



**Lao People's Democratic Republic**  
**Peace Independence Democracy Unity Prosperity**

**20-Year National Digital Economy Development Vision**

**(2021-2040),**

**10-Year National Digital Economy Development Strategy**

**(2021-2030),**

**5-Year National Digital Economy Development Plan**

**(2021-2025)**

**Ministry of Technology and Communications**

**Vientiane Capital**  
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## PREFACE

Many technologies around the world have been developing in a fast pace; the nations that are well-prepared have transformed themselves to embrace the 4<sup>th</sup> Industrial Revolution era. The heart of such development is the development of digital technology that is used in all sectors, leading to connectivity, new services, borderless communication and trading. Many countries make most of such advantage by creating new and solid production foundation, contributing to their economy infrastructure, which makes their economy development grow rapidly and strongly, and many countries had successfully accomplished such revolution. It was estimated that digital economy value in 2019 reached \$11 trillion, covering 15.5% of global economy. This value was expected to grow in two folds within the new few years. Specifically in 2020, as the ASEAN-China Digital Economy Cooperation Year and RCEP was also adopted, which will further increase the support, promotion and development of digital commerce between ASEAN and China, and among participating countries.

For Lao PDR, it is necessary to adjust and exercise those potentials to map with its hidden potentials in order to improving the challenging state of the economy to have new and better potentials. Along the Vision in the development to reduce poverty and getting ready to graduate from LDC in 2024, the strategies on regional and international connectivity of Lao PDR, the Master Plan of ASEAN Connectivity 2025, and other strategies, the Government recognized the importance to use digital potential for establishing digital economy by determining strategies and development plans to attract cooperation and investment to develop essential digital economy infrastructures. This will support the expansion of every economic sector with the aim to solve the economic challenges and create favourable environment for business, production, commerce and services, bringing great benefits to develop the country.

Even though Lao PDR is small and has small number of population in comparison to neighboring countries, the advantage in location, geograpy, natural resources and environment give Lao PDR good potentials in energy, agriculture, tourism and land transportation. These will create economic benefits in general, together with the competitive capacity in the region. Therefore, it is necessary to promote digital technology deployment into those sectors, as to promote the establishment of the National Digital Economy.

This document has been created based on the actual and urgent necessity in socio-economy development in the new era of the country, economy restructuring and digital technology deployment in the region and international that has been growing in all sectors, including public and private sectors, as well as unavoidably in people's daily livings. Digital economy will become important and essential potentials contributing to the national economy. Therefore, the Government has approved **the 20-Year National Digital Economy Development Vision (2021-2040), 10-Year National Digital Economy Development Strategy (2021-2030) and 5-Year National Digital Economy Development Plan (2021-2025)**, and included the 9th 5-Year National Socio-Economy Development.

These National Digital Economy Vision, Strategy and Development Plan will become the foundation for determining the directions of national digital economy development in the future, including:

- 1) Main requirements for driving Lao PDR to digital economy.
- 2) Scope and potentials that Lao PDR can participate and grasp development opportunities from other countries.
- 3) Strategies of digital economy development of Lao PDR.
- 4) General scope of the implementing work plans, as the reference for all parties in translating into their own implementation plans.

The Government encourage all sectors and parties to use this 20-Year National Digital Economy Development Vision (2021-2040), 10-Year National Digital Economy Development Strategy (2021-2030) and 5-Year National Digital Economy Development Plan (2021-2025), and incorporate into their operations in order to make digital economy of Lao PDR happen.

**Minister**  
**Ministry of Technology and Communications**

## **NOTE**

For ease of access and reading, the English and Lao version of this edition of the 20-Year National Digital Economy Development Vision (2021-2040), 10-Year National Digital Economy Development Strategy (2021-2030) and 5-Year National Digital Economy Development Plan (2021-2025) has been compiled into separate English and Lao versions.

The English version is for the purpose of dissemination, to use for general information, and provided as a guide. However, the Lao version shall prevail in case of any inconsistency or misinterpretation.

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# PART I

## Overall Context of Digital Economy Development

### 1.1 Understandings of Digital Economy

#### 1.1.1 Definition

**Digital Economy refers to a new form of economy having digital technology as a tool to drive, increase effectiveness and efficiency of productivity for public and private sector, create value-added to production, commerce and services in order to improve living standards of citizens.**

In 1994-95, the term "Digital Economy" was mentioned in the book by Don Tapscott, *The Digital Economy - Rethinking Promise and Peril in the Age of Networked Intelligence*. Tapscott initially described how the Internet would change the way we work, production line and so on, which would become the new form of economy or Digital Economy (or Internet Economy/Web Economy). In 2005, Tapscott revisited his work and confirmed what had been stated in 1995 was true.

Digital Technology refers to electronic form of tools, systems, hardware and resources for creating, storing and managing data in digital form (binary 0 and 1). (More detail is provided in Annex 2).

#### 1.1.2 Importance of Digital Economy

Digital technology gradually become more important for our daily lives, and so for national development, bringing by opportunities and challenges. Digital technology is being used in all sectors and rapidly posting major changes and impacts on today's innovation, leading to new technologies, such as Cloud service, Cyber security, Artificial Intelligence (AI), Big Data, Internet of Things (IoT), Virtual Reality, Augmented Reality, Metaverse, 5G technology, Blockchain, drone, robot, social media. These are playing essential roles in revolutionize industrialization, agriculture, services, people's livings, new markets, new consumers and new businesses.

Digital economy is playing important roles in driving global businesses by encouraging innovation and promoting more competition. This new and unique environment provides high opportunity for new form of businesses, which is essential for economy to grow. Digital transformation has already been parts of our daily activities and become the necessity of economy, as illustrated below:

- 1) Digital economy shows rapid growth that other forms of economy. The recent World Bank's data shows that national income from ICT in developing countries covers 17% of GDP, and digital economy grows in the rate of 15-25% per year.
- 2) Digital technology can reduce the gap between cities and rural areas, as well as increase production and commerce because information can be shared and distributed easily. ITU estimated that 10% increase of broadband Internet will increase economy by 1.38%.
- 3) High rate of digital technology development and deployment generates competitive capacity, as illustrated by the rapid development of South Korea and Singapore.
- 4) A 10% growth rate of technology digital in a country can create 3% of new labours in digital fields.
- 5) Digital technology can be used as instruments to create innovation and increasing effectiveness and efficiency in all sectors: public, production, health care, education, commerce, MSMS, Start-Ups; business sectors can expand boundaries to international markets.

Therefore, digital economy is believed to leapfrog national economy development. When digital economy is effectively managed and deployed, the national economy will improve, our goal of graduating from poverty and sustainable development can be realized.

### 1.2 International and Regional Context of Digital Economy Development

#### 1.2.1 International Context of Digital Economy Development

Global economy has been transformed as a result of the revolution and escalation of digital technology or digital deployment. Digital transformation posts impacts to nations around the world in

different levels, and to the United Nations's implementation of the 2030 Sustainable Development goal. It generates opportunities and challenges in particular to development countries. Global digital transformation overview and trends could be demonstrated as follow:

- While fixed line telephone usage has been decreasing, mobile phone usage has been increasing. More than 51% of global population has access and been using the Internet. Fixed line and wireless broadband Internet have high tendency to grow rapidly.
- New technologies have been developed and widely deployed, such as 5G technology, Blockchain, Artificial Intelligence, Internet of Things, Big Data, 3-D printings and so on, which create numerous economic values.
- In 2018, it was estimated that the e-Commerce generated \$29 trillions, covering 32% of global GDP, which increased 13% from 2017. In that, sales in Business-to-Business (B2B) covered 87% or \$412 billions of all international e-Commerce.
- Global mobile payment usage increased from 2.4% in 2014 to 4.9% in 2017, of which Africa jumped in highest rate from 12% in 2014 to 23% in 2018. In East Asia the rate was not very high, from lower than 1% in 2014 to 2% in 2017.
- Automation and robotics have been deployed more widely in production plants and gradually replacing human labors. In 2013-2017, it was estimated that 381,300 was sold, and is expected to be 630,000 robots sold in 2017-2021. Globally, 79% of robots are produced in China, Japan, South Korea, USA and Germany, in that China covers 36% which is the highest of global robot markets
- Provided that data, data center and data flow grow exponentially in the world, and data flowing freely with no border, new shared services have been created. A good example is Cloud service that helps saving investment cost a great deal and ensuring sustainability and accessibility. On top of Cloud database service, Software-as-a-Service and Platform-as-a-Service have also been provided. Among Cloud service providers, 75% of market share is covered by the 5 giants: Amazon Web Service, Microsoft, Google, IBM and Alibaba.

### 1.2.2 ASEAN Context of Digital Economy Development

Government of ASEAN Member States (AMS) create national digital economy development plan due to the increasing importance of digital economy that contributes to national economy. Even though each nation has a unique plan, they all aim to strengthen their own digital competitiveness. In 2019, Lao PDR hosted the 19th ASEAN Telecommunications and ICT Ministers' Meeting (TELMIN), where all ministers mutually agreed to rename TELMIN to ASEAN Digital Ministers' Meeting (ADGMIN).

In addition, the rapid development of technology and innovation brings about opportunities and challenges. In order to successfully accomplish digital transformation, ASEAN has renamed its ASEAN ICT Unit to ASEAN Digital Unit, and improved measures to ensure the availability and accessibility of the connectivity, bridging the digital gaps among ASEAN states.

ASEAN Digital Unit conducted ASEAN Digital Masterplan 2025 (ADM2025) or previously known as ASEAN ICT Masterplan, which has been endorsed in the 1st ASEAN Digital Ministers' Meeting in early 2021 in Malaysia. The masterplan laid out initial guidelines and defined the vision : **"ASEAN as a leading digital community and economic bloc, powered by secure and transformative digital services, technologies and ecosystem"**.

ADM 2025 specifies what actions AMS governments and regulators can take to best achieve the vision set out above. Put simply achieving the vision of a digital economy and a digital society requires three conditions to be met:

- 1) There is high quality and ubiquitous **connectivity throughout ASEAN** - delivered through the underlying telecommunications infrastructure. Excellent, ubiquitous and high-speed connectivity is clearly essential to enable digital services. This means both improving infrastructure in those areas that are already connected and bringing connectivity to unconnected and underserved areas.

- 2) The services which run over this connectivity must be **safe and relevant to the needs of end users**. This means removing barriers to innovation by market players, improving e-government services and developing services which are safe and can better support international trade. It also means building services which ASEAN consumers and businesses can trust.
- 3) **The barriers** which now prevent many businesses and consumers from using digital services need to be removed. Separate actions are needed for businesses and for consumers – the two key users of digital services. For businesses the focus is on improving productivity through digital skills and for consumers on improving basic digital literacy and affordability so that digital services can be widely used.

To meet these three conditions ADM 2025 has specified eight desirable outcomes which the master plan should meet in the next five years :

- 1) Actions of ADM 2025 prioritised to speed ASEAN's recovery from COVID-19;
- 2) Increase in the quality and coverage of fixed and mobile broadband infrastructure;
- 3) The delivery of trusted digital services and the prevention of consumer harm;
- 4) A sustainable competitive market for the supply of digital services;
- 5) Increase in the quality and use of e-government services;
- 6) Digital services to connect business and to facilitate cross-border trade;
- 7) Increased capability for business and people to participate in the digital economy;
- 8) A digitally inclusive society in ASEAN;

It is important to note that these desired outcomes and enabling actions are complementary. This means that enabling actions are needed for all the desired outcomes if the ADM 2025 vision is to be achieved.

Digital masterplan of some countries covers wider scope that include all fundamental factors of digital economy. Another option to enhance the implementation of digital masterplan is to cooperate with business sectors, operate and follow-up, because business sectors can drive the rapid development of digital in the economy. Therefore, it is necessary for the government needs to work and cooperate with business operators. Business sectors play important roles in creating good environment, and continuous support on upgrading skills, which is Digital Transformation within business sector.

Each AMS interpret digital economy according to the nation's situation and potentials. Essentially the implementation of digital economy masterplan is lead directly by Prime Minister or Deputy Prime Minister, with lined ministries, relevant state parties and involvement of business sectors. For instance :

- **Viet Nam** : the first Digital Economy Strategic Plan was released in 2015, which clearly defined 2020 targets as :
  - 1) Encourage business sector to transform its operations to online 60%.
  - 2) 80% of businesses shall have online e-Commerce platform so that customers can buy from websites or mobile applications.
  - 3) 30% of population make online purchase.
  - 4) 70% of major stores and facilities shall provide electronic payment method.
  - 5) Start-Ups have access to necessary funds, so that new start-ups can borrow up to 70% of its investment from State Government.
  - 6) Reliability assurance for customers.
  - 7) Protect intellectual properties.
  - 8) Create national electronic invoice management system.
  - 9) Prepare students to become good resource for digital economy development.
  - 10) Prepare necessary legislations to encourage creation of applications and mobile e-Commerce.
- **Malaysia** : Digital Economy Committee has set targets as below :
  - 1) Work plan on National Centralized ID Card, strategies on digital government and development of e-Government systems.
  - 2) Having Digital Economy masterplan in place.



3) Create Universal Service Fund with two main work plans : (1) expansion of infrastructure to remote areas, and (2) human resource development in ICT field.

- **Thailand** : Digital social and economic development plan, with objectives in overcoming challenges, accept and increase new economic opportunities. The 20-year plan was divided into 4 phases: creating fundamental digital readiness phase, expanding digital to cover all sectors phase, complete digital transformation phase, and becoming globally recognized digital economy. Significant work plans as follow:

- 1) Promote stores of online communities.
- 2) Trainer of SME to go online.
- 3) Create digital user communities.
- 4) Promote new businesses in digital fields to create innovative products and services

## 1.3 Lao PDR Context of Digital Economy Development

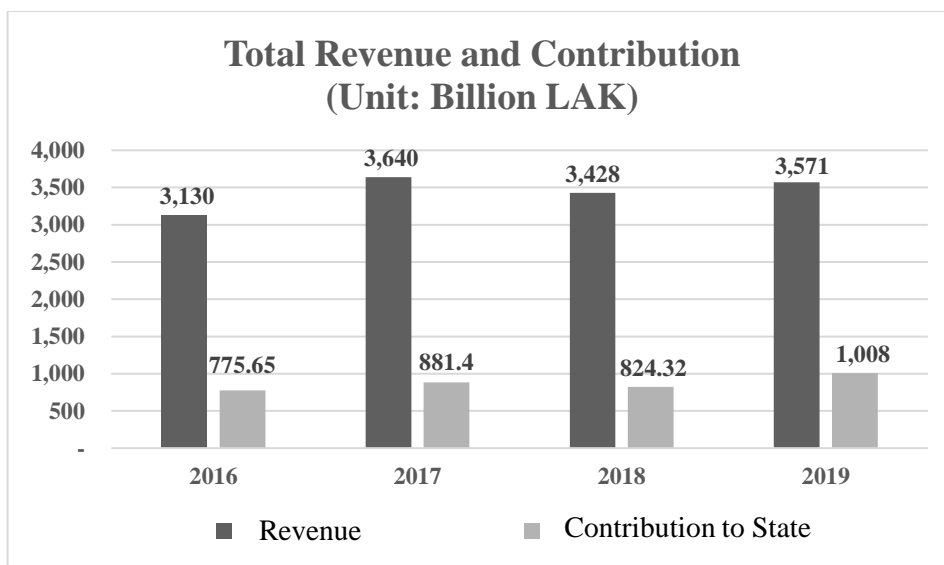
### 1.3.1 Overall Context of Digital Economy Development in Lao PDR

#### ❖ National Economy Overview

In the past 5 years (2016-2021), the national economy has been continuously developed, 5.9% per year on average (2016: 7,02%, 2017: 6,9%, 2018: 6,3%, 2019: 5,5% and 2020: 3,6%). However, the growth rate tends to decrease and less than planned target of 7.2%, where agriculture sector 2.3% (target : 2.7%), industry sector 6.8% (target : 7.3%, service sector 1.7% (plan : 6.9%), and tax 2.1% (plan : 7.5 %). Industry sector contributed the most to national economy, in particular Hydro-power and construction sector; the wholesale-retail service sector, finance and insurance companies have good rate of expansion, but lower contribution to national economy. One of the critical factors that prevented national economy to grow is the difficult situation in national budgets, natural disasters and flooding in rainy season of 2017 and 2019 where agriculture and transportation were heavily affected, and COVID-19 pandemic. National GDP per capital increased from \$2,025 in 2016 to \$2,654 in 2019, and increased to \$2,642 in 2020 (Annual Economic Report 2020, BoL).

