National Economic Research Institute (NERI) and the National University of Laos (NUOL).	
Expected Impact	Value addition to mining industry through the development of downstream industries.	
Indicators of Measurable Impact	Relevance of research for policymakers based on perception surveys, number and quality of research being conducted.	

Project Name	<i>Activity 1.2: Technical and Vocational Training for Service Industries Supporting Mining and Hydropower Industries</i>	
Summary Description & Justification	Design and implement a national strategy for long-term technical and vocational training for service industries that can support resource-based industries. Demand for goods and services generated by the large mining and electrical energy projects can support the development of offshoot industries from which local and national sourcing of products and services occur.	
Specific Activities	Examine technical and vocational requirements and availability of possible offshoot activities from the mining and hydropower industries in machinery maintenance services, training of technical personnel in a wide range of capacities, including business services, accounting and safety standards; in addition, for the hydropower industry, examine technical and vocational requirements for fishing, farming activities, tourism and recreational activities.	
Cost Estimate	1. Consultants	\$141,458
	a. Remuneration and Per Diem	\$126,250
	i. International Consultants	\$95,750
	ii. Domestic/Regional Consultants	\$30,500
	b. International and Local Travel	\$11,875
	c. Reports and Communications	\$3,333
	2. Equipment + Training + Seminars + Misc	\$3,792
	Total	\$144,791
Implementation	Technical assistance in the form of international, regional and local consultants will be provided to MOIC, with support from the Ministry of Education (MOE), Economic Research Institute for Trade (ERIT) and the National Economic Research Institute (NERI).	
Expected Impact	Support for development of offshoot activities from mining and hydropower industries.	
Indicators of Measurable Impact	Relevance of national strategy for implementation of technical training in offshoot activities based on perception surveys, number and quality of research conducted.	

Project Name	<i>Activity 1.3: Incentives System for Resource-Based Companies to Offer On-the-Job Training in Support Services</i>	
Summary Description & Justification	Design incentive system for on-the-job training in resource-based companies. Opportunities for improvements in employment and living standards through on-the-job training in the mining and hydropower companies	
Specific Activities	Explore mechanisms through which on-the-job training in resource-based companies could be implemented for machinery maintenance services, training of technical personnel in a wide range of capacities, including business services, accounting, safety standards, and other service support activities.	
Cost Estimate	1. Consultants	\$91,083
	a. Remuneration and Per Diem	\$78,250
	i. International Consultants	\$51,250
	ii. Domestic/Regional Consultants	\$27,000
	b. International and Local Travel	\$11,500
	c. Reports and Communications	\$1,333
	2. Equipment + Training + Seminars + Misc	\$1,167
	Total	\$92,416
Implementation	Technical assistance in the form of international, regional and local consultants will be provided to MOIC, with support from the Ministry of Education (MOE), Economic Research Institute for Trade (ERIT) and the National Economic Research Institute (NERI).	
Expected Impact	Development of locally based support services to bolster employment opportunities and living standards.	
Indicators of Measurable Impact	Relevance of national strategy for implementation of technical training in offshoot activities based on perception surveys, number and quality of research conducted.	

Project Name	<i>Activity 1.4: Pilot Project Business Development Services (BDS) Centers for Offshoot Activities</i>	
Summary Description & Justification	For development of new activities in the areas where large-scale mining and hydroelectric projects are located, establish pilot projects for BDS centers that are self-sustainable over the medium to long run. SME-based development strategies in the non-resource sector are constrained by lack of business capabilities and restricted access to financing and technical expertise. Support for businesses in emerging industries and export products has been fragmented, and business development services (BDS) are at an infant stage of development. What BDS products that do exist are limited to skills-related training courses that do not necessarily induce entrepreneurial activity.	
Specific Activities	<p>Pilot project-based BDS Centers would provide services ranging from counseling and training services to facilitating activities for accessing markets, finance and networking activities, and finally to dealing with government licensing procedures and obtaining information from government agencies. Financing of BDS the Center and business activities would initially occur through the Cost-Sharing Facility (CSF) and later the commercialization and partial financing through the Credit Guarantee Facility (CGF). Both of these facilities would provide significant financial support to SMEs. Together these facilities would seek to establish the business capabilities of SMEs to participate in networking systems through value chains and clusters.</p> <p>A comprehensive approach for the delivery of BDS products to microenterprises and small scale enterprises will need to encompass, as a minimum, the following components: (i) improved availability and access to production and market information; (ii) access to markets, including transport and logistics support; (iii) access to low cost finance; (iv) affordable technical consultancy and training; (v) basic management training; (vi) start-up training and consultancy; and (vii) training in entrepreneurship.</p>	
Cost Estimate	1. Consultants	\$301,083
	a. Remuneration and Per Diem	\$288,250
	i. International Consultants	\$241,250
	ii. Domestic/Regional Consultants	\$47,000
	b. International and Local Travel	\$11,500
	c. Reports and Communications	\$1,333
	2. Equipment + Training + Seminars + Misc	\$1,167
	Total	\$302,416
Implementation	Technical assistance in the form of international, regional and local consultants will be provided to MOIC, with support from Economic Research Institute for Trade (ERIT) and the National Economic Research Institute (NERI).	

