

LAO PDR

COUNTRY AND INDUSTRY PROFILE

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LIST OF ACRONYMS

ADB	Asian Development Bank
EoDB	Ease of Doing Business
DIC	Department of International Cooperation, Ministry of Investment and Planning
DIH	Department of Industry and Handicrafts, Ministry of Industry and Commerce
FDI	Foreign Direct Investment
ICT	Information and Communication Technology
ILO	International Labour Organization
IR	Industrial Revolution
IT	Information Technology
ISID	Inclusive and Sustainable Industrial Development
ISP	Internet Service Provider
LDC	Least Developed Country
LNCCI	Lao National Chamber of Commerce and Industry
LMIC	Lower Middle-Income Country
LSB	Lao Statistics Bureau
MoIC	Ministry of Industry and Commerce
MoF	Ministry of Finance
MPI	Ministry of Planning and Investment
MVA	Manufacturing Value Added
NIER	National Institute for Economic Research
NTFPs	Non-Timber Forest Products
NSEDP	National Socioeconomic Development Plan
NSEDS	National Socioeconomic Development Strategy
RCA	Revealed Comparative Advantage
SEZ	Special Economic Zone
SME	Small and Medium Enterprise
UNIDO	United Nations Industrial Development Organization
WB	The World Bank Group

EXECUTIVE SUMMARY

The Lao PDR Country and Industry Profile assesses the status and progress Lao PDR's industrial sector has made in terms of inclusive and sustainable industrial development (ISID). It provides an overview of the country's economy, in general, and of its industrial sector, in particular, with a focus on the country's manufacturing performance in comparison to neighbouring countries or to countries in the same region.

Lao PDR is a landlocked country and is classified as a Least Development Country (LDC). It has a population of 7.1 million and a GDP per capita of USD 1,789 (2018). Lao PDR's average GDP growth rate has been 7.2 per cent on average over the last 20 years, which is quite remarkable.¹ Its GDP growth rate is mainly driven by hydropower, mining and quarrying, wood and agricultural products. Both the service and manufacturing sectors have been picking up pace in recent years in terms of their contribution to the economy. According to the National Socioeconomic Development Plan (NSEDP), the manufacturing sector's role in the country's economic growth has increased in recent years.

The overall country and industry assessment reveals that Lao PDR continues to rely heavily on natural resources as a driver of the country's economic growth. Only few firms are engaged in high-technology manufacturing, namely in the telecommunication and chemical industries; the majority of manufacturing firms are small and medium sized enterprises (SMEs) and primarily produce medium- and low-technology goods. There is definitely room for improvement in the manufacturing sector in the medium- and long term. There is also some concern that the country is vulnerable in the wake of the Fourth Industrial Revolution because it is not sufficiently resilient, not very diversified and less competitive than other countries.

According to the World Bank's (WB) Lao Economic Monitor², the Asian Development Bank's (ADB) Country Diagnostic Study³, and the National Institute for Economic Research⁴, Lao PDR's productivity needs to be improved, and the economy needs to move from an agricultural- to an industrial-based one, and the diversity of its production and of its service sector needs to be improved. Similar findings are reported in Section 2 of this country and industry profile, despite the fact that Lao PDR's manufacturing performance appears to be in a better position than that of many other countries in the region. Lao PDR's performance in manufacturing value added (MVA), diversification, competitiveness and resilience must be improved if the country is to achieve ISID. This would require substantial improvements in human capital, innovation and advanced technology, quality investments, ease of doing business, logistics, information and communication technology (ICT), data and statistics collection, technology standards and assurance, and private and public investment. Such improvements would promote the growth of the country's manufacturing sector and foster inclusiveness, sustainability as well as higher and resilient competitiveness.

1 Lao Economic Monitor series of reports of WB.

2 WB:-Lao Economic Monitor April 2015 and subsequent series of reports.

3 ADB:- Accelerating Structural Transformation for Inclusive Growth - Country Diagnostic Study, November 2017.

4 The National Institute for Economic Research suggestion during Macroeconomic Update and Economic Diversification in Laos seminar in mid-July 2017.

INTRODUCTION

Lao PDR is a landlocked country with a total land area of 236,800 square kilometres. The total land area is 230,800 square kilometres, and the total water area is 6,000 square kilometres. Its population in 2017 was around 7.1 million, with an average growth rate of 1.45 per cent annually⁵. The country has a total of 49 ethnicities consisting of over 160 ethnic groups according to the Lao Front for National Construction's (LFNC) recently revised list.

The country is classified as a low- and middle-income country (LMIC) and a least developed country (LDC), and belongs to the Association of Southeast Asian Nations (ASEAN). Its GDP per capita is USD 1,789 (constant 2010 USD). The country's absolute poverty headcount is 23.1 per cent; its Human Development Index (HDI) was 0.604, ranking 140th; and its gross enrolment ratio in tertiary education is 16 per cent according to the UNDP Human Development Report 2019. The country's employment-to-population ratio is 76.6 per cent (ILO, 2017).

Lao PDR was ranked 103rd in the 2017 UNIDO Competitive Industrial Performance index (which analyses the ability of countries to competitively produce and export manufactured goods), while the Ease of Doing Business (EoDB) ranked the country at 154 (2020).

The country depends on natural resources for growth and exports, in particular, agriculture and forestry products, mining and quarrying and hydroelectricity. FDI is promoted through its 11 special economic zones (SEZs).

Lao PDR's industrial sector is mostly natural resource-based, and while manufacturing appears to be immature and small, it has a huge impact on the economy. The manufacturing sector's biggest challenges include the small size of firms, industry's labour intensity, the lack of skills, of safety, of quality of standards and statistics, of financial resources and of energy.

Lao PDR is committed to its ten-year National Socioeconomic Development Strategy (NSEDS) (2016–2025), which consists of seven components, one of which is the “Strategy on Industrialization and Modernization”. The country's first National Green Growth Strategy has recently been introduced. The Ministry of Industry and Commerce (MoIC), along with other line ministries, has initiated an overall development plan to promote export-oriented, non-natural resource-based industries to accelerate industrialization, modernization, green growth, inclusiveness and sustainability.

The goal is ultimately to achieve ISID, green growth and industrial modernization, and—based on the five-year National Socioeconomic Development Plan (NSEDP)—to graduate from LDC status by 2025.

⁵ Lao Population and Housing Census 2015.

INDUSTRY PROFILE ANALYSIS

Building on UNIDO's country and industry profile methodology, this analysis of Lao PDR's industrial sector aims to shed some light on the country's economic and human development performance in comparison with other countries. The comparator countries were selected because they either share a border with Lao PDR, have a similar history and culture, a comparable GDP composition and growth rate, a logistics linkage with Lao PDR, a similar EoDB rating, or because they are comparable in terms of their FDI attraction, MVA, etc. The benchmark countries are Cambodia, with a population of 16.2 million and a GDP per capita of USD 1,205 (in 2018); Myanmar, with a population of 53.7 million and a GDP per capita of USD 1,571 (in 2018); Thailand, with a population of 69.4 million and a GDP per capita of USD 6,361 (in 2018); Viet Nam, with a population of 95.5 million and a GDP per capita of USD 1,964 (in 2018), and China, with a population of 1.3 billion and a GDP per capita of USD 7,754. All of these countries share a border with Lao PDR, have a similar history and close trade relations with Lao PDR. Cambodia, Myanmar, Thailand and Viet Nam are selected as immediate comparators/benchmark countries, while China serves as a role model.

SECTION 1: INITIAL BENCHMARKING ON THE LEVEL OF THE ECONOMY

The following benchmark indicators provide an overview of Lao PDR's overall development and its position compared to the benchmark countries. While the country and industry profile largely focuses on the manufacturing sector, the first part of the analysis presents an overview of the economy as a whole. The selected indicators are important not only for estimating a country's general level of development, but also address other relevant factors such as education and infrastructure, which are crucial for a well-functioning manufacturing sector.

1. Level of income

Figure 1 shows that Lao PDR's GDP per capita increased steadily from 1999 onwards, at an annual average rate of 5.5 per cent, which is similar to the trend observed in Cambodia, Viet Nam and Myanmar. Lao PDR's increase of GDP per capita was stronger than in Cambodia and Myanmar, but weaker than in Viet Nam, Thailand and China.

Lao PDR consolidated its vision in the National Assembly (20–22 April 2016) to achieve inclusive and sustainable development based on green growth by 2030. The country also aims to meet the criteria and reach eligibility for graduation from LDC status by 2025.

Lao PDR has implemented a series of comprehensive, market-oriented reforms since 1986, and its GDP per capita has been climbing steadily. According to the Lao PDR Statistical Yearbook 2017, the country's total GDP for 2017 was around USD 17.06 billion, up from USD 10.19 billion in 2013, and its GDP per capita was USD 2,468 in 2017, up from USD 1,534 in 2013. The economy's three key sectors are agriculture-forestry (with a 16.20 per cent share in GDP and a 2.87 per cent growth rate in 2017), industry (with a GDP share of 30.91 per cent and a growth rate of 11.61 per cent in 2017), and services (with a share in GDP of 41.53 per cent and a growth rate of 4.51 per cent in 2017).