#### ❖ Contribution of ICT and Digital Service in National Economy

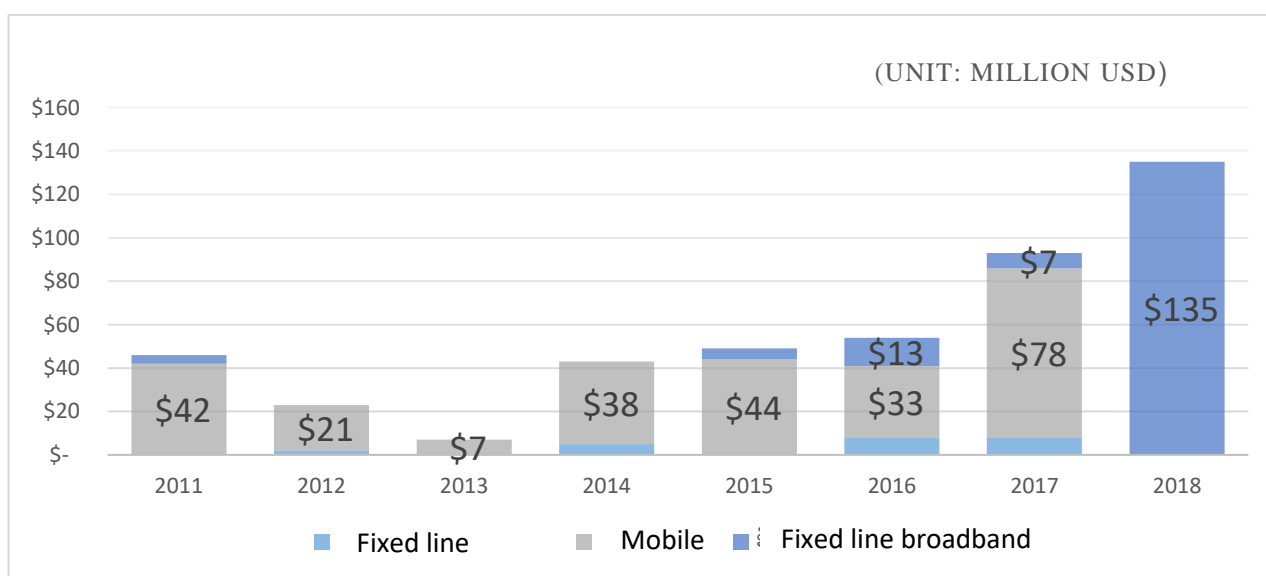
- 1) State investment and budget : in 2019, digital sector could generate income LAK 107.83 billion (3% increase from the previous year), contributed to State Revenue of LAK 107.20 billion (increased LAK 6.66 billion or 6.6%). In addition, Ministry of Post and Telecommunications (MPT) was granted 14 projects of total value LAK 27.63 billion, focusing on upgrade of ICT infrastructure and capacity building in technology and communications sector at central and local levels across the country.
- 2) Telecommunications : aiming at effective management and regulation measures based on good and profitable business operations, contributing to State Revenue and making the service available to general public with good quality and reasonable price. The ICT sector could generate income approximately LAK 3,571 billion, which is 7% increase from previous year (LAK 3,428 billion in 2018, LAK 3,640 in 2017), profit of LAK 628 billion. The contribution of MPT to State budget in 2019 is LAK 1,008 billion, which is 22% increase from previous year (LAK 824.32 billion in 2018, LAK 881.4 billion in 2017). In general, MPT sector's contribution to the national GDP was 3% of the total national GDP.
- 3) In addition, ICT has been increasingly embedded in order to facilitate the operations and functions of all sectors : security, communications, commerce and trade, business and so on, such as tax payment, daily purchases, online purchases, logistics, information sharing and electronic government. These are intangible contribution of ICT to the national socio-economic development and the national GDP.



**Figure 1 – Total revenue and contribution to State Revenue of Telecommunications sector.**

❖ **Investments of Telecommunications Operators**

In 2014-2018, the investment of telecommunication operators and Internet service provides (ISPs) increased from \$38 million to \$135 million. This illustrated the continuous growing of ICT market in the country. In 2018, the ISPs continued to invest in Broadband Internet infrastructure.



**Figure 2 - Investment of telecommunication operators and Internet service provides**

4) ICT Sector has been growing in relatively high rate of 15 - 20% each year in accordance with the surveys and reports of the Lao ICT Commerce Association (LICA). Great proportion of the revenue of ICT operators is by importing products from overseas to facilitate and support the modern transformation goals of several sectors. Finance sectors deploys ICT in management and administration more than other sectors. In the past 5 years, the investment in ICT of all sectors accounts for LAK 2,000 billion. ICT labours also increase every year, from 5,500 in 2015 to 9,000 in 2020. Many sectors also promote ICT skills in employees.

❖ **ICT Service Providers**

Information and Communication Technology (ICT) development as foundation in digital economy development is the major trend for all business operators to survive in this high competitive environment. Many of them have accepted and adjusted that ICT and innovation development and

deployment are keys to their businesses. This is a good opportunity for business operators and start-ups that have been focusing on ICT development and innovation.

In Lao PDR, information and communications technology and telecommunications business requires business operation license from technology and communications sector. Some types of business are authorized by ministry level, where some other types may be authorized by the Division of Technology and Communications in 18 provinces depending on the boundary of services.

**Table 1 – ICT and Telecommunication Operators in Lao PDR (2020)**

#	Services	QTY
1	Telecommunication Operators	8
2	Intenet Cafe business	509
3	ICT Consultation business	39
4	ICT Training business	20
5	Software development, production and service business	79
6	ICT equipment import business	39
7	ICT equipment distributor business	1,466
8	ICT equipment repair business	443
9	Internet content provider business	8
10	Data center service business	6
11	Internet service provider business	26
12	Postal, delivery and distributor business	15
<b>Total</b>		<b>2,658</b>

#### ❖ **ICT Products of Lao PDR**

Most of ICT products available in Lao PDR, both software and hardware, are products from overseas, which make ICT markets in Laos grow. In the past 5 years, some ICT business operators recognized the opportunities of digital transformation, which is the necessity for every sector to adapt and transform to create new opportunities and new business model. In particular, start-up businesses also emerge and grow, including :

- 1) ALO Technology that produces ICT equipment.
- 2) Bizgital that creates a shared ride service apps, LOCA, and product delivery apps that delivery shopped products to customers form grocery stores, LOCA Gro.
- 3) GoTeddy delivery apps.
- 4) BCEL One, LDB Trust, LDB Wallet, JDB Yes, U-Money, M-Money were also emerged within the last 5 years for providing services on mobile devices.

Furthermore, there are other ICT products created on Internet mobile technology platforms, for example, online job finding, online lottery purchasing and selling, air ticket booking, transport booking, accommodation booking and virtual tourism information, online education, trading over social media platforms, and so on.

### **1.3.2 Digital Economy Development Readiness of Lao PDR**

#### **1.3.2.1 Legislations**

Lao PDR has necessary legislations on management of ICT, payment, transaction, commerce, electronic protection and ICT resources, which form good foundation for national digital economy development. Relevant laws and regulations are :

**Table 2 – Legislation Supporting Nation Digital Economy Development**

Business	<ul style="list-style-type: none"> <li>- Law on Enterprise;</li> <li>- Law on Business Competition;</li> <li>- Law on SME Promotion;</li> <li>- Law on Protection of Manufacturers affected by Goods Importation;</li> <li>- Decree on e-Commerce;</li> </ul>
Infrastructures on Telecommunications, Logistics, ICT and Science	<ul style="list-style-type: none"> <li>- Law on Telecommunications;</li> <li>- Law on ICT;</li> <li>- Lao on Radio Frequency;</li> <li>- Law on Postal;</li> <li>- Law on Land Transportation;</li> <li>- Law on Multimodal Transportation;</li> <li>- Law on Technology Science;</li> <li>- Decree on Internet Data Center;</li> </ul>
Trust and Security	<ul style="list-style-type: none"> <li>- Law on Intellectual Property;</li> <li>- Law on e-Signature;</li> <li>- Law on e-Transaction;</li> <li>- Law on Electronic Data Protection;</li> <li>- Law on Consumer Protection;</li> <li>- Law on Cybercrime;</li> <li>- Decree on Internet Content Management</li> </ul>
e-Payment	<ul style="list-style-type: none"> <li>- Law on Payment;</li> <li>- Strategy on Payment;</li> </ul>

Available legislations serve as good foundation for digital economy development in the country. However, they need to be updated and new legislations may need to be created in order to keep up with the rapid change in the field.

### 1.3.2.2 ICT Infrastructure

Telecommunication and Internet infrastructures in Laos have been developed and upgraded in order to serve citizens throughout the country. In 2019, Fiber Optic spanned across the country for 90,258 KM covering all districts and provinces, 7,882 cellular base-stations installed, giving coverage area of 95% of all villages. In that, 3G and 4G network covered 82% and 55% of all villages respectively. In 2020, 5G network were setup on trial in some areas in Vientiane Capital.

Even though the current state of infrastructures could support digital economy development only in big cities, broadband internet in remote areas is still limited, which still need to be developed in order to reduce the digital gap between cities and remote villages.

### 1.3.2.3 Human Resource

In recent years, public and private education institutes have been recognizing the essential of creating human resource in ICT fields in order to fill the required and necessary skills in the country. The main institutes include the National Universities, ICT institutes, private colleges and overseas scholars. Every year these institutions can produce several hundreds of ICT labours to serve to communities. The current estimate of ICT labour is 0.3% of all labours in the country. However, the capacities of these labours are still limited in quality and quantity; only very few that can compete in regional and international levels. So, high ICT skills still need to be imported from overseas to develop

digital technology in the country. It has been estimated that at least 3% of ICT labours of all labours is required in order to steer the national digital economy effectively.

In 2021, more than 3.55 million people in Lao PDR have access to Internet, where more than 50% are youth and teenagers. This is a good notion for the country so that it can transform to deploy digital technology faster.

#### **1.3.2.4 Cybersecurity and Personal Data Protection**

Cybersecurity is highly essential in order to ensure that digital developments are secure and reliable. To ensure cybersecurity, the Government has set up the Lao National Internet Center (LANIC) in order to ensure the security of telecommunication and Internet connectivity, National Internet eXchange (NIX), National Data Center (NDC) and Dongmakkhay data center, National Root Certification Authority (NRCA), Electronic Know-Your-Customer (e-KYC), in order to ensure the deployment and services, and to create technical benchmarks for other sectors : finance, bank and commerce. Along the same line, the Lao Computer Emergency Response Team (LaoCERT) has been established in order to administer and protect cyber crime, and to ensure the internet usage.

#### **1.3.2.4 Electronic Government (e-Government)**

The Government has increasingly embedded and deploy digital technology in governance and public services. It becomes an important tool that facilitate the operation of all sectors, both public and private. Moreover, digital technology serve as the main communications channel among the Government, private sector and citizens. For instance, in 2019 Ministry of Finance implemented road tax collection via BCELOne service of Banque Pour Le Commerce Exterieur Lao Public (BCEL), which could collect over LAK 90 billion; in 2017 only LAK 25 billion were collected.

The Government has been emphasizing the importance and essential of modern transformation, where recently it has deployed e-Mail System, Video Conference System, Electronic Office (e-Office), Government Chatting Application (G-Chat), Government Document Management and Sharing System (G-Drive, G-Share), Government Internet Network (GIN), Electronic Visa (e-Visa), Citizens Information Management System, Government Staff Management System, Identity Card Management System, Advanced Passengers Processing System (APPS), TaxRIS, Automated System for Customs Data (ASYCUDA), Government Financial Information System (GFIS), National Single Window service (NSW), Government Web Portals and other Government mobile applications. Although the demands are still high, e-Government system development is still not centralized, no central exchange of data, and limited budget and skills. The Government should make e-Government development a priority and in a much faster rate.

#### **1.3.2.5 Electronic Commerce (e-Commerce)**

##### **1) Logistics**

In 2019, postal network is available in all provinces, 149 postal offices. Lao postal is connected to 192 countries, providing various postal related services, including domestic and international mail and package delivery. Currently there are 5 major postal service provider : Lao Post, TNT, PT Air Cargo Co., Ltd, OCS, and DHL.

In private sector, small-medium delievery services have been booming in big cities, such as HAL, Kiengkai, Xangnoy, Foxpress, Delivery Company. In addition, there emerge food delivery services via applications: GoTeddy, Foodpanda, mydelivery and so on. Express mail delivery service is also available despite the relatively high service fee, making it less popular among general public.

Lao PDR and PR China were in cooperation to build high-speed railway connecting Laos and southwest of China, creating significant opportunities to link markets of Laos, ASEAN and China.

##### **2) Commerce and Services**

Trading over the Internet and social media, like Facebook, is being popular among small and medium businesses because social media is a quick, low cost advertising channel that can reach target customer efficiently.

In promoting small and mediam enterprises (SME), Ministry of Industry and Commerce has built an online trading platform, [www.plaosme.com](http://www.plaosme.com), in 2017, now having 146 companies as members

and 464 products. In addition, there is an application for taxi booking service that uses private vehicles: LOCA LAO (launched in 2018), some famous applications for reserving accommodations in Laos (Hotels.com, Expedia, Agoda), lao insurance (AGL) and other applications that promote tourism service in Laos.

### 3) Electronic Payment (e-Payment)

Payment refers to paying money so that the payer is obliged to pay to the payee due to conducting business or trading product and service; in this context, the "money" that is due to pay refers to the money in the form of cash, bank deposits, and money in the form of electronic cards.

According to the Law on Payment System, payment system refers to all procedures related to payment services, composing of payment order, transfer and giving-taking money between the payer and the payee by using payment devices or other payment processes of system operator and payment service provider. Key components of payment system consist of: System Operator, Payment Service Provider and End User.