Expected Impact	Development of offshoot activities supporting mining and hydropower sectors would upgrade technical skills of local population, raise employment and improve local livelihoods.
Indicators of Measurable Impact	Number of individuals trained by BDS Centers, funding obtained by entrepreneurs, and new offshoot businesses created by pilot BDS Centers. Perception surveys of training quality by participants.

Project Name	<i>Activity 1.5: Research on General Export Discovery Process for Diversification of Non-Resource Sector</i>	
Summary Description & Justification	Research supporting the general export discovery process in sectors where returns to learning are high or agglomeration effects particularly strong. While considerable work has been carried to identify new and emerging exports at the detailed product level, there still remains considerable work to be done.	
Specific Activities	Areas of research should explore the reason for different rates of survival among businesses in different sectors and industries, including the reason why there are low survival rates for some of the new entrants in sectors where the Lao PDR is known to have a comparative advantage. Also, identify causes of low survival rates in areas where high ones are expected, including obstacles and constraints to diversification in areas where the Lao PDR could develop a strong competitive advantage in regional and global markets.	
Cost Estimate	1. Consultants	\$351,083
	a. Remuneration and Per Diem	\$338,250
	i. International Consultants	\$241,250
	ii. Domestic/Regional Consultants	\$97,000
	b. International and Local Travel	\$11,500
	c. Reports and Communications	\$1,333
	2. Equipment + Training + Seminars + Misc	\$1,167
	Total	\$352,416
Implementation	Technical assistance in the form of international, regional and local consultants will be provided to MOIC, with support from Economic Research Institute for Trade (ERIT) and the National Economic Research Institute (NERI) and the National University of Laos (NUOL).	
Expected Impact	Improved understanding of general export discovery process would help design trade reforms and legal and regulatory actions to support new and emerging non-resource exports and help identify existing obstacles to business activities.	
Indicators of Measurable Impact	Support for general export discovery process in non-resource sector, based on perception surveys, number and quality of research conducted.	

Project Name	<i>Activity 1.6: Improvements in Incentive Environment for Non-Resource Exporters</i>	
Summary Description & Justification	Design and implement incentive schemes for improvements in investment environment for non-resource exporters that will help to compensate them for high cost of investment in what is often an underdeveloped business environment	
Specific Activities	Support government decision-making on how to expand investment and encourage diversification in diversify non-resource exports.	
Cost Estimate	1. Consultants	\$89,708
	a. Remuneration and Per Diem	\$76,875
	i. International Consultants	\$51,250
	ii. Domestic/Regional Consultants	\$25,625
	b. International and Local Travel	\$11,500
	c. Reports and Communications	\$1,333
	2. Equipment + Training + Seminars + Misc	\$1,167
	Total	\$91,041
Implementation	Technical assistance in the form of international, regional and local consultants will be provided to MOIC, with support from the Ministry of Planning (MPI).	
Expected Impact	Expanded investment and export diversification in non-resource sector.	
Indicators of Measurable Impact	Number of new exporting firms in non-resource sector; number of exporters having significant survival rates.	

ANNEX A: CONSULTATIONS

03 October 2011

- NIU, MoIC Briefing with DTIS Team

04 October 2011

- Mr. Phetsathaphone Keovong, Monetary Policy Department., Bank of the Lao PDR
- Mr. Xaypaseuth Phomsoupha, Director General, Department of Energy Promotion and Development
- Mr. William Rex, Lead Specialist, World Bank Office, Vientiane, Lao PDR

05 October 2011

- Mr. Alister MacLean, General Manager of External Affairs, Phu Bia Mining
- Mr. Robin Hamilton Coates, Manager of External Relations, Minerals and Metals Group (MMG), Lane Xang Minerals Limited
- Phouphet Kyophilavong, Faculty of Economics & Business Management, National University of Laos.
- Mr. Ackhavone Luangsouvannavong, Deputy Director General, Ministry of Finance
- Mr. Eravanh Boun Gnaphalom, Deputy Director General, Department of Mines, Ministry of Energy and Mines.