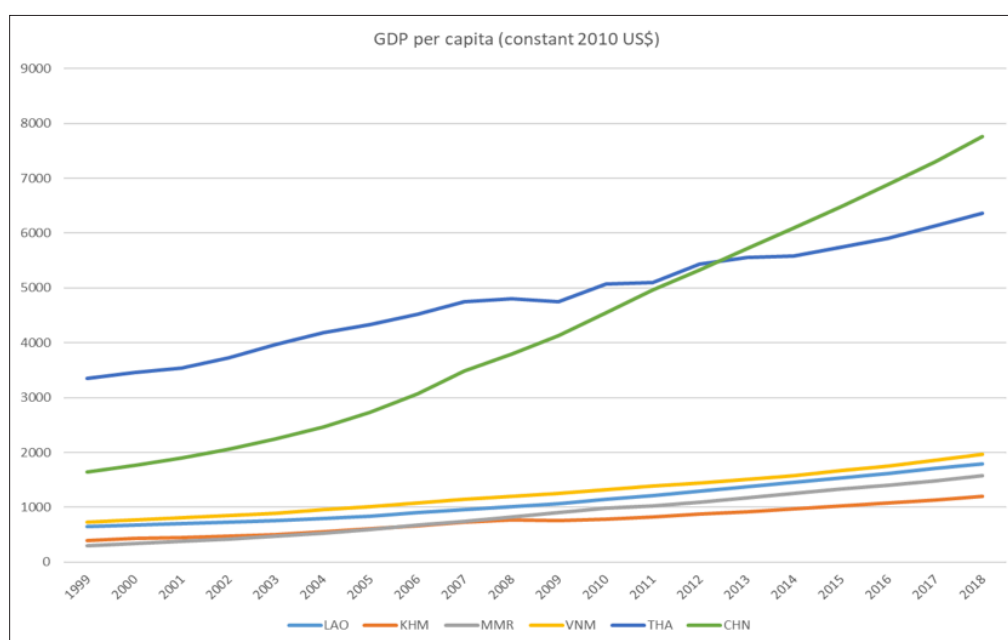


Figure 1 GDP per capita (constant 2010 US\$)
Source: World Development Indicators and IMF

2. Growth of the economy

Figure 2 illustrates that Lao PDR's GDP growth rate in absolute terms (not per capita) over the past 20 years was 7.2 per cent, on average, higher than both Thailand's and Viet Nam's, but lower than Cambodia's, China's and Myanmar's GDP growth rate. Cambodia's, Myanmar's, Lao PDR's and Viet Nam's growth dynamic was similar at around 1.5 per cent annually.

According to World Bank and ADB data, Lao PDR's GDP growth rate was above 8.0 per cent between 2011–2014 and 6.8 per cent from 2015–2017. The country is projected to maintain a robust GDP growth rate of 6.5 per cent, on average.⁶

Lao PDR is one of the fastest growing economies in the region, with an average growth rate of 7.5 per cent between 2010 and 2017. Its GDP is driven by energy (hydroelectricity) and mining, timber and non-timber forest products (NTFPs), followed by services and agriculture. Its manufacturing sector has also been steadily growing. Due to the country's exposure to natural disasters, the general global economic slowdown and recently, the trade war tensions, Laos PDR's GDP did not meet the target of 7.5 per cent growth and has been readjusted several times to reflect the country's general economic situation.⁷

With a total population of 7.1 million, Lao PDR's population growth is moderate at 1.45 per cent annually, with an even balance of the ratio of males to females in the population of 1:1.⁸ The majority of the workforce is concentrated in the agricultural sector and lives in rural areas. The agricultural sector is low-tech, labour-intensive and has low productivity, i.e. it does not contribute much to GDP growth (WB Lao Economic Monitor, April 2015).

6 ADB's Economic Outlook – April 2019.

7 WB: Lao Economic Monitor April 2015 and subsequent series of reports.

8 ILO 2017 Report.

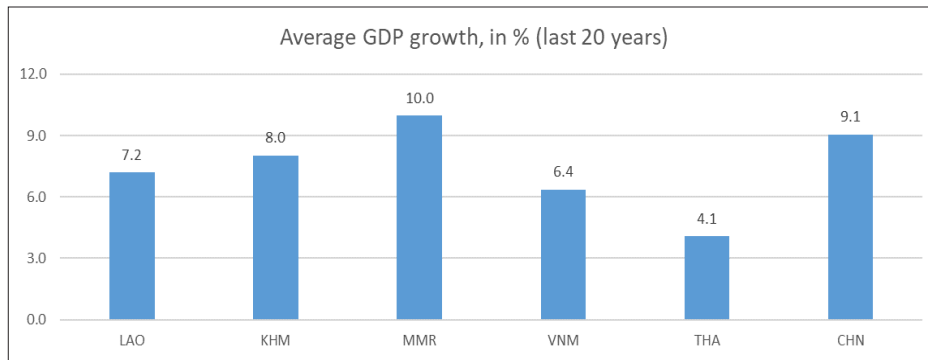


Figure 2 Average GDP growth, in % (last 20 years)
Source: World Development Indicators

3. Poverty and inclusiveness

Despite an average growth rate of 7.2 per cent in recent years, Lao PDR still faces obstacles in poverty reduction, in particular among vulnerable people living in rural areas. The poverty rate has gradually been decreasing, but the share of those living on less than USD 3.2 a day was 58.7 per cent (2012), exceeding the poverty rate of other countries in the region (Figure 3).

According to the Country Analysis Report 2015 – Lao PDR (UN in Laos), consumption among the bottom 40 per cent of the population increased by 1.3 per cent compared to 2.4 per cent among the wealthiest 20 per cent population. Over the past two decades, the rural poverty headcount ratio fell from 51.8 per cent to 28.6 per cent. From 1992/93 to 2007/08, the decline in rural poverty has been slightly faster than is the case of urban poverty. One-third of the population living in upland areas still lives below the poverty line; around one-fifth of the population living in lowland areas is poor (18.8 per cent).⁹

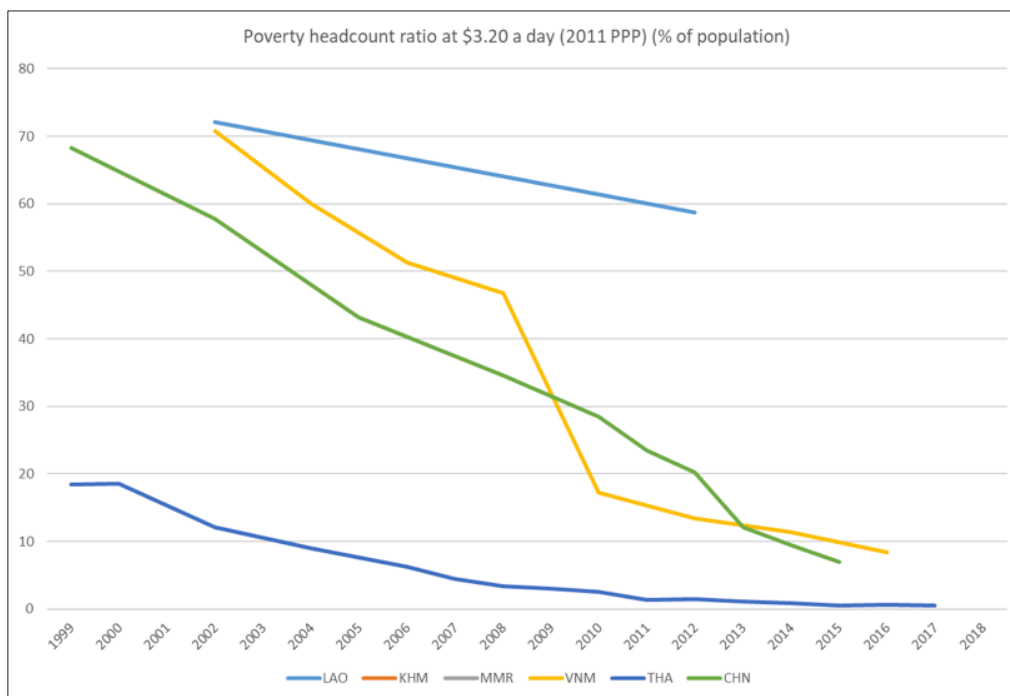


Figure 3 Poverty headcount ratio at US\$ 3.20 a day (2011 PPP) (% of population)
Source: World Development Indicators

9 Country Analysis Report 2015– Lao PDR by The UN in Laos.

According to the World Development Indicators¹⁰, data for Lao PDR’s GINI index were available for three years (2002, 2007 and 2012), while no data are available for Cambodia and Myanmar. A comparison can, however, be made with Thailand, Viet Nam and China.

Figure 4 illustrates that Lao PDR’s GINI index was 30.2 (2002), 35.4 (2007), and 36.4 (2012). The country’s GINI index is rising at a gradual pace compared to Thailand, which reported a slight decline in its GINI index from 43.1 (1999) to 39.3 (2012) and 36.5 (2017), while China’s GINI index started off at 38.7 (1999), peaked at 43.0 (2008), and then gradually dropped to 42.2 (2012) and further to 38.6 (2015).

In 2002, Lao PDR’s GINI index was around 10 points lower than Thailand’s (41.9), China’s (42), and 5 points lower than Viet Nam’s (37). By 2012, the country’s GINI index had increased by just a few points, trailing Thailand’s (39.3) and China’s (42.2), but was nearly one point above Viet Nam’s GINI index (35.6).

The increase in Lao PDR’s GINI index seems to have followed the five-year NSEDP, and indicates that the gap in the inequality of income distribution has widened as the country’s economy expanded over the years.

Higher income distribution and job creation does not yet seem to have reached rural areas and vulnerable people. This remains a challenge and will require effective policies, in particular in terms of promoting job creation in the manufacturing sector, income generation and equality to achieve inclusive and sustainable development.