#### 1. Payment Landscape in the Lao PDR

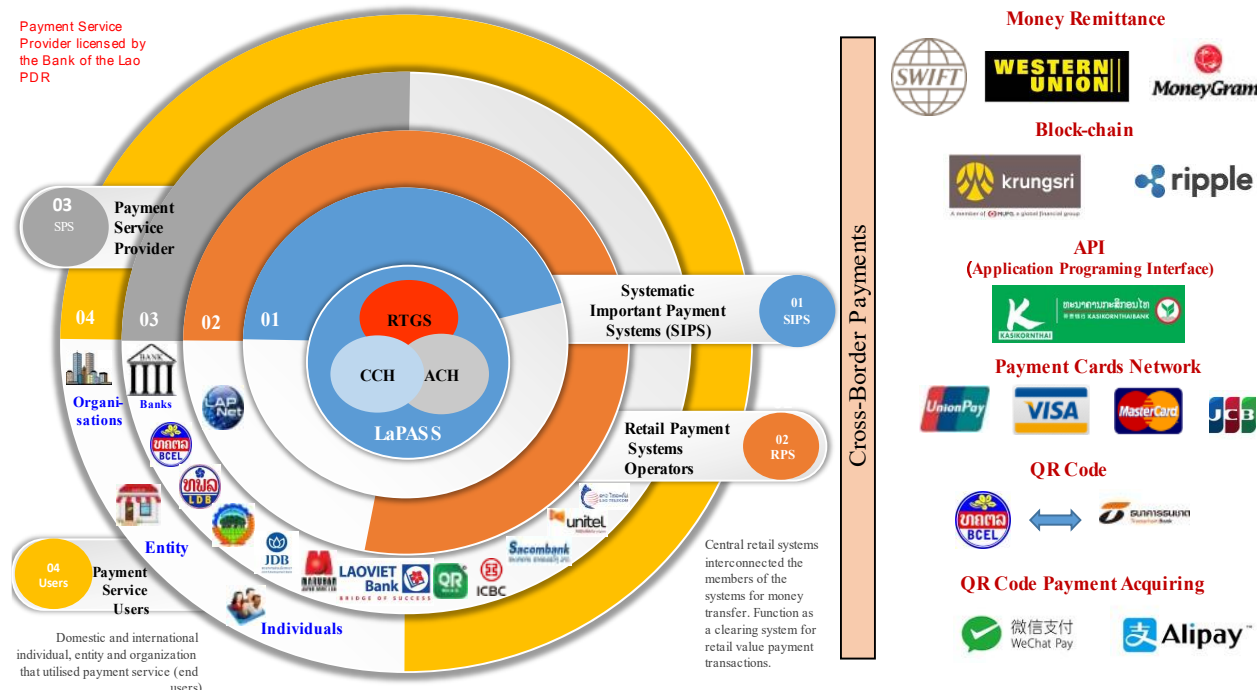


Figure 3 – Overview of Payment System in Lao PDR

- **First Ring** is the Systematically Important Payment System (SIPS): at present, SIPS is the Lao Payment and Settlement System (LaPASS), ISO20022 certified, and functioning through 2 main systems: RTGS and ACH. The system is under the management of Banking Operations Department as the System Operator and Banking Information Technology Department as the technical administrator. Now LaPASS is connected to 43 members: Ministry of Finance, LAPNET, LSX and 40 commercial banks.
- **Second Ring** is the Retail Payment System (RPS): currently LAPNET is running such operations as settlement of transactions and forward to LaPASS for settlement. LAPNET is connected to 14 banks: BCEL, LDB, APB, JDB, LVB, MJBL, ICBC, BOC, VTB, IDBC, ACLEDA, BIC, SACOM and STB. Only 7 banks have cross-bank transfer service via ATM in place: LDB, APB, JDB, MJBL, BIC, BCEL and STB,
- **Third Ring** refers to Payment Service Provider: consists of commercial banks, micro finance institutes and individuals.
- **Fourth Ring** refers to End User: (1) consists of payment service providers, Ministry of Finance, Lao Stock Exchange, or the users of SIPS (LaPASS) and RPS (LAPNET); (2) Organization, entities, individuals as End Users of Payment Service Provider (PsP).

- Cross-border payments: currently cross-border money transfer services are operated via the networks of major payment service providers: SWIFT, Western Union, and MoneyGram. In 2018-2019, there increase new cross-border transfer services by using 2 new technologies: connecting API with Head Quarter of Kasikorn Thai bank and cross-border transfer using Blockchain technology of Krungsri bank. Bank cards that can be use cross-border: UnionPay, VISA, MasterCard and other cards. Cross-border payment service via QR Code: WechatPay, AliPay, BCEL One in cooperation with Thanachart Thai bank.

### 1.3.3 Digital and Digital Economy Assessment of Lao PDR

The overall assessment of digital and digital economy developments in Lao PDR are as below (detailed assessments are describe in **Annex 4 – Detail Assessments**):

#### ❖ Strengths

- The Government recognized the importance of ICT development and digital transformation of public and private sector.
- The implementation of guidelines on modernized industry transformation is continuously progressing and the number of industry factory is increasing.
- The country is located in the heart of Mekong lower region, so that it can benefit as the connectivity hub, regional data center and logistic hub, the gate between PR China and ASEAN.
- Wide coverage of telecommunication infrastructure, mobile coverage 95% of total number of villages, fiber optic as the backbone from North to South, the number of mobile subscribers is 120% of total number of citizens in Laos.
- Major State economy grows and people's incomes also increases.
- Foreign investment in all sectors continue to grow.
- Other sectors also deploy ICT, such as tourism, finance-banking, commerce, service, agriculture and industry.
- ICT is embedded in curriculum of secondary-high school, polytechnique and high education. ICT literacy rate also keeps increasing.
- The majority of population is young and energetic to learn ICT. Citizens are using electronic device, especially smart phone and computer. Lao scripts have also been pre-stored into electronic devices.
- Private sectors in Laos that run ICT businesses tends to gain more strength and new businesses will emerge. Also there exist Lao ICT Commerce Association (LICA) under Lao National Chamber of Commerce and Industry (LNCCI).

#### ❖ Weaknesses

- Unclear public-private cooperation mechanism in digital promotion and development.
- Broadband Internet infrastructure is limited, only available in big cities.
- Public infrastructure, roads, power lines network are still limited in some areas in local levels.
- Limited Internet content and information for digital economy promotion.
- Low competitive capability regarding digital economy in regional and international market.
- Low investment rate in digital sector; limited funding and difficult to access fund.
- Most businesses are small sized and lacking innovation in business operations.
- No products, commodities or ICT service system that is Lao made.
- Majority of end users (or citizens) still lack knowledg and skills on using ICT and cyber security.

- Limited purchasing capacity of citizens towards ICT products and commodity. i.e. high product price but low income of citizens.
- Fluctuate of digital skills in the country; low quantity and quality.

❖ **Opportunities**

- Domestic market keepig growing. Medium income population also increases, which is the main group that use and demand to use ICT.
- High interest from foreign investment in ICT ; especially after the completion of Laos-China Railway, it is expected to attract more production lines to Laos due to lower labour cost.
- Geographical location with high potential of hydro-power, less impact from natural disaster, is suitable for being regional no data center.
- Good economic potential in service and agri-tourism; high trends of ICT deployment in production and distribution.
- Citizens tend to self-learning through available digital platforms.

❖ **Threads**

- Shrink of global and regional economy caused bey COVID-19 pandemic, leading to shrinking in digital economy.
- Small and medium sized businesses in other sectors sare slow in deploying digital in increasing effectiveness of production and services.
- Cyber crime keeps getting more severe, posting more unprofitable costs to business providers and end users.
- Limitation on collecting tax from digital platforms, such as Facebook, Youtube, Amazon.
- Climate change and natural disasters, i.e. floodings, still post challenges to telecommunication and ICT infrastructures.
- The mountainous geographical condition of the country post great challenges to infrastructure network expansion to remote areas.
- 70% of the population are scattered in rural areas, resulting low and unstable revenues from ICT markets in those areas.
- Human resource development in ICT fields is still challenging in qulity and quantity in order to meet the demand and to support digital economy development.

#### 1.3.4 Key Findings and Lessons Learnt

The lessons from international, regional and current status of domentic development of digital economy illustrate that each country defines development mechanism unique to its own potentials and divide into short, medium and long term development phases. Lao PDR, on the other hand, is recommended:

- 1) Digital economy development has no set or fixed model; it instead depends on several factors, readiness and potentials of each country.
- 2) The good initiative to build digital economy in many countries is to make it the State Agenda, led by Prime Minister.
- 3) Make clear policies, strategies and development plans as solid principles and references for all sectors to implenment and deploy digital technology.
- 4) Focus in building human resources and experts for digital technology development; advanced technology and innovation development are still acquire foreign expertise.
- 5) Create policies that support start-ups to have access funding. This is to create good environment for domestic business operators to create digital technology products for domestic use, and hence to upgrade the quality of digital technology products in order to compete in outside market.
- 6) ICT infrastructure requires high investment costs, where hardware equipment and software systems must be imported from overseas. The Government shall have policies and facilitate the



expansion of infrastructure to remote and rural areas, and for those necessary digital infrastructures that do not create tangible profits.

- 7) ICT projects are not centralized, where sectors rely on ODA or loans from overseas. Budget allocated for ICT development is still low and not sustainable.
- 8) Investment promotion on digital technology development and service is low, and so is the public-private partnership cooperation.

## PART II

### **20-Year National Digital Economy Development Vision (2021-2040), 10-Year National Digital Economy Development Strategy (2021-2030)**

#### **I. 20-Year National Digital Economy Development Vision (2021-2040)**

According to the environment, specialties, current status of information and communications technology and the National Development Strategy, the Government of Lao PDR sets the 20-Year National Digital Economy Development Vision (2021-2040), under the theme: "**Digital Technology as primary driving instruments for digital economy development, aiming to strengthen national economy structure with assurance and sustainability**", with 20-year target below:

- 1) **General targets:** enlarge factors and potentials of our nation by making appropriate digital technology to create opportunity, power and foundation for critical productions and services, becoming core engine to gradually grow, to gain strength and self-reliant on national economy, together with good quality human resource development as an important factor in socio-economy development. Getting prepared in all aspects in order to graduate from Least-Developed-Country and pursue socialism target.
- 2) **2025 targets:** pursue the goal of modern transformation in the New Normals despite the COVID-19 pandemic. Execute digital economy development, improve payment systems, improve mechanisms for collecting revenues and manage expenses by electronic tools, manage and deploy cryptocurrency business to highest benefit, develop e-Commerce into reality, promote MSME and start-ups to deploy digital technology. Create digital tools to manage documents and human resources in all ministries, State organizations and provincial offices, turn 50% of public services into online service. Develop digital infrastructure, Big Data center and broadband Internet connectivity, expand coverage area of 4G to 90% and 5G to 50% of the country, improve human resource development with better quality in order to satisfy the development needs, increase digital labours from 0.3% to 1% of all labours in 2025, contribution from digital economy to national GDP reaching 5%.
- 3) **2030 targets:** create new ways development by deploying digital technology in primary sectors in national socio-economic development, in order to transform Lao PDR into upper-middle income country and with innovative, green and sustainable economic growth. Strengthen telecommunication foundations, develop high-speed broadband Internet and ensure 100% 5G network coverage throughout the country, transform 100% of managements and services of the Government into online, create high quality human resources and increase digital labours to 2% of all labours, make digital economy 7% contribution to national GDP
- 4) **Vision 2040:** widely use of digital technology as primary driving instruments for all sectors to strengthen the development with sustainability. Create smart foundation for productions and services, smart cities and make digital economy 10% contribution to national GDP. Create domestic digital expertise, increase labours with digital skills to 4% of all labours.

#### **II. 10-Year Strategy (2021-2030) of National Digital Economy Development**

To steer national digital economy development along the defined targets, digital economy development of Lao PDR shall focus on 8 Strategy:

##### **2.1 Strategy 1: Legislation Development**

Legislation is an essential tool for the Government to endeavor the practice in social, economic and environmental aspects, in order to leapfrog and direct digital economy development to the right track. It is necessary for all legislations having compliance and support each other to create good environment for sustainable development. The goal for legislation development is to promote equality and fair competition, which will ensure the stability of national digital economy. The main objectives of this strategy include:

- 1) Revise existing legislation and implementation.
- 2) Amend and create new legislation to comply and promote others in order to manage, promote and stimulate environment for digital economy development.
- 3) Amend and create legislation to support digital transformation.
- 4) Create policies on digital technology deployment; create conditions to promote investment ability in digital technology procurement and installation, and ability to access and use high-speed broadband Internet.

## 2.2 Strategy 2: Infrastructure Development

This Strategy emphasizes the development of telecommunication and high-speed broadband Internet, which is digital technology infrastructure, to cover all areas in the country and in implementing the 3-Builds directive. Digital technology infrastructures have direct impact to the development and growth of digital economy. The main objectives of this strategy include:

- 1) Having policies support and increase acceleration development rate for high-speed broadband Internet with good quality and reasonable price throughout the country.
- 2) Making telecommunication and Internet infrastructures available for shared uses, such as shared transmission network, shared based stations, so to avoid duplicate investment and for highest benefits.
- 3) Creating core digital infrastructures, including National Data Center, Big Data center, digital Government systems.
- 4) Creating fiber optic networks for connecting neighboring countries via Lao PDR.
- 5) Developing wireless high-speed broadband Internet (5G) to all big cities and special industrial/economic zones. Developing wired high-speed broadband Internet (FTTx) to villages of big cities.
- 6) Developing Government Network as secure channel for sending-receiving information between organizations and supporting Digital Government Development.
- 7) Developing digital technology and high-speed broadband Internet for education sector. Enlarge telecommunication and Internet infrastructures to schools, supporting online teaching-learning norms. Giving incentives to promote and reduce internet service price and electronic equipment so that students can have access to.
- 8) Developing digital technology and high-speed broadband Internet for healthcare sector, including hospitals and healthcare centers, to practice telemedicines, and for bridging the gap between big cities and remote rural areas with 3-builds directive;
- 9) Use Lao Satellite to support e-learning and Government services in remote area, or in emergency disasters. Further study Satellite Internet service, Balloon Internet and Drone Internet in order to expand the Internet network throughout the country.

## 2.3 Strategy 3: Platform Development

Platform refers to fundamental software capable of running online transaction and exchange data to promote digital government, commerce, payment and banking. The main objectives of this strategy include:

- 1) Development platforms to support Digital Government system, Digital Land Management system, e-Commerce system, e-Payment system, e-Banking system, e-Market system.
- 2) Develop Data Exchange system.
- 3) Improve and upgrade existing electronic finance (e-Finance) systems, such as e-Tax, e-Customs, TaxRIS, ASYCUDA, GFIS, State Assets Management Systems, and so on, in order to support digital transformation in Finance sector.
- 4) Accelerate the development of Mobile Money systems as a widely used alternative in State revenue collection.

## 2.4 Strategy 4: Human Resource Development

For digital economy to stand out, digital literacy of citizens must also be improved. The notion of literacy benchmarks in many countries do not only measure abilities to read and write, but also to

be digitally-capable and be able to know and understand contents of digital, to have good quality access to digital, to invent, analyze and communicate with appropriate tools. Shall digital technology be important for the growing of the society, the digital literacy is also essential as the mean for learning of one's life. The main objectives of this strategy include:

- 1) Promote digital technology learnings and skills in all levels of national education curriculum. Give incentives to investments on digital technology procurement and installation in education sector, such as Internet for education, ICT hardware equipment for education, improvement of curriculum and means of online learning-teaching.
- 2) Support trainings and capacity building for Government officials in using digital technology to improve public services and administration. Relevant sectors shall work closely with education sector in order to upgrade training curriculum for officials and to create benchmark on digital technology knowledge of officials in each sector.
- 3) Reduce the online education gap between big cities and mountainous, remote areas following the 3-Builds directive.
- 4) Create digital human resources to meet the demand of domestic skill markets and the regional and international demands. Create and amend policies and mechanisms to attract foreign expertise, capacities, knowledge, potentials and talents to come to work, conduct businesses, transfer knowledge and experiences of advanced digital technology and innovation in contribution to national development.
- 5) Create and develop human resources in cyber security to support the growing of digital technology.
- 6) Encourage young generations on the deployment of digital technology and digital economy into the improvement of one self, family and nation. Enlight them in using digital technology to initiate new and creative things leading to new start-up businesses.

## **2.5 Strategy 5: Product and Service Development**

Promotion and development of products and services inside the country will reduce the influx of foreign technologies, and initiate the export of Lao made digital products. The activities in this Strategy will ensure to have new products and services of Lao PDR in digital economy. In addition, it is evenly important to create opportunity and attract foreign investments to transform Lao PDR into digital production and service hub in the region and international. Furthermore, it is necessary to create good environment to support the productions and services of technology and innovation. The main objectives of this strategy include:

- 1) Promote and support activities and businesses related to the productions and services in supporting domestic digital economy.
- 2) Promote and prioritize domestic digital technology operators.
- 3) Encourage the creation of digital technology innovation to steer the improvement of MSME productions and services; provide fundings to those businesses on digital transformation.
- 4) Establish special zone for Digital Park to attract foreign investment.
- 5) Establish Start-Up Centre as the centre of research and development of innovation.

## **2.6 Strategy 6: Security of Digital Technology Development**

The security of digital technology deployment will enhance the confidence of the community in using digital technology and getting involved in digital economy. This Strategy mainly emphasize the importance of security, standards, framework and guideline on cyber security to the communities. The main objectives of this strategy include:

- 1) Assess and upgrade cyber security tools to ensure national connectivity and online transactions.
- 2) Ensure Data and Privacy Protection of users. Ensure Digital Data Governance and Digital Data Flow.
- 3) Ensure e-Commerce security protection, prevention of fake, low standard and illegal products, malicious activities.
- 4) Ensure administration of Internet information, anti fake news, anti fake information, anti any information that will impact national security and peacefulness of community, prevention of cyber crime.

- 5) Ensure the security of digital technology infrastructures, Critical Information Infrastructure (CII), protection of any domestic and foreign cybercrime activities.
- 6) Develop digital identification and authentication system in order to ensure secure and reliable domestic e-Transactions, including Certification Authority system (CA), Electronic Identification system (e-ID), Digital Identification system (Digital ID), Electronic Know-Your-Customer system (e-KYC) and so on.
- 7) Create standards and guidelines on cyber security, security measures for telephone and Internet systems.

## **2.7 Strategy 7: Digital Technology Deployment**

This Strategy determines digital technology development in relation to people's livings, especially to implement the United Nation's Sustainable Development Goals, including poverty reduction, upgrade education standards, improve healthcare quality, job distribution. The main objectives of this strategy include:

- 1) Promote digital economy related products and services to communities.
- 2) Embed digital technology as one of fundamental factors in people's living and business operations.
- 3) Raise awareness on digital technology deployment with responsibility.
- 4) Encourage digital technology deployment in the communities as New Normal, after the COVID-19 pandemic.
- 5) Promote digital technology in all sectors and communities in order to create new economy, new source of income, improve standards of living, reduce poverty and satisfying the 3-Builds directive.

## **2.8 Strategy 8: International Cooperation and Connectivity**

This Strategy emphasizes the importance of cooperation and connectivity between domestic and international in digital economy developments in Lao PDR, reducing State investment budgets, promoting Public-Private Partnership, attracting foreign investment regionally and internationally, to realize digital economy. In order to attract more cooperation and investment from foreign countries and organizations, the main objectives of this strategy include:

- 1) Promote and enlarge cooperation in digital technology development in a wider and deeper context with strategic partner countries with advanced digital technology. Besides, it is necessary to enhance the cooperation in advanced digital technology development under various framework: sub-region, ASEAN, international organizations and enterprises.
- 2) Attract and seize international and foreign investment assistance in deploying resources to support research and development in technology, innovation, start-ups business operations and technology knowledge transfer to Lao people.
- 3) Create and amend policies and legislation related to foreign investment in following the direction of high technology standards, promoting business cooperation and strengthen the connectivity and technology transfer between domestic and international enterprises; administer foreign businesses that lack business registration and office in Lao PDR in order to protect domestic business operators.
- 4) Promote and support items in Strategy 1-7 relating to international cooperation and connectivity.

## PART III

### 5-Year National Digital Economy Development Plan (2021-2025)

To realize the 10-Year National Digital Economy Development Strategy (2021-2030), it is necessary to have development plans as references for future implementation. Therefore the 5-year goals are set below:

- 1) Create the complete e-Commerce environment, including e-Commerce platform, e-Payment, logistics, products, commodities and services.
- 2) Improve domestic business operators' strengths by encouraging MSME and start-ups to deploy digital technology and e-Commerce.
- 3) Have modern tools and technologies deployed in Government sectors (ministries/equivalences, provincial offices) that are ready and in urgent needs, including electronic document management systems, government communications systems, government networks, government data center, government data exchange centre and so on.
- 4) Transform 50% of essential fundamental Government services into online operations in order to improve development indices in e-Government service and ICT developments.
- 5) Completely transform Government services into single-window model in central and provincial.
- 6) Improve State revenues collection and expenses management system via finance-banking systems and e-Payment systems completely, including e-Banking, Mobile Money.
- 7) Establish at least 1 Digital Park to attract foreign investments.
- 8) Promote digital infrastructure development, such as 3 data centres, International Internet Gateway (IIG) and National Internet Exchange (NIX) by using Telecommunication Operators and Internet Service Providers infrastructures, Highway, Lao-China Railway and power transmission networks.
- 9) Expand high-speed digital technology infrastructures to cover 80% of big villages and districts in rural areas following the 3-Builds directive, expand mobile 4G and 5G base-stations to cover 90% and 50% countrywise respectively.
- 10) Increase the number of digital labours with knowledge and expertise from 0.3% to 1% of all active labours.
- 11) Promote digital economy to contribute 5% to national GDP.
- 12) Ensure the security aspect of digital technology in terms of national security and government services, business operations and general public uses.

To meet the Goals, Strategies and Visions, it is essential to determine 5-Year National Digital Economy Development Plan (2021-2025), consisting of 14 Work Plans and several activities/projects:

#### **3.1 Work Plan 1: Develop and Amend Policies, Laws and Legislations**

In order to achieve the highest benefits and most effective digital transformation, to provide complete management in ICT services, to ensure the protection of consumers, business operators, and of the Party-Government or National benefits as a whole, it is undeniable to have solid plan for creating and amending policies, laws and regulations in relevant sectors. This Work Plan is composed of:

- 1) Creating and amending laws and regulations to ensure the completeness, readiness and up-to-date, aiming at the benefits of Party-Government, benefits and rights of business operators and consumers, such as laws relating to ICT, payment, transaction, commerce, electronic protection and ICT resources.
- 2) Creating policies to promote all digital transformation service deployment in order to gain public participations. In addition, create policies to facilitate private sectors in ICT investment in all sectors, which will widely stimulate digital transformation, including National Policies on ICT, National Policies on High-Speed Broadband Internet, Policies on computer security.

#### **❖ Projects and Supporting Activities**

- 1) Promote this National Digital Economy Development Vision, Strategy and Plan throughout the whole country.

- 2) Focus on amending legislations related to Information and Communications Technology (ICT) and digital technology, and to comply and meet the requirements of national development, such as Law on Telecommunications (Amended), Law on Cyber crime, Law on Information and Communications Technology, Decree on Internet Content Management, Law on Radio Frequency, laws relating to e-Commerce, laws relating to e-Finance, e-Payment related legislations, logistics related legislations and other necessary legislations.
- 3) Create necessary laws and legislations to support the management of digital economy and modern government transformation, such as Law on Digital Technology, Law on Digital Transformation, Law on Cyber security, Decree on Digital Government, Digital Government Master Plan, National Standardization Software Framework, Decree on Standards, Disclosure and Government Data Exchange, and other necessary legislations.

### **3.2 Work Plan 2: Improve and Expand Digital Technology Infrastructures**

Lao PDR is still in need of digital infrastructure development that is advanced, high quality, sufficient, covering most of country area, shared infrastructure with highest benefits, and ensuring availability of services with reasonable price, supporting domestic businesses so that they can compete with regional and international. This Work Plan focuses on:

- 1) Improving and expanding Fibre Optic infrastructures and high-speed wired Internet (FTTx) and wireless Internet (5G) to the 3-Builds directive's villages
- 2) Support effective deployment of digital infrastructure resources, such as sharing of Interneting transmission lines and telecommunication based-stations, establish a telecommunication infrastructure provider.
- 3) Improving telecommunication enterprises and Internet service providers in accordance with current status and advancement of digital industry.
- 4) Using telecommunications and digital transformation fund to expand telecommunications and Internet services to the 3-Builds areas, mountains and remote areas, so that citizens in those areas can have access to telecommunication and Internet service.

#### **❖ Projects and Supporting Activities**

- 1) Project on upgrade and development of digital technology infrastructure, such as high-speed wired and wireless Internet broadband, data center, National Root Certification Authentication (NRCA).
- 2) Project on upgrade and development of e-Commerce Platform.
- 3) Project on digital technology development feasibility study, such as Artificial Intelligence (AI), Blockchain, Big Data, Internet of Things (IoT), Cloud Computing, Virtual Reality (VR), Augmented Reality (AR), Metaverse, 3-D Printing, 5G technology.
- 4) Project on digital infrastructure developments, such as telecommunications transmission over electric power line transmissions, Lao-China Railway, high-way.
- 5) Project on high-speed broadband Internet to rural areas in order to reduce the gap and poverty, following the 3-Builds directive.

### **3.3 Work Plan 3: Connectivity**

Transform Laos into the hub of sub-regional, especially as the connecting hub between PR China and ASEAN Member States (AMS) by means of telecommunication connectivity and citizen communications, and related to the National Strategy of Lao PDR. Establishing information and telecommunication data center, National Data Center, will support the transformation of Lao country from land-locked into land-linked country. At the same time, promote sharing of technology, sharing of businesses and sharing of data to support the management and services among Government bodies, will support effective use of information resources, support entrepreneurship promotion and embedding new drives into complete and sustainable socio-economy development. This Work Plan focuses on:

- 1) Creating opportunities for Lao PDR to become the digital hub in the sub-region. Become data exchange hub between PR China and ASEAN member states along the Digital Silk Road, which

will be located in the north, center and south of Laos. Also become connecting hub for neighboring countries.

- 2) Establishing high-speed broadband Internet infrastructures to connect with the centers in the north, center and south of Lao PDR, connecting with PR China and AMSs, in implementing the Belt and Road Initiative.

#### ❖ **Projects and Supporting Activities**

- 1) Project on optical distribution frame (ODF) installation.
- 2) Project on telecommunication transmission networks, land optical fiber via neighboring countries and submarine cables to Internet Data Center Hub in Singapore and Hong Kong.
- 3) Project on high speed ICT infrastructures for poverty reduction and Digital Silk Road.
- 4) Project on transforming Laos into telecommunication connection hub, connecting from China to Thailand and from Viet Name to Thailand via Lao PDR.
- 5) Project on attracting foreign investors to establish data center and host in Lao PDR.

### **3.4 Work Plan 4: Establish Digital Government**

ICT or digital deployment in States administration sectors and public services has been expanding throughout the country. It has become an important tool for operations of all sectors in the Government and private sectors. In addition, it could become an important channel for communications between the Party-Government, private sectors and citizens. For Lao PDR, these components are essential and need to be implemented systematically for effectiveness and highest benefits. Ministry of Technology and Communications together with the e-Government Committee have submitted the project proposal to Ministry of Planning and Investment, especially the core services in e-Government and e-Services development that is necessary for national development.

Besides, the Government needs to prepare for Digital Transformation in all sectors to support digital developments in the future. This Work Plan focuses on:

- 1) Ensuring digital government system is available in all provinces that are ready, including e-Portal system, video conference system, e-Document system, e-Mail system, chatting system, digital land management system and other necessary systems.
- 2) Developing fundamental infrastructure for ensuring advanced government transformation.
- 3) Ensuring that State ICT developments are going in the same directions.
- 4) Improve ICT skills of government officials so that they can apply modern technology and innovation in their operations.
- 5) Create policies and mechanisms to support Public-Private Partnership (PPP) in implementing digital government system and its services.

#### ❖ **Projects and Supporting Activities**

- 1) Project on Government Network (G-Net)
- 2) Project on Government Cloud (G-Cloud)
- 3) Project on National Data Exchange Center.
- 4) Project on improve and expand video conference system in central and local levels.
- 5) Project on improve and expand e-Mail system in central and local levels.
- 6) Project on establishing provincial electronic data center.
- 7) Project on Government Website Platform (G-Web-Platform) for ministries and government offices.
- 8) Project on Electronic Office Systems (e-Office) for ministries and government offices.
- 9) Project on Government Chatting Systems (G-Chat).
- 10) Project on Lao font (Phetsarath Office), Government Document Sharing Systems (G-Share) and Government Document Drive Systems (G-Drive).
- 11)  Project on Government Electronic Services and Single Sign-On systems for the in central and local levels.
- 12) Project on National Standardization Software Framework.
- 13) Project on promoting e-Government system deployment to government officials in in central and local levels.



- 14) Project on Government Data Standard and Open Government Data Platform.
- 15) Project on transforming services of ministries, provinces and government organizations into e-Services via websites and mobile applications.
- 16) Project on Digital Identification, Digital Family Book, Citizen Database, Government Official Database.
- 17) Project on disaster notification systems on mobile devices.
- 18) Project on developing Government reporting system (Dashboard) on mobile devices, for digital transformation.
- 19) Project on Lao Font development and local contents in Lao language.
- 20) Project on improving e-Government Index.
- 21) Project on national digital database.