ANNEX B: REFERENCES

- ASEAN Federation of Textile Industries (2011), "Laos Textile and Garment Industry Profile". Kuala Lumpur, Malaysia.
- Asian Development Bank (2011), "Energy Sector in Lao People's Democratic Republic". Manila. Available: <http://www.adb.org/Documents/Reports/SAPE/LAO/SAP-LAO-2010-42/default.asp>
- Baño, Alfredo (2011), "Future Development of the Power Sector in Lao PDR Consultative Workshop". Lao Plaza Hotel, Vientiane, Lao PDR, September 23, 2011.
- Barma, Naazneen, Verena Fritz, and William Rex (2010). "Governance of Natural Resource Management in Lao PDR: A Value Chain Perspective." Background Paper for World Bank (2010a).
- Brahmbhatt, Milan and Ekaterina Vostroknutova (2010). "Development with a Rapidly Expanding Natural Resources Sector: Challenges and Policy Options for the Lao PDR." Background Paper for World Bank (2010a).
- Chandra, V., and I. Osorio Rodarte (2009), "A Conceptual Framework for Export Diversification and Sustainable Growth". Washington, DC, Economic Policy and Debt Department, The World Bank.
- Danish Institute for International Studies (2011), "A missed opportunity: Mining for Sustainable Development". Copenhagen, Denmark. DIIS Policy Brief.
- Davading, Somneuk (2010) "Lao PDR: Growth Analysis for a Small Resource-Rich Transition Economy," Background Paper for World Bank (2010a).
- Fenton, Nina, and Magnus Lindelow (2010). "How Employment in Natural Resource Sectors Directly Contributed to Poverty Reduction: Some Evidence from the LECS Surveys." Technical Note for World Bank (2010a).
- Fenton, Nina, Magnus Lindelow, Andreas Heinimann, and Ian Thomas (2010b). "The Socio-Geography of Mining and Hydro in Lao PDR: Technical Report on Analysis Combining GIS Information with Socioeconomic Data." Technical Note for World Bank (2010a).
- Fenton, Nina, Magnus Lindelow, Jutta Krahn, and Bjorn Larsen (2010a). "Natural Resources, Poverty, Food, and Nutrition in Lao PDR: A Stock-taking." With support from AusAID. Background Paper for World Bank (2010a).
- Fraser, Julia (2010). "Hydro Power Background Summary Note and Sector Assessment." Background Note.
- Gibson, Daniel and Helene Carlsson Rex (2010). "Improving Hydropower and Mining Resettlement Performance in Lao PDR: Examining Potential for Benefit-Sharing Approaches." Background Paper for World Bank (2010a).
- Insisienmay, Sthabandith (2008), "Dutch Disease Syndrome and the Lao Economy". East Asian Economic Review, No. 3: 109-118.
- International Council on Mining and Metals (2011), "Utilizing Mining and Mineral Resources to Foster the Sustainable Development of the Lao PDR". Prepared by National Economic Research Institute (NERI), National University of Laos (NUOL), Oxford Policy Management (OPM) and Earth Systems Lao (ESL).