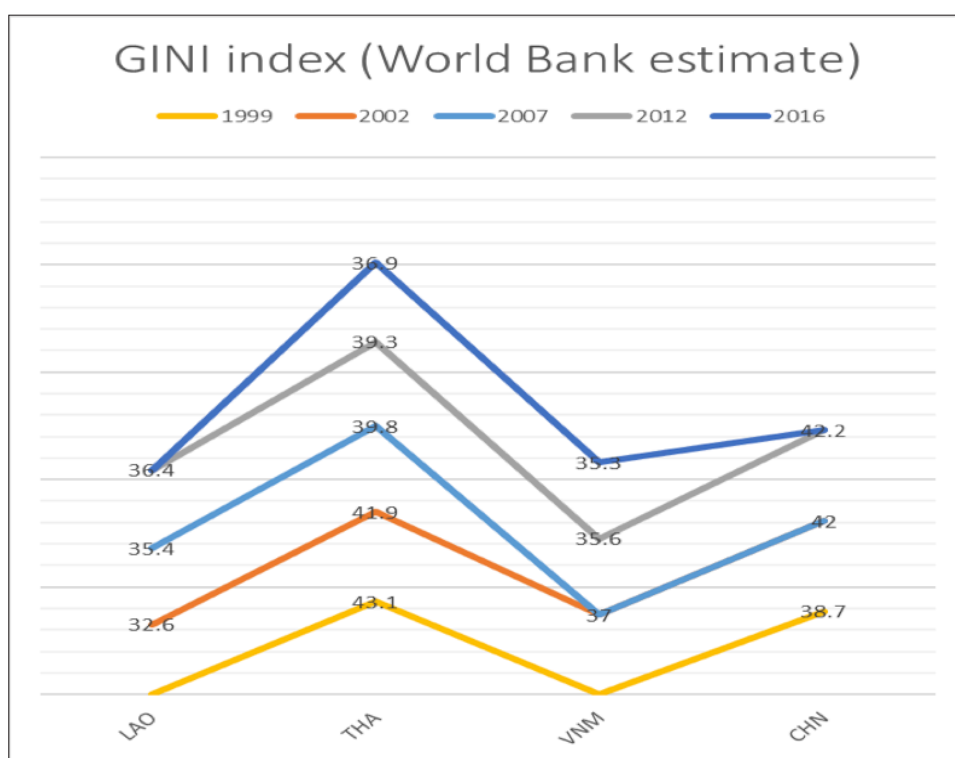


Figure 4 GINI index (World Bank estimate)
Source: World Development Indicators

10 WB:-World Development Indicators.

4. Skills and education

Human capital is a measure of the level of skills and education of the labour force. The higher the level of education, the higher the population's capacity and level of innovation in economic development and productivity. Enrolment in tertiary education is an indicator that provides a clearer picture of the skills and level of productivity of a country's human capital for development.

Figure 5 shows that tertiary enrolment in Lao PDR is generally higher than in Cambodia and Myanmar, but trails far behind Thailand's, China's and Viet Nam's. Lao PDR reported the lowest enrolment rate in tertiary education (less than 2.5 per cent) among the comparator countries in 1999. This rate began to gradually increase from 2001 onwards, reaching 10 per cent in 2007, and peaking at 19 per cent in 2013, to then start declining to below 15 per cent in 2018. This could be associated with the country's strong economic growth from 2005 onwards and the reduction in poverty over that same period. Moreover, new educational institutions opened across the country.

Figure 6 presents the number of researchers engaged in research and development (R&D) (per million population). Only scarce data are available (only one observation is available for the year 2002, when the number of researchers engaged in R&D was 15.8/million). In 2020, the number of researchers involved in R&D in Lao PDR was only slightly smaller than in Cambodia (17.64/million) and Myanmar (17.75/million), but lagged far behind the number of researchers in Thailand (280.59/million, 2003), Viet Nam (113.81/million), and China (624.13/million). A comparison reveals that over time, the number of researchers engaged in R&D increased in all countries, e.g. Cambodia (30.37/million in 2015), Myanmar (29.07/million in 2017), Thailand (over 1,200/million in 2016), Viet Nam ((700.77/million in 2017), and China (over 1,000/million since 2007). It can thus be concluded that Lao PDR has not yet been able to exploit the full potential of the educational institutions in the country and to unlock the full R&D potential. There is clearly room for improvement to develop industry, innovation and technology. Increasing the number of researchers involved in R&D in Lao PDR represents another challenge on the path towards Industry 4.0.

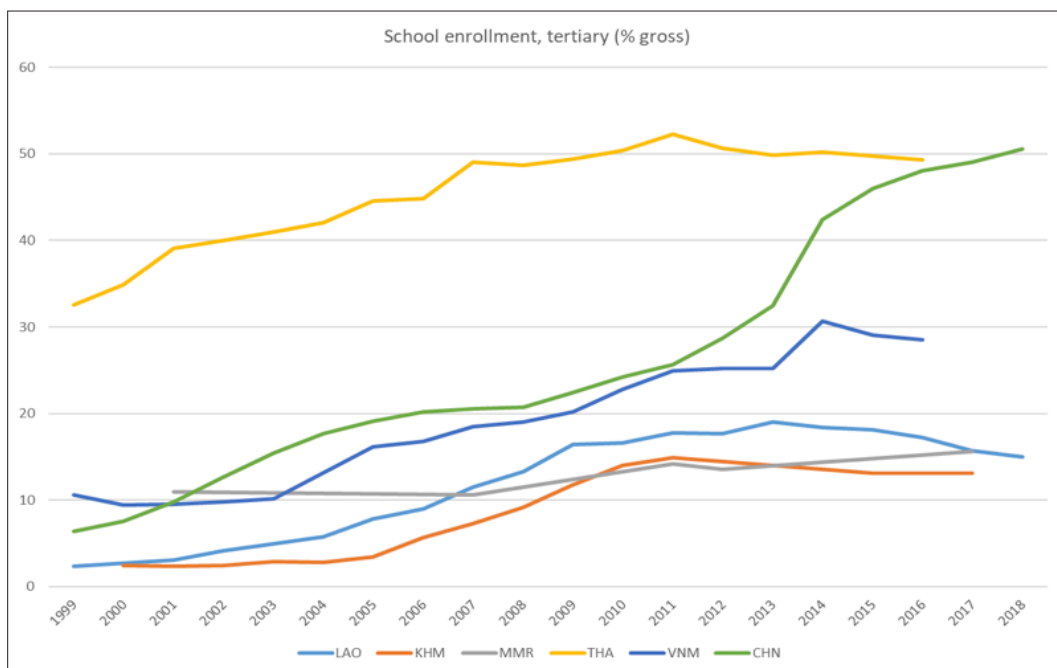


Figure 5 Enrolment in tertiary education (% gross)

Source: World Development Indicators

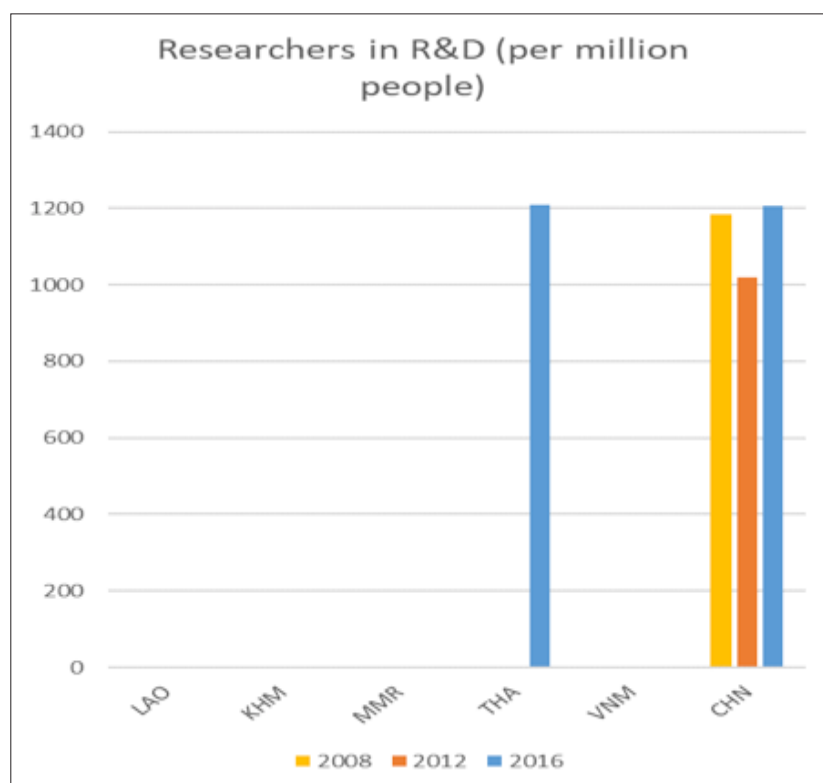


Figure 6 Number of researchers in R&D (per million population)

5. Infrastructure

Since Lao PDR is landlocked, the level of infrastructure, including roads, the expansion of cities, power grids and communication technology, is a measure for a country's overall development. A higher level of infrastructure increases the connection of overland links with other countries for trade, the exchange of people and know-how, contributes to improvements in logistics, global supply chains, investment attraction, ease of doing business and partnerships. Figure 7 shows that Lao PDR achieved a relatively high score in terms of its quality of trade and transport-related infrastructure from 2012–2014, reporting a slightly higher figure than Myanmar and a similar score as Cambodia's during the same period. Lao PDR's logistics performance index ranked lowest in 2016, with a score of less than 2, while the comparator countries' average was above 2.3. Lao PDR's higher score between 2007 and 2014 could be attributable to the fact that infrastructure development was in line with the measures of the NSEDP during those years and the corresponding economic boom, while the lower score of 2016 could be the result of a degradation of infrastructure. The country should allocate new financing for infrastructure development and investment to prepare the country's infrastructure for the future and support the nation's logistics services and connectivity to markets.

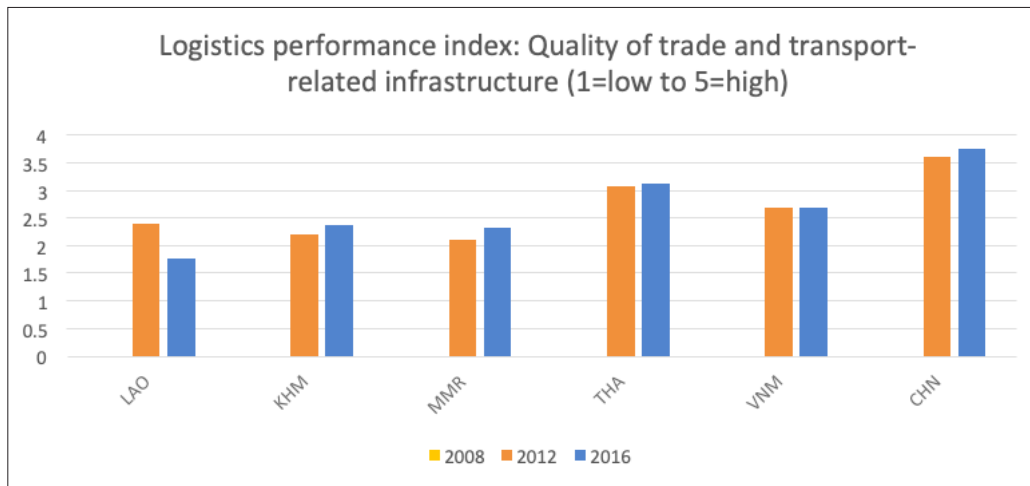


Figure 7 Logistics performance index
Source: World Development Indicators

Lao PDR is currently involved in several infrastructure projects, including the East-West Economic Corridor connecting five Southeast Asian countries, namely Lao PDR, Cambodia, Viet Nam, Thailand and Myanmar; the high-speed train under the Belt & Road Initiative, as well as highways and rail road links to sea ports in Viet Nam. The coming year will bring additional improvements. Lao PDR needs more public spending, however, as well as FDI to finance such projects.

Mobile phones and the internet play an important role in Laotians' daily life. According to the Lao Economy Monitor¹¹, the country's telecommunication industry grew rapidly to meet the surge in demand for services. By mid-2007, mobile phone users (per 1,000 population) had risen by 35 per cent from 150 users in mid-2006. According to Kittinavong¹², the Government of Lao PDR has recognized that ICT is playing an increasingly important role in the promotion of socio-economic development and modernization. Phissamay¹³ asserts that Lao PDR must strengthen its ICT system and spur the development of IT to become competitive and stay connected to the world. The OECD Digital Economy Outlook 2017¹⁴ emphasizes that ICT is a key driver of innovation, that IT is expanding rapidly and that digital transformation is an integral part of the global agenda for realizing opportunities and addressing challenges. In other words, mobile phone and internet subscriptions are important indicators for a country's level of development and people's level of participation.

Figure 8 shows that less than 1 person (per 100 population) has a fixed broadband subscription, i.e. the rate of internet access is extremely low in the country. This trend is similar to that in Cambodia and Myanmar. Lao PDR's rate of fixed broadband subscription is among the lowest of its neighbouring countries and lags far behind China's, Thailand's and Viet Nam's. Lao PDR's fixed broadband subscription rate began to increase from 2009 onwards, nearly doubling from 0.04 in 2008, and continued rising at a rapid pace to 0.35 in 2016 and 0.64 in 2018. Cambodia's fixed broadband subscription rate started to pick up from 2008 onwards starting at 0.11, nearly doubling since 2007, and increasing again two-fold in 2009–2013 to over 0.21 in 2008. Its fixed broadband subscription rate doubled again in 2014 and was over 1.0 by 2018.

11 Lao Economy Monitor of WB, November 2007.

12 ICT development in Lao PDR presented by Somluay Kittignavong, July 2009 in Bangkok during the Expert Group Meeting on cooperation on the information society in Asia and Pacific.

13 ICT infrastructure in Lao PDR presented by Phonpasit Phissama, October 2010.

14 OECD Digital Economy Outlook 2017: <https://www.oecd.org/internet/oecd-digital-economy-outlook-2017-9789264276284-en.htm>

In Myanmar, this rate increased to over 0.2 during 2017–2018. The increase in Lao PDR’s fixed broadband subscription rate appears to take place during each 5-year NSEDP cycle (currently, the 8th NSEDP (2016–2020) is in place). It seems that Cambodia and Myanmar follow similar cycles in terms of their countries’ development plans.

Taking a closer look at Lao PDR’s telecommunication industry, Kittinavong and Phissamay find that there were only a total of five telecom operators and 12 internet service providers (ISPs) in 2005, and that no new licenses were issued until 2009. Moreover, according to LNCCI’s position paper (2018), Lao PDR’s high internet excise tax contributes to the high cost of internet broadband connections (Lao PDR had the second highest internet excise tax rate in ASEAN after Brunei, and was around three times higher than Myanmar’s, four times higher than Cambodia’s and Viet Nam’s, and nearly 10 times higher than Thailand’s internet excise tax rate in 2017). The high cost of internet broadband, the limited number of operators and ISPs, and the cycle of implementation of the NSEDP all contribute to the low rate of fixed broadband subscriptions in the country.

At the current rate, it will be challenging for Lao PDR to promote digital transformation, to modernize its industry and take advantage of Industry 4.0. Mobile phone and broader internet accessibility will certainly contribute to the industrial/manufacturing sector’s development and support the country’s technological progress in the near future.¹⁰

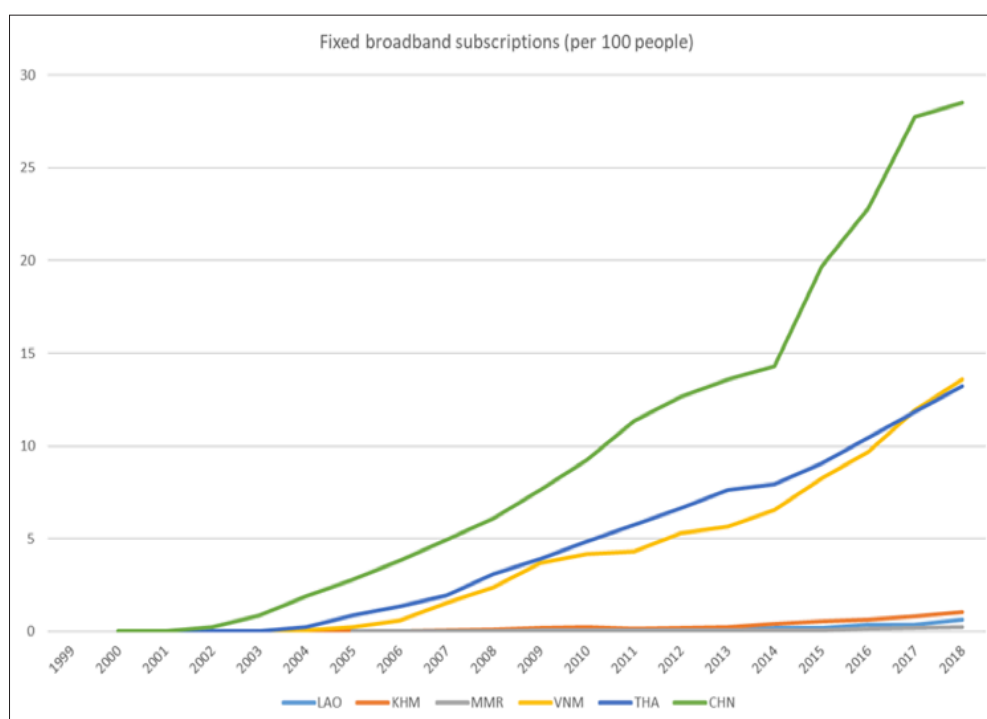


Figure 8 Fixed broadband subscriptions
Source: World Development Indicator

6. Foreign direct investment

Figure 9 indicates that Lao PDR’s net foreign direct investment (FDI) inflows (% of GDP) were similar to those of Cambodia and Viet Nam between 1999 and 2007. The trends in Lao PDR and Viet Nam have been similar since 2007, peaking at around 10 per cent of GDP in 2017. Cambodia has registered much higher FDI net inflows since 2009.

Despite the low FDI inflows in the year 2000 (1.9 per cent of GDP), which decreased even further to below 1 per cent of GDP in 2005, Lao PDR's FDI rate bounced back and was 5.4 per cent of GDP in 2006 and peaked at 7.66 per cent in 2007. It remained below 5.4 per cent thereafter until 2011. Between 2012–2015, the country's average FDI rate was above 6.0 per cent, reaching 7.4 per cent of GDP in 2015. FDI peaked again and accounted for just over 10 per cent of GDP in 2017, but declined to 7.28 per cent of GDP in 2018. The decline in FDI is attributable to the overall global economic slowdown, the trade war and the decrease in Lao PDR's WB Ease of Doing Business ranking. The country's FDI has been considerably higher than that of its neighbouring countries since 2016, including China. Only Cambodia has reported higher average FDI inflows of 10 per cent since 2007.

According to the WB, Lao PDR's official development assistance in 2000 (in current US\$) amounted to USD 23.61. Cambodia received USD 345.55 million, Myanmar USD 105.63 million, Viet Nam USD 1.48 billion, and China 1.74 billion. By 2005, China received close to USD 1.79 billion in official development assistance, Viet Nam over USD 1.69 billion, while Lao PDR received USD 241.28 million, Cambodia USD 452.89 million, and Myanmar USD 144.83 million.

From 2006 onwards, Lao PDR received USD 471.08 million (in 2015), USD 480.20 million (in 2017), and USD 565.15 million in 2018 in official development assistance. A similar increase was observed for both Cambodia and Myanmar from 2006 onwards. Cambodia received USD 681.03 million in 2010, over USD 800 million during 2012–2014, and USD 855.76 million in 2017, followed by a decrease to USD 768.55 million in 2018. Myanmar received USD 534.59 million in 2008, remaining below that level until 2013, and peaking at USD 3.93 billion to then drop to below USD 1.6 billion. Viet Nam's official development assistance increased to over USD 2 billion in 2007, reaching USD 4.21 billion in 2014 and then gradually decreasing to USD 1.63 billion in 2018. China, on the other hand, has registered a negative figure since 2011, with nearly USD -1 billion in 2017 and USD -737.03 million in 2018. Thailand reported negative figures much earlier, namely since 2003, with positive figures for some years, e.g. in 2017 (USD 250.11 million), followed by a drop to USD -423.23 million in 2018.

According to the Foreign Aid Implementation Report – 2017 Semi-Annual Progress and 2018 Estimation by the Department of International Cooperation (DIC)/ Ministry of Planning and Investment (MPI) of Lao PDR, total planned official development assistance (ODA) was around USD 979.81 million (USD 215.31 million as a grant and USD 764.50 million in loans). The actual disbursement in the first six months was about 37.40 per cent of total planned ODA. In addition, DPI estimated the ODA requirement for 2018 at around USD 970.12 million, while the estimated disbursement by line ministries and provincial governments was about USD 770.18 million, of which ODA funds covered over 95 per cent. As the country plans to graduate from LDC status by 2025, which implies that the country will lose some privileges as an ODA recipient, Lao PDR will have to attract more FDI. Lao PDR will continue to depend on FDI and ODA for further development. According to the 8th NSEDP (2016–2020), the Government of Lao PDR aims to mobilize additional FDI and ODA in coming years by improving its policies, e.g. introducing a single window system and providing clear timelines, improving the ease of doing business along with a restructuring of governance to address transparency and effectiveness. The government is also encouraging more private sector involvement in the country's development and investment.

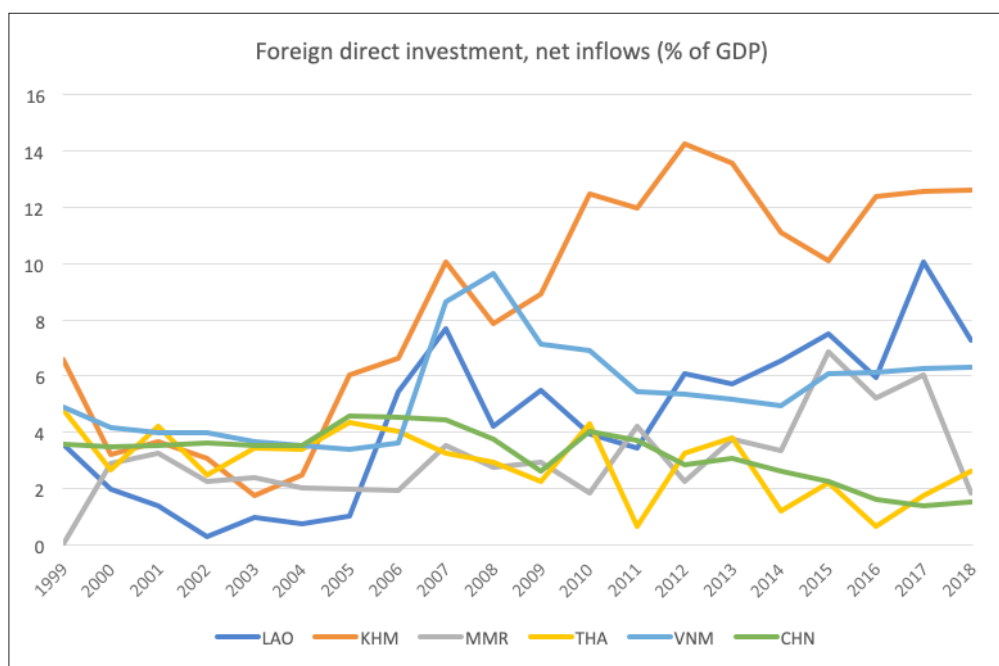


Figure 9 Foreign direct investment, net inflows
Source: World Development Indicators

SECTION 2: MANUFACTURING ANALYSIS

This section delves further into Lao PDR's progress in inclusive and sustainable industrial development based on the country's structural change. The focus is on the country's manufacturing sector and the progress Lao PDR has made in comparison with the comparator countries. The manufacturing sector can contribute substantially to economic development, and is a key driver of job creation, productivity and skill development. Investments in new machinery as well as in R&D, technology and technical know-how, energy efficiency and environmental protection, etc. are also necessary.

UNIDO's mandate covers the promotion of inclusive and sustainable industrial development in all key aspects. This section explores selected indicators such as MVA, inclusiveness within manufacturing, carbon dioxide emission per unit of value added, and technological capability and innovation.

7. Scale and intensity of manufacturing activities

MVA per capita measures the contribution of manufacturing—as opposed to non-manufacturing sectors, e.g. agriculture and mining—to a country's economy as a whole (in constant prices). MVA per capita captures the country's industrial development, which contributes to its growth.

According to the Lao Statistic Bureau's (LSB) report¹⁵, manufacturing accounted for 9.90 per cent of GDP in 1990, gradually increasing to around just over 3 per cent every five years and reaching 20.50 per cent in 2005. Over the same period, the share of the mining and quarrying, electricity and construction sectors increased by an average of between 0.5 per cent and 1.5 per cent. From 2010 to 2014, the share of Lao PDR's manufacturing sector in GDP amounted to 9.77 per cent (2010) and 7.87 per cent (2014), decreasing

15 The Lao Statistical 40 years 1975-2015 Book, December 2015, Lao Statistic Bureau.

around 1.5 per cent, on average, every five years. The share of the mining and quarrying, electricity and construction sectors (2010–2014) increased, with mining accounting for 9.26 per cent (2010), peaking at 16.90 per cent (2012) and subsequently dropping to 14.19 per cent (2014). The contribution of construction to GDP was 5.18 per cent in 2010 and continued to increase to slightly over 7 per cent in 2014, while electricity accounted for 4.41 per cent (2011), remaining above 3.33 per cent, on average, until 2014.

According to the Lao Statistical Yearbook (2015 to 2018), manufacturing accounted for 8.19 per cent of GDP in 2015 and remained at 7.50 per cent, on average, for several years. The share of mining and quarrying decreased compared to the previous period to 6.80 per cent in 2015, and remained at just above 6 per cent in 2018, while electricity witnessed a large leap of nearly 7 per cent in 2015 and climbing to nearly 11 per cent by 2018. The construction sector's share in GDP decreased slightly compared to the previous period to 5.64 per cent in 2015, rising again to 6.97 per cent.

Figure 10 presents MVA as a share of GDP (in %), and shows that Lao PDR's average MVA share was just above 10 per cent (2012–2015), with modest improvements (+/- 1 point) over the past 20 years. In comparison to Southeast Asia's regional average, Lao PDR remained far below the regional average (about 22 per cent, i.e. Lao PDR's MVA in GDP was on average 10 percentage points lower than the regional average). The country has the lowest MVA contribution to GDP among the benchmark countries. In 2018, Lao PDR's MVA share in GDP was 11.1 per cent.

According to the Lao Industrial Development Report 2017¹⁶ of the Department of Industry and Handicraft (DIH)/ MoIC, the industrial sector continued to grow at a satisfactory pace (2009–2017), while the agricultural sector appeared to decline slightly (2014–2015).

According to the Government Finance Statistics Annual Report 2017¹⁷, Lao PDR's exports in 2017 were dominated by electricity (25.6 per cent), minerals and quarrying (29.2 per cent), agriculture and forestry products (11.9 per cent), and other manufacturing products (27.6 per cent). The country's major exports include electricity and mining, while timber and NTFPs and agricultural products play a lesser role.

With the exception of hydropower and cement factories, the majority of manufacturing firms are SMEs and only few are high-tech firms. A lot of FDI is located in special economic zones which are not included in domestic MVA. There is a high concentration of SMEs in manufacturing with low levels of investment in high-technology and R&D from both the private and public sector.

16 Lao Industrial Development Report 2017 by the Department of Industry and Handicrafts (DIH), Ministry of Industry and Commerce (MOIC).

17 The Government Finance Statistics Annual Report 2017 by the Ministry of Finance Lao PDR.

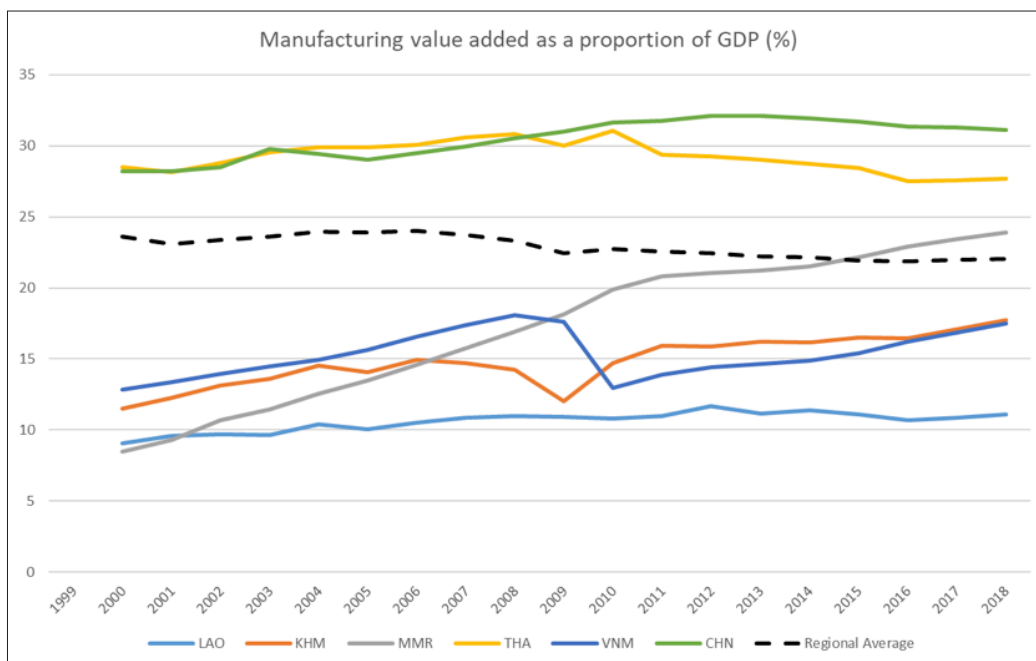


Figure 10 Manufacturing value added as a share of GDP (in %) Source: UNIDO SDG indicators

The trend of Lao PDR’s MVA per capita (Figure 11) was similar to that of Cambodia’s, Myanmar’s and Viet Nam’s during 2000–2010, with an MVA per capita below USD 150, far below the regional average and that of China and Thailand. Lao PDR’s MVA per capita was just above USD 200 in 2018, similar to that of Cambodia, but below Myanmar’s and Viet Nam’s, which registered an MVA per capita of over USD 300. This confirms that there are several gaps in Lao PDR’s productivity, technology and investment.

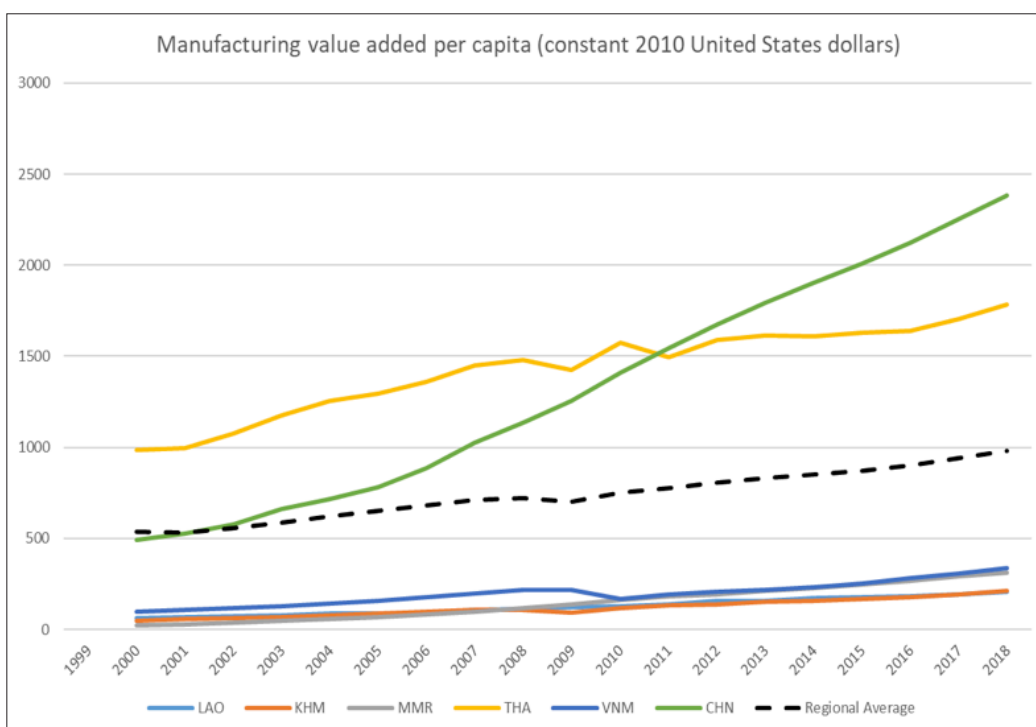


Figure 11 Manufacturing value added per capita (constant 2010 US\$) Source: UNIDO SDG indicators

Lao PDR’s manufactured exports per capita were just below USD 300 during 2015–2018, surpassing only Myanmar (Figure 12). Lao PDR trails far behind the other benchmark countries from 2007 onwards. Its manufacturing sector is characterized by labour-intensive, low-technology firms that do not produce many processed goods and focus on semi-finished products or export raw materials. There are only few high-technology firms and innovation among firms is generally low.

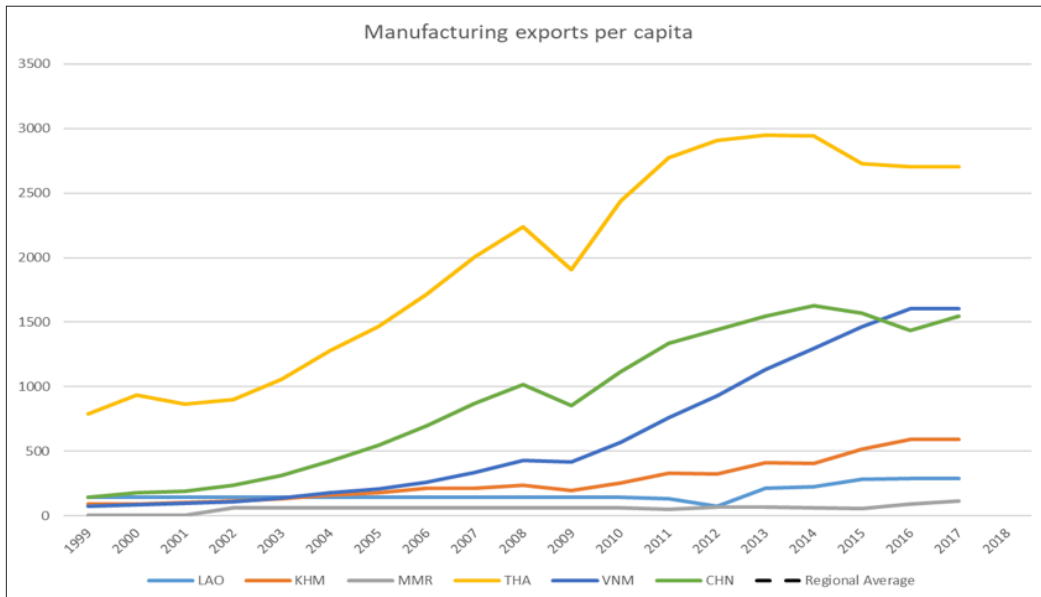


Figure 12 Manufactured exports per capita
Source: UNIDO CIP index

8. Inclusiveness within manufacturing activities

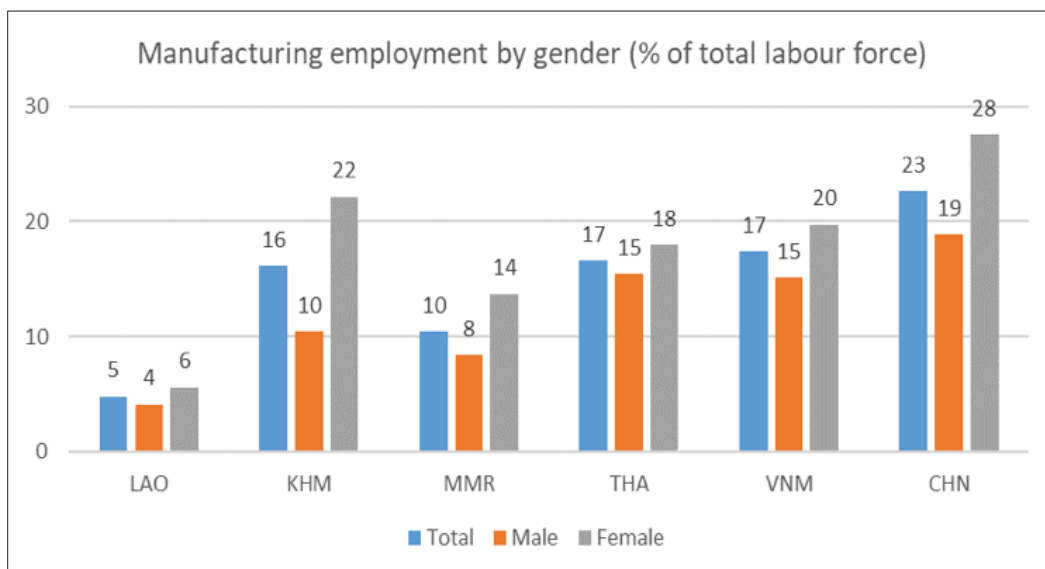


Figure 13 Manufacturing employment by gender (% of total labour force)
Source: ILO manufacturing employment estimate 2017

With a total population of 7.1 million, Lao PDR's population growth is moderate, growing at 1.45 per cent annually. It has a balanced ratio of males to females in the population of 1:1. According to the Labour Force Survey 2017 (ILO), the country's employment to population ratio was 36.9 per cent, of which 40.3 per cent were male and 33.7 per cent were female. The labour force participation rate was 40.8 per cent, of which 45.2 per cent were male and 36.5 per cent were female. These shares reveal that the share of male employment is slightly higher than female employment. The UN Country Analysis Report¹⁸ finds that the working population consists of an equal share of men and women, but that women generally occupy the lower rungs of the labour market. Around 64 per cent of workers in low-skill jobs and 63 per cent of workers in jobs classified as service jobs, jobs in shops and markets are women. Women account for only 23 per cent of all employers, more often of small enterprises rather than medium to larger firms.

Figure 13 shows that in 2017, only about 5 per cent of the total labour force (of which 4 per cent were male and 6 per cent were female) was employed in manufacturing. This could be explained by a higher emphasis on equality, that there is a higher number of manufacturing firms engaged in apparel/garment, food processing and other agri-processing and electronic parts which mostly employ females. The country's manufacturing employment rate was the lowest among the comparator countries. In addition, the majority of the labour force is concentrated in the agricultural sector and lives in rural areas. The agricultural sector uses less advanced technologies, is labour-intensive and has low productivity and does not contribute much to GDP growth.

9. Sustainability of the manufacturing sector

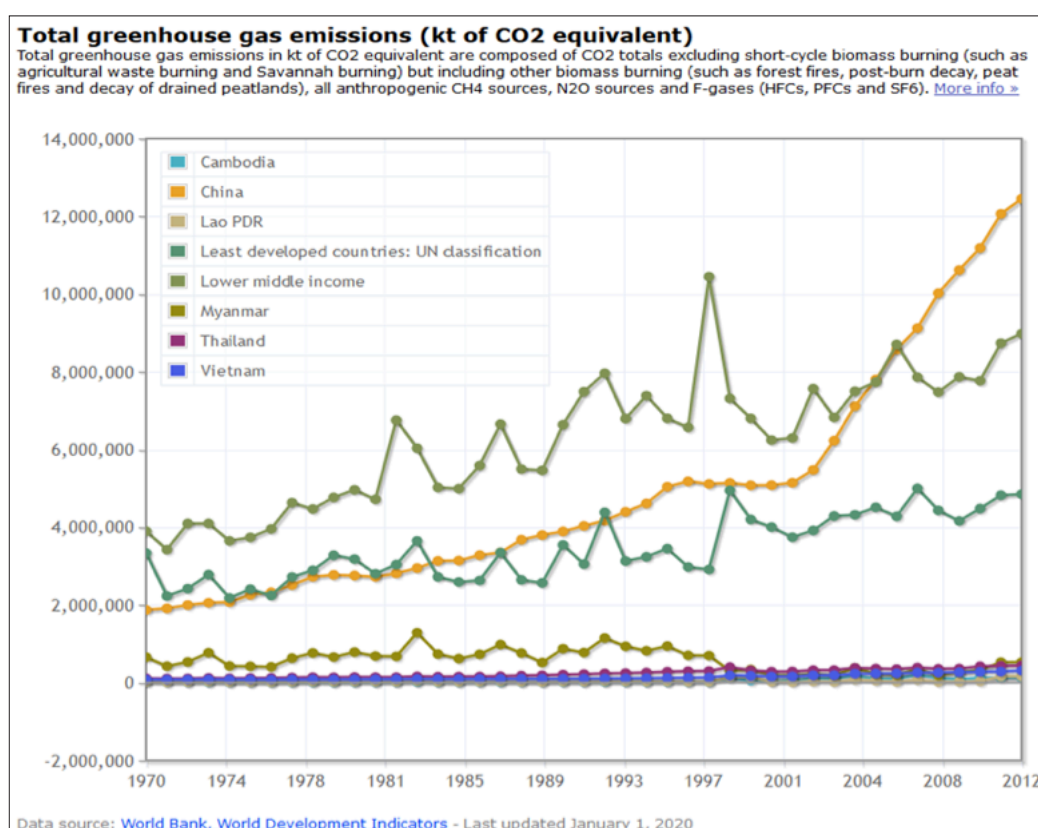


Figure 14 Total greenhouse gas emission

18 Country Analysis Report: Lao PDR – Analysis to inform the Lao PDR – United Nations Partnership Framework (2017-2021), The United Nation in Lao PDR, Vientiane 13 November 2015.

The impact of the country's industrial sector on the environment as well as the available natural resources, in addition to the use of clean and renewable energy plays a role for sustainable and inclusive growth. Lao PDR's total greenhouse gas emission (kt of CO₂ equivalent) was 161,719 in 2012. Figure 12 illustrates that over the past 42 years, this indicator achieved a maximum value of 161,719 in 2012 and a minimum value of 14,116 in 1976.¹⁹

Of Lao PDR's total CO₂ emission, nearly all was emitted through land use change and forestry, with the agricultural sector producing the greatest share of methane (CH₄) and nitrous oxide (N₂O). The country, however, has the lowest CO₂ emission among the other countries in the region.

This is likely the result of numerous policy measures that have been introduced, such as PM No. 15, which bans all illegal logging. Moreover, the country has a clear direction for green growth, nearly 50 per cent of land is forest coverage, with a target to increase forest coverage to 70 per cent by 2030, and to significantly increase the use of hydropower. Lao PDR is committed to inclusive and sustainable development based on green growth, and to other global low carbon conventions. It is embedded in all 5-year National Socioeconomic Development Plans. Many policies and action plans have been implemented to achieve climate change, resilience and green growth.

Lao PDR's absolute CO₂ emission is closely linked to the size of its industry, forest coverage and agro-industry. Country data is limited and scattered among different organizations, and it is therefore difficult to provide reliable assessments and recommendations or to make a statement about the country's implementation progress. Such data needs to be collected and properly analysed and made publicly available.

10. Technological capabilities and innovation

According to UNIDO's Analytical Industry Platform (2016), of Lao PDR's top 22 manufactured exports, eight products are high-tech exports, five are medium-tech and the rest are low-tech exports. Telecommunication (15 per cent) and chemicals (12.5 per cent) accounted for the largest share of high-tech exports, while basic metals (26.2 per cent) accounted for the highest share of medium-tech exports. The top three low-tech exports were food and beverages (14.9 per cent), apparel (10.4 per cent) and wood products (5.7 per cent).

Figure 15 presents the country's share of medium- and high-tech (MHT) industry's value added in total value added. It has remained consistent at below 15 per cent over the last 17 years, and lies below the regional average of nearly 30 per cent. Only China and Thailand came close to the regional average (42.4 per cent), while Viet Nam's share of MHT peaked at over 40 per cent in 2014, which was a large leap from 2001 when it was just over 20 per cent. By comparison, Lao PDR's MHT share was higher than Cambodia's (which had an average of less than 0.5 per cent MHT) and Myanmar (with a share slightly below Lao PDR's during 2000–2008, and 6 per cent lower, on average). The share of MHT industries in total industry was, on average, lower in Lao PDR than in Viet Nam by nearly 14 percentage points (2000–2016), with the highest difference in 2015 at nearly 30 per cent and the lowest difference between the two countries in 2011 at around 11 per cent.

Please note that the result in Figure 15 is based on one observations for Lao PDR only, and is therefore just a rough approximation of where the country has stood in the past.

19 <https://www.indexmundi.com/facts/lao-pdr/indicator/EN.ATM.GHGT.KT.CE>

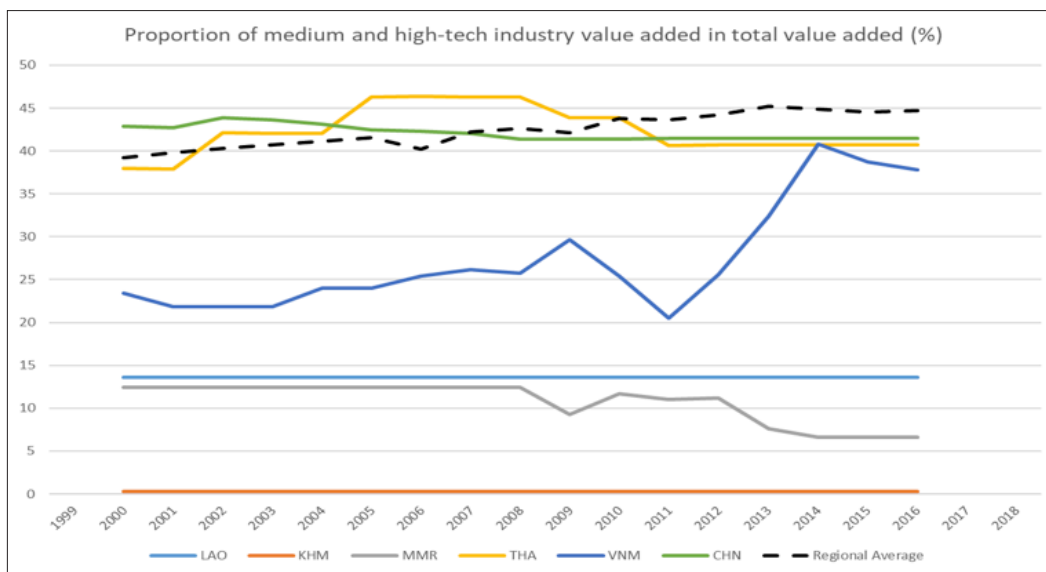


Figure 15 Share of medium- and high-tech industry value added in total value added (%)
 Source: UNIDO’s SDG indicators and CIP index, downloaded from www.stat.unido.org

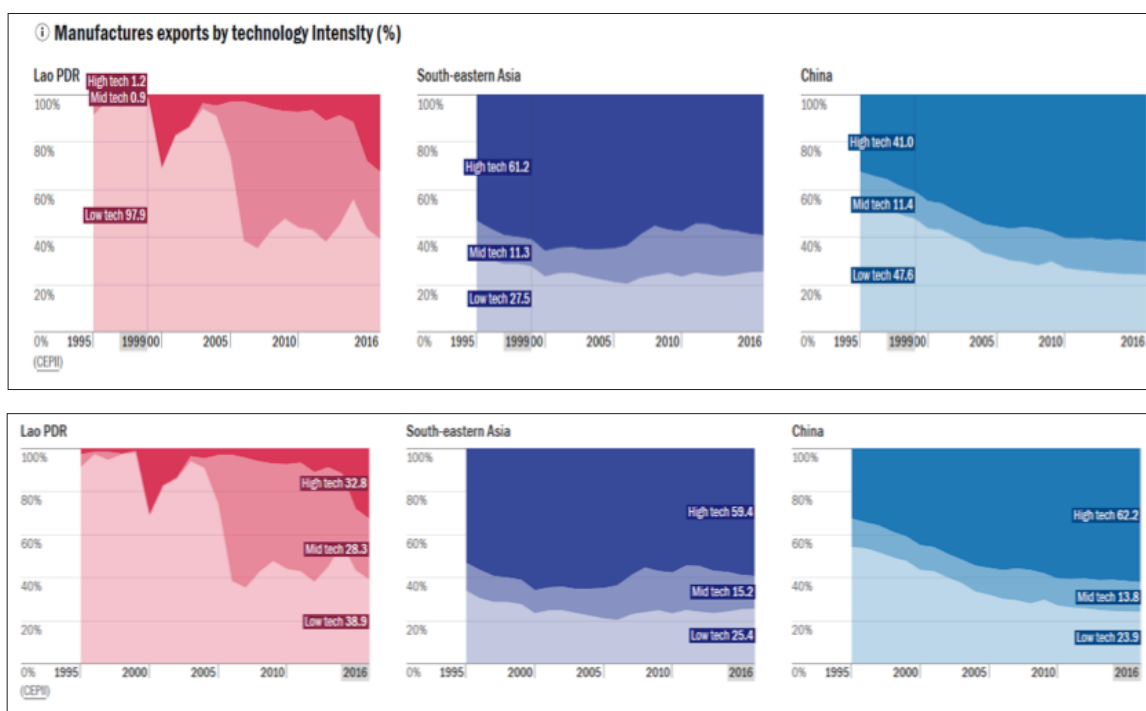


Figure 16 Manufactured exports by technology intensity
 Source: UNIDO Industrial Analytics Platform: <https://iap.unido.org>

Lao PDR’s manufactured exports by technology intensity is explored in the following section. This indicator measures the technological complexity of a country’s manufactured exports. As a country begins to produce more advanced goods for the global market, the share of medium- and/or high-technology goods in the country’s manufactured exports increases.

Figure 16 shows that Lao PDR mostly exported low-tech products such as apparel, wood, and textile during 1999, while other countries in the region exported higher tech products over the same period. According to the Industrial Development Report 2017 of DIH/MoIC, the compound annual growth rate (CAGR) of manufactured products between 2010 and 2016 was about 8.47 per cent while that of non-manufactured products averaged about 8.12 per cent. Over 50 per cent of manufactured exports were basic metals, camera parts and recording-related parts, food and beverages, apparel and wood products. Lao PDR relied heavily on natural resources during that period.

The technological complexity of Lao PDR's manufactured exports in 2016 was 32.8 per cent, 28.3 per cent, and 38.9 per cent for high-, mid-, and low-tech industries, respectively. Compared to other countries in the region and to China, Lao PDR's high-tech manufacturing lagged behind.

According to the Industrial Development Report 2017 of DIH/ MoIC, Lao PDR's manufacturing sector faces major challenges as the majority of manufacturing firms are SMEs that use medium- or low-technology, have low productivity and high costs of production. Moreover, they lack financing and access to credit, have poor infrastructure in terms of logistics and access to markets, ambiguous policy support, and weak law enforcement.

To strengthen the country's manufacturing sector, Lao PDR must promote quality investment, innovation, human capital development, advanced/ smart technology and supportive infrastructure and logistics, in addition to effective use of big data.

SECTION 3: WITHIN MANUFACTURING ANALYSIS ON INDUSTRY SUBSECTOR LEVEL

A country that has greater diversification and a manufacturing sector characterized by high-technology firms usually achieves stronger growth, is more resilient and has a higher level of inclusiveness and sustainability. Overall, Lao PDR's manufacturing sector has improved, but there is still room for improvement when the country is compared to neighbouring states in the region.

This section explores the structure of Lao PDR's manufacturing sector at the subsector level. This provides a clearer picture of the drivers of the country's manufacturing sector, which considerably contribute to the country's economy, and reveals areas for potential further development to achieve higher levels of competitiveness.

11. Diversification and specialization

According to the country's Industrial Development Report 2017, there are 13,148 manufacturing firms, of which 5.43 per cent are large firms with a value added of 57.51 per cent, 5.96 per cent are medium-sized firms with a value added of 18.84 per cent, 51.01 per cent are small firms with a value added of 16.43 per cent, and 37.60 per cent are micro firms with a value added of 9.22 per cent. The top 5 manufacturing firms in terms of exports were basic metals (26 per cent), telecommunication (15 per cent), food and beverages (14 per cent), chemicals (12 per cent), and apparel (10 per cent). The country's manufacturing sector is still relatively small and immature, but has the potential to grow based on inclusiveness and sustainability.

Lao PDR's leading exporting industries in the manufacturing sector, measured by their share of total manufactured exports, are presented in Table 1. As a developing country industrializes, medium- and/ or high-technology industries will account for more of the country's manufactured exports relative to low-technology industries.

Table 1 shows that Lao PDR's top-5 exports were relatively balanced and come from different subsectors in comparison with other countries in the region. The country's strongest share in total exports was basic metals (medium-tech) at 26 per cent, whereas other countries' share was less than 10 per cent. Remarkably, Lao PDR had a high share of 15 per cent exports in telecommunication, coming in third behind Viet Nam and China. The country's share of (high-tech) chemical exports in total exports was 12.5 per cent, which was higher than for other countries. Lao PDR had the second highest share of (low-tech) food and beverages exports at 14.5 per cent after Myanmar (24.7 per cent).

Despite the fact that Lao PDR has a low share of high-tech manufactured products, its overall concentration in medium- and low-tech manufactured exports was around 67 per cent. This share is higher than Cambodia's and Myanmar's, but lower than Thailand's, Viet Nam's and China's. When the share of high-tech manufactured exports is compared, the results are similar.

No.	Item	Lao PDR		Cambodia		Myanmar		Thailand		Vietnam		China	
		Tech... level	Share %	Tech... level	Share %	Tech... level	Share %	Tech... level	Share %	Tech... level	Share %	Tech... level	Share %
1	Basic metals	M	26.2	M	4.3	M	7.1	M	4.8	M	2.1	M	3.8
2	Telecommunications	H	15	H	0.8	H	3.7	H	11.8	H	30.7	H	20.8
3	Food & beverages	L	14.9	L	3.4	L	24.7	L	12.1	L	6.8	L	1.7
4	Chemicals	H	12.5	H	0.2	H	0.8	H	9.5	H	2.3	H	6.2
5	Apparel	L	10.4	L	47.9	L	32.3	L	1.1	L	11.5	L	5.1
6	Wood products	L	5.7	L	1.3	L	4.9	L	1.1	L	1.3	L	0.7
7	Tobacco	L	3.3	L	0.1	L	0.3	L	0	L	0.1	L	0
8	Electrical apparatus	H	2	H	2.3	H	0.6	H	4.2	H	4.5	H	7.8
9	Leather & footwear	L	1.8	L	14.1	L	6.4	L	0.9	L	12.2	L	3.5
10	Textiles	L	1.4	L	19.6	L	5.2	L	1.9	L	6.3	L	5.6
11	Furniture & other	L	1.3	L	1	L	3.1	L	3.3	L	5.3	L	6.2
12	Rubber & plastics	M	1.1	M	0.8	M	0.6	M	4.9	M	2	M	3.5
13	Automotive	H	1	H	0	H	0.2	H	13.7	H	0.7	H	2.3
14	Other transport	H	0.7	H	2.5	H	1.2	H	1.9	H	1	H	1.6
15	Scientific instruments	H	0.6	H	0.7	H	1.7	H	3.4	H	1.5	H	3.7
16	Machinery & appliance	H	0.6	H	0.2	H	5.8	H	9.5	H	2.7	H	10.4
17	Metal products	M	0.6	M	0.4	M	0.3	M	2.3	M	1.6	M	3.9
18	Office equipment	H	0.4	H	0.1	H	0.1	H	9.5	H	5.3	H	9.5
19	Fuels	M	0.4	M	0	M	1	M	2.1	M	0.4	M	0.8
20	Glass, ceramics & ceme	M	0.1	M	0	M	0.1	M	1.1	M	1.2	M	1.8
21	Publishing	L	0.1	L	0	L	0	L	0.1	L	0.1	L	0.4
22	Paper products	L	0	L	0.1	L	0.1	L	0.8	L	0.2	L	0.8

Table 1: Share of industry in total manufactured exports (in %), 2016

Source: 2016 - UNIDO Industrial Analytics Platform, country profiles. Available at <https://iap.unido.org/>

Table 1 indicates that Lao PDR's investment policy, the attractiveness of its business environment, the availability of energy at a low cost, the availability of labour, of raw materials, infrastructure and logistics, etc. are the drivers of the country's manufacturing diversification. However, these shares still rely heavily on natural resources and raw materials with limited value added, while other high-tech manufacturing opportunities have not yet been fully exploited or have not attracted investment.

12. Competitiveness of manufacturing (sub-)sectors

The UNIDO Competitive Industrial Performance (CIP) index benchmarks the ability of countries to competitively produce and export manufactured goods. It incorporates three dimensions of industrial performance: 1) capacity to produce and export manufactured goods; 2) technological deepening and upgrading, and 3) world impact. According to UNIDO's index, Lao PDR was ranked 103rd in the global manufacturing ranking.

We delve further to determine which products exported by Lao PDR have a revealed comparative advantage (RCA) (plot of UNCTAD). The RCA plot presents a full picture of countries' RCA in producing and exporting a full range of products (value) in a given year. The years 2016, 2017 and 2018 are further explored.

Figures 17–19 show that Lao PDR's concentration over the last three years has been in medium- and low-tech manufacturing, such as beverages, agricultural products, forest and non-timber forest products, basic metals, apparel and minerals as a commodity. It also shows that very few high-tech manufactured goods were produced during that period, such as electronic equipment and machinery, precision tools and equipment, telecommunication and computing processors, advanced food manufacturing, etc.

The mid-term review of the 8th NSEDP (2016–2020) reiterated that structural change lies at the core of the plan. The Government of Lao PDR is committed to a long-term sustainable growth strategy and aims to pursue non-resource-based industrialization, productive capacity-building and the reduction of economic vulnerability. Moreover, MoIC's Industrial Development Strategy and Plan (2011–2020) envisages manufacturing growth at an average of 12 per cent to 13 per cent annually, with a share of MVA in GDP of 25 per cent in 2020 (23 per cent in 2015). Lao PDR's manufacturing sector has strong momentum and a high potential for rapid growth. The country's competitiveness and advantage in low- and medium-tech manufacturing will face numerous challenges from other countries located in the same region, including economies of scale, lower logistics costs, market access and networks, competitive investment incentives, available skills and labour/workforce at a competitive cost, ease of doing business, the environment, etc.



Figure 17: RCA plot 2016



Figure 18: RCA plot 2017



Figure 19: RCA plot 2018

Source: UNCTAD, available at <https://unctadstat.unctad.org/EN/RcaRadar.html>

To conclude, Lao PDR will only be able to rely on growth based on its natural resources and low-tech manufacturing in the short term. The country has the possibility to sustain its growth based on diversification, competitiveness through high-tech manufacturing using its resources in the most efficient and effective way for higher value added products. This will require a clear long-term strategy and action plan for human capital investment, quality investment from both the public and the private sectors, and good governance to promote inclusive and sustainable industrial development.



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