### **3.5 Work Plan 5: Develop Digital Payment System**

Improve payment infrastructures, payment systems and services of Lao PDR to meet the standards and able to interoperate domestically, regionally and internationally, in order to promote and support digital economy, as implementing the Monetary Policies and maintaining financial stability, aiming at providing easy, quick, modern, secured and low cost payment services for citizens. This Work Plan focuses on:

- 1) Reducing cash and cheque usage, use for e-Payment systems and tools.
- 2) Digital Payment Ecosystem development in stepping towards digital payment country-wise.
- 3) Developing cross-border payment systems to support multi-channels.
- 4) Innovation and security deployment in payment services.
- 5) Payment Systems Data Mining for creating policies and implementing 5-year State policies, such as Monetary Policy, Finance Policy, Welfare Policy and in longer term.
- 6) Improving payment management system and relevant human resources to manage it.
- 7) Improving supporting infrastructures, such as Systematically Important Payment System (SIPS) and Retail Payment System (RPS); Cross-border payments that can be done in several channels; Cyber Security, payment systems and services standards; develop Information Sharing Platform so that relevant stakeholders can share payment information and data via such sharing platform, including public and private sectors, as well as citizens.
- 8) Supporting the trial and deployment of innovation by improving the variety of payment service providers: private banks, non-bank financial institutes and individual entity (Fintech).
- 9) Improving State revenue collection and budget expenditure by using advanced and modern systems, better linking with banking systems in 2025.
- 10) Payment service users or financial users, either public, private or citizen, can have better access to the services by being improved in Financial Literacy and Consumer Protection from relevant parties.
- 11) Feasibility study on Central Bank Digital Currency project of Bank of Lao PDR.

#### **❖ Projects and Supporting Activities**

- 1) Project on promoting electronic payment in communities.
- 2) Project on digital transformation in payment and financial systems (TaxRIS, ASYCUDA, GFIS, LAPASS, LAPNET, SAMS).
- 3) Project on improving revenue collection – expenditure management by using digital technology and Mobile Money systems.
- 4) Project on promoting e-Payment systems and electronic VAT collecting system.
- 5) Project on feasibility study of VAT collection from payment of products and services on e-Commerce, from foreign e-Services via Internet.
- 6) Project on Central Bank Digital Currency (CBDC), and Project to study Crypto Currency mining, payment, purchasing and trading.

### **3.6 Work Plan 6: Digital Human Resource Development**

Lao PDR is still in need of man power development to support the growing of digital economy development in all levels. This Work Plan focuses on :

- 1) Developing the conceptual scope for all types of digital skills as general standards for employers that need skills development and institutions that deliver trainings.
- 2) Promoting government officials in central and local levels to acquire ability to use information systems and improving human resources knowledge in using digital government management and services. Relevant sectors shall work together with education sector in order to improve government official training curriculums and create new benchmarks in digital technology literacy for government officials.
- 3) Encouraging and supporting education institutions of all levels, public and private, to provide teaching and training of digital expertise and skills. Providing incentives for investment in procurement and installation of digital technology in education sector, such as Internet for education, ICT equipment for education, improving of curriculum and teaching-learning mechanisms.
- 4) Encouraging and supporting private entities to improve digital skills among employees.
- 5) Creating and improving policies and mechanisms to attract and facilitate international and foreign experts and technicians having digital knowledge, skills, talents and experiences to come to Laos for works, business, knowledge and experience transfer in digital technology and modern innovation, and for the country development as a whole.
- 6) Raising awareness among citizens of all groups, in particular youths, elders and underprivileged people, to have understandings on safety, dangers, benefits and social responsibility in using digital technology.

#### ❖ **Projects and Supporting Activities**

- 1) Project on human resource development focusing in new digital skills, such as AI, Data Science, Cyber Security.
- 2) Project on development of ICT and digital curriculum in foundation education level.
- 3) Project on establishing Digital Technology Talent Center.
- 4) Project on establishing Start-Up Center.
- 5) Project on establishing Innovation Center.
- 6) Project on establishing Digital Labour Development Center.

### **3.7 Work Plan 7: MSME and Service Promotion**

The concept of Digital MSME can help MSME to transform traditional business operations into digital business operations by deploying digital technology. In strengthening domestic markets and to effectively connect with international markets by the promotion and support of digital technology in all operations of business based on the improvement of business models and operations of MSME and ICT businesses, so that MSME can deploy innovation and gain expertise in using digital technology for improving effectiveness, transforming from traditional services to high-value services for future expansion. This Work Plan focuses on:

- 1) Promoting the development of MSME in Digital Commerce (commerce and marketing) on Digital e-Commerce and Social Media platforms, in both domestic and international markets.
- 2) Transforming MSME to use digital technology in increasing effectiveness, business processes, product and service innovation development, in both domestic and international markets.
- 3) Promoting the e-Commerce supporting systems for MSME, such as Digital Payment/ Micro Payment, Data Pool, e-Trade, e-Invoice, Cybersecurity.
- 4) Stimulating MSME to deploy digital technology by communicating and encouraging relevant organizations, including tax waiver benefits, funding supports and accessibility.
- 5) Supporting service providers in deploying more digital technology in order to improve service capability, ease and security.
- 6) Supporting the establishment of new service model business by using digital technology in business operations.
- 7) Supporting service innovation development to support service users, especially tourists.
- 8) Promoting the development of service management system in service sector, so that SME can use such system in low service price.

### ❖ **Projects and Supporting Activities**

- 1) Project on promoting and supporting MSME operators into Digital Business Transformation, in order to improve business productivity, new service product development and/or new marketing strategies for domestic and international markets by using digital technology.
- 2) Project on promoting e-Commerce development (e-Market Place, e-Payment, Logistics, etc).
- 3) Project on e-Commerce promotion and development for MSME, such as e-Invoice, e-Supply Chain.
- 4) Project on promoting digital technology deployment into all sectors, such as tourism, health care, education, service.

### **3.8 Work Plan 8: Increasing Productivity by Digital Technology**

The increasing competitive environment forces domestic industries to maintain production capability in order to survive. Industries have to consider production factors, labours and productivity of the machines, as well as overall operations. Lao industries that rely mainly on man power need to adapt and increase productivity to fulfil the requirements of digital era. This Work Plan mainly focuses on:

- 1) Raising understanding and sharing relevant digital technology knowledge, especially system design and development, technology business partnership consultation and business operators in the industry fields.
- 2) Encouraging operators of all business sizes in the industry fields to begin adapting into digital technology.
- 3) Increasing the quantity and quality of man power in industry fields to obtain higher digital skills in order to support the advancement of technology.

### ❖ **Projects and Supporting Activities**

- 1) Project on promotion and development of advanced industry by deploying digital manufacturing.
- 2) Project on protion and development of Smart Factory.
- 3) Project on building Digital Industry Zone, such as Digital Economic Zone, Digital Park.
- 4) Project on creating policies and environment for attracting international and foreign investor to open factories producing digital technology equipment and systems.

### **3.9 Work Plan 9: Promotion of Agriculture Development by using Digital Technology**

New Agriculture using digital technolgy has become an important factor to increase agricultural production capability. Digital technologies are used in management of marketing, cultivation, animals raising, fishing and so on, in order to increase productivity and reduce the use of man power, shifting labours necessary for industry and service sectors, and hence improve the quality of life, stable income, graduate from poverty by transforming from traditional production agriculture to Smart Agriculture. This Work Plan focuses on :

- 1) Using digital technology and production data in managing agriculture products, cultivation/animal raising, harvesting as well as value added supply chain.
- 2) Promotion of transforming traditional agriculture into digital agriculture operators that emphasize digital technology in commerce, marketing, logistics/delivery and consumer service.
- 3) Improvement and development of digital agriculture knowledge pool and promotion, so that husbandry can access to information and knowledge useful for agriculture activities.
- 4) Supporting research, development and knowledge transfer of digital innovation technology in agriculture, in order to transform traditional agriculture to new era of agriculture.
- 5) Promoting and supporting new agriculture transformation by digital technology.

### ❖ **Projects and Supporting Activities**

- 1) Project of promotion and development of Smart Farm by using digital technology, such as 5G, IoT, Drone, Robot in to agriculture sector.

- 2) Project on development of e-Commerce and distribution of agriculture products, One-District-One-Product (ODOP) from producers directly to local buyers, and able to export to foreign countries.
- 3) Project on selling agriculture products on electronic market.

### **3.10 Work Plan 10: Development of Logistics for Digital Economy**

Promote of open logistics and postal businesses to gain more variety in service providers, services and products. Incorporate logistics and postal network and services with e-Commerce services, in order to support domestic public and private service providers, so that the services expand widely throughout the country and ensuring the service connection in regional and international level. This Work Plan focuses on:

- 1) Determine price structure of logistics and postal services based on fair competition rules, and improve the services to cover home delivery, registered and trackable delivery services, package assurance and so on.
- 2) Promotion of e-Service development in order to link with e-Commerce system, such as information management, payment and tracking, and package checking.
- 3) Promotion of using postal network as a payment method in e-Commerce (ATM Post and so on).
- 4) Promotion of economy development in rural areas by using logistics and postal networks in promoting e-Commerce in urban areas.
- 5) Deployment of logistics and postal networks in providing public information and support services to citizens.
- 6) Deployment of logistics and postal networks in delivery and distribution of agriculture products between producers and consumers directly.
- 7) Deployment of logistics and postal networks in linking and exchanging between urban and rural areas.
- 8) Creating Postal eShop.
- 9) Promoting the deployment of logistics and postal networks in delivery and distribution of products from electronic trading between shop owners and buyers.
- 10) Using postal offices as product shelves of small and medium enterprises.
- 11) Promoting the deployment of logistics and postal networks to deliver products from supplier to the market.

#### **❖ Projects and Supporting Activities**

- 1) Project on improvement and development postal systems, logistics systems, delivery system and so on.
- 2) Project on establishing and improvement of Dry Port along Laos-China, Laos-Viet Name, Laos-Thailand borders as a warehouse for product distribution to neighboring countries, ensuring convenient and quick e-Commerce with other countries.
- 3) Project on development and improvement of digital maps and postal code, address numbering in the country.
- 4) Project on improving Laos Post Enterprise to become profitable and competitive enterprise.

### **3.11 Work Plan 11: Cyber Security**

Cyber crimes have been growing with variety and strength, threatening all sectors that use digital technology, in particular banking, government organization, e-Commerce and services that have important systems and databases. The attack will damage the systems and rob important data, leading to losses in economy and National stability. Therefore, it is essential to emphasize raising awareness, protection and suppress those crimes by upgrading technical assurance and skills of employees, to ensure the important data and systems are not damaged. This Work Plan mainly focuses on:

- 1) Create necessary legislations in Cyber Security; enhance capacity of cyber security unit, develop mechanism for protecting essential infrastructures, and cyber security human resource development.
- 2) Development of user management mechanism in online transaction processing; development of monitoring online social engineering attack; development of recovery process for online attack.

- 3) Development of digital authentication, including electronic authentication (CA), e-ID, Digital ID, e-KYC.
- 4) Development of national electronic authentication system or National Digital ID, including CA, e-ID, Digital ID, e-KYC, e-Signature, and so on.
- 5) Development of e-Government Network Monitoring system.
- 6) Development of cyber security research and development center.
- 7) Development of cyber security human resources, such as trainings, seminars, activities, cyber security awareness raising.
- 8) Development of Lao Digital Economy Information Secure Network.

#### ❖ **Projects and Supporting Activities**

- 1) Project on Critical Information Infrastructure Protection (CIIP).
- 2) Project on strengthening and development of Cyber Security system.
- 3) Project on National Digital ID : CA, e-ID, Digital ID, e-KYC, e-Signature, etc

### **3.12 Work Plan 12: Readiness for Smart Cities**

Smart Cities refer to cities that have been developed to enhance effectiveness of city management and services to people by digital technology in order to have good and secure livings. Lao PDR has nominated Vientiane Capital and Luang Prabang Municipality to ASEAN Smart Cities Framework. Besides, municipalities (Kaysone Phovihane and Pakse) and other economic zones can also participate and develop as smart cities. This Work Plan on Smart Cities mainly focuses on:

- 1) Smart People: upgrading city governance by using digital technology in city development planning and raising awareness to people in the city to apply the use of digital technology in daily lives.
- 2) Smart Economy: promoting the city to be business center focusing on any specific aspect of economy sectors based on digital innovation, such as Smart Farm, e-Culture City, e-Tourist City and so on.
- 3) Smart Governance: refers to public services of local authorities via Web Portal services for general public, as additional channel for public participations and access to information and services of the cities.
- 4) Smart Mobility: refers to development of energy-saving and safe logistics and transportation systems with traffic information and recommendation system.
- 5) Smart Environment: refers to development of environment and energy management system using digital technology for targeted cities, with local and people participations in preserving national resources.
- 6) Smart Living: for supporting e-Services that facilitate people's living, such as access to health care, education and crime in the community.

This Work Plan mainly focuses on:

1. Creating highly skilled smart city developers, also raising understandings to locals about smart city.
2. Establishing relevant task force on smart city in national and district levels.
3. Amending laws, regulations and standards relating to smart city.
4. Implementing good management, connectivity and disclosure of data to further analyze and extract the data for use in socio-economy development.
5. Research and development in innovations, also having trial and test on actual services for Pilot Smart Cities.

#### ❖ **Projects and Supporting Activities**

- 1) Project on Smart Cities development (Vientiane Capital and Luangprabang).

### **3.13 Work Plan 13: Telecommunication Development and Digital Transformation Fund**

In order to expand, improve, advance and sustain the development of digital infrastructures to rural and remote areas, it is necessary to have Telecommunication Development and Digital

Transformation Fund, which is already included in the Law on Telecommunications (Amended), and will be used in various developments:

- 1) Development and expansion of telecommunications and Internet infrastructures to the 3-Builds, mountainous and remote areas.
- 2) Provide incentives and assistance to appropriately adjust the cost of Internet service and ICT equipment for education and health care sectors.
- 3) Promote innovation and digital technology that could further increase economic competitive capability.
- 4) Develop innovation and digital technology for improving people's living standard and reducing service gap between cities and rural areas.
- 5) Improve necessary digital skills and knowledge for general public in all sectors and communities.
- 6) Improve working process and services of the Government by digital technology and data mining in order to increase transparency, effectiveness and efficiency.

#### ❖ **Projects and Supporting Activities**

- 1) Project on establishing Telecommunications Development and Digital Transformation Fund.
- 2) Project on reducing digital gaps, including improvement of infrastructures, accessibility and deployment.

### **3.14 Work Plan 14: International Cooperation in Digital Development**

Enhance international digital development cooperations in all frameworks and levels: bilateral, ASEAN, sub-region and international organizations, in implementing the Foreign Affairs Direction of Lao PDR: peace, independence, friendship and regular cooperation, and following the policies on open cooperation with foreign countries in different ways, on a multilateral basis and in different forms, in order to implement work plans and strengthen the roles of Lao PDR in international stage. Obtain projects and activities, derive lessons and exchange of sectoral data for appropriate implementation of work plans, and to accomplish the cooperation target of mutual benefits, obtain assistance in various cooperation frameworks. This International Cooperation Work Plan mainly focuses on:

- 1) All-direction cooperation scheme with strategic cooperation partners: PR China, SR Viet Nam and Russia Federation, in order to exchange lessons and attract investment on digital transformation, digital economy and digital technology development (Mekong-Lanecang projects, Lao-China Railway).
- 2) Implementing ASEAN cooperation frameworks: Masterplan on ASEAN Connectivity 2025, ASEAN Digital Masterplan 2025, ASEAN Work Programme on Electronic Commerce 2017 – 2025 and other frameworks, in order to build digital connectivity between Lao PDR and the region; build Lao PDR's connectivity with neighboring countries based on geographical potentials and telecommunications and Internet connectivity, Lao-China Railway, Lao-China Highway, Lao-Viet Nam and so on.
- 3) International organization cooperations: United Nation (UN), International Telecommunication Union (ITU), Asia-Pacific Telecommunity (APT), in relation to planning and development of human resources under digital development framework.
- 4) Selective cooperation on advanced digital technology deployment and services from the European Union (EU), the United States of America, Japan, Korea, India, Australia and other developed countries, in order to attract investments and to create digital economy ecosystem in Lao PDR.
- 5) Finding source of funds from international financial institutes: World Bank (WB), Asian Development Bank (ADB), Asian Infrastructure Investment Bank (AIIB) and so on, as the source of funding for digital economy development.
- 6) Creating supporting conditions and mechanisms for Public-Private Partnership (PPP) with local and/or international entities for digital transformation, digital economy and Digital Government development.
- 7) Creating supporting conditions to attract regional and international investments of major enterprises or start-ups to Lao PDR, including e-Commerce enterprises: Taobao of Alibaba, JD, Lazada, Shopee and so on, logistics-delivery companies, e-Finance companies and so on.

❖ **Projects and Supporting Activities**

- 1) Project on encouraging all sectors to implement foreign cooperation policy in order to drive the national digital transformation under their responsibilities.
- 2) Project on encouraging the provinces that have cooperation with provinces of neighboring countries and other foreign countries in order to use digital technology in improving education and health care, increase the living standard in the province, reduce poverty and gaps between urban and rural areas.
- 3) Promoting and supporting projects and activities of Work Plan 1-13 that have foreign cooperation components.

**Table 3 - 10-Year National Digital Economy Development Strategy (2021-2030) and 5-Year National Digital Economy Development Plan (2021-2025), Work Plans and Project/Activities.**

(Note: The listing of project shall be revised by the National Implementation Committee)

5-Year National Digital Economy Development Plan (2021-2025)		5-Year Project (2021-2025)			Strategy 2021-2030							
		#	Project or Activity	Stakeholders	1. Legislation Development	2. Infrastructure Development	3. Platform Development	4. Human Resource Development	5. Product and Service Development	6. Digital Technology Security Development	7. Digital Technology Deployment	8: International Cooperation and Connectivity
1	Develop and Amend Policies, Laws and Legislations	1	Promote this National Digital Economy Development Vision, Strategy and Plan throughout the whole country.	All sectors	√							
		2	Focus on amending legislations related to Information and Communications Technology (ICT) and digital technology, and to comply and meet the requirements of national development, such as Law on Telecommunications (Amended), Law on Cyber crime, Law on Information and Communications Technology, Decree on Internet Content Management, Law on Radio Frequency, laws relating to e-Commerce, laws relating to e-Finance, e-Payment related legislations, logistics related legislations and other necessary legislations.	MTC, MOIC, MOF, MPWT, BOL	√							



		3	3) Create necessary laws and legislations to support the management of digital economy and modern government transformation, such as Law on Digital Technology, Law on Digital Transformation, Law on Cyber security, Decree on Digital Government, Digital Government Master Plan, National Standardization Software Framework, Decree on Standars, Disclosure and Government Data Exchange, and other necessary legislations.	MTC, MOPS	√									
2	Improve and Expand Digital Technology Infrastructures	4	Project on upgrade and development of digital technology infrastructure, such as high-speed wired and wireless Internet broadband, data center, Nataion Root Certification Authentication (NRCA).	MTC		√								
		5	Project on upgrade and development of e-Commerce Platform.	MTC, MOIC		√								
		6	Project on digital technology development feasibility study, such as Artificiall Intelligent (AI), Blockchain, Big Data, Internet of Things (IoT), Cloud Computing, Virtual Reality (VR), Augmented Reality (AR), Metaverse, 3-D Printing, 5G technology.	MTC		√								
		7	Project on digital infrastructure developments, such as telecommunications transmission over electric power line transmissions, Lao-China Railway, high-way. Project on high-speed broadband Internet to rural areas in order to reduce the gap and poverty, following the 3-Builds directive.	MTC, MEM, MPWT		√								
		8	Project on high-speed broadband Internet to rural areas in order to reduce the gap and poverty, following the 3-Builds directive.	MTC		√								
3	Connectivity	9	Project on optical distribution frame (ODF) installation.	MTC		√								

		10	Project on telecommunication transmission networks, land optical fiber via neighboring countries and submarine cables to Internet Data Center Hub in Singarpore and Hong Kong.	MTC		√						
		11	Project on high-speed ICT infrastuctures for poverty reduction and Digital Silk Road.	MTC		√						
		12	Project on transforming Laos into telecommunicaiton connection hub, connecting from China to Thailand and from Viet Name to Thailand via Lao PDR.	MTC		√						
		13	Project on attrating foreign investors to establish data center and host in Lao PDR.	MTC		√						
4	Digital Government	14	Project on Government Network (G-Net)	MTC			√					
		15	Project on Government Cloud (G-Cloud)	MTC			√					
		16	Project on National Data Exchange Center.	MTC			√					
		17	Project on improve and expand video conference system in in central and local levels.	MTC			√					
		18	Project on improve and expand e-Mail system in in central and local levels.	MTC			√					
		19	Project on establishing provincial electronic data center.	MTC		√						
		20	Project on Government Website Platform (G-Web-Platform) for ministries and government offices.	MTC			√					
		21	Project on Electronic Office Systems (e-Office) for ministries and government offices.	MTC			√					

	22	Project on Government Chatting Systems (G-Chat).	MTC			√						
	23	Project on Lao font (Phetsarath Office), Government Document Sharing Systems (G-Share) and Government Document Drive Systems (G-Drive).	MTC			√						
	24	□Project on Government Electronic Services and Single Sign-On systems for the in central and local levels.	MTC			√						
	25	Project on National Standardization Software Framework.	MTC	√		√						
	26	Project on promoting e-Government system deployment to government officials in the in central and local levels.	MTC								√	
	27	Project on Government Data Standard and Open Government Data Platform.	MTC	√		√						
	28	Project on transforming services of ministries, provinces and government organizations into e-Services via websites and mobile applications.	MTC								√	
	29	Project on Digital Identification, Digital Family Book, Citizen Database, Government Official Database.	MTC, MOHA			√						
	30	Project on disaster notification systems on mobile devinces.	MTC, MORE			√						
	31	Project on developing Government reporting system (Dashboard) on mobile devices, for digital transformation.	MTC			√						
	32	Project on Lao Font development and local contents in Lao language.	MTC			√						
	33	Project on improving e-Government Index.	MTC								√	

		34	Project on national digital database.	MTC, MORE, MOF, BOL			√					
5	Digital Payment System	35	Project on promoting electronic payment in communities.	MTC, MOF, BOL							√	
		36	Project on digital transformation in payment and financial systems (TaxRIS, ASYCUDA, GFIS, LAPASS, LAPNET, SAMS).	MTC, MOF, BOL			√					
		37	Project on improving revenue collection – expenditure management by using digital technology and Mobile Money systems.	MTC, MOF, BOL	√		√					
		38	Project on promoting e-Payment systems and electronic VAT collecting system.	MTC, MOF, BOL							√	
		39	Project on feasibility study of VAT collection from payment of products and services on e-Commerce, from foreign e-Services via Internet.	MTC, MOF, BOL, MOIC			√					
		40	Project on Central Bank Digital Currency (CBDC), and Project to study Crypto Currency mining, payment, purchasing and trading.	MTC, MOF, BOL								
6	Digital Human Resource Development	40	Project on human resource development focusing in new digital skills, such as AI, Data Science, Cyber Security.	MTC, MOES, MOLSW				√				
		41	Project on development of ICT and digital curriculum in foundation education level.	MTC, MOES, MOLSW				√				
		42	Project on establishing Digital Technology Talent Center.	MTC, MOES, MOLSW				√				

		43	Project on establishing Start-Up Center.	MTC, MOES, MOLSW				√				
		44	Project on establishing Innovation Center.	MTC, MOES, MOLSW				√				
		45	Project on establishing Digital Labour Development Center.	MTC, MOES, MOLSW				√				
7	MSME and Service Promotion	46	Project on promoting and supporting MSME operators into Digital Business Transformation, in order to improve business productivity, new service product development and/or new marketing strategies for domestic and international markets by using digital technology.	MOIC					√			
		47	Project on promoting e-Commerce development (e-Market Place, e-Payment, Logistics, etc).	MOIC, MOF, BOL, MPWT					√			
		48	Project on e-Commerce promotion and development for MSME, such as e-Invoice, e-Supply Chain.	MOIC					√			
		49	Project on promoting digital technology deployment into all sectors, such as tourism, health care, education, service.	MTC, MICT, MOES, MOH					√			
8	Increasing Productivity by Digital Technology	50	Project on promotion and development of advanced industry by deploying digital manufacturing.	MOIC					√			
		51	Project on promotion and development of Smart Factory.	MOIC, MPI					√			

		52	Project on building Digital Industry Zone, such as Digital Economic Zone, Digital Park.	MPI, MOIC, MTC					√			
		53	Project on attracting international and foreign investment to open factories producing digital technology equipment and systems.	MPI, MOIC					√			
9	Promotion of Agriculture Development by using Digital Technology	54	Project of promotion and development of Smart Farm by using digital technology, such as 5G, IoT, Drone, Robot in to agriculture sector.	MAF, MTC					√			
		55	Project on development of e-Commerce and distribution of agriculture products, One-District-One-Product (ODOP) from producers directly to local buyers, and able to export to foreign countries.	MOIC, MAF					√			
		56	Project on selling agriculture products on electronic market.	MAF, MOIC, MTC					√			
10	Development of Logistics for Digital Economy Development	57	Project on improvment and development postal systems, logistics systems, delivery system and so on.	MTC		√	√					
		58	Project on establishing and improvement of Dry Port along Laos-China, Laos-Viet Name, Laos-Thailand borders as a warehouse for product distribution to neighboring countries, ensuring convenient and quick e-Commerce with other contries.	MPWT, MTC		√	√					
		59	Project on development and improvement of digital maps and postal code, address numbering in the country.	MTC		√	√					
		60	Project on improving Laos Post Enterprise to become profitable and competitive enterprise.	MTC		√	√					
11	Cyber Security	61	Project on Critical Information Infrastructure Protection (CIIP).	MOPS, MTC						√		

		62	Project on strengthening and development of Cyber Security system.	MTC				√		√		
		63	Project on Natinoal Digital ID: CA, e-ID, Digital ID, e-KYC, e-Signature, etc.	MTC, MOPS		√	√			√		
12	Readiness for Smart Cities	64	Project on Smart Cities development (Vientian Capital and Luangprabang).	MPWT, MTC, VTE, LPB	√	√	√	√	√	√	√	
13	Telecommunicati on Development and Digital Transformation Fund	65	Project on establishing Telecommunicaitons Development and Digital Transformation Fund.	MTC, MOF	√	√	√	√	√	√	√	
		66	Project on reducing digital gaps, including improvement of infrastructures, accessibility and deployment.	MTC	√	√	√	√	√	√	√	
14	International Cooperation in Digital Development	67	Project on encouraging all sectors to impletment foreign coopration policy in order to drive the national digital transformation under their responsibilities.	All Sectors	√	√	√	√	√	√	√	√
		68	Project on encouraging the provinces that have cooperation with provinces of neighboring countries and other foreign countries in order to use digital technology in improving education and health care, increase the living standard in the province, reduce proverty and gaps between urban and rural areas.	All Sectors	√	√	√	√	√	√	√	√
		69	Promoting and supporting projects and activities of Work Plan 1-13 that have foreign cooperation components.	All Sectors	√	√	√	√	√	√	√	√

## Part IV – Implementation

### 4.1 Policy

In order to implement the Vision, Strategy and Development Plan of digital economy development, the Government promotes the following policies:

- 1) Develop and amend legislations, laws and regulations, on digital technology management and deployment to provide highest benefits for digital economy development.
- 2) Develop advanced and secure digital infrastructures with international standards, interoperable within the region and internationally.
- 3) Develop digital platforms as common tools for creating digital product and service that is quick, variety and useful for economy-society.
- 4) Develop skilled human resources for digital technology development, management and deployment.
- 5) Create digital innovation by technology research and development to produce new things to the community, environmentally friendly, promoting and strengthening capacity of the operators and start-ups.
- 6) Develop digital and cyber security to ensure technical security in digital technology deployment.
- 7) Promote and deploy ICT in developing products and services.

### 4.2 Measures

In order to ensure the timeliness of implementing Digital Economy Development Plans and to ensure that relevant committees to consider when determine directions of the implementation, the following measures are recommended:

- 1) The Government will issue an implementation decree for all sectors at central and local levels in effectively and efficiently translating the national plan into a detailed plan at their levels.
- 2) The Government will establish a National Committee, led by the Prime Minister, consisting of relevant sectors, assigning Ministry of Technology and Communications as the core to communicate with ministries and equivalents, and local level authorities.
- 3) The National Committee shall divide the responsibilities and tasks, and prioritize the work plans and projects to be implemented, together with manage the budget from Telecommunication Development and Digital Transformation Fund, which is also stipulated in the Law on Telecommunications (Amended), or from other sources of budget, in implement each plan.
- 4) Enhance accountable and consistent partnership among government sectors (vertically and horizontally), and between public and private sectors, in implementing and monitoring this development plan.
- 5) Promotion and advertising are important and essential in the implementation of this digital economy development plan, in order to ensure common understandings country-wise, by using new model of media as advertising channels, encouraging all sectors to deploy digital technology into their operations.
- 6) Create partnership frameworks for public and private sectors to jointly implementing this development plan successfully as targeted.
- 7) This Vision, Strategy and National Development Plan on Digital Economy supports and promote the 9th 5-Year National Socio-Economy Development Plan (2021-2015). All sectors shall refer to this development plan in order to translate into 5-year develop plans at their sectors.

### 4.3 Mechanisms

Establish the National Committee, led by the Prime Minister, consisting of relevant sectors, assigning Ministry of Technology and Communications as the core to communicate with ministries and equivalents, and local level authorities, in order to implement this digital economy development plan. The committee will determine priority the work plans, follow-up and monitor the implementation, determine the budget for important and essential work plans and projects in the next 5 years.

The Government will issue the Decree on Telecommunication Development and Digital Transformation Fund, and manage source of funding. All interested parties shall submit project



proposals and plans related to digital economy development to seek approval and budgets from the committee.

#### **4.4 Monitoring and Evaluation**

- 1) The established National Committee centrally communicate with all relevant parties and is responsible for monitoring and evaluating the implementation of this development plan.
- 2) Setoral and local authorities focus on monitoring the progress of implementing Vision, Strategy and Development Plan on National Digital Economy in relation to their sector, and report to the National Committee on regular basis via the implementation as their annual plans.
- 3) The National Committee studies the methods for collecting statistic data and measuring the contribution digital economy to the GDP.
- 4) This development plan will have mid-term evaluation and review in the middle of the 3rd year, in order to derive lessons learnt and improve the vision, strategy and development plan to be implemented.
- 5) This development plan will have end-of-term evaluation and review in the 5th year, in order to create new development plans for the next term.

## **Appendices**

### **Appendix 1 - Glossary**

3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> Generation (3G, 4G, 5G): the 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> Generation of mobile communications technology respectively.

AI: Artificial Intelligence.

ACH: Automated Clearing House.

ASYCUDA: Automated System for Customs Data

Big Data: used in analyzing behaviors for decision making.

Blockchain: distributed database that has self-authentication function.

Cloud Computing: a system that provides shared resources service via Internet, such as data hosting, data accessibility and using applications.

Cyber security: the security on cyber and Internet.

Drone: an aircraft without any human pilot.

e-Banking: electronic banking.

e-Commerce: electronic commerce.

Fintech: financial technology operator.

GFIS: Government Financial Information System.

IoT: Internet of Things, where devices can communicate with each other via Internet.

IR4.0: Industrial Revolution 4.0.

LaoCERT : Lao Computer Emergency Response Team.

LANIC: Lao National Internet Center.

MSME: Micro Small Medium Enterprise.

Metaverse: Internet virtual universe.

NDC: National Data Center.

NIX: National Internet Exchange.

NRCA: National Root Certification Authority.

TaxRIS: Tax Revenue Information System.

RTGS: Real Time Gross Settlement.

RCEP: Regional Comprehensive Economic Partnership.

VR: Virtual Reality.

## Appendix 2 – Additional Information about Digital Economy

### 1. Additional Information about Digital Economy

The definition of digital economy has yet clearly defined; the G20 OECD and Oxford University gave specific scope, medium scope and general scope meaning as:

- Specific scope meaning : Digital Economy is ICT economy that include ICT manufacturing factories, telecommunications and internet operators, developers and providers of information and software.
- Medium scope meaning: Digital Economy is the economy in industrial sectors whose business model is related to digital technology, such as online, shared resources and services economy, financial cooperation, crowdsourcing and chain business.
- General meaning: Digital Economy is the transformation of business model from traditional to the business that use digital technology as tools and medium, including e-Commerce, 4.0 manufacturing industry, smart agriculture, e-Tourism, e-Government and so on.

In comparison to traditional business model, digital economy differs in several ways :

- Data or information is the Source of Value in digital economy: the rapid grow of digital technology means the increase of data from various sources (mobile phones, sensor devices in factories, vehicle traffic, movement of people and so on). The transaction of these enormous amount of data, together with data analysis systems, can create value for the operation of public and private sectors.
- Advanced software systems and hardware devices: digital economy led to new digital technology development, such as robot, IoT, and digital model led to over transformation in ICT sector which happened in every sector, including finance, transport, industry, information, education, health and so on.
- New business model brings about opportunities and challenges for business operations: new business model allows different groups of people to have direct communications, creates network that can reduce expenses in business interaction, for example, e-Commerce facilitates product and service purchasing through easy-to-use electronic channels, online advertising can deliver advertising content to the right targets. In addition, business sharing creates opportunities for employment and access to services without having to visit actual stations.
- New role of consumer: digital technology helps consumers to be the center of services. The ability of media and opinion sharing not only change the buying experience of consumers, but also affects the reputation of the business. The Internet creates power for consumers with new channels to state and share opinions, making the consumers important sources of information for innovation transformation in business operations.

### 2. Other Definitions Related to Digital Economy

- **Digital:** refers to digit, first used in early 18th Century (1704), which is the way to specify value of data with digits instead of graphs. Initially it was used in communication systems, where an equipment, called Modem, changes data analog signal into digital. After that digital technology has been continuously developed until an equipment, called Transistor (1947), that used digital computation as the foundation to invent a Computer that can save data in digital format.
- **Digitization:** is the conversion of data from analog to digital, where the value of data will be kept in Byte, which is the starting point of creating value from digital data.
- **Digitalization:** is changing of working processes or methods that use technology, such as autonomous system in manufacturing, inventory warehouse. Large organizations implement digitalization by means of improving existing operations.
- **Digital Transformation:** is the transformation operation processing methods of the community based on the deployment of digital technology.

- **Industry 4.0:** is manufacturing industry that deploy digital and online manufacturing operations based on advanced digital technology, such as autonomous system, Big Data, sensor network, cloud computing system, AI and IoT. The Industry 4.0 concept is relating to manufacturing factory 4.0 and agriculture 4.0:
  - **Manufacturing factory 4.0:** is the manufacturing based on machine-to-machine communications, where AI will help in machine's decision-making in automation processing control. In addition, Big Data helps people with information to make right decision, especially estimation of consumer needs, estimation of machine failure, quality assessment of production in real-time and helps in effective and efficient management of manufacturing processes.
  - **Agriculture 4.0:** is Smart Agriculture model that can control plantations as needed by using GPS and remote sensing systems, so that real-time data can be known, such as nutrition in the soil, air condition, nutrition or plant and animal food needed, and market demands.

### 3. Things to be away of in digital economy development

- 1) Facilitate business unit: create policies to support start-up and business.
- 2) Increase community readiness: faster and more effective services, understanding of community needs and create uniqueness for products and services.
- 3) Consumer protection: create consumer protection mechanism and create confidence for customers to use the system by determine rules for the operators to implement strictly.
- 4) Data protection: an institute responsible for management and defining data protection principles shall be established in order to service the community and to quickly receive public opinions and reducing replicated principles.
- 5) Cyber security: digital system protection is one of important factors to emphasize so that digital economy operations are not struggle.
- 6) Consumer Confidence: digital consumer data shall be managed effectively and transparently to create assurance for citizens.
- 7) Transportation infrastructure: product transportation and distribution service shall be available, so is the assurance of products, in order to meet the requirements and to improve shopping experiences.
- 8) Human resources: effective human resource development in ICT and others in order to support digital economy development.
- 9) Agreement signing: it is necessary to draft online agreement to resolve dispute issues with effective and fair judgement.
- 10) Digital Government: improve working processes in government bodies to service citizens and business units, particularly transforming the management and services into digital model via Internet network. Additionally, establish new channels for accessing open government data with convenience and transparency.

### Appendix 3 –Digital Economy Development AMS

- 1) Brunei Darussalam: the Wawasan Brunei 2035 defines digital economy development strategy.
  - ICT capacity building development plan, which is implemented by the Authority of Digital Technology Industry Promotion Authority of Brunei. The development plan provides funds to support trainings in topics related to ICT skills and knowledge for Brunei citizens, aiming at strengthening other non-digital careers to obtain ICT basics.
  - Establishment of Opportunity Development Center as the One-Stop Business Service to help SME to initiate digital-related business.
- 2) Cambodia: has recently created the development plan, aiming at digital economy development toward 2023:
  - Expand high-speed Internet infrastructure coverage of 100% in urban areas and 70% in rural areas.
  - Create strategy to support new business operators in digital technology sector, support SME of other economic sectors to transform to digital, establish Online Crowdfunding Platform, and digital skill development.
- 3) Indonesia: the Government had announced several work plans that create cooperation between the Government and industry sectors in order to improve Indonesia in global stage:
  - Infrastructure development plan, including ICT.
  - e-Commerce Strategic Plans 2017-2019, the 7 action plans: investment promotion, tax incentives, skills development, logistics and distribution system development, telecommunication infrastructure development, cyber security and consumer protection.
  - Work plan on promoting outside-of-school education with new digital model.
  - Work plan on supporting SME in digital transformation.

In 2020 digital economy had value \$130 millions. The important factor of digital economy is the improvement of national digital infrastructure with the installation of 36,000 KM fiber optic system, and the project on providing scholarship to digital talents as to prepare human resources for Industry 4.0. Besides, the Government also had special benefits for new digital operators in access to funding.

- 4) Myanmar: under the vision of digital and innovative Myanmar, the Government has established Digital Economy Committee in 2017. One of the primary development goals is to improve customs and commerce, improve education in digital technology, enhance the accessibility to health care system and sustainable city development, making digital economy contribution reaches 5% of GDP in 2020. In addition, launch the e-Portal of e-Government and digital tax system in 2019.
- 5) Malaysia: National Chamber of Commerce had been established, consisting of lined ministries and organizations. The Chamber is directly under the Prime Minister to supervise the implementation of work plans. The Malaysian Government invested about 177 billion Malaysian Ringgit in establishing Digital and Free Trade area, which estimate the value of trading to reach \$65,000 billion in 2025. In addition, there was improvement in automation of management and production in agriculture sector in order to improve agriculture to the 3rd large industry of Malaysia. Furthermore, the National Chamber of e-Commerce was established, and in 2020 e-Commerce reached 211 billion Malaysian Ringgit. The Government also invested 1 thousand Malaysian ringgit on the development and expansion of high-speed fiber optic, connecting rural and remote area with speed of 30 Mbps.
- 6) Philippines: in the digital strategy work plan laid out primary targets in upgrading Internet connectivity throughout the country in order to reduce digital gap based on location and geography, ensuring accessibility of citizens:
  - High-speed Internet for public schools.
  - In every business center of the city shall have high-speed Internet network available with guaranteed speed no less than 20 Mbps

- 80% of households shall have connection to high-speed Internet no less than 2 Mbps.
- Work plan on improve and upgrade the Government ICT Infrastructure systems, and connect to Government sector's operations and implementations.

Ministry of Information and Communications Technology of Philippines invested 1,4 billion Philippines Peso in setting up free wifi in public areas and education institutes. Moreover, the ministry invested more than 220 billion Philippines Peso in upgrading the speed of Internet, 25 millions Peso in improving digital-related education system in schools and universities, aiming at making Philippines the main source of the region for exporting digital skilled labour, and \$100 millions from ADB in establishing Innovation Development Promotion Center.

7) Singapore: is the nation of wisdom and the world's top city by ICT system:

- Becoming the top in the world in ICT effective deployment in order to create socio-economy value-added.
- Increase the value of ICT industry to 26 billion Singapore Dollars.
- Increase the revenue of exportation to 60 billion Singapore Dollars.
- Increase labour to 80,000.
- 90% of household have access to high-speed Internet.
- 100% of students shall have computer at home.

8) Thailand:

Digital economic and social development plan aimed at addressing challenges, embracing and expanding economic opportunities. The program sets out a 20-year period of development, divided into four phases of development: the digital infrastructure phase, the digital expansion phase, the digital transformation phase, and the digital economy leadership phase.

In implementing the program, the National Digital Economy Promotion Agency has been set up to drive the implementation of the program, which the government has approved a budget of 1.4 billion baht, which is to support the use of technology by small and medium-sized enterprises to increase the number of entrepreneurs in the next 20 year from 2,000 to 10,000.

Established the Ministry of Digital Economy and Society (MDES) in place of the previous Ministry of Information and Communication Technology, expanding the role and responsibilities of the Ministry of Information and Communication, not only in the implementation of information and communication technology but also in the economic and social development of information technology. In addition to the MDES, a Digital Economy and Society Committee and a Cyber Security Committee have been set up, both chaired by the Prime Minister.

9) Viet Nam:

An e-commerce and digital economy organization has been set up under the Ministry of Industry, which is responsible for coordinating and implementing e-commerce. In addition, under the Ministry of Communications and Information, the Digital Economy Organization has been established to play a role in drafting guidelines on program implementation. However, the activities of such organizations must be approved and endorsed by higher leaders, whether at the level of the Prime Minister or the Deputy Prime Minister.

The Government of Vietnam has completed the development of a digital economy development plan to support the development of the country into a middle-income developing country by 2030 and a high-income developing country by 2045. The government is currently in the process of drafting and revising in line with the country's views and policies, which are expected to be promulgated in 2020.

In September 2018, Prime Minister chaired the conference committee system administration with electronic National's board ship to provide the direction of development systems, government digital and enhance cooperation between the public and private sectors which Prime Minister urged ministries, sectors focusing on opening the service sector to society in the form of electronic level can make transactions and integrate information through a single door. Vietnam aims to develop the country into a country with advanced economic digital in 2030, which allows the use of technologies that modernize the economy Digital is one of the priorities important to offer the

Ministry of Communications and Information adopted in November 2019, is the development of economic basis using technology digital which the project will upgrade the capacity of competition in the economy of Vietnam leads to expansion of the economy digital up 20% and labor has grown from 7% to 10% in 2030.

To achieve development Economic digital government's focus on developing infrastructure Internet speed, especially 5 AG (5G), upgrade education provided people can use the Internet at reasonable prices to the conditions of the economy and that Vietnam has established programs to encourage the formation and growth of entrepreneurs, including the establishment and development of technology entrepreneurs and National Fund to develop innovative technologies national center for technology advancement in Hoalac province, CILICOMCITY SAIGON, and also plans to build innovative and National Development Entrepreneurs Center.

## Appendix 4 - SWOT Analysis

### 1. Digital Industry

Strengthenes	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>- The government pays attention to promotion of economic growth including ICT sector.</li> <li>- Existence of overseas agents of well-known products or goods in Lao PDR.</li> <li>- Fast growing digital markets in Vientiane.</li> <li>- The expansion of digital networks creates local services.</li> <li>- The private sector increasingly uses digital solutions.</li> <li>- The start-ups move with positive directions.</li> <li>- The government increasingly purchases and moves to digitalization.</li> </ul>	<ul style="list-style-type: none"> <li>- ICT investment climates are not attractive to foreign investors; no varieties of ICT business in Lao PDR, most of entrepreneurs do the same business types.</li> <li>- No existence of industrial factories and entrepreneurs who can compete with international level. Therefore, there are no Lao products to supply to regional and international digital markets.</li> <li>- Lack of ICT experts; most of workforce does not have high ICT skills; rely on foreign experts to do maintenance or problem shooting for advanced technologies and products.</li> <li>- Despite of existence of ICT association, the number of its members is not big; no cooperation mechanisms to share best practices among digital business enterprises.</li> <li>- Digital businesses at the local levels are not strong and there no business stability.</li> <li>- Lack of legislations and investment supporting mechanisms for start-up businesses.</li> </ul>	<ul style="list-style-type: none"> <li>- State organizations are markets for digital products. Every year, state organizations provided with budgets to buy digital products and services.</li> <li>- Because of business competition, enterprises have to use ICT technologies. This creates opportunities for companies to sell their ICT products and services.</li> <li>- The majority of the populations is young people who are eager to learn and use digital technologies.</li> <li>- There is cooperation at the regional and local levels in digital trade.</li> </ul>	<ul style="list-style-type: none"> <li>- There are competitions among countries in the region in digital related investments.</li> <li>- There are no strong digital business environments and there are no mechanisms for protection or supporting of weak enterprises.</li> <li>- Many local technical workers who are knowledgeable choose to work outside the country.</li> <li>- There is no strong mechanism to protect producers and researchers, thus, there are many incidents of cybercrime.</li> <li>- SMEs have limitations to undergo digital transformation to provide services to the general public.</li> </ul>



## 2. Digital Infrastructure

Strengthenes	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>- Existence of the national internet and data centers.</li> <li>- Existence of telephone signal coverage of major areas of the country with 2G covering 95%, 3G 60% and 4G 30% of the villages.</li> <li>- It is possible for the country to be a data transit point for the Mekong-subregion.</li> <li>- There is the tendency that prices could drop due to competitions.</li> <li>- Access to cheap prices of devices / equipment from China and Vietnam to lower investment costs.</li> </ul>	<ul style="list-style-type: none"> <li>- Limitations in broadband infrastructure expansion and use.</li> <li>- Limitations in expansion of 3G and 4G telephone signal to rural areas.</li> <li>- No national cable and post infrastructures for the enterprises to rent or share.</li> <li>- Low quality of services.</li> <li>- Ineffective allocations of spectrums; not sporting network expansion to rural areas.</li> </ul>	<ul style="list-style-type: none"> <li>- Existence of policies, strategies, development plans and telecommunication and internet infrastructures.</li> <li>- There are policies and regulations that promote the sharing of infrastructures.</li> <li>- Large mobile phone markets and are likely to expand.</li> <li>- Regional and cross-border cooperation to develop broadband systems.</li> <li>- Existence of a telecommunication fund to promote network expansion to rural areas.</li> <li>- International and external cooperation to implement the infrastructure development project(s).</li> </ul>	<ul style="list-style-type: none"> <li>- Low buying power of people to buy ICT products and services; those having the buying power mostly live in urban areas.</li> <li>- Limited education and knowledge in ICT among the general public.</li> <li>- There are regulations introduced by many sectors which makes it confusing for enterprises to expand and develop infrastructures.</li> <li>- Internet utilization rate among the general public is not high – not encouraging to develop the speed and quality of infrastructures.</li> </ul>

## 3. Digital Finance Service

Strengthenes	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>- The government understands the importance of payment systems, thus, there is the establishment of payment mechanisms at departmental level of BoLto administer and centralize payment systems.</li> </ul>	<ul style="list-style-type: none"> <li>- The state budget payment system has just had a legislative reference for centralization of payment system development efforts because the masterplan for digitalization of payment systems for period 2021-2023</li> </ul>	<ul style="list-style-type: none"> <li>- The government sees the importance of payment systems between the public and private sectors and the general public in electronic formats to gradually administer revenue collection and</li> </ul>	<ul style="list-style-type: none"> <li>- The levels of payment service systems development in neighboring countries and at the regional and international levels are more advanced than Lao PDR. The systems in Lao PDR were recently established. As a result, the</li> </ul>

<ul style="list-style-type: none"> <li>- A number of legislations have been introduced to support the existence and development of domestic and cross-border payment systems. In 2017, the law on payment systems, No. 32, dated 7 November 2017 was introduced and some subsidiary legislations were also introduced, such as ❶ Decision on key payment systems, No. 29/BoL, dated 14 January 2019; ❷ Decision on payment systems for sub-transactions, No. 293/BoL, dated 1 April 2019; ❸ Decision on payment services, No. 288/BoL, dated 17 March 2020; ❹ Decision on Lao QR Codes for payment, No. 74/BoL, dated 28 January 2020; ❺ Decision on payment systems and accounting of Lao PDR, No. 327/BoL, dated 26 May 2020.</li> <li>- The key payment system (calculation and accounting of Lao PDR – the LaPASS) has been upgraded to international standard, in particular, the messaging standard ISO 20022.</li> <li>- The payment system for sub-transactions controlled by Lao National Payment Company (LAPNet) which developing a system to enable cross-bank</li> </ul>	<p>was just recently approved and it was introduced in June 2020.</p> <ul style="list-style-type: none"> <li>- Even though there are a number of legislations already introduced, but there is lacking tools and mechanisms to monitor and control the systems and payment service providers.</li> <li>- Even though the LaPASS system has been upgraded to international standard, there are a few payment service providers who are connected to the system in the form of Straight Through Processing (STP).</li> <li>- The development of sub-payment system by LAPNet Company is slow not meeting the needs in actual situations.</li> <li>- System developers are working alone, thus, making investment costs high to provide services by themselves.</li> <li>- The majority of payment service users live in urbanized areas with access to internet and smart phone. The access rate in rural areas is still low.</li> </ul>	<p>management of expenditures by means of digital technologies.</p> <ul style="list-style-type: none"> <li>- There is an increase in the need to use electronic payment systems between countries.</li> <li>- There are innovations related to payment services and there are non-bank businesses providing payment services, such as the Telecom Company and the Finance Technology Enterprise (Fintech).</li> <li>- So far, the global economy has continued growing quickly complicatedly as it is moving to 4.0 industrial revolution resulting from the use of technologies and IA. In addition, the outbreak of COVID-19 at the end of 2019 have changed people's lifestyles to new normal. This creates opportunities and challenges to the Lao PDR economy, in particular, the rapid development of payment systems because the people around the world have increasingly moved to electronic payment services avoiding cash handling and the risks in disease spread-out. This situation has created related business activities for many companies, e.g., Fintech, transport companies, food delivery</li> </ul>	<p>management mechanisms need to be improved to meet development needs.</p> <ul style="list-style-type: none"> <li>- The key payment systems and the payment systems for sub-transactions are used within the country only. They cannot be connected to the systems of neighboring countries and countries of the regional and international levels.</li> <li>- The majority of legislations introduced in the country for consideration of business establishment are based on international standards and they just been promulgated, not yet broadly disseminated because of COVID-19 outbreak, thus, the vast majority of enterprises do not fully understand the mechanisms for authorization of business establishment.</li> <li>- Most of users do not understand their rights and obligations in using payment systems in relation to safety; they use private codes and claim for their rights in case of disputes resulting from mistakes due to data error.</li> </ul>
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<p>transaction through Mobile Application.</p> <ul style="list-style-type: none"> <li>- Payment service providers actively develop products and services.</li> <li>- Users increasingly adjust themselves to digital choices both in urban and rural areas.</li> </ul>		<p>services companies, and on- line orders and purchasing.</p>	
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**4. e-Commerce**

<b>Strengthnes</b>	<b>Weaknesses</b>	<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>- The government is very much interested in e-commerce promotion.</li> <li>- The markets continue to grow, especially the form of B2C.</li> <li>- In urbanized areas, on-line shopping has increased.</li> <li>- Payments are done in the forms of cash at destinations and banking transactions.</li> <li>- Varieties of goods being shopped on-line including agriculture and handicraft items.</li> </ul>	<ul style="list-style-type: none"> <li>- High investment capital needed to establish on-line shopping business under current conditions in Lao PDR.</li> <li>- Most of on-line shops are operated in primitive ways that could be unsafe and unreliable.</li> <li>- B2B and B2C models do not have the real potentials to grow.</li> <li>- Even though transactions are directly done between the sellers and buyers, in reality people who want to purchase on-line still rely on other people to order the commodities.</li> </ul>	<ul style="list-style-type: none"> <li>- E-commerce markets are growing at the regional and international levels.</li> <li>- Increase in internet use among the general public as they move to more on- line shopping.</li> <li>- Because of COVID-19 outbreak, more people choose the on-line shopping option.</li> <li>- The government is developing legislations for management of e-commerce.</li> </ul>	<ul style="list-style-type: none"> <li>- There are not enough legislations for on- line shopping, such as the laws related to data protection and cyber safety. This leads to lacking trust among foreign investors.</li> <li>- There is slowness in technology development and changes and there are many competitors.</li> <li>- Access to internet is still limited and service prices are high.</li> <li>- The efficiency and the supply systems of postal service information are not fully functioning, thus, there are obstacles for delivery services.</li> <li>- Transport services are limited and expensive.</li> <li>- Safety concerns in on-line payment services.</li> </ul>

## 5. Digital Platform

Strengthenes	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>- In the last 10 years the government has made efforts to introduce ICT technologies in public administration, such as e-Government.</li> <li>- The various ministries are moving to digitalization, e.g., e-tax, e-ID, e-Document, among others.</li> <li>- E-Commerce has increasingly been used for online transactions.</li> <li>- The general public use ICT channels for communication, access to information and services of the state and private sectors.</li> </ul>	<ul style="list-style-type: none"> <li>- E-ID is used only in urban areas, however, other information such as population and others have not yet been connected to the ID card.</li> <li>- No systems to check the quality and effectiveness of ICT systems; there are many standards and often there are changes in the systems and structures at times when improvements are needed.</li> <li>- No centralized systems to administer the programs being used by the state and private sectors.</li> <li>- Prices and expenses in using the systems are high either in the state or private sector.</li> </ul>	<ul style="list-style-type: none"> <li>- The government pays attention to ICT solutions; Also, the private sector is providing services to the general public in through online platforms.</li> <li>- There is cooperation at the regional and international levels through ICT, such as e-Government, e-Services and others.</li> <li>- There are civil society organizations and community supports to reduce digital gaps.</li> </ul>	<ul style="list-style-type: none"> <li>- Transformation to centralized / common standards and connectivity of programs developed by the various ministries.</li> <li>- Enrollment of e-tax and e-customs and other e-services at the local levels and in rural areas.</li> <li>- Protection of the rights of individuals or information through electronic transactions.</li> </ul>

## 6. Digital Skills and Labours

Strengthenes	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>- The government takes education as priority by developing a strategy to introduce ICT curriculums in secondary education level.</li> <li>- Schools and universities of the public and private sectors are teaching ICT subjects at the bachelor and master levels. Technical vocational schools are also teaching ICT technologies.</li> </ul>	<ul style="list-style-type: none"> <li>- There is fewer ICT workforce with quality.</li> <li>- Low quality of ICT education of the secondary education level compared to the region. Teaching of this subject is mostly done through theories as there is lack of ICT teaching facilities for learning in practice.</li> <li>- The graduates from institutions</li> </ul>	<ul style="list-style-type: none"> <li>- High demands on ICT workforce locally and internationally.</li> <li>- In general, the salaries for ICT workforce are considerably high compared to other professions, thus, many people have the interest to learn and seek for jobs in ICT areas.</li> <li>- The majority of Lao PDR populations is young people</li> </ul>	<ul style="list-style-type: none"> <li>- There are no systematic coordination approaches between relevant sectors either in the public or private sector as well as the cooperation between the public and private sectors.</li> <li>- Even though, the government investment in human resource development in ICT areas is considerably high if compared with other sectors, however, this</li> </ul>

<ul style="list-style-type: none"> <li>- There are projects of e-learning development in schools.</li> <li>- There is the workforce with ICT education qualifications of bachelor, master and PHD levels from overseas.</li> </ul>	<p>within the country do not have sufficient knowledge to join international labor markets.</p> <ul style="list-style-type: none"> <li>- High level ICT professions (programmer, designer program, system) which are paid with high salaries are for those who completed education from overseas institutions, especially the levels of bachelor and master. There is fewer workforce graduated at these levels locally.</li> </ul>	<p>having the interest to learn ICT and they start using ICT at primary school age.</p> <ul style="list-style-type: none"> <li>- There is regional and international cooperation in skills development, in particular, in ICT areas.</li> </ul>	<p>cannot meet the market need to increase the ratio of ICT workforce from 0.3% to at least 1% of the total workforce.</p> <ul style="list-style-type: none"> <li>- The regional economic integration will allow more ICT workforce to work in the country more easily. The foreign workforces are better in terms of quality and are paid lower if compared to Lao national workforces who have high levels of ICT qualifications.</li> <li>- There are limitations in the promotion of ICT subjects being taught in the education sector, especially the internet learning in schools or the shortage in computer learning rooms in schools due to the constraints either in terms of budgets or human resource to take care of administration activities and to</li> <li>- provide services in schools.</li> </ul>
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**7. Logistics**

<b>Strengthenes</b>	<b>Weaknesses</b>	<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>- The postal services exist in Laos and in the world for more than a century. People understand and have experience in using the services and the government pays attention in the</li> </ul>	<ul style="list-style-type: none"> <li>- The post industry is not yet strong, does not have large markets; its growth rate is lower than economic growth; enterprises operating postal services are not making profits or</li> </ul>	<ul style="list-style-type: none"> <li>- National economic growth, population increase, and the growth of e-commerce are driving factors for the growth in the postal service sector in positive ways.</li> </ul>	<ul style="list-style-type: none"> <li>- The postal sector will be a complicated and challenging sector because of globalization, the development of the telecommunication sector which</li> </ul>

<p>management and development of this sector.</p> <ul style="list-style-type: none"> <li>- The postal services have been growing and have increased their important roles in economic activities. The sector has produced revenues, offered employment and properly encouraged business activities in other sectors.</li> <li>- The network of postal services has considerably been enlarged at the central and local levels enabling the vast majority of people to access to the services.</li> <li>- Management of the services and enterprises are increasingly done under the laws and legislations to ensure equality and fair competition. The state organizations at the national and local levels have experience in the administration activities for more than 30 years.</li> <li>- The Lao Postal Service State-owned Enterprise has been the main driver in postal services which have been well recognized by local and international users.</li> <li>- There has been cooperation in postal services at the local, regional (APPU) and international (UPU) levels leading to mutual assistance that ensure strong and wide</li> </ul>	<p>making small profit margins.</p> <ul style="list-style-type: none"> <li>- Management is not strong, and legislations are not stringent enough leaving rooms for existence of unauthorized services or local users choose to use services outside the country or enterprises of neighboring countries operating the same types of business in the country.</li> <li>- Despite the existence of wide networks, but utilization effectiveness is not high; cannot meet the needs of users; in some geographical locations the postal service networks are not sustainable.</li> <li>- The services provided by many enterprises have high prices but their quality does not fully meet the needs of users.</li> <li>- The business operation of the Lao Postal Service State-owned Enterprise is not fully effective leading to cumulated debts, and it cannot represent the government to fulfill the obligations of universal postal services.</li> </ul>	<ul style="list-style-type: none"> <li>- Local and foreign investors are interested in investing in the post service sector because it is seen as an economic opportunity.</li> <li>- The development growth in telecommunication, railway, national roads or air routes have all created opportunities for the postal service sector to be further developed to facilitate telecommunication and commodity distributions between urban and rural areas to grow faster.</li> <li>- The transformation to digital societies and economies has led to new market opportunities for the postal service sector in connecting the users and the service providers in e-commerce transactions.</li> <li>- The telecommunication progress has facilitated the postal sector to upgrade the service standards and quality more easily.</li> <li>- The regional and international cooperation creates the opportunity for the postal sector to have a new economic role related to sustainable development efforts, thereby creating the opportunity for the Lao Postal Service State-owned Enterprise to receive cooperation, assistance and to expand its markets.</li> </ul>	<p>will have positive and negative impacts; there will be the needs to develop policies, strategies and management practices that should be suitable to fast changing environments.</p> <ul style="list-style-type: none"> <li>- The adaptation and changes in service patterns of the postal, transport and e-commerce sectors are progressive and connecting among themselves. However, there are large numbers of incidents of unlicensed transport services which will be difficult to develop policies specifically for individual sectors to control all kinds of services.</li> <li>- Because of the increase in competition and the changes in consumers' demands, the enterprises have to be more innovative in the ways they manage and provide services. As a result, they need to further invest to upgrade the standards and quality of their services.</li> <li>- Apart from the competition among the enterprises in the ways they are doing business in the postal sector, they also need to diversify their products and services.</li> </ul>
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<p>networks globally.</p> <ul style="list-style-type: none"><li>- The postal services mainly use human labor in delivery and distribution, thus, creating employment opportunities. The post institute upgrades and develop human resource in postal service areas. There are trainings organized locally and internationally with access to financial assistance from international</li><li>- organizations which Laos is partied to.</li></ul>			
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