- International Monetary Fund (2011a), "Lao People's Democratic Republic—Staff Report; Staff Supplement; Public Information Notice on the Executive Board Discussion; and statement by the Executive Director for Lao P.D.R.". IMF Country Report No. 11/257, August 2011."
- International Monetary Fund (2011b), "World Economic Outlook". Washington, DC, September 2011.
- Jessen, A., and C. Vignoles (2010), "Deepening and Diversifying International Trade", in L. Rojas-Suarez and C. Elias, *From Growth to Prosperity*. Washington, DC., Inter-American Development Bank.
- Komany, Souphasay (2008), "Water Resources Management in Lao PDR". The 1st Working Group Meeting of the Project on Asian Environmental Review. Manila, 31 July 2008.
- Kyophilavong, Phouphet, and Toshihisa Toyoda (2008), "Foreign Capital Inflows in the Natural Resources Sector: Impacts on the Lao Economy". Presented at the conference on *The Future of Economic Integration in Asia*. Organized by Faculty of Economics, Thammasat University and Japan Bank for International Cooperation (JBIC), Bangkok, 20-21 November 2008.
- Larsen, Morten (2010). "Lao PDR: Economic Assessment of the Future of the Mining Sector." Background Paper for World Bank (2010a). MacGeorge, Richard, James B. Stewart, and Ekaterina Vostroknutova (2010). "Lao PDR: Fiscal Regime in the Hydro Power Sector." Background Paper for World Bank (2010a).
- Leung, Suiwah, Benedict Bingham, Matt Davies, eds (2010), *Globalization and Development in the Mekong Economies*. Cheltenham, UK. Edward Elgar
- Lord, Montague (2010), "Implications of WTO Accession for Selected Domestic Industries of Laos". Vientiane, Ministry of Industry and Commerce United Nations Development Programme (UNDP). Capacity Building and Technical Support to Laos in the World Trade Organization Accession Negotiation.
- Lord, Montague, and P. Tangtrongjita (2011), "Mapping the Organic Vegetable Value Chain along the East West Economic Corridor". Bangkok, Asian Development Band Thailand Resident Mission.
- Ministry of Planning and Investment (2010), 'Seventh National Socio-Economic Development Plan, 2011-2015'. Vientiane Capital.
- Porter, Ian C., and Jayasankar Shivakumar, eds (2011), "Doing a Dam Better: The Lao People's Democratic Republic and the Story of Nam Theun 2". Washington, DC. The World Bank.
- Prime Minister's Office (2010), "Decree on Environmental Impact Assessment", Vientiane, Lao PDR, February, 2010.
- Record, Richard and Konesawang Nghardsayson (2010c), "Mapping the Lao Product Space, Trade Development Briefing Note." Issue 1. December 2009. Policy Note (based on background paper Record and Nghardsaysone, 2010a).
- Record, Richard and Konesawang Nghardsaysone (2010a), "Export Dynamics and Diversification in Lao PDR: An Analysis of the Product Space." Background Paper for World Bank (2010a).

- Record, Richard and Konesawang Nghardsaysone (2010b), "Do exporters still face a heavier regulatory burden than non-exporters? Evidence from the new enterprise survey." Background Note for World Bank (2010a).
- Record, Richard and Konesawang Nghardsaysone (2011), "Diversification – The Extensive Margin". Vientiane (unpublished).
- Somvichith, Sanhya (2011), "Summary Report on Power Development Plan in Lao PDR". Vientiane, Department of Electricity, Ministry of Energy and Mines.
- Stenhouse, Renae and Jan Bojo (2010). "Hydropower and Mining Development in Lao PDR: Environment and Natural Resources." Background Paper and Executive Summary for World Bank (2010a).
- van den Toorn, Willem (2009). "Natural Resources and Sustainable Development in Laos." Background Paper prepared by the European Commission for World Bank (2010a).
- Vientiane Times (2011), "Laos aims for billion dollar tourism industry by 2020", 17 May 2011.
- Vostroknutova, Ekaterina, Ying Li, Somneuk Davading, and Vivek Suri (2010). "Fiscal Policy Options for a Resource- Rich Laos." Background Paper for World Bank (2010a).
- World Bank (2006), "Building Export Competitiveness in Laos: Background Report". Washington, DC. East Asia, Poverty Reduction and Economic Management (PREM) Department.
- World Bank (2010a), 'Lao PDR Development Report 2010. Natural Resource Management for Sustainable Development: Hydropower and Mining'. Washington, DC. Report No. 59005-LA.
- World Bank (2010b), "TA for Capacity Development in Hydropower and Mining Sector". Available:
<http://web.worldbank.org/external/projects/main?pagePK=64312881&piPK=64302848&theSitePK=40941&Projectid=P109736>
- World Bank (2010c), "Global Economic Prospects 2010". Washington, DC. Available:
<http://web.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTDECPROSPECTS/GPEXT/EXTGEP2010/0,,contentMDK:22608440~pagePK:64167689~piPK:64167673~theSitePK:6665253,00.html>.
- World Bank (2011a), "Robust Growth Amid Inflation Concerns". Lao PDR Economic Monitor. May 2011.
- World Bank (2011b), Doing Business Survey. Available: <http://www.doingbusiness.org>.
- World Bank (2011c), "Lao PDR Investment Climate Assessment: Policies to Promote Growth in the Non-Resource Sectors". Report No 64800-LA. Poverty Reduction and Economic Management Sector Department. East Asia and Pacific Region.
- World Bank (2011d), "Logistics Performance Index (LPI)". Washington, DC. Available:
<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/EXTTLF/0,,contentMDK:21514122~menuPK:3875957~pagePK:210058~piPK:210062~theSitePK:515434,00.html>
- "World Economic Forum (2010), ""Stakeholder Perceptions and Suggestions: Responsible Mineral Development Initiative 2010"". Available:

https://members.weforum.org/documents/ip/MM/AM11/RMDI_FinalReport_20-01-2011.pdf.

World Trade Organization (2010), "World Trade Report 2010: Trade in Natural Resources". Geneva. Available:
http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf