KINGDOM OF CAMBODIA

Nation Religion King

Royal Government

Comprehensive Master Plan on Cambodia Intermodal Transport and Logistics System 2023-2033

(Unofficial & Transitional Translation)

August 2023

PREFACE

The **"Win-Win"** policy has brought peace, territorial integrity, national unity, and political stability. Peacekeeping efforts have created the necessary and sufficient environment for the Royal Government to build a strong economic basis and socio-economic development. Since the introduction of Triangular and Rectangular Strategies in the past four phases, the level of development has remarkably noticeable, which has transformed Cambodia from least developed country to lower-middle-income country. This achievement is based on a strong and dynamic foundation, overcoming a series of regional and global crises, including the spread of COVID-19, the Russia-Ukraine war, and the current food crisis. Therefore, we need to protect the **"peace"** that we have achieved with the utmost difficulty to restore Cambodia's economic growth to the path of long-term economic growth as before the Covid-19 crisis.

For the development of the infrastructure sector, I occasionally used the slogan **"Where there is a road, there is hope"**. In this sense, roads, railways, waterways, and air transports have directly and indirectly contributed to the development process and the important socio-economic achievements for Cambodia and have raised Cambodia's hope in the 21st century. As the Cambodian economy is growing and advancing, the Royal Government sees the needs to improve and strengthen transport sector to meet current demands as driven forces to push the evolution of the socio-economic situation in the future. So far, investment in infrastructure has been based on the feasibility and appropriateness of economic size, especially referring to population growth, employment conditions, urbanization, trade, and diversification in industry, agriculture, and tourism. At the same time, the Royal Government continues working to address the imbalance of maintenance and repair, and new investment in infrastructure to ensure and increase transport capacity as more investments in infrastructure leads to increase in costs for managing and maintaining those infrastructures. On the other hand, in the stage of current digital development, the transportation system requires timeliness, lower cost, reliability, and door-to-door delivery.

With this consideration, the Royal Government has initiated the Comprehensive Master Plan on Cambodia Intermodal Transport and Logistics System 2023-2033, setting out the vision **"Continue to improve and develop the transport and logistics system, focusing on promoting the construction of physical and non-physical infrastructures towards the development of intermodal transport systems with high connectivity and intertwining within the country and the regions that will continue to contribute, promote and sustain national economic growth, as well as meeting the needs of sustainable and inclusive socio-economy".**

It is to be noted that the establishment of a strategic framework for building transport infrastructure in the form of "3-3-4-2" also known as "**the three major transport corridors, three secondary transport corridors, four transport hubs and two external transport nodes"**, and construct the logistics nodes system structure of "2-2-N " or "2 logistics complexes, 2 logistics parks and N centres in all places", are proper strategic and comprehensive frameworks to mutually complement that can narrow the gap of the imbalances in the transport sector to serve Cambodia's long-term goal of socio-economic development.

The master plan will serve as a roadmap and a solid foundation for the preparation and introduction of policies and specific action plans to promote the development of transport infrastructure as a whole and by sector. In addition, the master plan will improve the efficiency of investment and budget allocation by determining project priorities, responding to specific needs, setting quality standards, and mobilizing resources, as well as utilizing the potential of all infrastructures. At the same time, this master plan will serve as a tool to promote dialogue and cooperation between the Royal Government and development partners in mobilizing resources and supports to promote the development of physical transport infrastructures.

Taking this opportunity, on behalf of the Royal Government of Cambodia, I would like to express my deep gratitude to the Government of the People's Republic of China for the grant aid to support a detailed and in-depth study on the intermodal transport system in Cambodia, and also thank to development partners, including the World Bank, Asian Development Bank, the European Union, the Japan International Cooperation Agency and the Korea International Cooperation Agency that have always supported the development of the transport system in Cambodia, particularly through research studies and policy development. I highly praise and appreciate the efforts of His Excellency **Dr. AUN Pornmoniroth**, Deputy Prime Minister, Minister of Economy and Finance, Chairman of the Supreme National Economic Council and Chairman of the National Logistics Council, as well as His Excellency **SUN Chanthol,** Senior Minister, Minister of Public Works and Transport and Chairman of National Logistics Steering Committee, who led the inter-ministerial working groups on the preparation of this master plan in high quality and efficiency through close and interactive consultations with relevant stakeholders from the public sector, private sector, and development partners.

Finally, I would like to remind that the official implementation of this master plan is the beginning of great work in the development of the Intermodal Transport and Logistics system in Cambodia, meaning that many other tasks must continue to be done in a spirit of high responsibility and the active participation of all relevant ministries and institutions. In this sense, I would like to delegate the National Logistics Council to lead and monitor the implementation of this master plan while the National Logistics Steering Committee provides supports via facilitation role and promote the implementation of this Master Plan. At the same time, I would like to encourage all relevant ministries and institutions with full cooperation from stakeholders to implement this Master Plan with proactive and interactive spirit of high responsibility, and to adhere to my analogical approach related to good governance namely, **"self-reflection, showering, scrubbing, treatment and surgery"** to strengthen competitive capacity and to promote the diversification of the national economy base, in order to response to the expectations as well as the needs of the Cambodian people towards achieving the milestone 2030 and Cambodia's vision 2050.

Phnom Penh, August 2, 2023

Prime Minister

(Signed)

Samdech Akka Moha Sena Padei Techo HUN Sen

EXECUTIVE SUMMARY

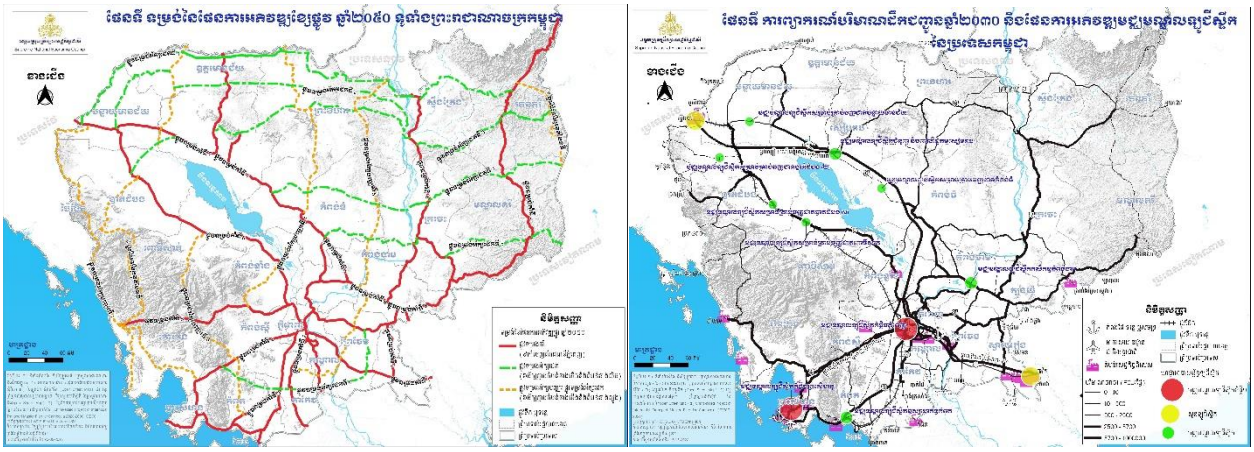
Since the early 1990s, transport infrastructure has been given high priority and focused on rehabilitation, construction, and maintenance based on available resources and socio-economic needs, which can be divided into three distinct phases namely rehabilitation and country integration, regional connectivity and sustain internal integration and infrastructure strengthening for long-term growth.

In the efforts to develop transport infrastructure in the above stages, Cambodia has achieved remarkable progress. In fact, by the beginning of 2022, Cambodia has built a total of 66,723 km of road, of which national roads are 7,432 km, equivalent to 11%, while rural roads are 47,920 km long, equivalent to 72% of the total roads network. At the same time, Cambodia has just completed the construction of the first expressway connecting Phnom Penh and Sihanoukville. Currently, Cambodia has two railway lines, the southern line and the northern line, with a total length of 652 km in the type of single line and a short width (one meter). For inland waterway transport, the total length of waterways is 1,750 km, of which the Mekong River covers about 30%, the Tonle Sap River and Tonle Sap Lake about 15%, the Bassac River 5%, and other waterways about 50%. In addition, for Maritime Transport, Cambodia's coastline has a total length of about 443 km, with several major ports operating, including Sihanoukville Autonomous Port, Koh Kong Port, Sre Ambel Port, Oknha Mong Port, Kampot Port in Kampot Province and Kep tourism port and so on. For Air transport in Cambodia, there are three airports in operation, including Phnom Penh, Siem Reap, and Sihanoukville International Airports, while the other five airports are not yet operational.

However, the development of the transport and logistics system in Cambodia has not yet fully responded to meet the demand as well as the driven force for socio-economic development, especially in the transition stage to become a middle-income and high-income country. In this regard, the Comprehensive Master Plan on Cambodia Intermodal Transport and Logistics system 2023-2033 sets out the vision **"Continue to improve and develop the transport and logistics system, focusing on promoting the construction of physical and non-physical infrastructures towards the development of intermodal transport systems with high connectivity and intertwining within the country and the regions that will continue to contribute, promote and sustain national economic growth, as well as meeting the needs of sustainable and inclusive socio-economy"**

The vision of the Master Plan leads to the achievement of four major objectives including (1) expanding and improving the scope and capacity of transport infrastructure system, (2) improving the efficiency and effectiveness of service and transport infrastructure, (3) enhancing and improving transport infrastructure aiming at supporting national development policies, and (4) Strengthening efficiency of service and logistics costs. The Master Plan sets out the strategic framework for constructing a comprehensive transport infrastructure in the form of **"3-3-4-2''**

referring to **"three major transport corridors, three secondary transport corridors, four transport hubs and two external transport nodes".** In the arrangement of Logistic node system, the master plan has set out the strategy of **"2-2-N" referring to "two logistics complexes, two logistics parks and N centres in all places"** based on the actual demand for logistics. The strategic framework for long-term transportation infrastructure and logistics system development is defined as follows:



The Master Plan sets out 174 priority projects, including 94 road projects, 8 railway projects, 23 inland waterway transport projects, 20 maritime transport projects, 10 airway transport projects, 15 logistics system projects, and 4 additional projects. Those projects include linking one mode of transport to another mode of transport and logistics centres as well as divided into 90 short-and medium-term projects, and 91 long-term projects. Financing estimation is 36,679 million USD in total, including the short- term and medium-term needs from 2023-2027 are 19,926 million USD, equivalent to 3,985 million USD in annual average which shall be mobilized in a financial framework from a source of (1) Financial support mechanisms for public investment projects financed by the national budget, (2) Financial support mechanisms for public investment projects financed by foreign countries, and (3) Financial support mechanisms for public investment projects through a public-private partnership mechanism. Determining the amount of funding from each source will be determined in stages of implementation by the actual action plan.

Criteria for defining project priorities and the cycle of project implementation will be determined based on a list of basic projects along with setting out a complete and comprehensive action plan of priority projects for the implementation phases. These definitions are based on (a) the principle of rationality (b), the principle of economic and financial performance (c), and the principle of optimal choice (d) principles of sustainability of the Budget (e) principles of implementation (f) principles of green development and (g) principles of readiness for project implementation. At the same time, the project implementation process by the common procedures

and cycles of public investment projects include (1) project identification and preparation of preliminary project proposals, (2) feasibility study and assessment of project proposals, (3) review and evaluation of project proposals, (4) selection of project proposals and budgeting, (5) project management and implementation, (6) project revision, (7) the use of infrastructure under the project, and (8) evaluation of project completion.

Facilitating the implementation and monitoring and evaluation are under a simple institutional mechanism, yet it is effective through utilization of strengthened and improved existing mechanisms which include the followings: (1) National Logistics Council, (2) National Logistics Steering Committee, (3) Transport and Logistics Advisory Board, and (4) Secretariat. The monitoring and evaluation mechanism will be based on the implementation phase of the theory of change, starting with identifying inputs based on actions, then turning them into final outcomes or impacts, and this process takes the form of result chains according to the level of each indicator. The monitoring and evaluation mechanism is to be conducted on the basis of semester, annual and biennial review in addition to the mid-term review assessment (during 2028) and preparation of progress and achievement reports.

Because of the complexity and time-consuming, the implementation of this master plan shall have major risks management such as (1) the mobilization of financing to support investment may be achieved as expected due to the changes in financial conditions, (2) estimation cost may be lower than the actual investment cost, (3) natural disasters and climate change may hinder the construction of infrastructure, (4) prioritizing maintenance will limit the results of investment in infrastructure, (5) the financial, health, and economic crisis has caused the changes in the economic and financial conditions, and (6) inefficient institutional coordination, which has led the risks for the implementation of the overall plan. The responses to those risks are being considered together, but risk reduction and mitigation will be considered within a monitoring and evaluation, decision making and instruction framework of the National Logistics Council.

Contents

1. INTRODUCTION

Cambodia has a long history of building transport infrastructure, especially the major ancient road networks, connecting Angkor to four key areas[1] which are significant for international trade, religion, and country governance during the Angkorian era. In separation, the construction of transport infrastructure in sophisticated era began to emerge during the French colonial period, including the construction of ports and main road networks connecting Phnom Penh and Saigon (Prey Nokor). At the same time, in the 1920s, a railway was built connecting Phnom Penh to Thailand via Battambang province. Then there was the construction of the port of Phnom Penh, connecting to the railway station to facilitate the transportation of goods. Since then, infrastructure in Cambodia and especially in Phnom Penh has been continuously developed to meet the socio-economic needs.

After gaining independence from the French colony till 1970, Cambodia continued to make great efforts to build more transport infrastructures, including road networks connecting Phnom Penh to Sihanoukville, a new railway connecting Phnom Penh to Sihanoukville, Sihanoukville Port, and Phnom Penh International Airport. Unfortunately, civil war during the 1970s and 1980s severely damaged those infrastructures, leaving about two-thirds of the roads damaged, most of the bridges in rural areas were also damaged while railways were running erratically, and ports lacked resources for regular operations. Although the civil war continued since the early 1990s, the development of the transport system began to gain momentum through the rehabilitation, construction, and maintenance efforts and stages of socio-economic development under the wise leadership of **SAMDECH AKKA MOHA SENA PADEI TECHO HUN SEN**. Overall, the development of Cambodia's transport infrastructure can be divided into three main phases as follow:

- **National Rehabilitation and Integration Phase (1989-1998):** This phase focuses on rehabilitation under the slogan **"Where there is a road, there is hope"**. The construction of transport infrastructure focuses on the goal of connecting the regions within the country, namely to facilitate and serve social goals and the restoration of post-war economic recovery (mainly in agriculture). The road network rehabilitation needs to be done as soon as possible for goods and human movement, along with a target to promote the economic activities in rural areas to reactivate, as well as reoperate ports which are international trade gateways. At this phase, the Royal Government intends to address the challenges based on priority and purchase sufficient equipment and facilities to reoperate transport services

[1] *The four key areas: Bakan, Stokkokthom, Phimai, and Wat Phou*

through the availability of existing resources. However, the shortage of skilled workers and investment capital continues to be the biggest obstacles in the process of transport infrastructure rehabilitation at that time. At the same time, during 1996 and 1998, an emergency plan for major road network rehabilitation was temporarily suspended. This provides an important lesson learnt for Cambodia to look at a permanent and long-term strategic plan, focusing on all major road repair plans, as well as cover on a number of challenges, including limitation of resources and capacity of institution and the shortage of a detailed plan which are factors causing a large number of transport infrastructure projects to take longer than expected.

- **Regional Connectivity and Internal Integration Phase (1999-2010):** In this phase, the construction of transport infrastructure is carried out under the slogan **"Where there is a road, there is development."** focusing on the goal of connecting with neighbouring countries, ASEAN and the world coincided with the expansion of internal integration to deepen economic growth, especially after Cambodia achieved full peace. Economic activity has gradually shifted from agriculture to services and manufacturing industries. At this time, the construction of transport infrastructure gained momentum, but it was urgent and ubiquitous in response to the needs of development and rapid socio-economic growth. This means that the development is not concentrated and has no comprehensive plans, leading to inefficient resource allocation and high responsiveness to the demand both quantity and quality. In response, the Royal Government has developed a strategic plan to build a more strategic and centralized road network in the country. In addition, the Royal Government has set clear investment policies in response to the needs for development to ensure trust from investors.

- **Strengthening the infrastructure to support long-term growth Phase (2011-present):** under the slogan of **"Where there is a road, there is a future." or "Where there is an intermodal transport, there is higher future potential."**. In an increasingly competitive environment, combined with changing contexts with a high amount of uncertainty, Cambodia's transport infrastructure is looking at a new turning point, focusing on intertwining of means of transport or constructing efficient intermodal transport as well as focusing on quality and resilience of construction infrastructures in line with the improved feasibility of mobilizing resource levels. On the other hand, this can also mark as the phase of improving the efficiency of transport infrastructure, which will help increase the competitiveness of Cambodia's transport and logistics system to support economic growth and long-term outlook.

Along with this consideration, the preparation of the Comprehensive Master Plan on Cambodia Intermodal Transport and Logistics System 2023-2033 reflects the real needs of the development of the transport and logistics sector, as well as responds to the phases of infrastructure development to contribute to long-term growth based on the directions of the main policies, including the Rectangular Strategy Phase 4 and the Industrial Development Policy 2015-2025.

Overall, it aims to orient the development of transport and logistics system to improve Cambodia's connectivity both domestically and externally, leading to reduce transport and logistics costs, promote Cambodia's regional and global integration, as well as enhancing Cambodia's competitiveness and economic diversification.

In addition, the Master Plan will serve as a blueprint and a concrete basis for the development of specific policies, policy measures and action plans to promote the development of transport infrastructures and other sectors. On the other hand, it will promote efficient investment and budget allocation by prioritizing projects, meeting specific needs, and mobilizing resources for investment, as well as utilizing the full potential of those infrastructures. Moreover, it will play an important role as a tool to promote dialogues and cooperation between the Royal Government and development partners in mobilizing resources and support to promote the development of physical transport infrastructures. It is a living document, which means simultaneous implementation, and the Royal Government will continue to closely monitor the actual development and local, regional and global related trends, which can have direct and indirect impacts on the relevance and feasibility of this master plan. Therefore, if necessary, the Royal Government will update or extend the time frame for the implementation of this master plan, especially based on the results of the mid-term review that will be prepared in the future.

This Comprehensive Master Plan is divided into six sections, including **Section 1: Introduction** briefs on the background of the development of transport infrastructures in Cambodia and the concept of the master plan preparation, **Section 2: Development of the transport sector in Cambodia** describes the related factors of the development of the transport and logistics sector, the current situations and challenges, as well as the needs of transport infrastructure in the medium and long term. **Section 3**: **Strategic Framework of the Construction of Intermodal Transport Infrastructure** describes the vision, objectives, strategic framework, and infrastructure development projects. **Section 4**: **The implementation of the master plan** describes the criteria of prioritized projects and cycle of project implementation, financing framework, mechanism of coordination, and monitoring and evaluation mechanism, and **Section 5: Risk Management** describes the key risks and **Section 6: Conclusion**. In addition, this master plan has additional parts including (1) Estimated traffic volume for the base year 2017, (2) Summary of studies by transport sector, (3) Glossary explaining key terms and (4) List of intermodal transport projects.

In addition, to make this document more concise and comprehensive, the scope of the master plan focuses primarily and in detail on the aspects of physical infrastructures, while briefly covering non-physical infrastructure aspects. In separation, in term of statistical data, it uses practical and appropriate feasibility. In fact, there is a use of statistical data in 2019 in the reason that the economy was not affected by Covid-19, but some sections of the study use pre and post 2019 data such as the data and achievements related to transport infrastructure and logistics.

2. DEVELOPMENT OF THE TRANSPORT SECTOR AND DEMANDS IN CAMBODIA

2.1 Factors identifying demands of Transport and logistics infrastructures in Cambodia

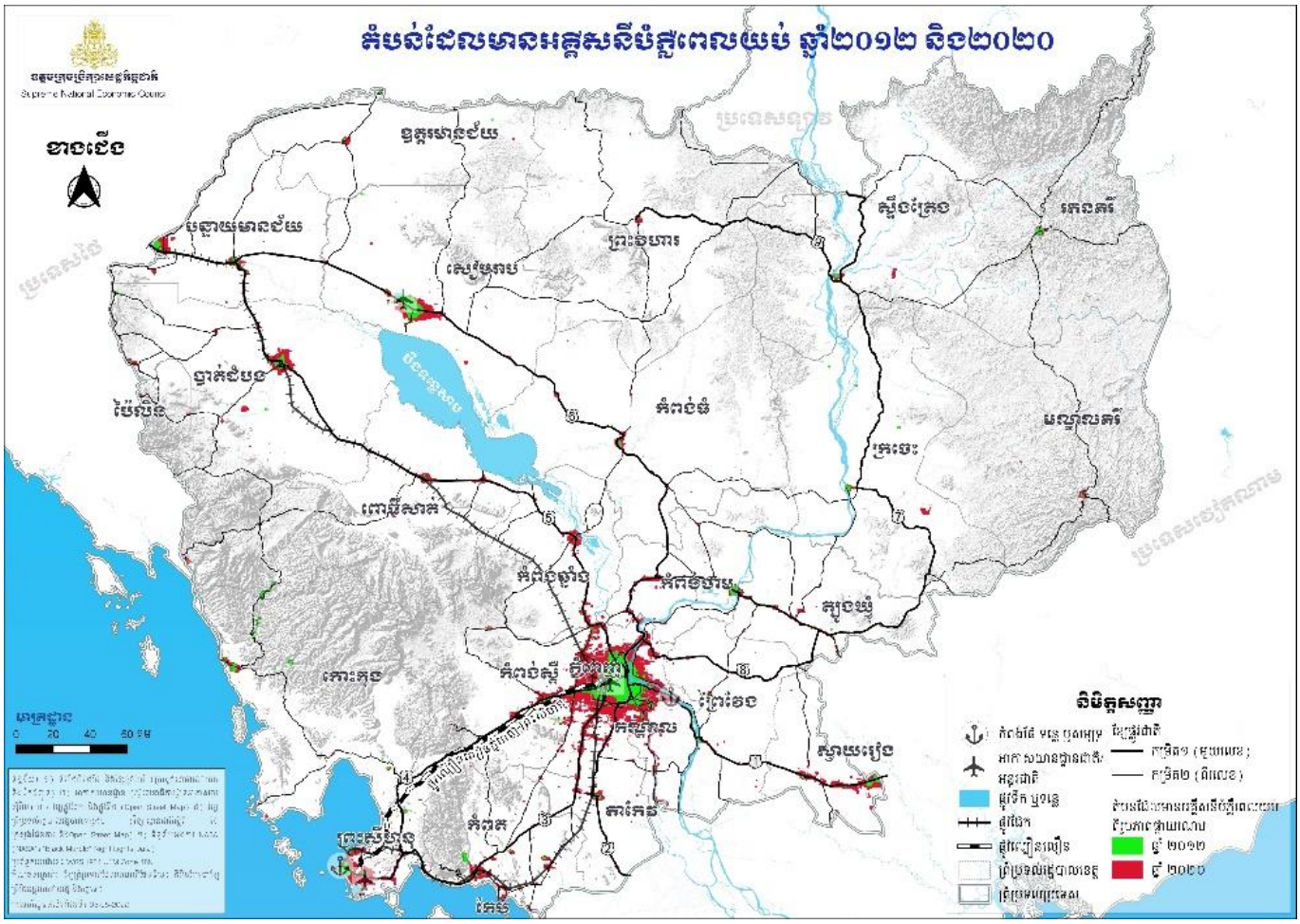
The transport and logistics sector in Cambodia has been interconnected with socio-economic factors including demographic change and urbanization growth, the development of international trade and regional integration, regional connectivity, and the development of Cambodia's industrialization, and internal economic activities. This means that the development of the transport and logistics sector, especially the construction of physical infrastructure, has been responding to the demands of simultaneous socio-economy, while socio-economic changes have also provided support for the development of transport infrastructure (bilateral or reciprocal communication).

2.1.1. Demographic Change and Urbanization growth

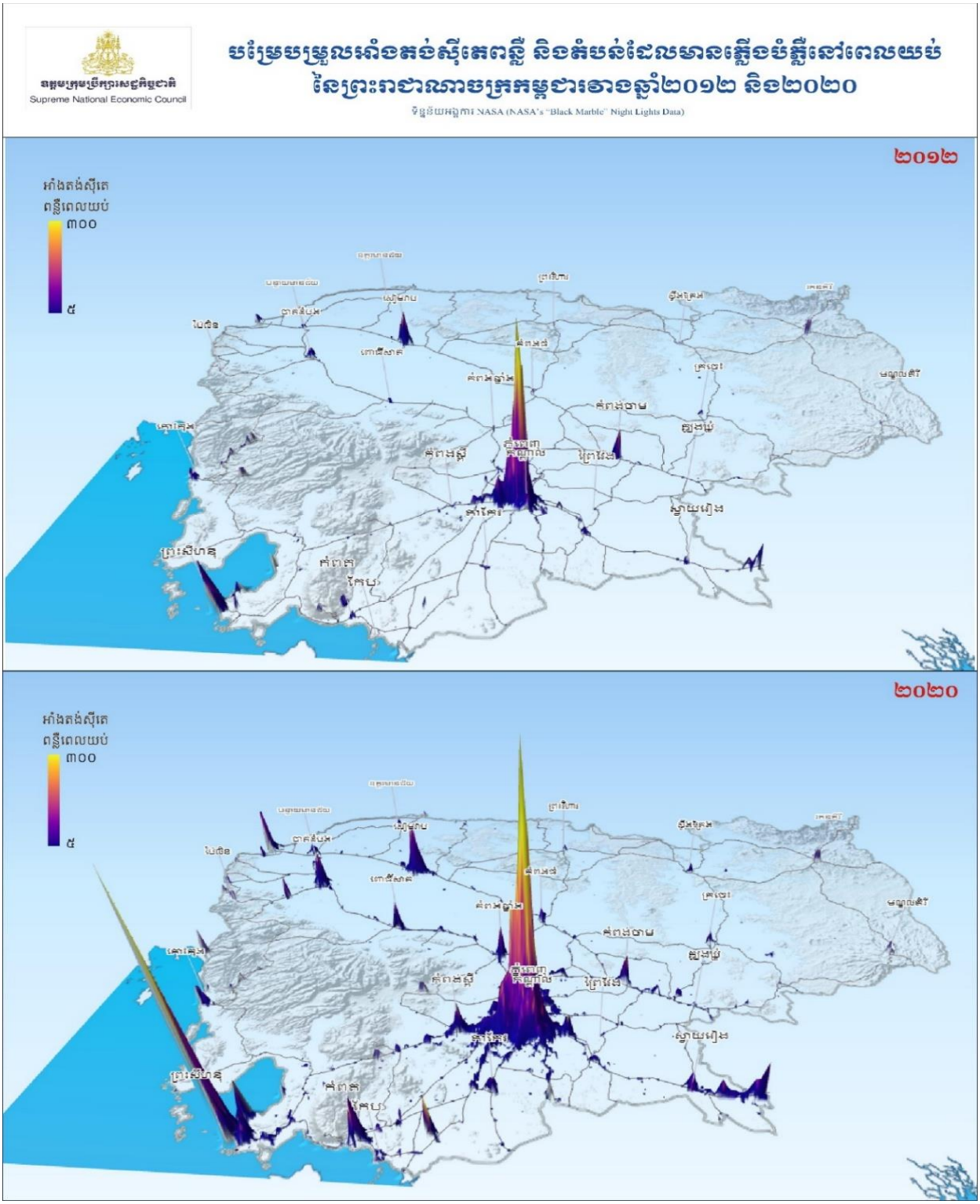
According to the 2019 census, Cambodia has a total population of 15.6 million, an increase of more than 2 million between 2008-2019 or equivalent to an increasing of 16.1%. In which the youth (15 to 35 years old) is about 5.69 million, while 2.88 million are women, equivalent to 36.59% of the total population and 55.97% of working-age people (15 to 64 years old). At the same time, about two-fifths of the population, or 39.4%, live in cities and towns, of which Phnom Penh is the largest city with a population of 2.28 million, equivalent to 14.7% of the total population. Thus, the demographic factor has driven the growth of daily traffic and transportation for the supply of consumer goods and services.

At the same time, in recent decades, urbanization in Cambodia has grown significantly in line with the trend of economic and social development, demographics, and foreign direct investment. The growth of the industrial sector mostly covers in Phnom Penh, major cities, and international border gates, including Sihanoukville, Siem Reap, Poipet, and Bavet, which allow the movement and migration of people from rural areas to cities and towns in search of employment opportunities, business, and education. Phnom Penh and other major cities are larger, more attractive, and become active and potential business centres for business and investment activities. As a result, this trend has led to significant growth in the construction and urbanization sectors, such as housing estates, commercial buildings, shops, supermarkets, resorts, hotels, restaurants, and high-rise buildings in recent years, which respond to the rapid economic growth and reflect the improvement of living standards and people’s income. With the rapid growth of urbanization, physical infrastructures, including transport infrastructures such as roads, bridges, subways, wastewater treatment plants, and sewage systems shall be accelerated to keep up with the speed of development.

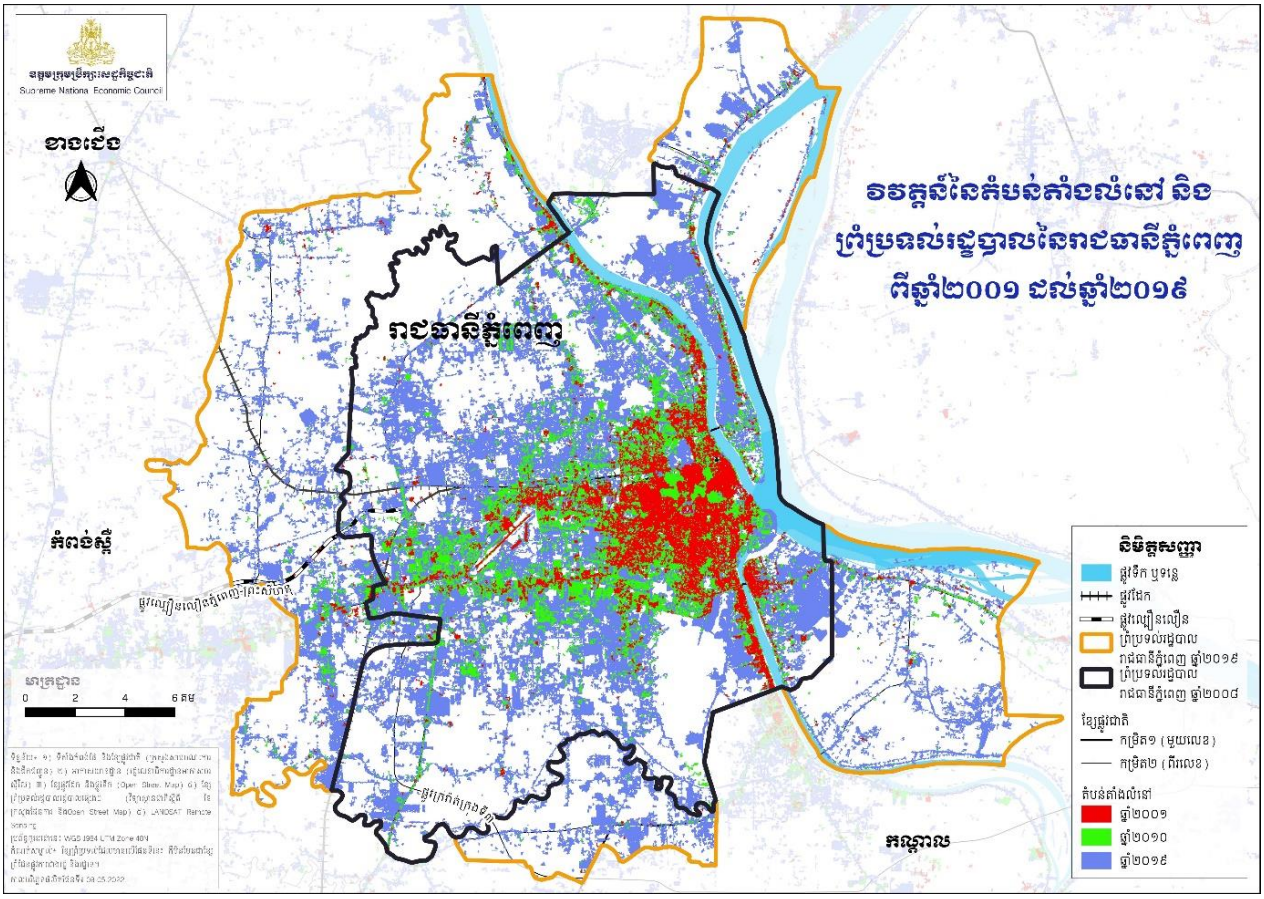
Map 2.1.1.A. Areas with night lighting in 2012 and 2020



Map 2.1.1.B. Representing the changing of light dencity and the area with electricity at night in the Kingdom of Cambodia between 2012 and 2020 (data from satellite images)



Map 2.1.1.C. Representing the revolution of the settlements and administrative boundary of Phnom Penh from 2001 to 2019



2.1.2. International Trade and Regional Integration

The size of international trade including imports, and exports is growing every year. In fact, Cambodia's exports in 2019 compared to the year 2016 have increased by 48.57% from the amount of 9,926 million US dollars to 14,748 million US dollars. In separation, Cambodia's imports also increased by about 64.74% from 12,243 million US dollars to 20,171 million US dollars in the same period. In general, the import and export of goods have to go through four main gates, including Sihanoukville Autonomous Port, Phnom Penh Autonomous Port (K'am Samnar), Poipet, and Bavet international border gate. There are many types of imported and diversified goods such as mineral products (salt, stone, cement, coal, oil, etc.), and container cargo frequently imported through Sihanoukville Autonomous Port. At the same time, few goods are imported to Phnom Penh International Airport. National Road No. 1, No. 5, and No. 6 are the southern economic corridor of the Greater Mekong Subregion that is an important transportation network for Cambodia. In addition, the Bavet and Poipet international border gate has played an essential role in the transportation sector, especially goods. Most of the goods imported through these two international border gates are divided into two categories: the first category is spare parts materials (raw materials or semi-finished goods) imported from core companies in Thailand, and Vietnam

or exported products to those countries in final goods or semi-final goods under "Thailand + 1 strategy" and "Vietnam + 1 strategy", and the second category is goods transported through Thailand, Vietnam to the final destination, especially leaving from Phnom Penh. The corridor passing from Phnom Penh to Sihanoukville is an important economic corridor connecting Phnom Penh to the Sihanoukville Autonomous Port, and it is also the major economic corridor for exporting to the international market.

Cambodia is seen as a potential location for connectivity in the Greater Mekong Subregion (GMS) helping promote free trade in Cambodia, Laos, Myanmar, and Vietnam (CLMV) and help these countries be ready for integration in ASEAN Economic Community. In fact, it has been using beneficial factors of geographical economy to gain beneficiaries from the linkage between China and the GMS as well as China and ASEAN. Major cities in Cambodia including Phnom Penh, Siem Reap, Battambang, Bavet, Poipet, and Sihanoukville are the focal points of southern coastal corridor of the Greater Mekong Subregion (GMS). Meanwhile, with the Belt and Road initiatives (BRI) and ASEAN Economic Community (AEC) which have been promoting and accelerating the regional integration, Cambodia has the potential to become one of the economic centres in ASEAN region while Phnom Penh and Sihanoukville are seen as the potential cities for business centres and deep-sea ports in the middle of "the Belt and Road Initiatives".

As of 2021, Cambodia is affiliated with the Free Trade Agreement under the framework of ASEAN and ASEAN Plus 7 that have been signed and entered into force, including the ASEAN Free Trade Agreement, ASEAN and Japan, ASEAN and China, ASEAN and Korea, ASEAN with Australia and New Zealand, ASEAN and India, and ASEAN and Hong Kong. In addition, Cambodia participated in the negotiation and signing of the Regional Comprehensive Economic Partnership Agreement (RCEP) and Cambodia-China Free Trade Agreement, both of which entered into force on January 1, 2022. At the same time, Cambodia also signed with Korea, the Free Trade Agreement between Cambodia and Korea on October 26, 2021, and entered into force on December 1, 2022. At the same time, Cambodia also signed a trade partnership agreement with the United Arab Emirates on June 8, 2023.

Map 2.1.2. Map of Mekong Subregion Economic Corridor

The Regional Comprehensive Economic Partnership Agreement, the Cambodia-China Free Trade Agreement, and the Cambodia-Korea Free Trade Agreement are some of the top international trade policies in Cambodia for strengthening and expanding Cambodia's export markets, and other existing free trade agreements that Cambodia already has under the framework of ASEAN and ASEAN Plus. It means that these free trade agreements will potentially refer to the growth of Cambodia's international trade, mainly to boost exports, which requires the development efficiency of a transport and logistics system.

2.1.3. Economic activity

The development of the transport and logistics sector is closely related to the overall economic activity and the priority sectors, namely the demand for transportation by production and distribution location, manpower and raw materials. This shows a two-way (reciprocal) relationship that pushes the mutual and intertwining growth.

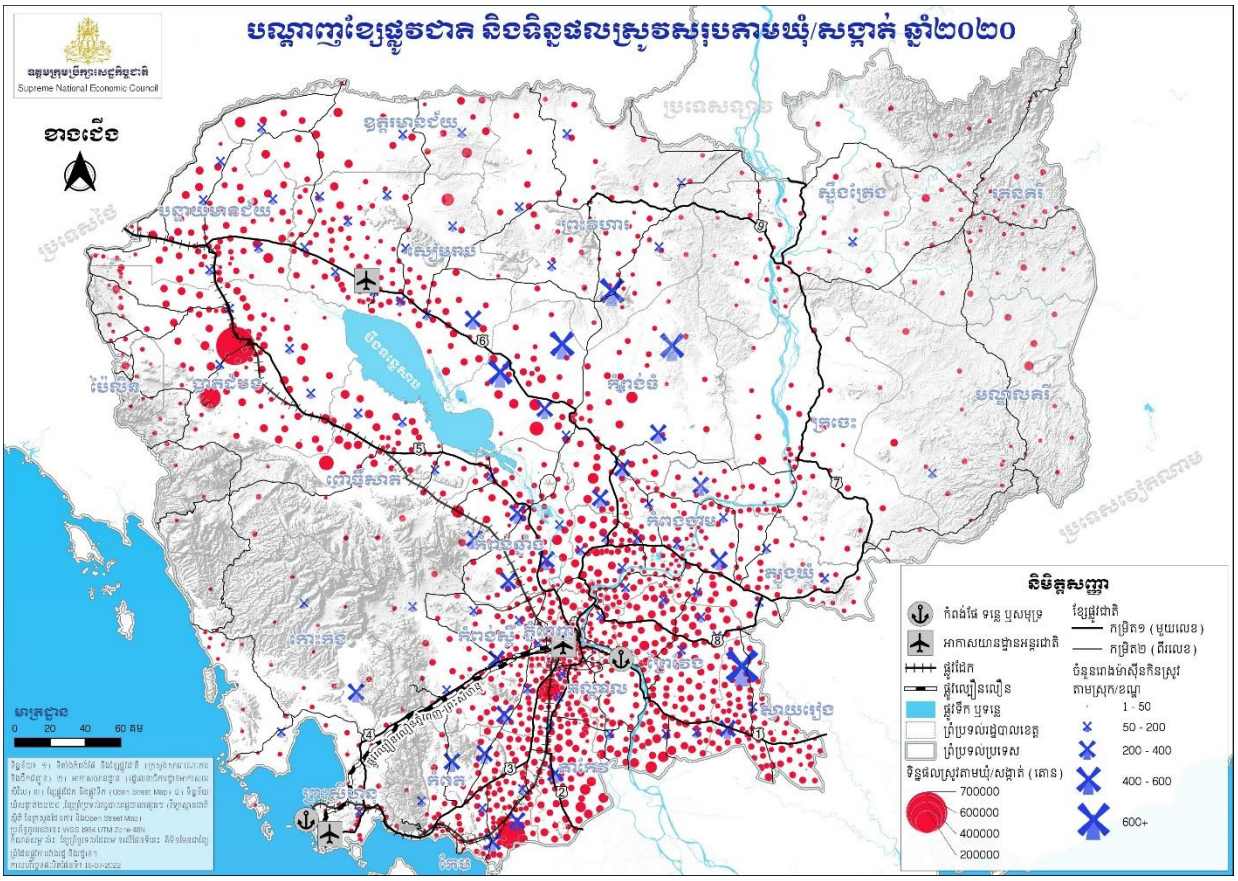
A. Agriculture

The agricultural sector in Cambodia maintained significant growth from 2015 to 2019, achieving an average growth rate of 0.76% per year and contributing about 20.8% (at current prices) of Gross Domestic Products (GDP) in 2019. The total value added (at current prices) of the agricultural sector increased steadily from 4.8 billion US dollars in 2015 to about 5.6 billion US dollars in 2019. In 2019, the total export of agricultural products reached 6.9 million tons, equivalent to more than 1.95 billion US dollars, including 620,106 tons of rice, 1,626,165 tons of dried cassava slices, 1,608 450 tons of fresh cassava, 202 318 tons of cashew nuts and 119,993 tons of corn.

The above progress shows that the agricultural sector has created a large demand for transportation, including the distribution of agricultural inputs, the distribution of domestic agricultural products, and the export of agricultural products to international markets. Currently, the demand for transportation for the agricultural sector in Cambodia focuses on major crop subsector, including rice, cassava, red corn, sugarcane, rubber, and other mixed crops.

For rice, the total cultivated area reached 3.32 million hectares and the total yield was 10.88 million tons in 2019. This achieved rice production has enabled Cambodia to export 620,106 tons of rice and 2,155,102 tons of paddy in 2019. In general, rice production mostly surrounded the Mekong River’s delta especially located in Prey Veng, Takeo, Kandal, Battambang, and Banteay Meanchey provinces. (Map 2.3.A.1)

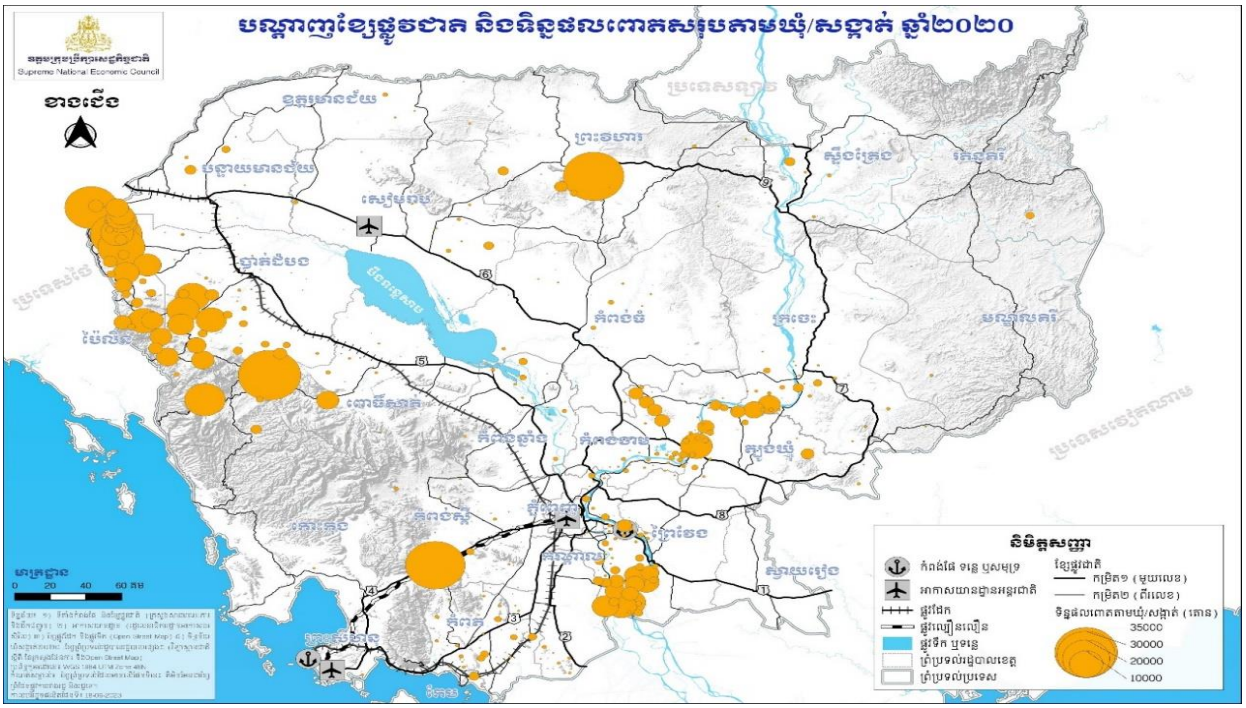
Map. 2.1 .3. A. 1. National road network and total rice yield by commune / district 2020



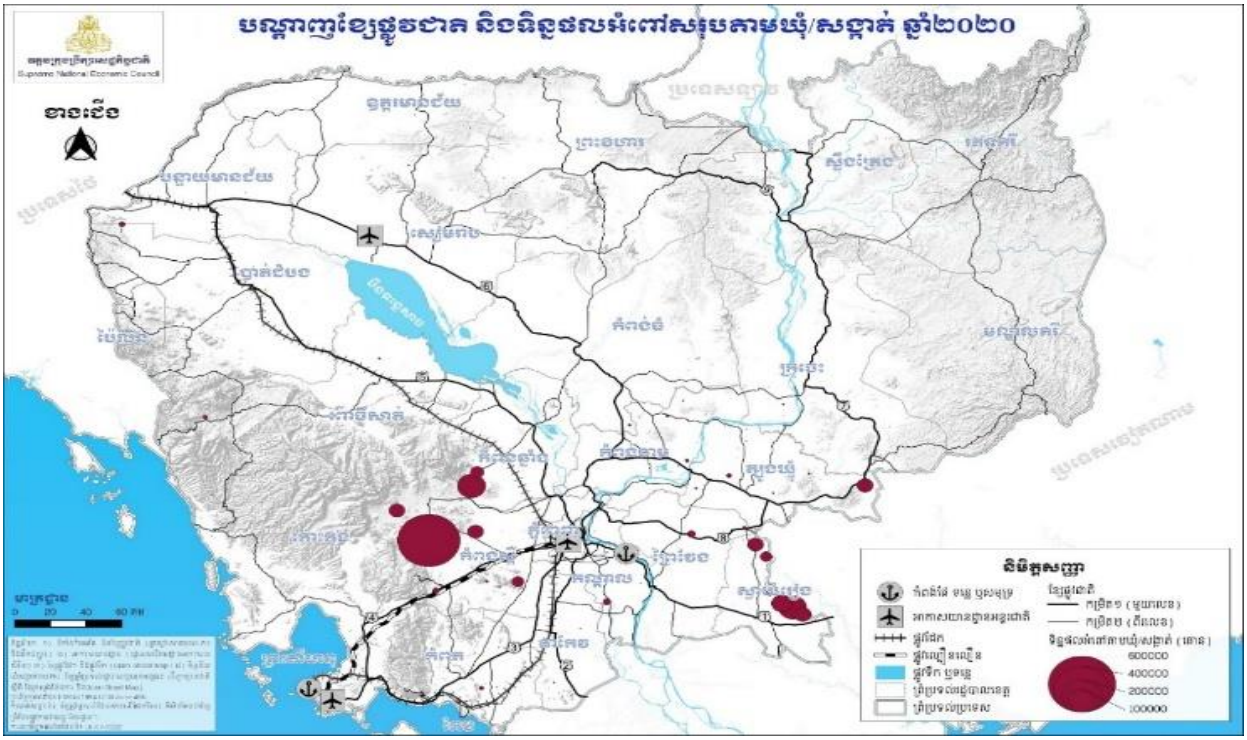
For corn, in separation, the cultivated area reached 200,036 hectares and received a total yield of 895 436 tons in 2019. This has boosted corn exports to 119,993 tons in 2019. Most corn is grown in Battambang, Pailin, Preah Vihear, Pursat, Kampong Speu, Kampong Cham, Tbong Khmum, and Kandal. (Map 2.1.3.A.2)

For sugarcane production, the total cultivated area reached 17,016 hectares and received a total yield of 618,313 tons in 2019. Based on the yield in 2019, Cambodia has been able to export 281,404 tons of refined sugar products. Most of sugarcane production are in Kampong Chhnang, Svay Rieng, and Kampong Speu provinces, and a large refined sugar factory in the Oral district in Kampong Speu province. (Map 2.1.3.A.3)

Map 2.1.3 A.2 National Road Network and Total Corn Yield by Commune / District by 2020



Map 2.1.3.A.3 National Road Network and Total Sugarcane Yield by Commune / District 2020

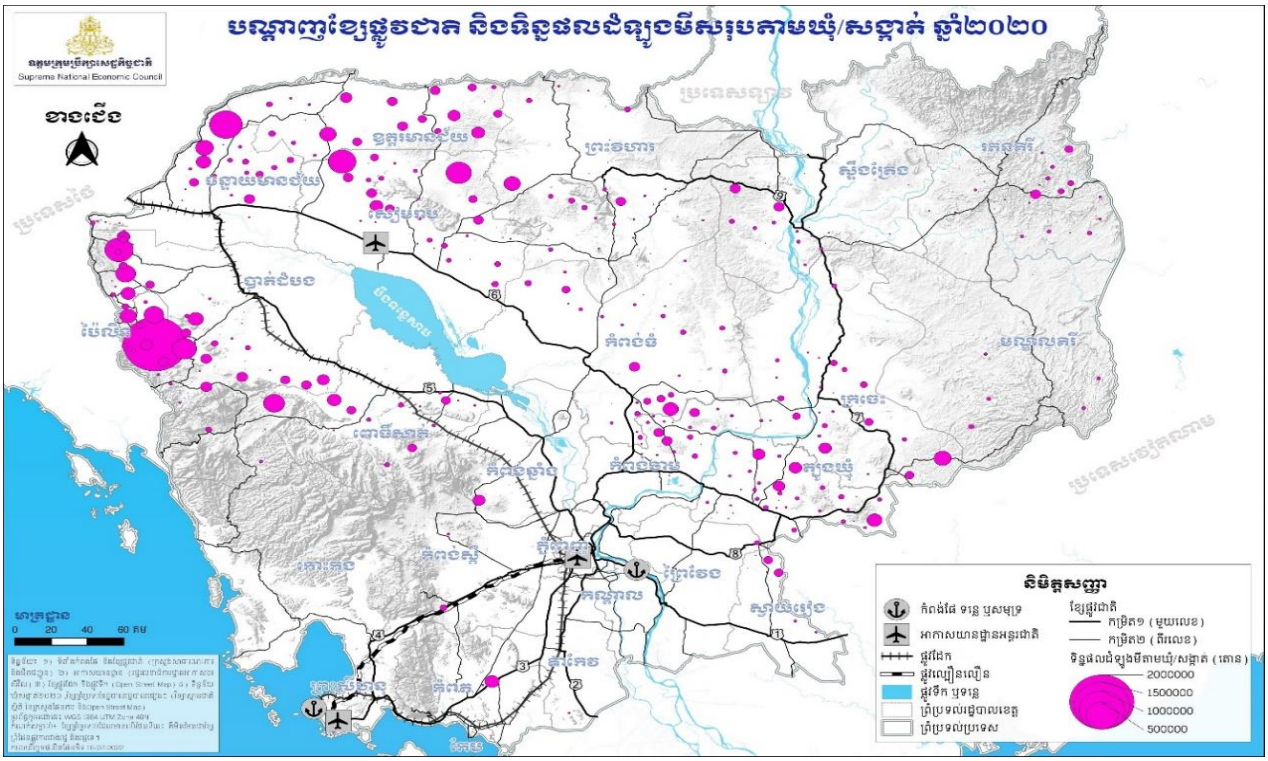


For cassava, the total cultivated area reached 656,868 hectares, and the total yield was 13.51 million tons in 2019. The export of cassava products was remarkable, including 1,608,450 tons of fresh cassava, 1,626,165 tons of dried cassava slices, and 56,874 tons of cassava flour in 2019. In general, Cassava is widely grown in the northwestern provinces bordering with Thailand, including Battambang, Pailin, Banteay Meanchey, Siem Reap, and Oddar Meanchey, and mostly exported through Thailand. The northeastern and eastern region including Kratie, Kampong Thom, Tbong Khmum, Kampong Cham, Ratanakiri, and Preah Vihear also has cassava plantations which will become main export products, especially to China. (Map 2.1.3. A.4)

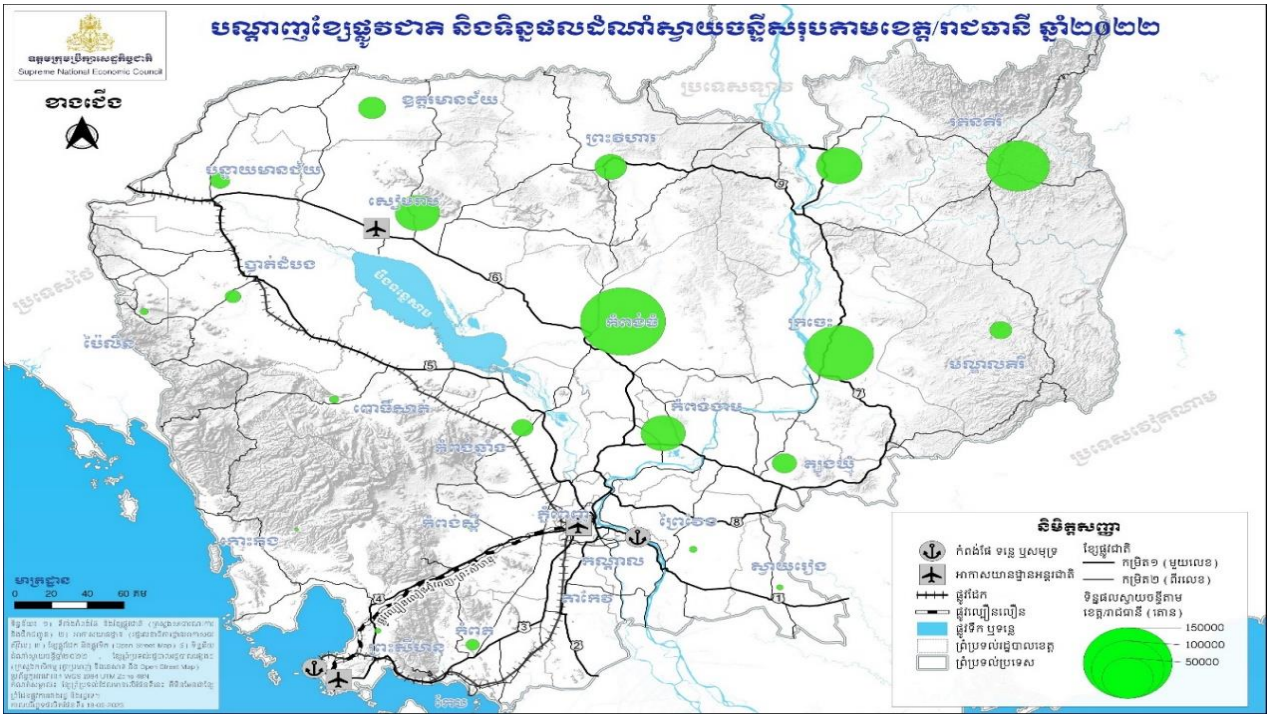
By 2022, the increasing area of cashew cultivation is 405,991 hectares, and the harvested area is 275,679 hectares, with an average yield of 1.74 tons per hectare and a total yield of 472,636 tons per year. Ten provinces with the largest area of cashew cultivation are Kampong Thom, Ratanakkiri, Kratie, Kampong Cham, Preah Vihear, Steung Treng, Oddar Meanchey, Tbong Khmum, Mondulkiri and Siem Reap. In 2021, Cambodia exported 937,974.26 tons of cashew nuts (an increase of 328.34% compared to 2020). Although Cambodia produces a lot of cashew nuts, Cambodia now produces only about 5% of cashew nuts, and most of the fresh cashew nuts are exported to neighbouring countries resulting to the loss of its value added. (Map 2.1.3.A.5)

For rubber, the total cultivated area reached 405,671 hectares and received the total of 287,628 tons of rubber products, which boosted rubber exports to 282,071 tons in 2019. Most rubber is grown in Kampong Cham, Kratie, Kampong Thom, and Ratanakiri provinces, but also in other provinces such as Kampot, Sihanoukville, Mondulkiri, Siem Reap, Pailin and Preah Vihear. Most rubber products are sold in the form of latex and coagulum that was sold from farmers to collectors and then resold to local factories or Vietnam (unofficially) through the bordering provinces along the Vietnam border. The local processing factory produces Technical Specified Rubber (TSR) and Ribbed Smoked Sheet (RSS), using latex and coagulum locally bought and rubber taken from its rubber plantations to export to China, Vietnam, Malaysia, and Singapore, but due to the processing factory location is far from the Sihanoukville Autonomous Port, most of the rubber exports depend on Vietnam and Thailand border gates. (Map 2.1.3.A.6)

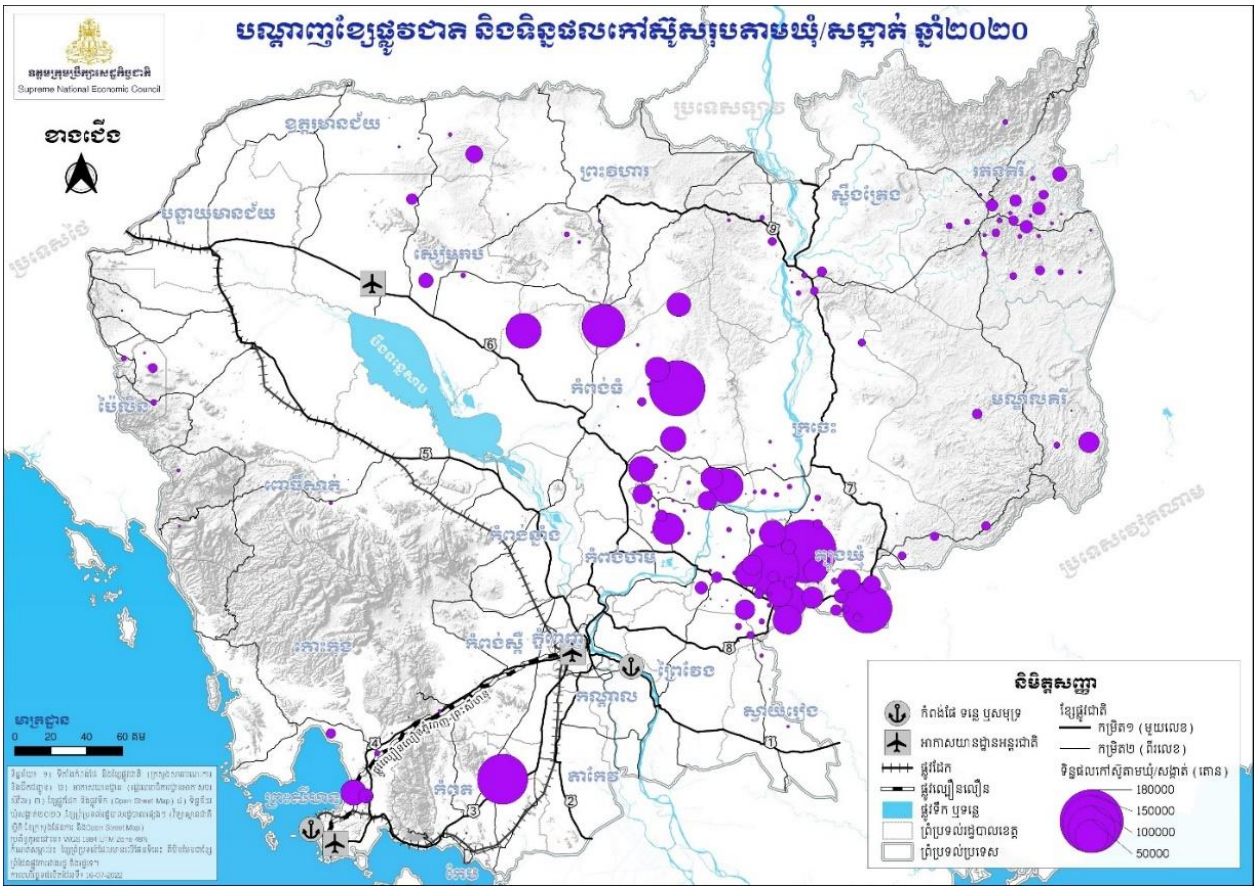
Map 2.1.3.A.4. National Road Network and Total Cassava Yield by Commune / District 2020



Map 2.1.3.A.5. National Road Network and total cashew by province 2022



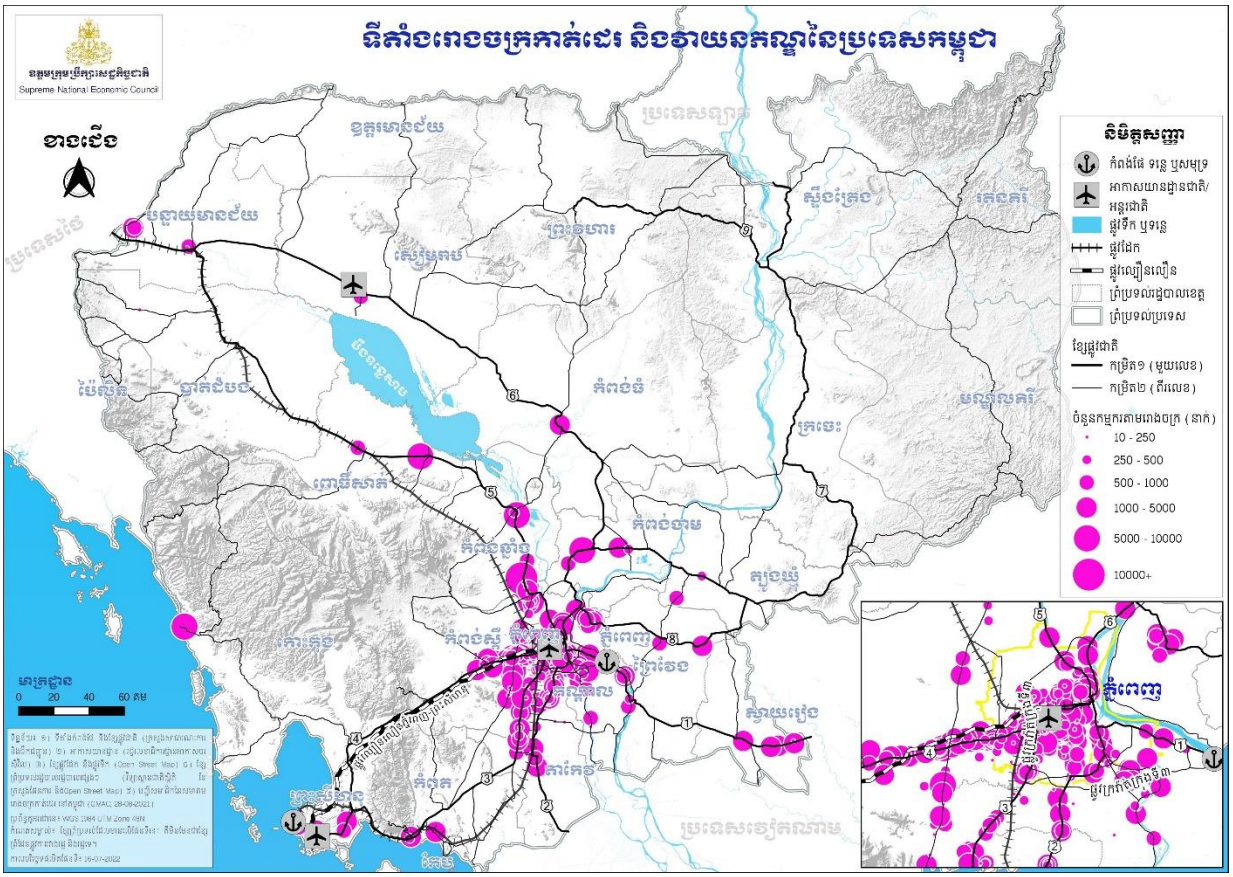
Map 2.1.3.A.6. National road network and total rubber by commune/district in 2020



B. Industry

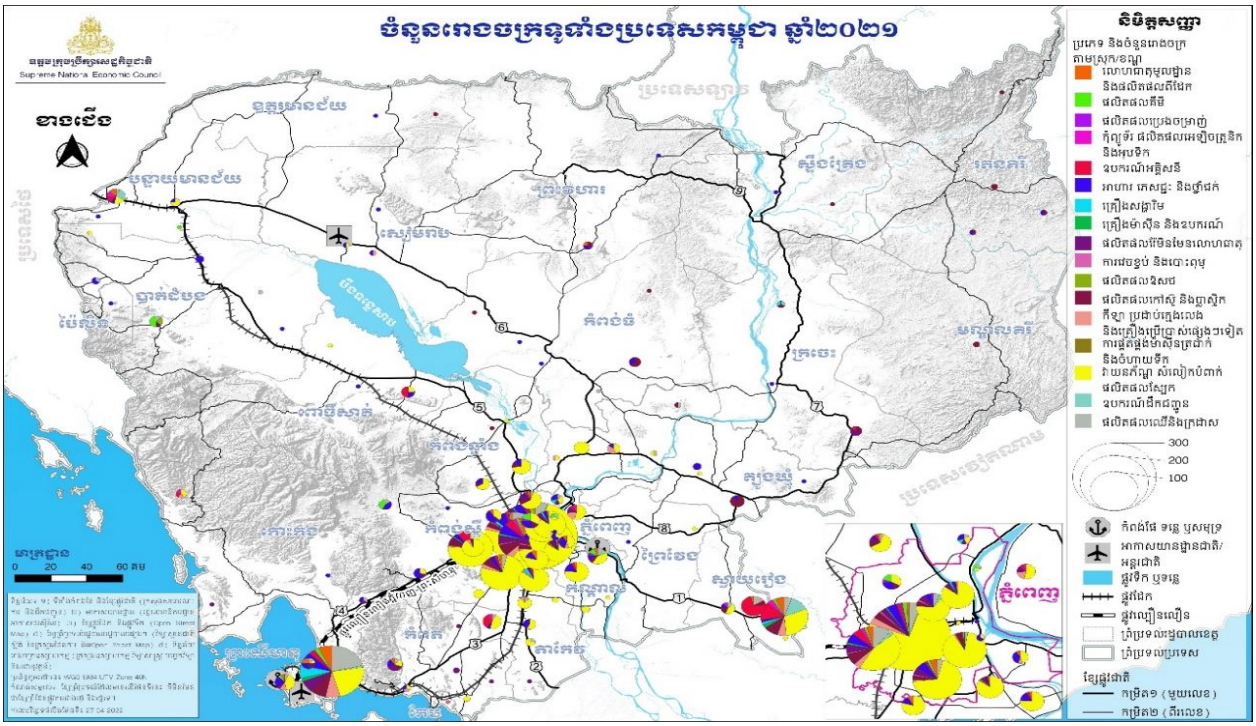
The Cambodian industry continues to rely mainly on the garment sector, accounting for 75% of Cambodia's total exports. In 2019, total garment exports had a growth rate of 13%, equivalent to 10.84 billion US dollars. Meanwhile, footwear products are still small compared to garments, but the share of footwear products has increased steadily by an average of nearly 30% between 2009 and 2019. In separation, exports of travel products (or bag products) such as suitcases, backpacks, handbags, and wallets to the US market under the General Preferential System (GPS) that Cambodia received in 2016, and it also helped support the industry. Notably, most garment, footwear, and travel products factories in Cambodia are currently located in Phnom Penh, Svay Rieng, Sihanoukville, Kandal, and Kampong Speu province.

Map 2.1.3.B.1. Location of Garment and Textile Factory in Cambodia

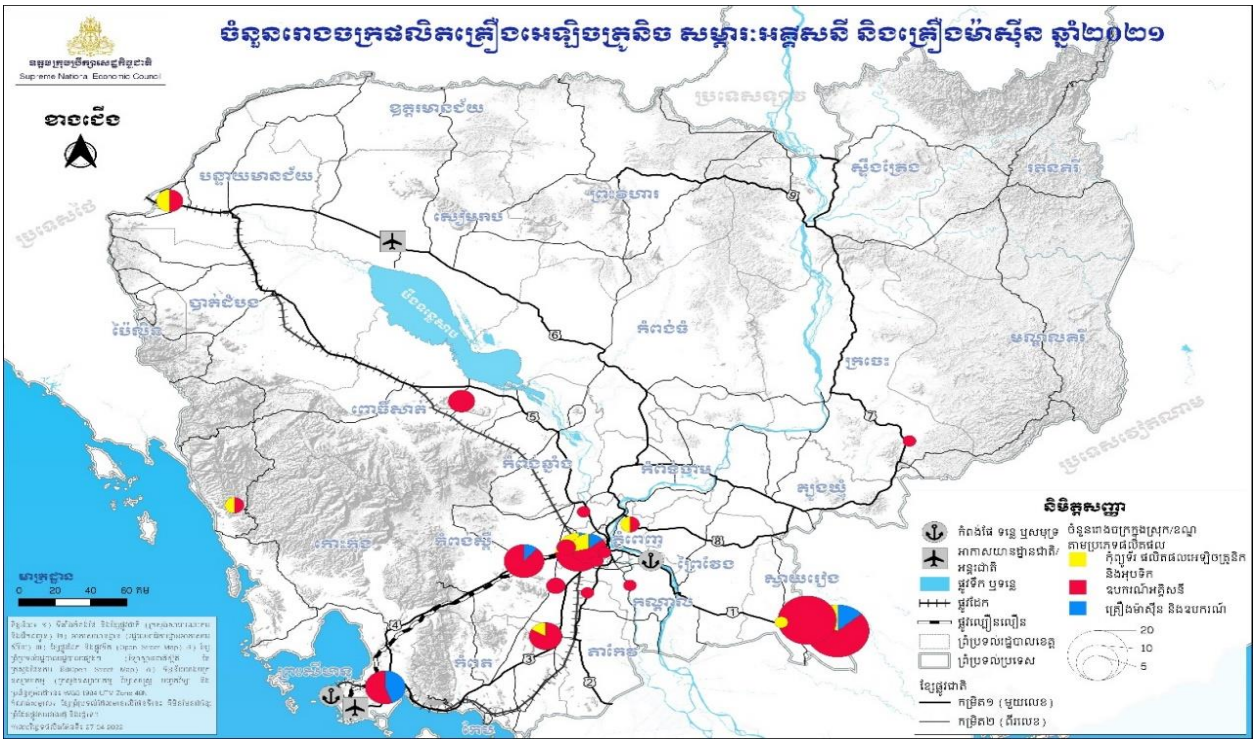


However, the Royal Government has been focusing on promoting investment in the manufacturing sector, especially on the ability to enter new markets with high value-added products, innovative and highly competitive products, including non-garment products, machinery, electrical, electronic equipment, and transportation and processed natural products. More than 70% of factories are concentrated in major cities such as Phnom Penh, Sihanoukville, Kandal, Pursat, Kampong Speu, Takeo, Bavet, and Poipet since they have labour force, electricity, and clean water supply. In general, the situation of the industrial sector has increased the demand for transportation concentrated in the main economic corridors, including the import of raw materials for production and exporting the final goods to international markets.

Map 2.1.3.B.2 Number of factories throughout Cambodia in 2021



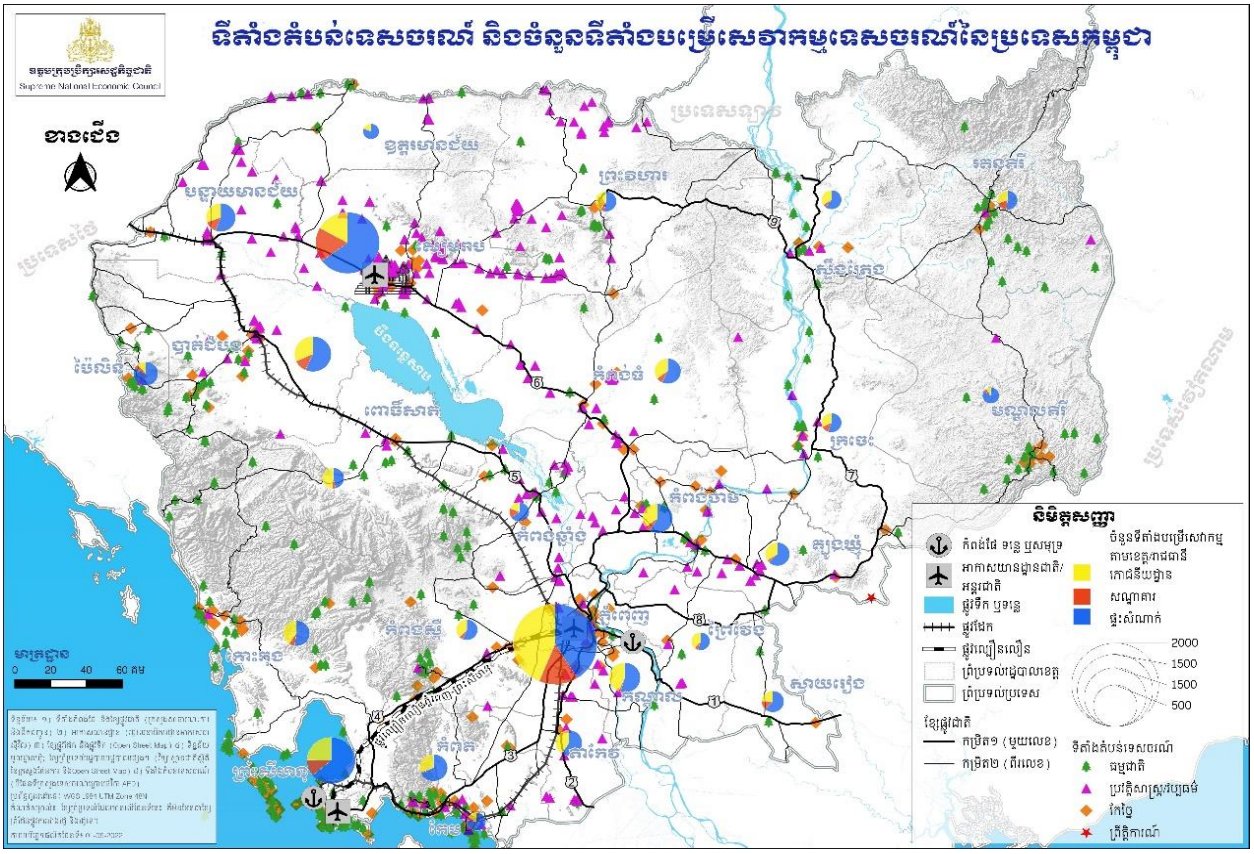
Map 2.1.3.B.3. Number of electronics, electrical equipment and machinery factory 2021



C. Tourism

Potential tourist destinations in Cambodia are Angkor Wat temple in Siem Reap, Northeast Ecotourism, and Coastal Areas in Sihanoukville and Kampot Province. Commonly, tourist area in Cambodia is divided into four destinations, including Phnom Penh City, Siem Reap Province, the coastal sea, and the Northeast. In 2019, Cambodia received 6.6 million international tourists in total, of which Chinese, Vietnamese, and Thai tourists were the top three, accounting for 36%, 14%, and 7% of international tourists. In general, transportation in the tourism sector, especially foreign tourists, is mostly by air and concentrated in Phnom Penh, Siem Reap, and Sihanoukville. In 2019, the number of tourists traveling by air was about 4.4 million, or about 66.6% of the total international tourists, and another 2.2 million, or about 33.4%, travelled by land and waterway. Subsequently, the Royal Government has set out policies and strategies for the development of the tourism sector, focusing on promoting tourism services and the diversification of tourism destinations. In this regard, the transport sector will contribute to the achievement of tourism development strategies through the efficiency of transportation network connectivity, as well as the development of distribution centres to supply food, beverages, souvenirs, and the demand for consumer goods.

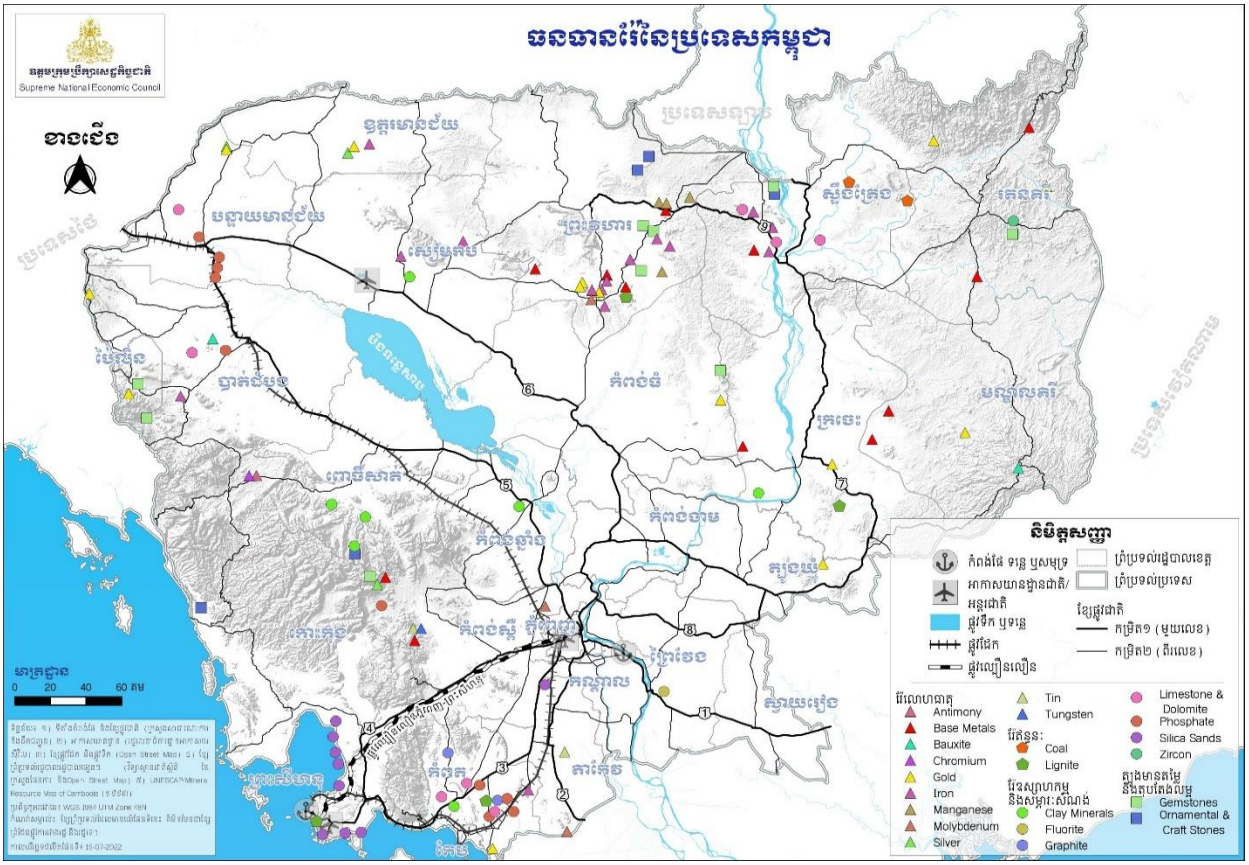
Map 2.1.3.C. Location of tourism sites and number of tourism service locations in Cambodia



D. Mineral Resources

Cambodia has the potential for the development of mineral resources, especially in the northeast, including Preah Vihear, Steung Treng, Ratanakiri, and Kratie provinces, which are rich in bauxite, gold, coal, and antimony (rare metals). The coastal areas are Koh Kong and Kampot provinces which are rich in silica minerals and limestone. In addition, Battambang province, located in the Tonle Sap Lake area, also has the potential to extract new limestone. Currently, the most active operations in the business sector include sand and cement production, which are used locally in the form of construction materials. Sand and soil are transported from Kampong Chhnang province, mostly to Phnom Penh and other areas such as Sihanoukville by trucks. Cement factories are located in Kampot and Battambang provinces, and they use limestone from areas near the factory. Cement produced in Kampot is transported by train and trucks, while cement produced in Battambang is transported by trucks. In general, Cambodia's mineral resources are highly concentrated in specific areas. As the demand of transportation is different based on geography and potential of resources. As a result, the lack of effective and rich transport connectivity is the constraint to the potential of the mining businesses.

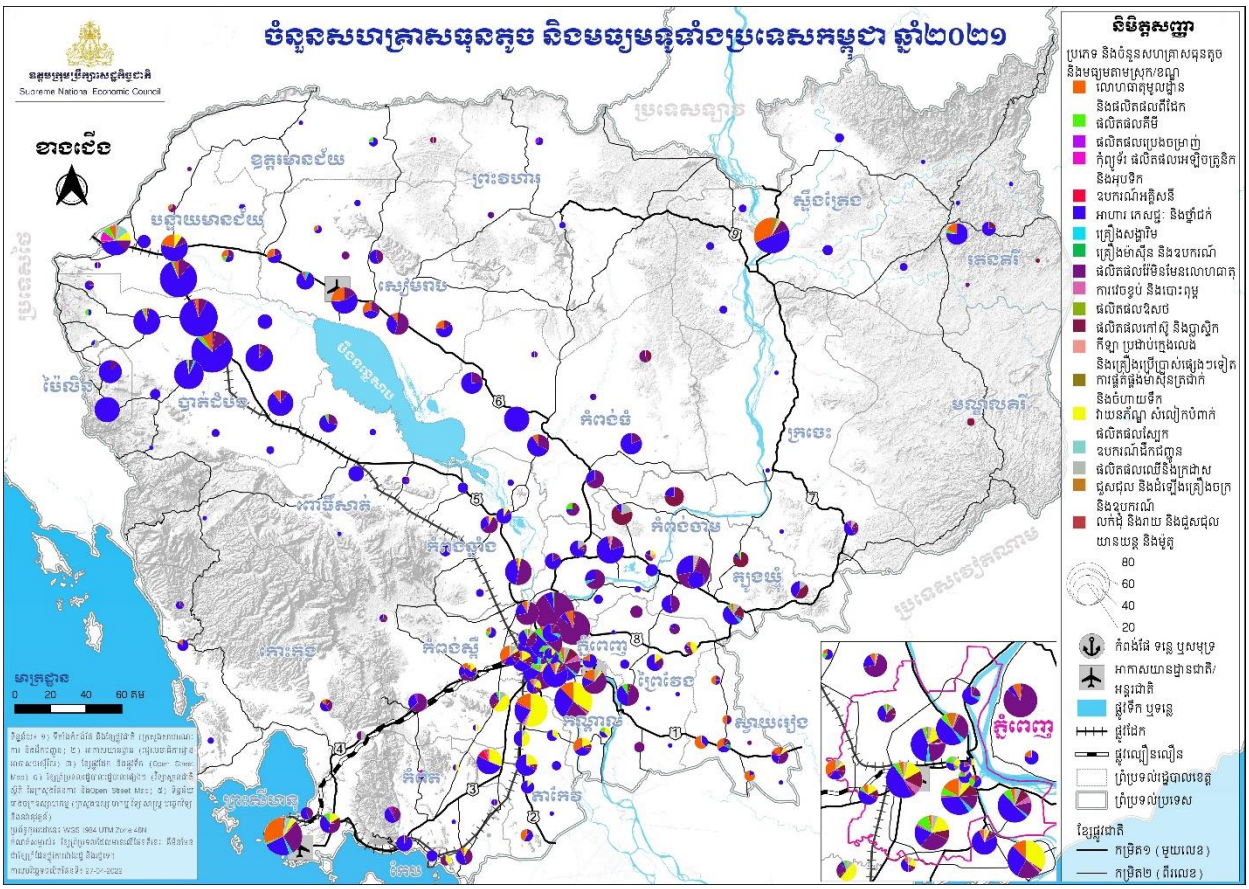
Map 2.1.3.D. Mineral resources of Cambodia



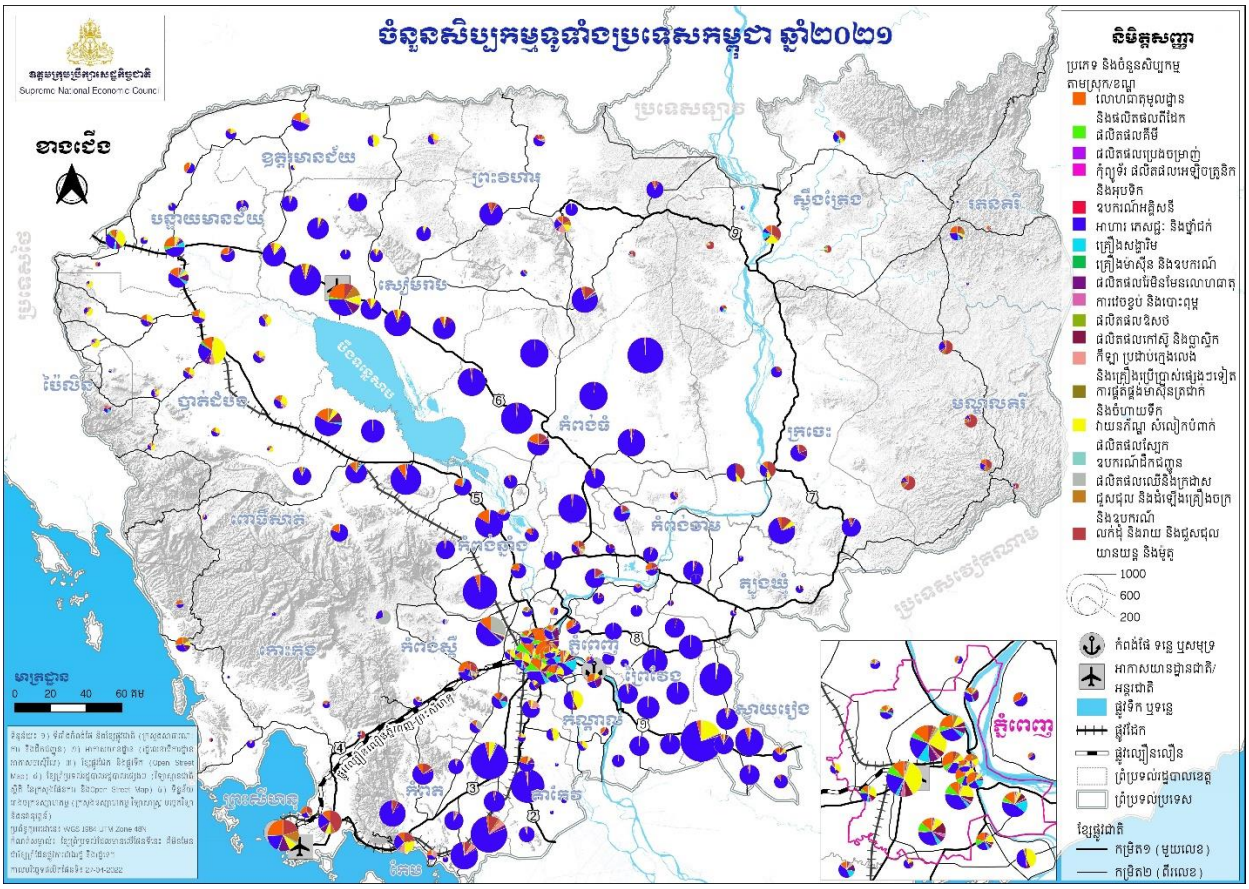
E. Small, medium enterprises and handicrafts

Most small, and medium enterprises and handicrafts are concentrated in major cities, especially Phnom Penh, Kandal, Battambang, Sihanoukville, and in the towns along the main national roads, including National Roads 2, 3, 5, and 6, and so on. More than half of those enterprises are in the food and beverage industry. At the same time, almost one-third are non-metallic mining enterprises, such as construction materials, stone, concrete, drainage, marble, glass, brick and roof tile, etc. Most small and medium enterprises serve domestic consumption, where transportation needs are ubiquitous, transportation of raw materials, semi-finished products, and distribution of consumables. For food enterprises, there is also a need for transport services that maintain temperature or Cold chain delivery to ensure the quality of both inputs finished products, and last-mile delivery.

Map 2.1.3.E.1. Number of small and medium enterprises throughout Cambodia in 2021



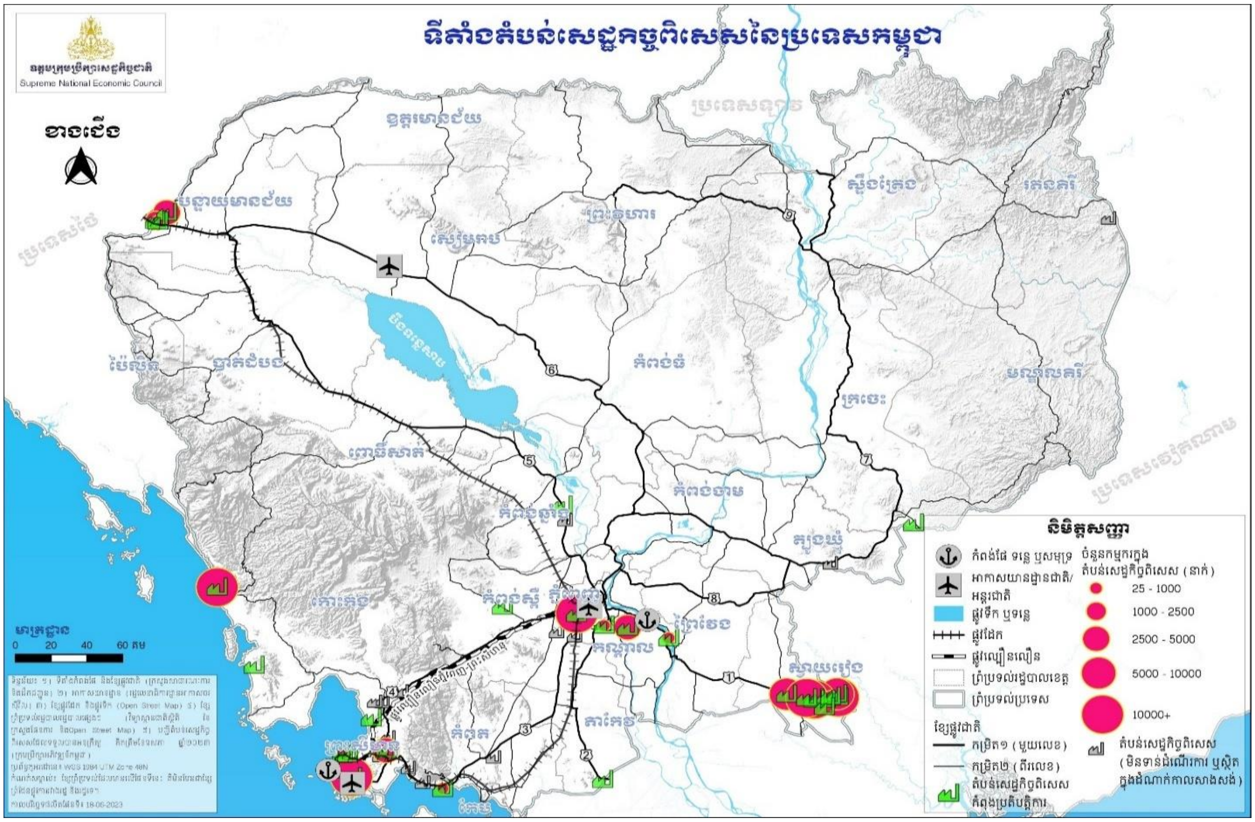
Map 2.1.3.E.2. Number of handicrafts throughout Cambodia in 2021



F. Special Economic Zone (SEZ)

Recently, Cambodia has 42 SEZs, of which 24 are operating and concentrated in Phnom Penh and other bordering provinces and international gates, including Banteay Meanchey, Koh Kong, Svay Rieng, and Sihanoukville. Special economic zones contribute about 168,151 jobs and account for about 1% of total employment and 3.7% of total secondary industrial employment in Cambodia. At the same time, the SEZs have played an important role in attracting foreign investment and especially new high-value-added industries. With special features, most of them are at the direct gates, especially for border areas, while areas in Phnom Penh require the use of transport corridors to exporting gates including international ports and crossing borders which use roads and railways.

Map 2.1.3. F. Location of Special Economic Zones of Cambodia



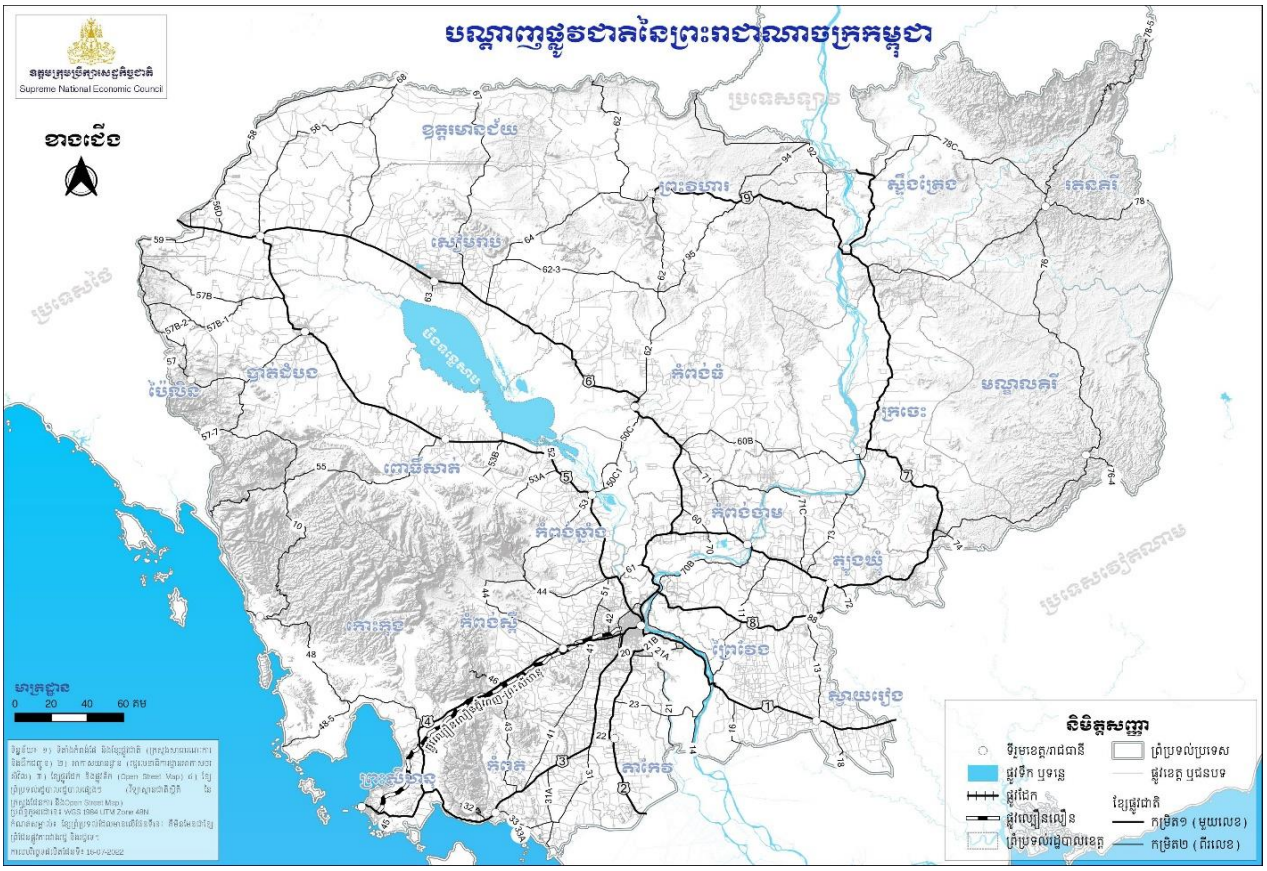
2.2. STATUS OF TRANSPORTATION AND LOGISTICS SYSTEM IN CAMBODIA

2.2.1. Road Network

As of the beginning of 2022, the total road length in Cambodia is about 66,723 kilometres including the length of national roads (one and two-digit) is 7,432 kilometres, equivalent to 11% of the total road networks. National road one-digit has nine lines as the main national roads connecting cities and towns in different directions and has Phnom Penh as the centre. National road two-digit has 71 lines connecting National Road one-digit to all provinces in Cambodia. There are 667 provincial roads (three and four-digit) that connect cities and provinces with a length of 11,371 km, equivalent to 17% of the total road length in Cambodia. Besides, the total length of rural roads in communes and villages is about 47,920 kilometres long, equivalent to 72% of all road networks in the country. Cambodia currently has an expressway, which is just officially launched, connecting Phnom Penh to Sihanoukville.

Road density throughout Cambodia is about 0.37 km/square kilometres, which is lower than neighbouring countries in the region such as Vietnam, Thailand, the Philippines, etc. More than 90% of the National Road one-digit consists of two lanes (2-lane), and the National Road one-digit consists of four-lane roads (4-lane) is less than 10%. Most National Road and Provincial Road networks have 2% concrete pavement, 11% of AC pavement, 43% of DBST, and 45% of gravel pavement.

Map 2.2.1. National Road Network in the Kingdom of Cambodia



The road infrastructure of Cambodia continues to face several challenges. In fact, the small size and low density of road network in Cambodia are some of the main reasons that travels and transportation continue to be perplexing and congested. Meanwhile, the road networks revealed the imbalance as they are more gathered at the south, but less amount at the mountainous, northern and eastern area of the country. On the other hand, they are vulnerable to damage when there is disaster (flood). In addition, some areas are blocked by mountains and streams, leading to many inconvenient accesses to the road network. Along with lacking of a road network, and less development of road network, including lack of concentrated traffic on some national roads, such as National Roads 1, 4, and 5, causing severe traffic congestion. Besides, the transport connectivity between roads and other modes of transport is insufficient such as a road connecting to airports, railway stations, and ports, etc., In separation, the overall technical standard of roads is limited due to the lack of quality, equipment, management, and just-in-time and effective maintenance.

However, the trend of road construction nowadays highly focuses on quality and safety and aesthetics. The government tries to upgrade the main National Roads from 2 lanes to 4 lanes and improve pavement from DBST to AC while installing drainage systems, and traffic signs along with the efficiency of roadside management.

2.2.2. Railway Network

There are two existing railway networks in Cambodia, including the Southern Line and the Northern Line, with a total length of 652 km in type of single line and a short width (one meter). The northern railway connecting Phnom Penh to Poipet (Cambodia-Thailand border), 386-kilometer, was built from 1929 to 1942, and the Southern railway line from Phnom Penh to Sihanoukville Port, 266 km, was built between 1960 and 1969.

Between 2008 and 2015, the Royal Government of Cambodia rehabilitated both railways at a total cost of 140 million USD. Since 2015, the Royal Government provided 20 million USD/year to rehabilitate the railway. The southern line was rehabilitated and completed in 2013. The northern railway line was connected in April 2018, including the construction of a new section linking Serey Sophorn and Poipet with a length of 48 km. However, the Northern Line has not yet officially launched its operation. The Northern Railway has been connected with Thai Railway at the Poipet border gate, but cross-border transportation by railway has not yet been begun due to the Cambodia-Thailand cross-border transport agreement is being under negotiation.

Map 2.2.2. Railway network in the Kingdom of Cambodia

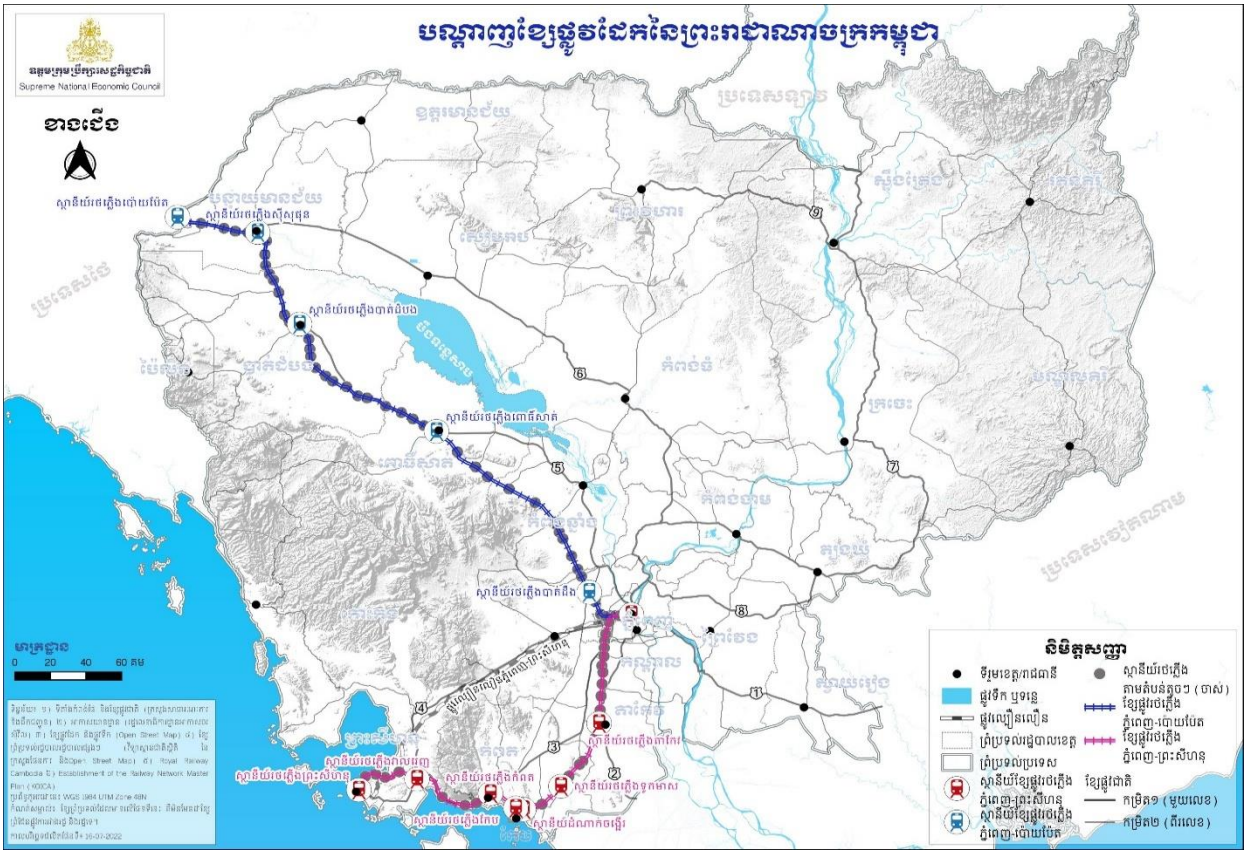
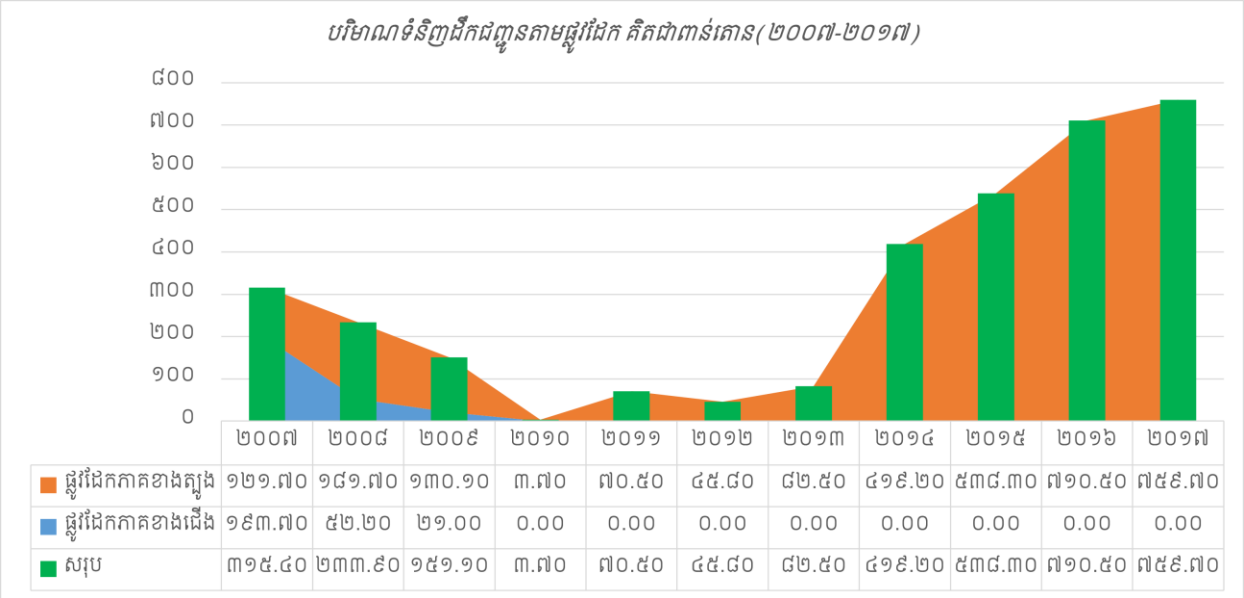


Figure 2.2.2. Volume of goods transported by railway (2007-2017)



	២០០៧	២០០៨	២០០៩	២០១០	២០១១	២០១២	២០១៣	២០១៤	២០១៥	២០១៦	២០១៧
ផ្លូវដែកភាគខាងត្បូង	១២១.៧០	១៨១.៧០	១៣០.១០	៣.៧០	៧០.៥០	៤៥.៨០	៨២.៥០	៤១៩.២០	៥៣៨.៣០	៧១០.៥០	៧៥៩.៧០
ផ្លូវដែកភាគខាងជើង	១៩៣.៧០	៥២.២០	២១.០០	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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Currently, the number of operating passenger trains and Cargo trains along the southern route is a small amount, of which the operation time is 5 hours/trip with an average speed of 55 km /hour, and four-car trains are operated for daily transit and had about 39,100 passengers in 2017. In separation, the operating time of cargo transport is 6 hours with a speed of 45km/hour that transports major cargo, including oil, cement, coal, and containers; plus, the cargo with 759,700 tons was transported in 2017. As the northern line is expected to take about 10 hours/trip with an average speed of 30 km / hour and the operating time of cargo transport is 10 hours with a speed of 30 km/hour, but the Northern line has not yet officially launched.

The density of the railway network in Cambodia is 35.9 km / 10,000 km2, equivalent to 0.41 km/10,000 population. Compared to neighbouring countries such as Vietnam, Thailand, Laos, Myanmar, and Malaysia, the density of the railway network in Cambodia is only higher than in Laos. Overall, the development of Cambodia's railway infrastructure is still limited due to low technical standards and lack of competitiveness (both cost and time).

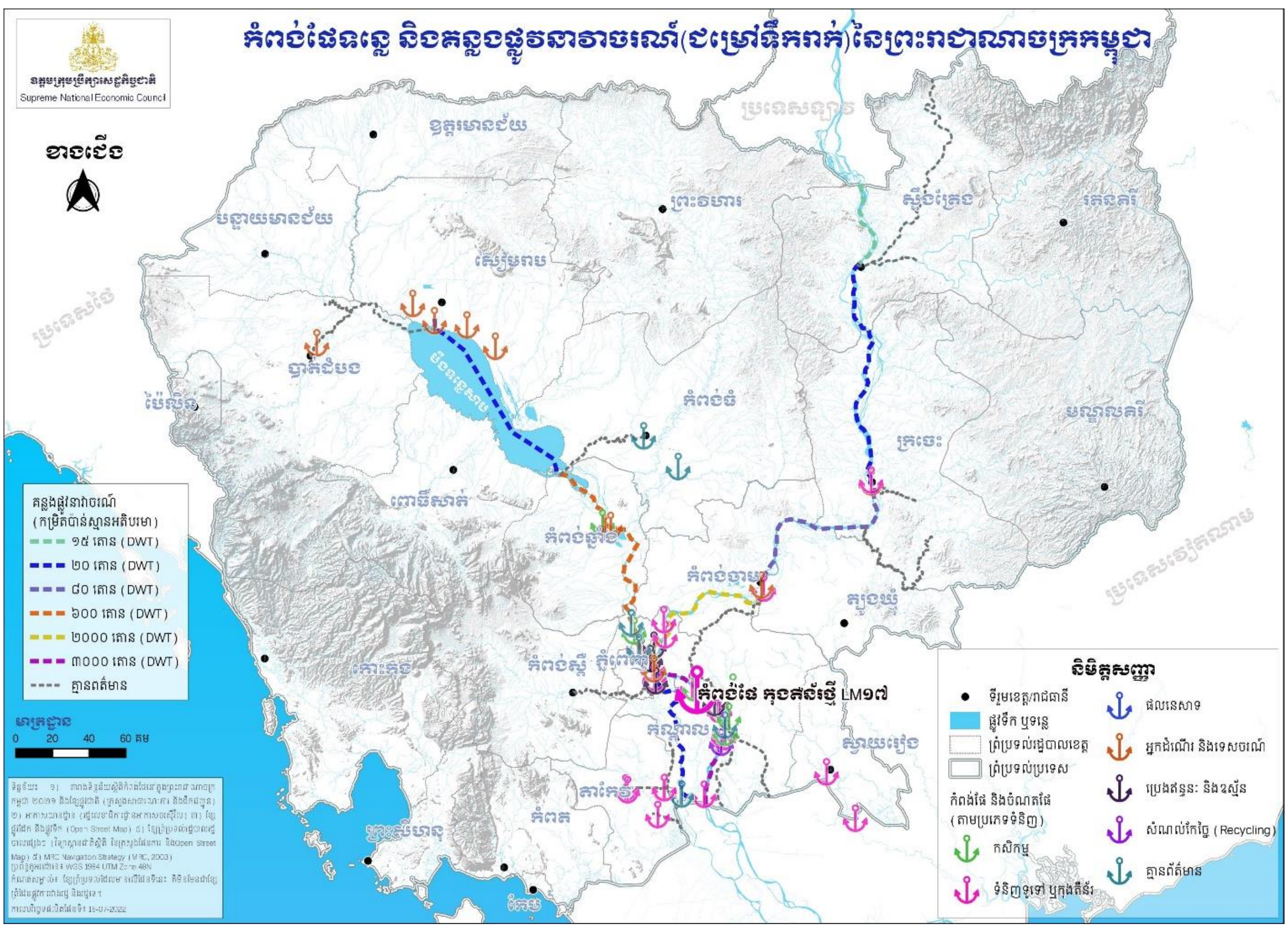
2.2.3. Waterway Transport

Cambodia has canals, streams, and rivers that are important sources of waterway transport. Currently, the navigable waterways are 1,750 km long, of which the Mekong River accounts for 30%, the Tonle Sap and Tonle Sap lakes about 15%, the Tonle Bassac 5%, and other waterways about 50%. However, in the dry season, the total length of the navigable route is only 580 km, which shows significant variability. Cambodia has 19 major river ports including (1) UM2, (2) Kratie Port, (3) Steung Treng Port, (4) Siem Reap Port, (5) Battambang Port, (6) Pursat Port, (7) Kampong Chhnang Port, (8) TS3, (9) TS1, (10), TS11, (11) New container LM17, (12) Prek Anchanh Port, (UM1) at Kandal Province, (13) Koh Roka Port (LM26) in Prey Veng Province, (14) Prek Kdam Port, (15) Boeung Ket Port,(16) O'smach Port, (17) Kampong Leng Port, (18)

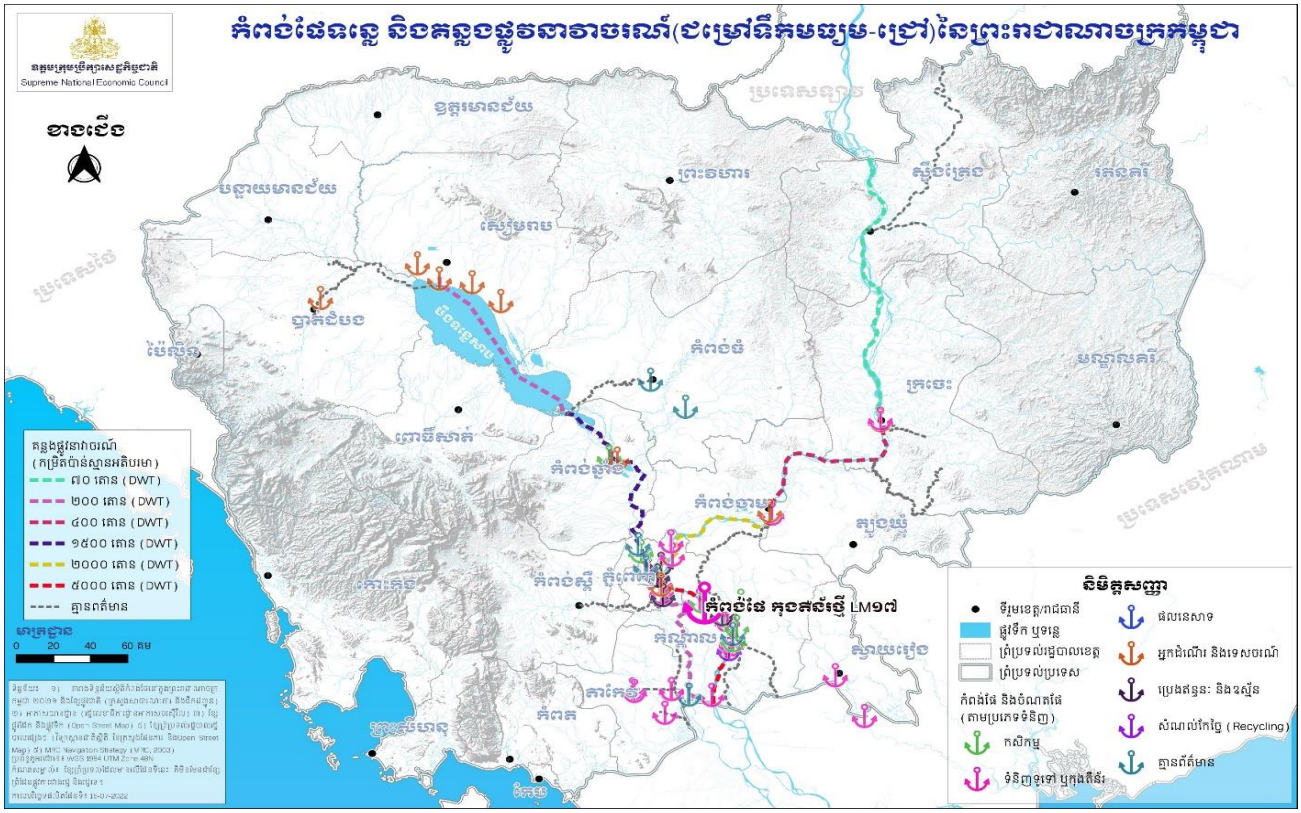
Mekong Port, and (19) Sovannaphumi Port as well as tourist ports and petroleum terminal port of some private companies.

Meanwhile, the capacity of cargo transportation crossing the container terminal has been highly challenging as the economic development has been fast accelerated. Since the change of water level by season, some routes cannot allow ships to navigate smoothly, and a large part of routes cannot allow 1,000-ton vessels to navigate for the whole year. In fact, some of the routes of the Tonle Sap Lake area and the locations connected to the Tonle Sap (junction between Kratie and Steung Treng provinces) as well as the route of the Mekong River to Vietnam are not deep enough and make it difficult for heavy vessels to cross. In addition, navigation conditions along the Cambodia-Laos border are unfavourable due to very different water levels, which hindered the development of water transport between the two countries. Facing natural factors as well as high shipping costs and fewer shipping activities, Cambodia's inland waterway transport requires more and more efficient investment.

Map 2.2.3.A. River Ports and Navigation Routes of the Kingdom of Cambodia (Shallow water level)



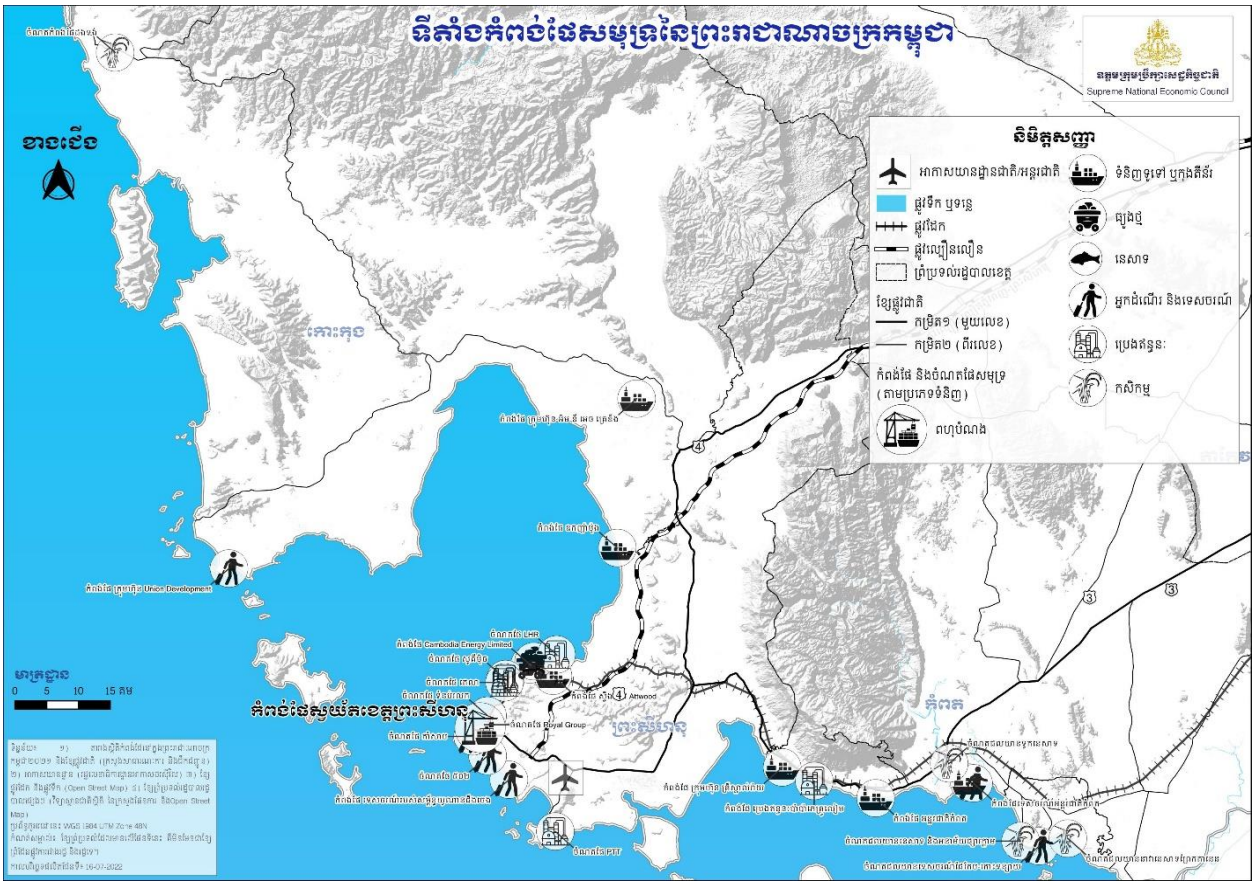
Map 2.2.3 B. Map of Navigation Routes and Ports of the Kingdom of Cambodia (Deep, Medium Water Level)



2.2.4. Maritime Transport

Cambodia's coastline has a total length of 443 km with favourable conditions (deep water level) for deep sea and large-size port construction. Currently, the seaports in Cambodia include Sihanoukville Autonomous Port in Sihanoukville, Koh Kong Port, Sre Ambel Port, Oknha Mong Port in Koh Kong Province, Kampot Port in Kampot Province, and Kep Tourist Port in Kep Province.

Map 2.2.4 Location of the Seaports of the Kingdom of Cambodia



Sihanoukville Autonomous Port, built in 1956, is a deep-sea port and is the main international trade gateway in Cambodia. This port covers a total area of 125 hectares with a length of 1,860 meters and is capable of international container shipping. There are 12 terminals in the port for container handling, retail goods, and cruise ships. At the same time, rail and handling stations are connected to the perimeter of the port to facilitate the transportation of goods, especially heavy goods. In 2019, Sihanoukville Autonomous Port received about 6.55 million tons of cargo, including 639,211 TEUs and 51,479 passengers. Currently, Sihanoukville Autonomous Port has signed an agreement with 13 international container companies that dock to transfer goods 15 trips/week. Along the coast, there are 5 other petroleum ports with a total length of 950 meters and a yearly transport volume of 1.5 million tons and 2 power plant ports (coal terminals for coal-fired power plants) with a length of 950 meters and yearly transport volume of 2 million tons.

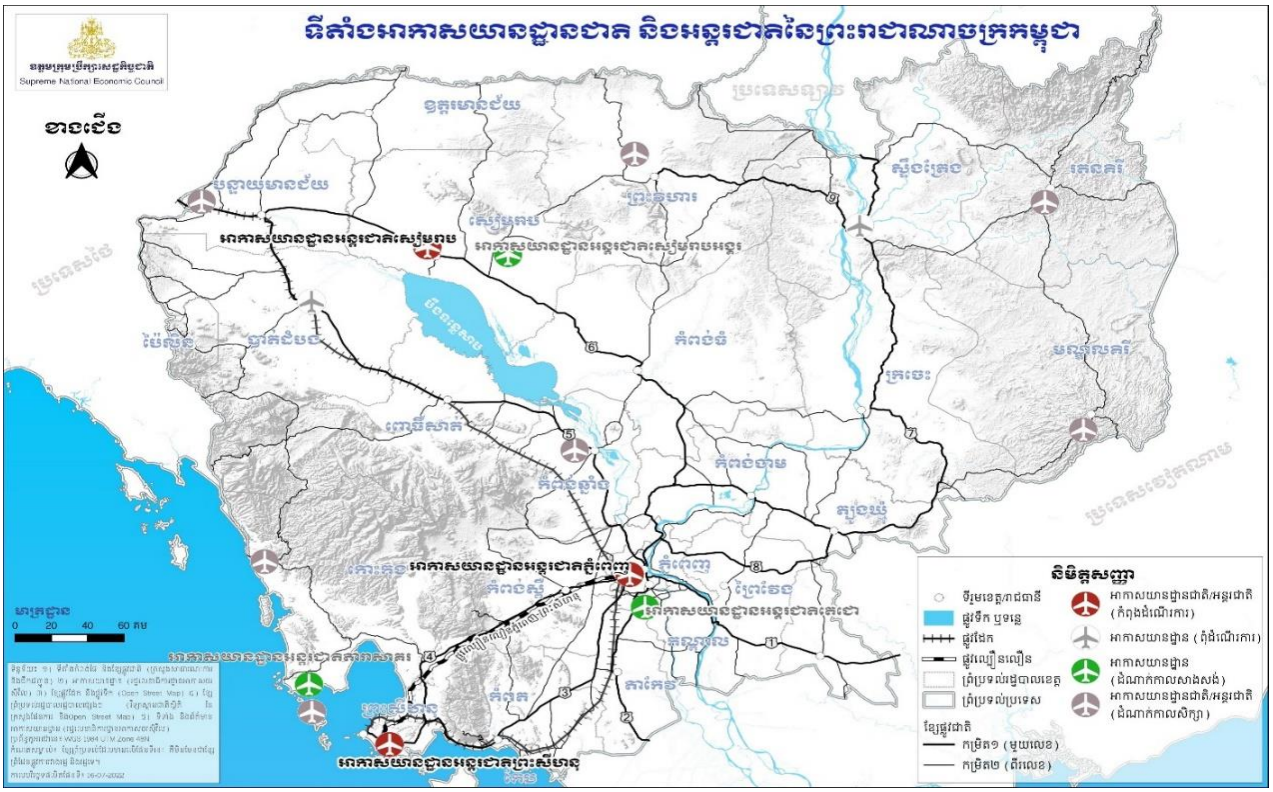
Koh Kong Port, 50 meters long with a capacity of 300 tons, is a type of fishing port with poor condition. Union Development, multi-purpose port, in Koh Kong Province has a capacity of 10,000 tons with a length of 208 meters, and it is under the construction to provide transportation services to the industrial area in the centre of the port or the industrial park behind the port. At the same time, the multi-functional port with a capacity of 2,000 tons in the Kampot International Port serves the industrial park as well as the transportation of coal

and construction materials. Crystal Rice Port has eight cargo terminals that can accommodate 3,000 tons with a length of 250 meters and receive about one million tons of goods annually. Kampot International Port, Papa Petroleum Port, and Kampot International Tourism Port based in Kampot province are all under the construction. Kep Tourism Port has provided transportation and tourism services to the island opposite the beach. In general, most of Cambodia's maritime transport is concentrated in the Sihanoukville Autonomous Port, which is the main deep-sea container port for major international trade in Cambodia and can accommodate container vessels of up to 20,000 tons currently. This port will be able to accommodate ships up to 50,000 tons after dredging. However, the capacity of Cambodia's international ports is still limited compared to regional seaports those of Thailand and Vietnam.

2.2.5. Air Transport

There are currently 8 registered airports in Cambodia, 3 of which are fully operational, including Phnom Penh, Siem Reap, and Sihanoukville International Airports, which are international airports operated by SCA (the Société Concessionaire de l'Aéroport) with exclusive rights until 2040. In separation, five domestic airports are not operated, including Battambang, Steung Treng, Koh Kong, and Mondulkiri airports. Meanwhile, Kampong Chhnang airport is being used and jointly managed by the State Secretariat of Civil Aviation and the Ministry of National Defence.

Map 2.2.5 Location of Domestic and International Airports



Currently, these airports operate primarily for C and D aircraft category. Due to the need for long-haul flights and high-traffic routes, some runways operate E aircraft category,

such as the A333 and B777 are excessively using technical standards that do not comply with airport safety and operational guarantees. Siem Reap International Airport and Sihanoukville International Airport are currently 4C with a runway of 2,550 meters and 2,500 meters, but allowing limited long-distance international flights.

In 2017, Phnom Penh International Airport received 4.24 million passengers and 41,000 flights, an increase of 25% and 23% compared to the previous year. Siem Reap International Airport handled 4.21 million passengers and 44,000 flights with an increase of 21% and 16% compared to last year. Sihanoukville International Airport received 340,000 passengers and 5,600 flights. Most international flights from Cambodia focus on flights in Southeast Asia and Northeast Asia, with the longest flights to Tokyo in the east and to Dubai in the west. The destination country with the most direct flights is China, with flights to 31 cities. Currently, Cambodia does not have direct flights to Europe, the United States, Africa and South Asia. Cambodia's Air transport is operated by 8 airlines providing domestic and international aviation services. These include Cambodia Bayon Airlines, Cambodia Angkor Air, Bassaka Air, JC (Cambodia) International Airlines, Lanmei Airlines, and Cambodia Airways. The six companies that are providing domestic aviation services include Cambodia Bayon Airlines, Cambodia Angkor Air, Bassaka Air, JC (Cambodia) International Airlines, Lanmei Airlines, and Cambodia Airways. Notably, China has the largest number of airlines operating flights to Cambodia, consisting of up to 12.

Recently, OCIC received approval from the Royal Government to invest in the construction of the new Phnom Penh Airport as a public-private partnership (OCIC 90% and the government 10%) in the form of "Design, Build, Finance, Own, and Operate (DBFOO)". This development project is divided into three phases, the first phase from 2019 to 2030, the second phase from 2030 to 2050, and the third phase from 2050 onwards. In the first phase, the new Phnom Penh Airport Development Master Plan will expand to 13 million passengers/year with throughput cargos 175,000 and the capacity to receive airplane E category (Code E: A340-300, A350-900 and B777-200 / 300ER, B747-300 / 400) and has 22 spots. After completing the first phase, the company plans to build the 2nd runway and other infrastructures for taxiway. This plan aims to expand the reception capacity to 30 million passengers/year by 2050 with a capacity of throughput cargos of about 527,000 tons. At the same time, the implementation of the master plan for the development of Siem Reap Angkor International Airport has two phases, including from 2020 to 2023 with an aim to increase the capacity of 7 million passengers/year with throughput cargos 10,000 tons/year while the next phase after 2023 aims to enlarge the capacity of 20 million passengers/year with throughput cargos 60,000 tons/year.

Overall, the development of the aviation industry in Cambodia is still limited compared to other ASEAN countries, mainly due to the lack of physical infrastructure. In reality, there are now only three airports in Cambodia that can receive international flights with a small number of flights and throughput cargos, and the airline network is incomplete, causing the barrier to connecting flights with countries and regions. At the same time, Cambodia does not

have sufficient transit modes and facilities for aviation as well as a lack of sufficient support international transit and economic and trade cooperation in the field of air transport.

2.2.6. Logistics System

Most logistics service providers in Cambodia are trucking companies and can be divided into three levels depending on the size and types of service. Level 1 is a large international freight company with a total of between 800 and 1,000 heavy vehicles nationwide, of which each company has more than 10 trucks; and Level 2 is a small and medium registered company and mostly provides logistics services for agriculture and the construction industry, with a total of about 1,100 to 1,400 trucks nationwide, and the Level 3 is an unregistered small transport company and mostly provides services for commercial local production and trucking with a total of 2,300 to 3,000 trucks nationwide. The presence of some international companies such as APL Logistics, DSV, Panalpina, Yusen Logistics, Evergreen Marine Corporation (EMC), Sinotrans Limited, and China COSCO SHIPPING Corporation Limited, etc. have contributed to the promotion of logistics services in Cambodia in both level and size and to promote a system for Cambodia.

The logistics centres in Cambodia are mostly dry ports or small distribution warehouses and are not concentrated and have limited-service capacity. At the same time, the equipment of logistics complexes is insufficient, especially the lack of centralized logistics centers and the appropriate level of efficiency, which affects the storage, distribution, traffic, and management of distribution processes effectively, as well as creates unfavourable conditions for collecting, distributing and facilitating the transportation of goods on a large scale, resulting in higher logistics costs.

Cambodia has 5 main international border~~s~~ gates with neighbouring countries, including three Cambodia-Vietnam border gates, one Cambodia -Thailand border gate, and one Cambodia-Laos border gate. Most of these border gates are connected to Phnom Penh and other towns by road networks (currently 16 lines) and National Road with one and two digits with two lanes (one direction per lane) which does not meet the need for efficient transportation. At the same time, Cambodia does not yet have a complete railway connection with neighbouring countries. Among those, the railway connection between Cambodia and Thailand is better than others, but due to the international transit agreement, this line has not yet been activated. The Cambodia-Vietnam railway is an urgent project of the railway network development plan, but the connection between the two countries and the source of funding has not been determined. Besides, Cambodia does not yet have an agreement on a railway connection between Cambodia and Laos PDR.

According to a 2022 study by the World Bank, the estimated total logistics cost in Cambodia has reached about $ 6.7 billion, equivalent to about 26.43% of gross domestic product (GDP), including transportation costs, warehousing costs, inventory costs, and administrative costs, of which the highest cost is inventory costs accounted for 13.07% of GDP (equivalent to 49.47% of total logistics costs), followed by transportation and warehousing cost 10.95% of GDP (41.44% of total logistics) and administrative costs account for 2.40% of GDP (9.09% of total logistics

costs)[2].A comparison of logistics costs between Cambodia and neighbouring countries shows that the cost of inventory, transportation, warehousing, and management in Cambodia is higher than in Vietnam and Thailand, and the total logistics costs are also higher in the two neighbouring countries. The main reason for this high price is due to unfavourable traffic conditions, the use of old trucks, limited construction technology, and warehouse management, lack of information systems for effective resource integration, time consumption and high cost of cargo clearance, etc.

2.2.7. Common Challenges

In addition to the specific challenges noted above, the development of transport and logistics in Cambodia continues to face several other systemic challenges, as follows:

Lack of common policies or interconnected plans: The policy or plan for the development of the transport and logistics sector in Cambodia in the past was prepared according to the respective transport sector and different timeframes. In fact, the road development plan was prepared in 2006 and revised in 2009 with the support of the Japan International Cooperation Agency (JICA) and finally updated in 2017 with the support of the People's Republic of China (PRC). Meanwhile, the Law on Road , promulgated in May 2014, covers policies, strategies, and development plans for the construction, repair, and maintenance of road infrastructure, preparation of road master plan, land use for road development, road maintenance, arrangement of parking lots and other stations along the road, resources, budget, official use, protection of road infrastructure, loading weight of the vehicles and setting rules and technical regulations, as well as penalties or violating the law and so on. At the same time, the Korea International Cooperation Agency (KOICA) supported the Royal Government in developing a master plan for railway development in 2014. The city transport plan was developed by JICA in 2014, while the city's new bus system is in the testing phase. While logistics sector with five development strategies was organized in 2018 under the support of JICA and the World Bank with 25 priority programs. However, the policy and strategic framework are not comprehensive and fully integrated, especially while the legal standards and regulations for the management of transport infrastructure are still lacking. This leads to the development of physical transport infrastructure facing several challenges that make it difficult to achieve the level of potential investment.

Limitations of financing resources for public investment: Public investment as a whole focus on the development of physical infrastructure, especially transport infrastructure. However, in the new context, the Royal Government needs to have more responsibilities on other priorities, especially the social and environmental needs, which require greater and longer-term financing. In this sense, budget allocation and financing division need to be more balanced to meet key national policy goals. In fact, the Royal Government needs to focus on social assistance as a consequence of COVID-19 through the implementation of the program to restore and promote Cambodia's economic growth during the COVID-19 situation to the new normal path for 2021-2023, as well

[2] *Cambodia Economic Update June 2022- Special Focus: Post-Pandemic Supply Chain Disruption – Strategies to Reduce Logistics Costs.*

as priorities in other areas, especially the digital sector through the implementation of economic policy framework and the Digital Society of Cambodia 2021-2035 and so on.

Limitations of effective implementation of the projects: Overall, the effectiveness of the implementation of the transport infrastructure project is still limited. This challenge arises from many factors including weakness of concrete action plan preparation, project readiness, delays of construction and cooperation among relevant parties, limited technical skills and human resources as well as the lack of monitoring and evaluation of project implementation. This has caused the implementation of construction, repair and maintenance of transport infrastructure in Cambodia to be unable to achieve high efficiency, especially for quality.

Limitation of resilience to climate change and natural disasters: The consideration of resilience to climate change and natural disasters for transport infrastructure has become a trend that has received significant attention from all relevant parties, especially the development partners. This means that future transport infrastructure construction needs to integrate the climate change adaption and natural disasters resilience. So far, without considering all the factors, the construction of transport infrastructure in some geographical locations in Cambodia suffered damage faster and on a larger scale than expected, which caused the cost of maintenance and repair to be larger and became an additional burden on the national budget from year to year. However, the inclusion of resilience to climate change and natural disasters will inevitably increase investment costs for transport infrastructure.

Lack of human resources and competition: Human resources, especially skills and techniques for transport infrastructure, transport, and logistics continue to be the challenges for both public and private institutions. This causes Cambodia to continue relying heavily on outsourcing skills, while the Cambodian education system is not yet able to supply the skills needed. At the same time, the competition among transport and logistics providers is not yet widespread due to the lack of legal frameworks which make logistics fees less competitive compared to other countries in the region.

2.3. TRAFFIC FORECAST FOR 2030 AT THE ECONOMIC POLES AND MAIN CORRIDORS

The transport volume and demands for logistics services always depends on macroeconomic conditions, demographics, and changes in the industrial structure of the country. As a basis for determining the direction of transport systems across the country, as well as the preparation of intermodal transport and logistics Master Plan, it is essential to conduct scientific studies using predictive methods and modelling of traffic volume analysis based on the data that ensures the accuracy of the conclusions in the realistic implementation plan.

In general, as economic growth and population continue to increase, population movements and volume of goods are expected to increase in parallel. In such a situation, the transport and logistics sector must continue to develop and expand its capabilities to

respond better and faster to current and future needs. For this reason, to forecast traffic volume, the main parameters, including GDP, population, and vehicle ownership growth rate are considered as key inputs for analysis and forecasting.

2.3.1. Road

Traffic volume by 2030 will be concentrated in Phnom Penh and will be in the shape of a radius, showing the flow of traffic towards the northwestern provinces (along National Road 5 and National Road No. 6), Southwest Area (National Road No. 2, No. 3 and No. 4), Eastern Area (National Road No. 1, No. 6 and No. 8) and Northern Area (National Road No. 6 and No. 7).

Map 2.3.1.A Current Traffic Volume Forecast for 2030 (PCU/Day)

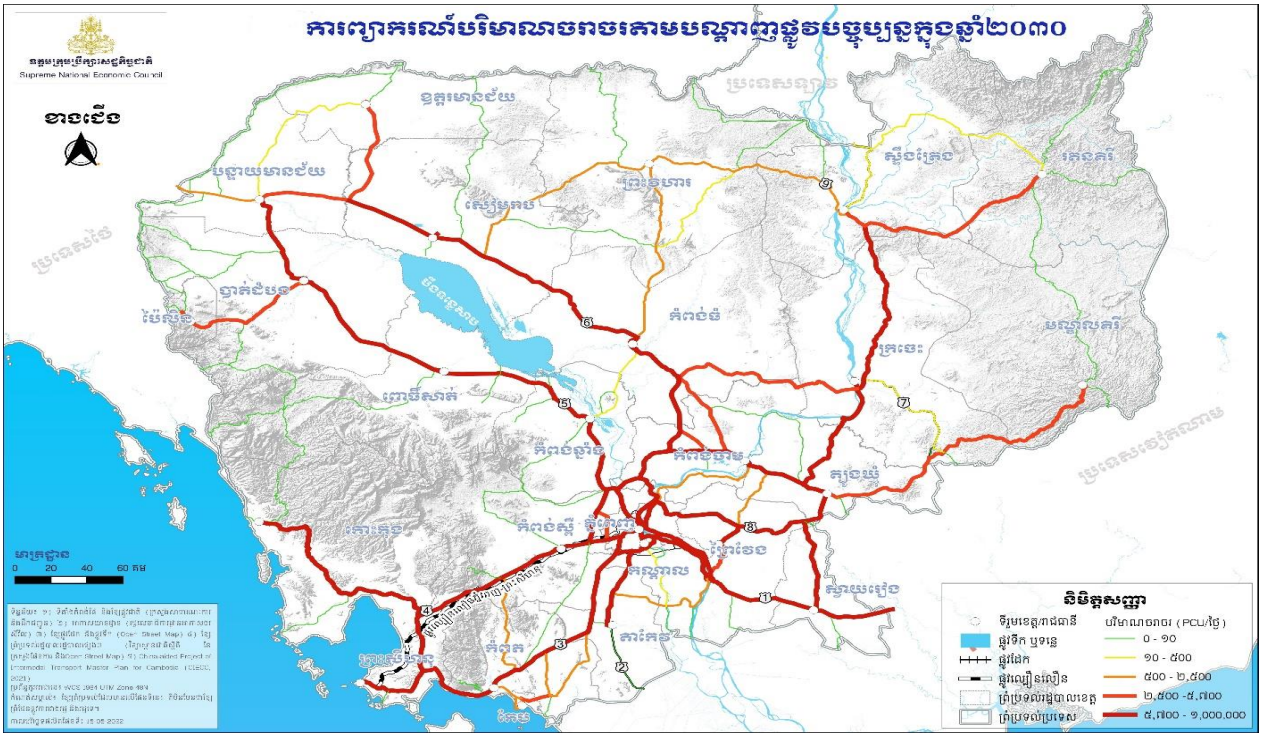


Table 2.3.1.A Results of 2030 traffic volume forecast based on current road network

National Road 1 digit	Current traffic network forecast annually (PCU / day)
NR 1	16,000 to 27,000
NR 2	25,000 to 26,000
NR 3	17,000 to 28,000
NR 4	20,000 to 40,000
NR 5	27,000 to 36,000
NR 6	12,000 to 25,000
NR 7	8,000 to 20,000

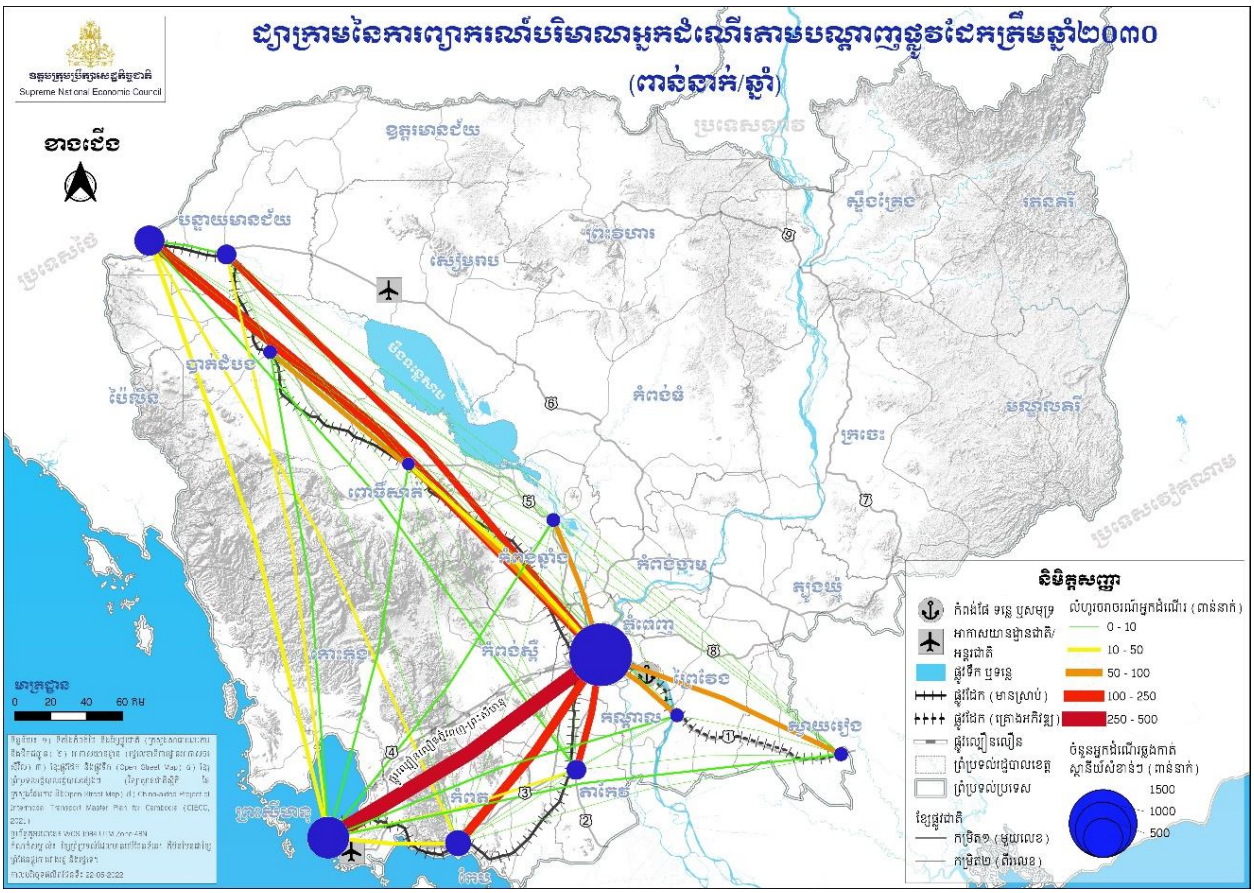
NR 8	12,000 to 25,000
NR 9	1,000 to 2,000

Based on the result of traffic forecast for 2030, the increase of traffic volume creates a massive burden on the national road network. It reflects the demand of expansion of the national roads in term of both capacity and quality to facilitate smooth transportation within the country, as well as the need of constructing ring roads to avoid congestion in Phnom Penh and to facilitate the connectivity of national roads without crossing Phnom Penh. The project of expressway construction is expected a better solution in promoting the efficiency of smooth and fast transportation.

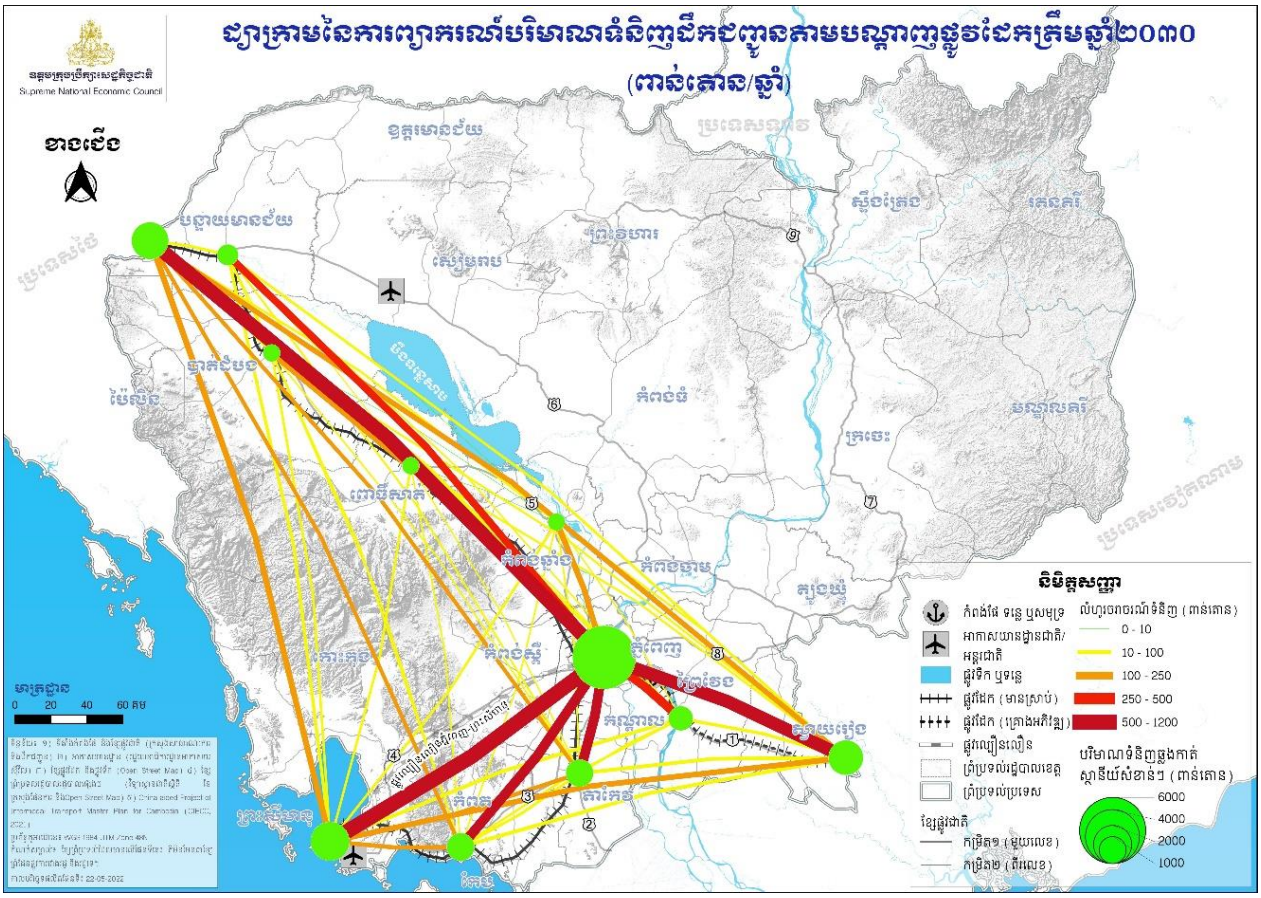
2.3.2. Railway

The volume of passengers traveling by railway is estimated at 1.5 million / year, and the volume of cargo is 8 million tons/year. The projection includes new Phnom Penh and Bavet railway lines, being scheduled for development by 2030.

Map 2.3.2.A. Estimation of the volume of passengers on the railway network by 2030 (thousand/ year)



Map 2.3.2.B. Estimation of the volume of cargo transported by rail network by 2030 (thousand tons /year)



2.3.3. Waterway

By 2030, passenger volume will be 550,000 persons/year, and cargo will reach about 10 million tons/year (of which 81% is international trade) through waterway transport, while Phnom Penh Autonomous Port is still a major port with 8 million tons of cargo/ year.

Table 2.3.3.A. Results of the estimated number of passengers by river ports in 2030 (10 thousand)

Port	Tourist	Passenger	Total
Phnom Penh Autonomous Port	12.5	2.5	15.0
Tonle Bet Port	3.0	0.7	3.7
Kratie Port	-	0.2	0.2
Steung Treng Port	-	0.3	0.3
Siem Reap Port	11.0	1.0	12.0
Kampong Chhnang Port	11.5	3.3	14.8

Kandal Port	-	0.2	0.2
Battambang Port	-	0.2	0.2
Pursat Port	7.0	1.6	8.6

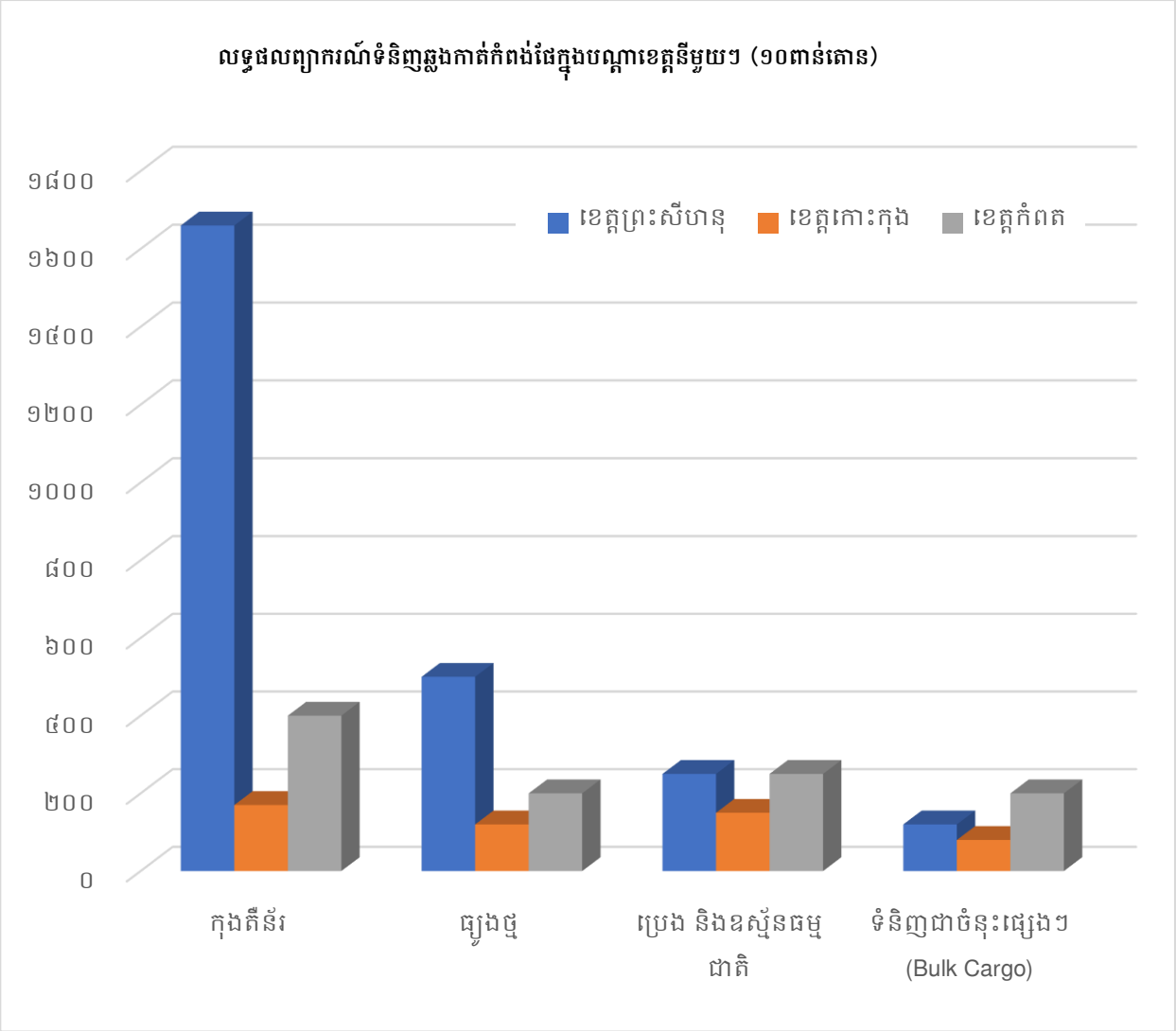
Table 2.3.3.B. Results of the estimated volume of goods by river port in 2030 (10,000 tons)

Port	Container	Bulk Cargo	Oils	Total
Phnom Penh Autonomous Port	846	135	80	800
Tonle Bet Port	-	25	-	25
Kratie Port	-	8	-	8
Steung Treng Port	-	6	-	6
Siem Reap Port	-	10	-	10
Kampong Chhnag Port	27	31	-	58
Kandal Port	45	34	-	79
Battambang Port	-	7	-	7
Pursat Port	-	7	-	7

2.3.4. Maritime

The total number of passengers passing through seaports projected in 2030 is approximately 1.2 million (Sihanoukville Autonomous Port with 120,000 passengers, Union Development Port with 80,000 passengers, and Kampot Tourism Port with 1 million passengers). In separation, the total cargo transported through seaports in Sihanoukville, Koh Kong, and Kampot is 41 million tons. Sihanoukville includes Sihanoukville Autonomous Port, CIIDG Coal Power Company, Cambodia Energy Limited, Tumnob Rolok Port and Steung Hav Port. Meanwhile, Koh Kong Province includes Koh Kong Smart Port and Union Development Port, and Kampot Province, including Kampot International Port and Papa Petroleum Port.

Figure 2.3.4. Estimation of the volume of cargo passing through seaports in each province (10 thousand tons)



2.3.5. Civil Aviation

The number of passengers passing through the airport in Cambodia will be around 26.5 to 30.5 million passengers/year, of which 2.9 million are domestic travellers. The forecast includes new airports under construction and construction plans. The cargo and packages by air will increase between 350,000 and 400,000 tons, which is about 180,000 tons of domestic cargo flow.

Map 2.3.5. Estimation of air passengers at other airports by 2030 (thousand passengers/year)

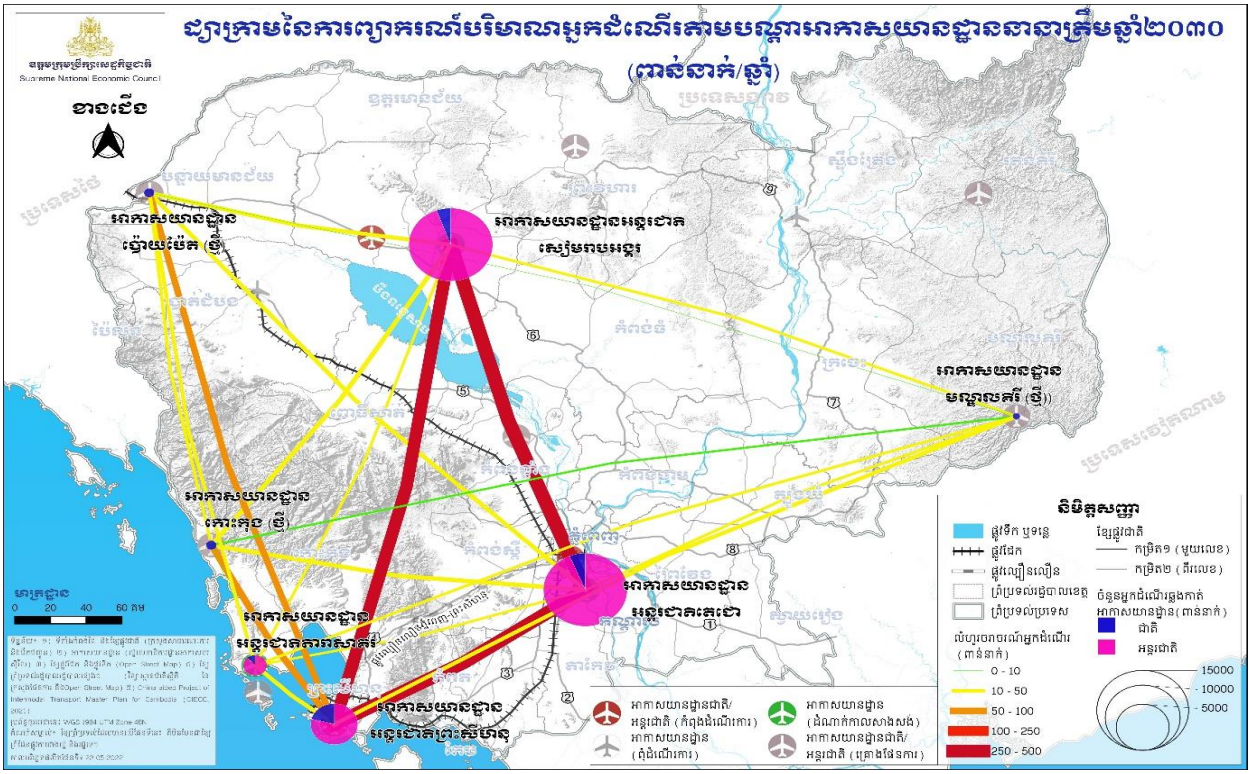


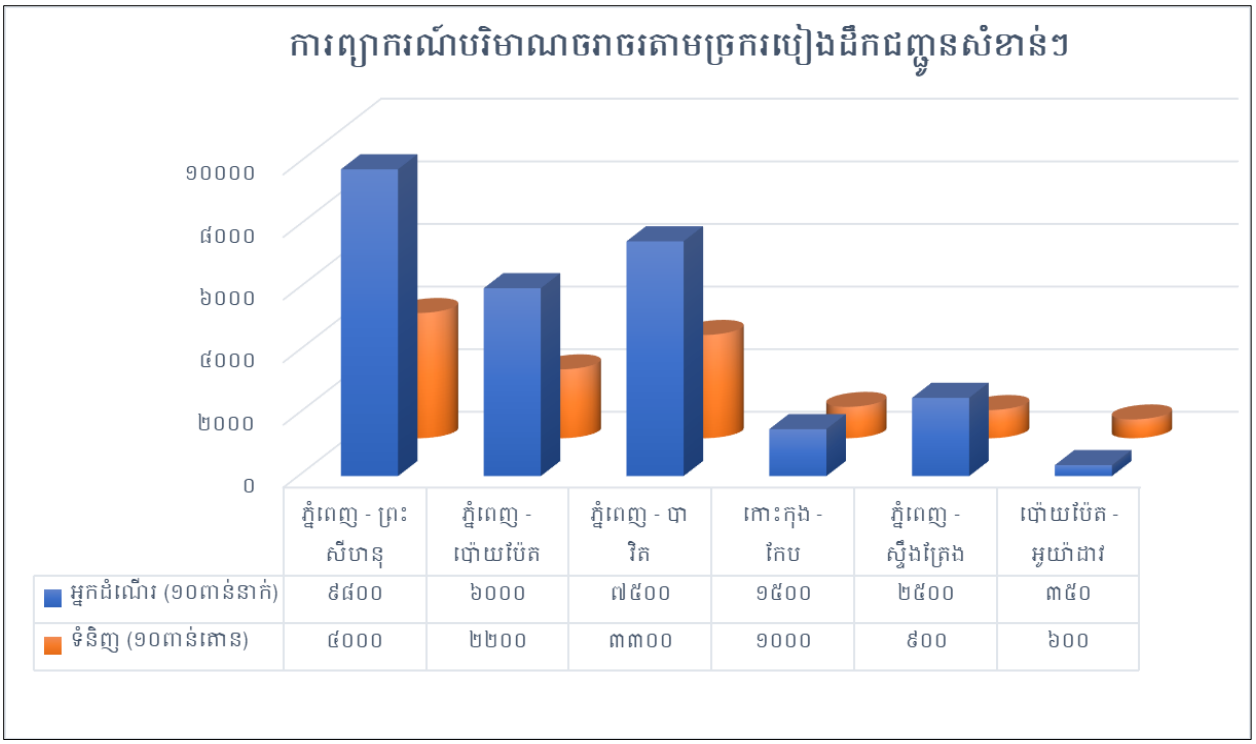
Table 2.3.5. Result of estimation of throughput cargos at the airport by 2030

Airport	Amount of cargos (10,000 tons)
Techo International Airport	28 to 31
Siem Reap Angkor International Airport	3 to 4
Sihanoukville International Airport	3 to 4
Koh Kong International Airport	-
Darasakor International Airport	1
Poi Pet International Airport (New)	-
Mondolkiri International Airport (New)	-

2.3.6. Total Traffic Volume By 2030 at Economic Poles and Main Corridors

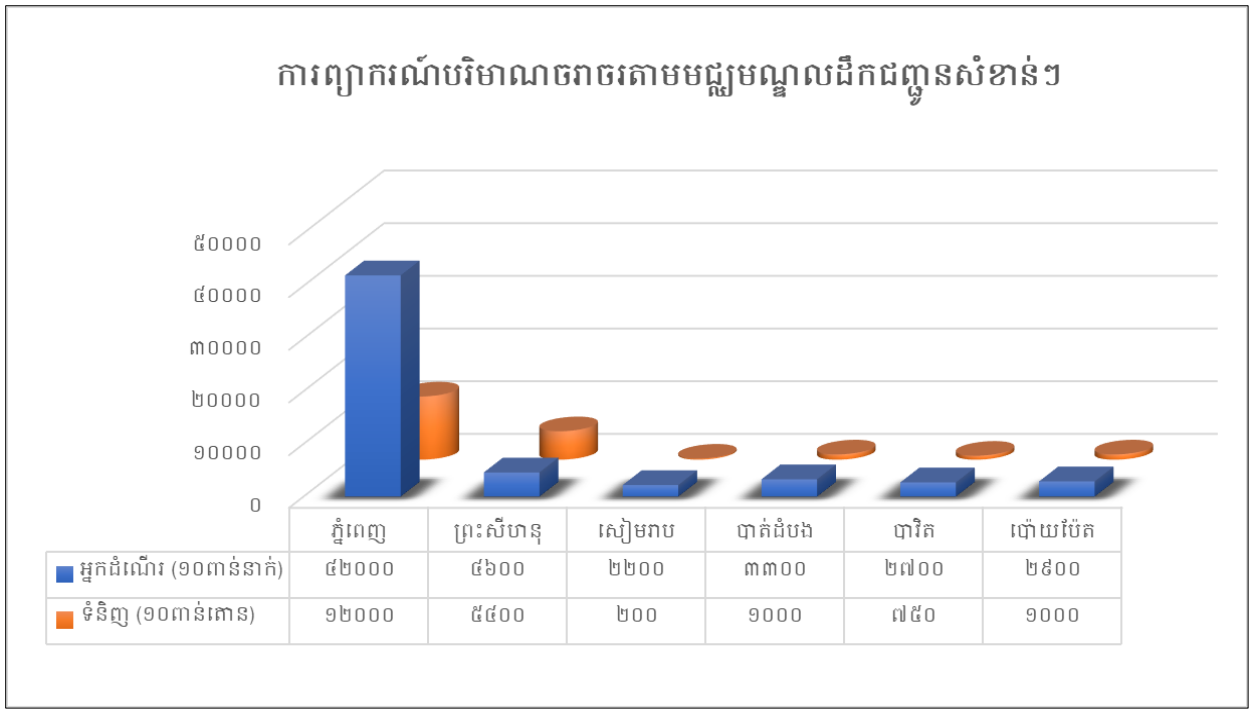
The volume of traffic (passenger and cargo) by 2030 is forecasted by main corridors, including Phnom Penh-Sihanoukville, Phnom Penh-Poipet, Phnom Penh-Bavet, Koh Kong and Kep, Phnom Penh and Steung Treng, Poipet and O' Yadav. This result leads to determine the transport network strategy (3 major transport corridors and 3 sub-transport corridors) which is a part of the comprehensive transport and logistics infrastructure in Cambodia (Hubs and Spokes).

Figure: 2.3.6.A. Forecasting Traffic Volume by Key Transport Corridors



At the same time, the volume of traffic is forecasted for 2030 by the key transport nodes, including Phnom Penh, Sihanoukville, Siem Reap, Battambang, Bavet, and Poipet. Traffic volume of transport is forecasted based on the number of traffic flowing in and out at the area of the transport hub that covers all types of transportation, including roads, railways, waterways, maritime, and air transport. Determining the location of the six transport nodes is defined as a cluster format (4 major transport hubs connecting to 2 external transport nodes) as part of the comprehensive transport infrastructure and logistics system of Cambodia (Hubs and Spokes).

Figure 2.3.6.B. Forecasting Traffic Volume by main nodes



3. STRATERGIC FRAMEWORK OF DEVELOPING THE INTERMODAL TRANSPORT INFRASTRUCTURE

3.1. Vision

Based on the assessment and the situations related to the requirements of transport infrastructure and logistics in Cambodia as well as the above 2030 traffic volume forecast, the vision of this master plan is **"Continue to improve and develop the transport and logistics system, focusing on promoting the construction of physical and non-physical infrastructures towards the development of intermodal transport systems with high connectivity and intertwining within the country and the regions that will continue to contribute, promote and sustain national economic growth, as well as meeting the needs of sustainable and inclusive socio-economy"**

The overall efficiency of transportation is reflected by:

- Reducing time and cost of transportation and logistics services in business activities of both domestic and international businesses.
- Support the cluster or agglomeration and additional investment in potential sectors.
- Optimization of travel and communication that brings flexibility to the labour market and the search for new jobs and business activities that respond to changes in socio-economic activities, including the effects of globalization, the opportunities of new technologies, and the increase of the female workforce etc.

- Promoting competition by opening up opportunities, approaching new markets and expanding markets, which allows businesses to expand wider and more competitive operations.
- Increasing customer convenience as the market or supply gets closer and more competitive in terms of cost and quality.

In the above vision, the transport and logistics sector need to respond to the social situation and the need for current and future economic growth, which has sufficient capacity to meet the growing demand for passenger and freight transport and provides effective support for industry, trade, tourism, and agriculture, as well as the need for development in response to population growth, employment, and urbanization.

3.2. Objective

Regarding the above vision, this master plan identifies key objectives as follows:

- Expand and improve the scope and capacity of transport infrastructure: Expand and improve all types of physical transport infrastructure by capital, cities, provinces, towns, rural areas, and border gates aiming to promote better interconnection.
- Improve the efficiency and effectiveness of transport services and infrastructure: Improve the efficiency and effectiveness of the use of transport infrastructure, including roads, railways, waterways, and air transport, focusing on reducing travel time and transportation costs.
- Improve service efficiency and logistics costs: Improve logistics systems and logistics structures by pursuing in-depth reform measures to promote transparency and competitiveness and human resources.
- Promote and improve transport infrastructure to support national development policies: Support and contribute to the Belt and Road Initiative, the Asian Highway Network, Mekong Sub-regional Economic Corridors and ASEAN Connectivity as well as the framework of the Mekong Basin Cooperation.

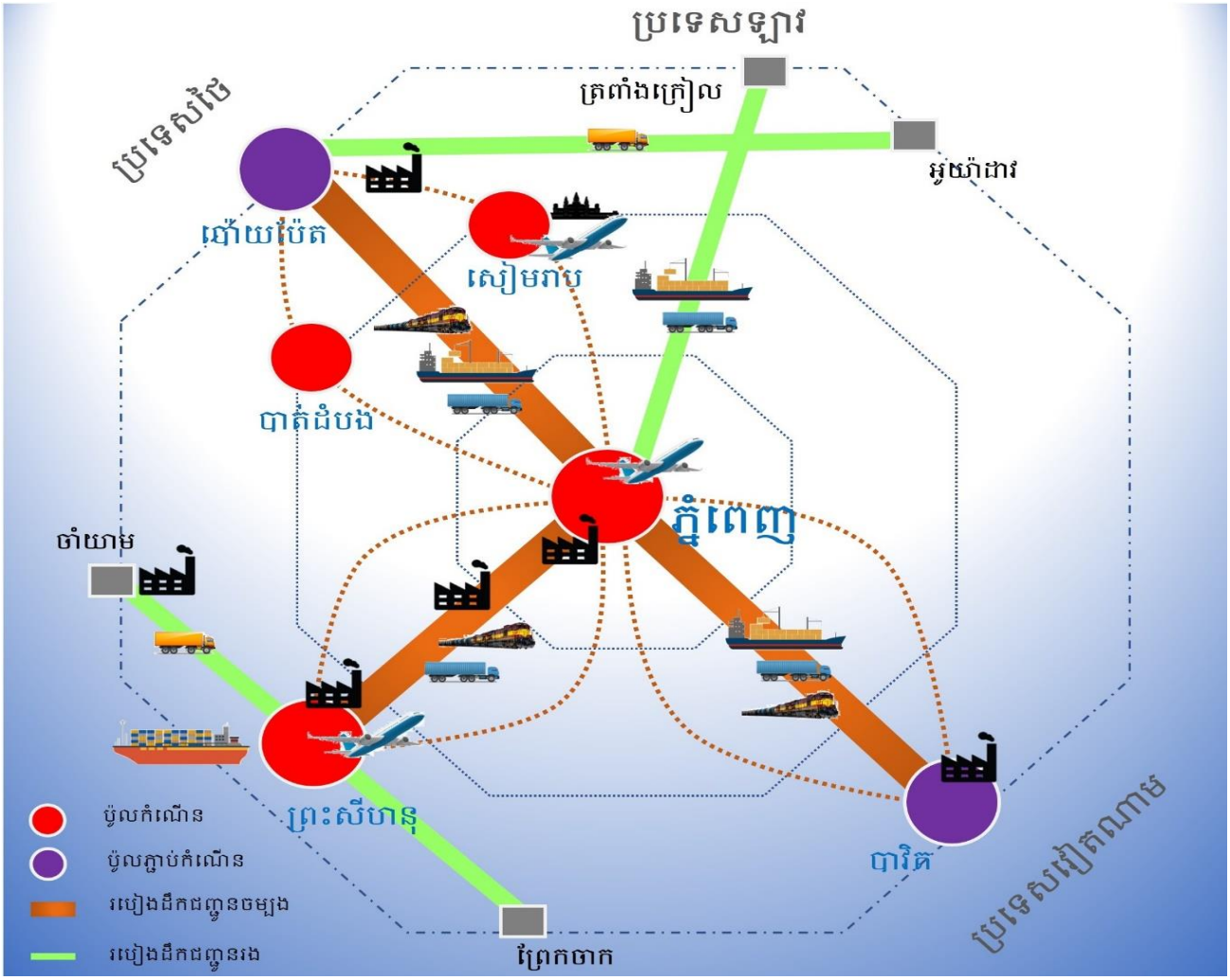
3.3. Strategic Framework

To achieve the above vision and objectives, the Master Plan sets out the strategies for the comprehensive transportation system “3-3-4-2” and logistics system “2-2-N” considering and covering the economic, social, and industrial development plan and a combination of economic corridor factors and industrial conditions, population and geographical distribution, as well as the destination of transporting passengers and goods.

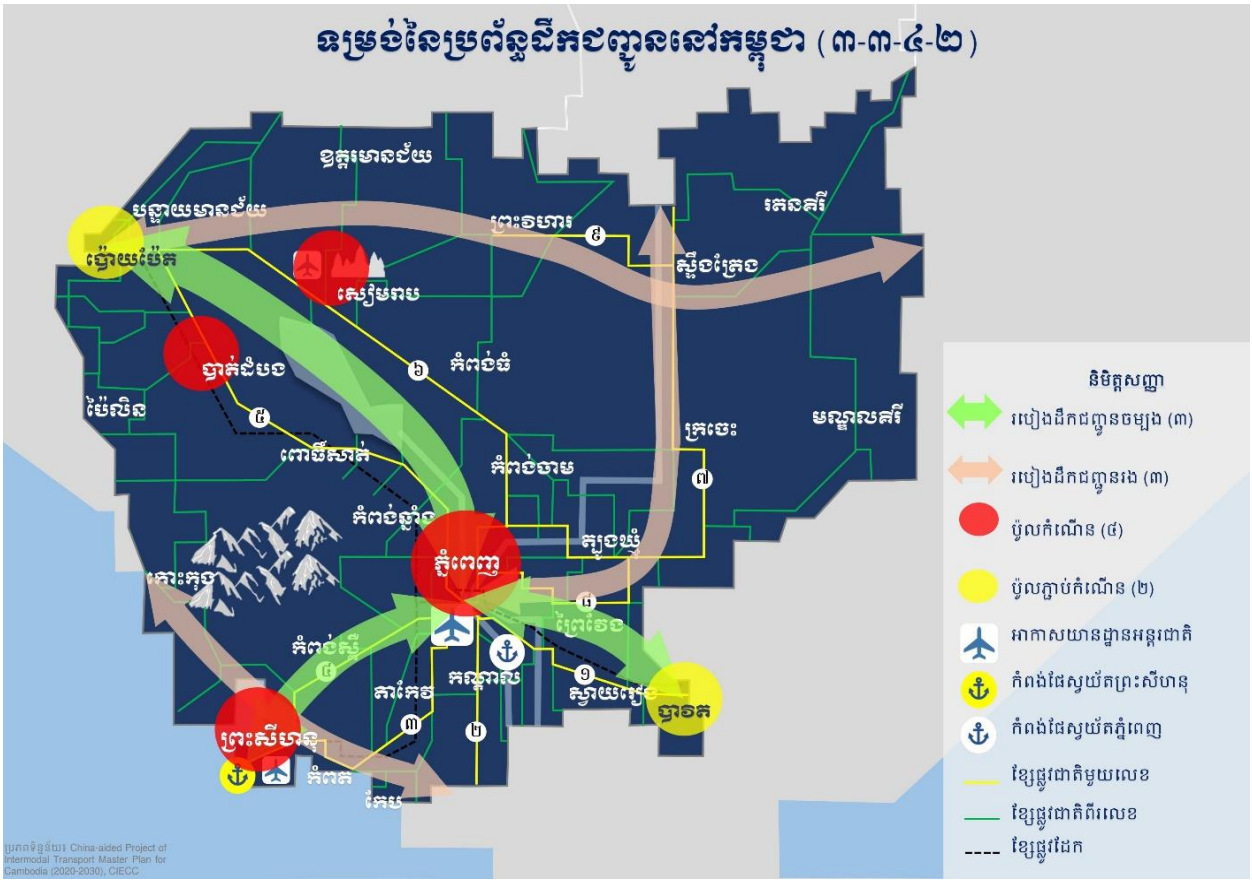
3.3.1. Strategy 3-3-4-2

The comprehensive transport network format “3-3-4-2” refers to three major transport corridors, three secondary transport corridors, four major transport hubs, and two external transport nodes.

Map 3.3.1 A. Structure of Transport Master Plan



Map 3.3.1.B. Cambodia's Transport network pattern (3-3-4-2)



3.3.1.1. Three Major Transport Corridors

A) Southwest Transport Corridor (Phnom Penh and Sihanoukville): The Southwest Transport Corridor connects the Phnom Penh Autonomous Port and Sihanoukville Autonomous Port, linking waterways and seaports in Cambodia and is the busiest transport corridor for import and export. This corridor covers part of the 4th Economic Corridor of Sihanoukville and Phnom Penh and Steung Treng and Pakse and Sovannakhet Province (SEC4) of the transport strategy in the Greater Mekong Sub-region and is covered by the transport network: road, railway, waterway, maritime and air.

The first major corridor forming the Southwest Transport Corridor (Phnom Penh and Sihanoukville) connects major cities such as Phnom Penh, Kampong Speu, Kampot, Takeo, Kep, and Sihanoukville. The major transport infrastructure includes National Roads 4, 3, and 41, Phnom Penh - Sihanoukville Expressway, Southern Railway (Phnom Penh and Sihanoukville), Phnom Penh Autonomous Port, Sihanoukville Autonomous Port, Techo International Airport (new) and Sihanoukville International Airport.

B) Northwest Transport Corridor (Phnom Penh and Poipet): Northwest Transport Corridor (covered by road, railway, waterway, and air) connects Phnom Penh to Siem Reap, Battambang, Serey Sophorn and Poipet. This corridor covers a part of the first economic corridor: Dawei-Bangkok-Phnom Penh-Ho Chi Minh-Vung Tau (SEC1) of the Greater Mekong Sub-region.

This is also the main transport corridor from Cambodia to Thailand and is an important part for connecting ASEAN transport infrastructure as well.

The Second major corridor forming a comprehensive transport corridor of the northwest (Phnom Penh and Poipet) connects the main cities such as Phnom Penh, Kampong Chhnang, Pursat, Battambang, Kampong Cham, Kampong Thom, Siem Reap, Serey Sophorn, Poipet, etc. Major transport infrastructure projects include National Roads 5 and 6, Phnom Penh - Siem Reap - Poipet Expressway, Northern Railway (Phnom Penh and Poipet), navigation channel and port terminal at Siem Reap and Phnom Penh Autonomous Port, Phnom Penh Autonomous Port, Kampong Chhnang Port Terminal, Siem Reap Port Terminal, Battambang Port Terminal, Pursat Port Terminal, Techo International Airport (new), Siem Reap Angkor International Airport (new) and Poipet Airport (new).

C) Southeast Transport Corridor (Phnom Penh and Bavet): The Southeast Transport Corridor (covered by roads, railways, waterways, and air) connects Phnom Penh to Svay Rieng, Bavet, and it is an important transport corridor for Cambodia connecting to Vietnam. This corridor also covers part of the first economic corridor, which is Dawei-Bangkok-Phnom Penh-Ho Chi Minh City- Vung Tau (SEC1), of transport strategies within the Greater Mekong Subregion. This is the main transport corridor from Cambodia to Vietnam and is also an important part for connecting ASEAN transport infrastructure.

Third Main Corridor forming Southeast Transport Corridor (Phnom Penh and Bavet) connects major cities, including Phnom Penh, Kandal, Prey Veng, Svay Rieng, Bavet, etc. The transportation routes are National Road No. 1 and No. 2, Phnom Penh-Bavet Expressway, Phnom Penh-Vietnam border Railway, Inland Waterway of Phnom Penh Autonomous Port and Cambodia border, Bassac Waterway, Phnom Penh Autonomous Port and Provincial Port, and Techo International Airport (New).

3.3.1.2. Three Secondary Transport Corridors

A) Coastal secondary transport corridor (Koh Kong and Kep): coastal transport corridor (road, sea, and air) connects Sihanoukville Autonomous Port, Southern Koh Kong Coastal Economic Corridor, and the main economic coastal areas. This corridor covers some important parts of the third economic corridor -Bangkok-Trat-Kampot-Hatien-Namkan (SEC3) of transport strategies in the Greater Mekong Sub-region.

The first secondary transport corridor connects Koh Kong, Sihanoukville, Kampot, Kep, and other cities. The transport routes are National Road 55, 48, 33, and 10 (connecting Battambang-Koh Kong) and Koh Kong - Sihanoukville Autonomous Port – Kampot – Vietnam

border Expressway. The connection of the maritime routes consists of Kampot Port, Koh Kong Port, and Kep Port. The airways are Sihanoukville International Airport, Darasakor Airport, and Koh Kong Airport (New).

B) Northeast secondary transport corridor (Phnom Penh and Steung Treng): The Northeast Corridor (consisting of roads, waterway, and air) connects the main economic zones of the Northeast of Cambodia with the main transport corridor between Cambodia and Laos. This corridor covers the main part of the 4th economic corridor, Sihanoukville-Phnom Penh-Steung Treng-Pakse-Savannaketh (SEC4) of the Transport Strategy in the Greater Mekong Subregion.

The second secondary transport corridor connects Phnom Penh-Kampong Cham-Kratie-Steung Treng and other cities. The transport routes are National Road No. 7, No. 8, and the Steung Treng-Phnom Penh Expressways. The connection of the waterway consists of Steung Treng Waterway and Phnom Penh Autonomous Port, Tonle Bet Port Terminal, Kratie Port Terminal, and Steung Treng Port Terminal. The airway routes will be operated through Techo International Airport (new).

C) Northern secondary transport corridor (Poipet and O' Yadao): The Northern Transport Corridor (road and air) connects the main economic zones in the northern part of Cambodia and refers to the other transport corridors connecting Cambodia with Vietnam and Thailand. This corridor covers an important part of the second economic corridor- Bangkok-Siem Reap-Steung Treng-Pleiku-Quy Nhon (SEC2) of the transport strategy in the Greater Mekong Subregion.

The third transport corridor connects Poipet-Serey Sophorn-Siem Reap-Steung Treng-O' Yadao and other cities by National Roads 9, 10, 64, 78 and Poipet-Siem Reap-Phnom Penh Expressways. The airways include Poipet Airport (New) and Siem Reap Angkor International Airport (new).

3.3.1.3. Four Transport Hubs

A) Phnom Penh Pole: Phnom Penh is the centre of politics, economy, culture, transportation, trade, religion, and tourist attractions. Phnom Penh is the intersection of the First Economic Corridor (SEC1) and the Fourth Economic Corridor (SEC4) of the Greater Mekong Sub-region, which is a main comprehensive transportation route for Cambodia, and it is also an important link for ASEAN. Phnom Penh is also the intersection of four modes of transport, including roads, railways, air and waterways.

Phnom Penh Pole Connections include Phnom Penh-Sihanoukville Expressway, Phnom Penh - Bavet Expressway, Phnom Penh - Poipet Expressway, ten national road lines, such as

National Roads No. 1 to 6, 20, 20A, 21B and No. 42. Two provincial roads such as provincial roads 114 and 130, and the first, second and third ring roads of Phnom Penh. Railways include the Southern Railway (Phnom Penh and Sihanoukville), the Northern Railway (Phnom Penh and Poipet), and the Phnom Penh – Bavet railway to Vietnam border. Waterway routes include the Phnom Penh Autonomous Port, while the air has the (new) Techo International Airport. The Logistics Complex in Phnom Penh will become the core of the supply chain for both production and consumption.

B) Sihanoukville Pole: Sihanoukville is a seaside city built next to the port and is the most important all-round transport hub of Cambodia and an important link for ASEAN. The city is an intersection of transportation, including roads, railways, air, and maritime transport. Sihanoukville Autonomous Port is the main deep-sea port in Cambodia and also a gateway for international trade. This port is also an important location for economic and social development and intermodal transport.

The connectivity of the Sihanoukville pole for economy, trade, and tourism includes National Roads 3, 4, 45, Expressway Phnom Penh - Sihanoukville Autonomous Port, Expressway Koh Kong - Sihanoukville Autonomous Port - Kampot, roads connecting to Sihanoukville Autonomous Port and the roads connecting Steung Hav port as well as the Phnom Penh and Sihanoukville southern railway. Sihanoukville Autonomous Port and Steung Hav Port are the most important export ports by maritime transport, while the air transport has Sihanoukville International Airport and Sihanoukville Logistics Complex serve an important role in export and import.

C) Siem Reap Pole: Siem Reap, a tourist destination in Southeast Asia and a major city in the north of the country, is a junction of three modes of transportation consisting roads (five national roads: National Road No. 6, No. 64, No. 66, No. 67 and No. 68, and two provincial roads: Provincial Road No. 201 and No. 202), air (Siem Reap Angkor International Airport), and waterway (Siem Reap port terminal). The Siem Reap Angkor International Airport (new) project and the Siem Reap Business and Logistics Centre will play a key role in supporting tourism and economic activities.

D) Battambang Pole: Battambang Province is a large rice barn that is a main source of rice production for export. Battambang is the second largest city and the main link of the Northwest Transport Corridor and is a transport connection point from Cambodia to Thailand. Transportation projects being promoted include Siem Reap and Battambang Road, National Road No.10 (Battambang-Koh Kong), Battambang port terminal, and Battambang Grain Logistics Centre.

3.3.1.4. Two External Transport Nodes

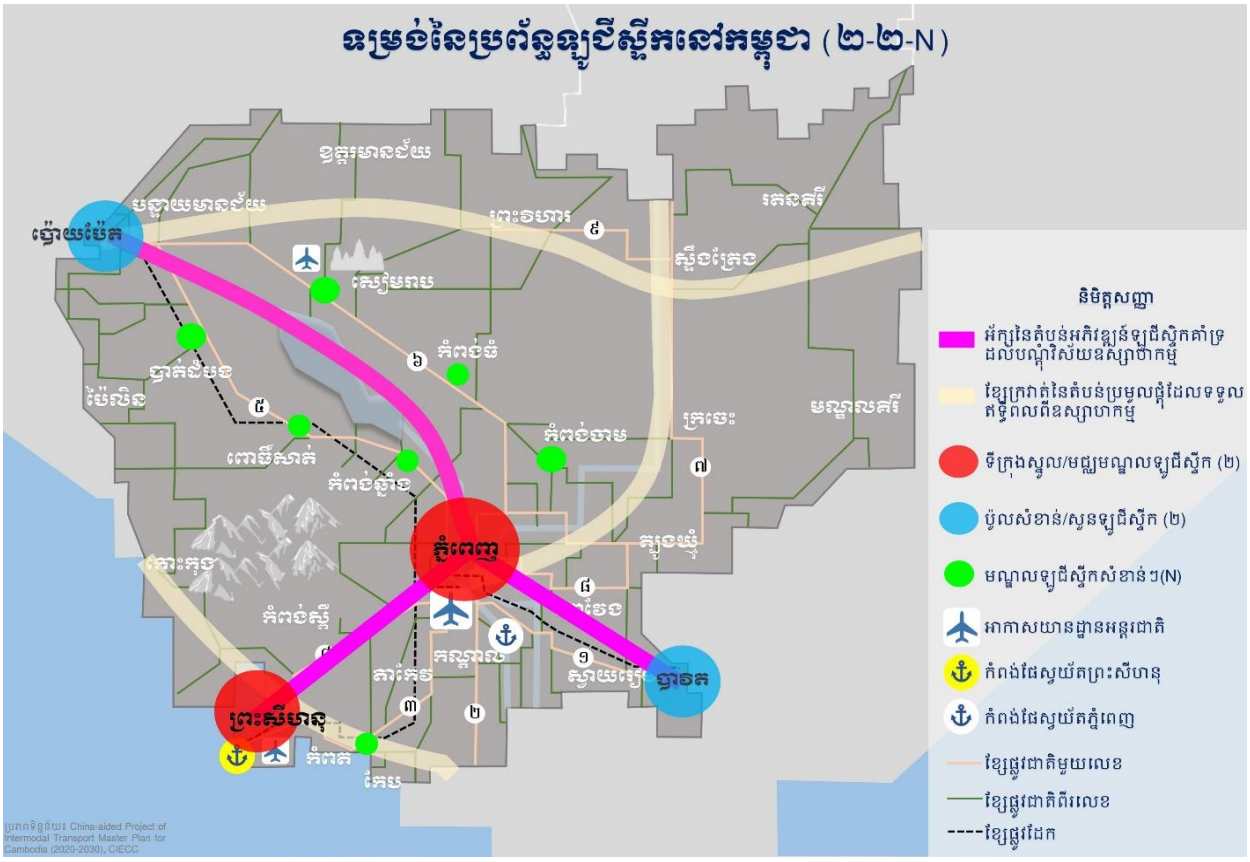
A) Svay Rieng and Bavet Pole: the border gate connecting Svay Rieng-Bavet transport is the main gateway at the border between Cambodia and Vietnam, and the main economic transport node raised in the national development plan. It is the centre of international trade, special economic zones, and free trade zones. In this regard, major road projects include the Phnom Penh-Svay Rieng - Bavet Expressway, the reconstruction section of National Road No. 1, Neak Leung and Bavet, and road construction project at Phnom Penh and Bavet Vietnam border gate and the Bavet Logistics Park Project.

B) Serey Sophorn and Poipet Pole: the border gate connecting Serey Sophorn and Poipet is an essential border gate between Cambodia and Thailand, and also a major economic transport node raised in the National Development Plan. It is an international trade centre, special economic zones, free trade zones, and towns. Transportation projects include the rehabilitation and expansion of National Road 5 (Serey Sophorn and Poipet), the northern Phnom Penh-Poipet railway and Poipet Airport (New), as well as Poipet Logistics Park also needs preparing.

3.3.2. 2-2-N Logistics System

The success of sustainable development, efficiency, and innovation for the economy and industry sector in Cambodia requires consideration of key aspects, including the integration of the logistics industry and industrial economy to improve regional transport network connectivity and the strengthening of smart logistics system (SMART), strengthening the logistics management structure, improving the capacity to support and distribute logistics, and especially the construction of logistics system model according to the **"3 Axis, 3 Belts, and Multiple logistics center"** approach, based on a comprehensive transportation system.

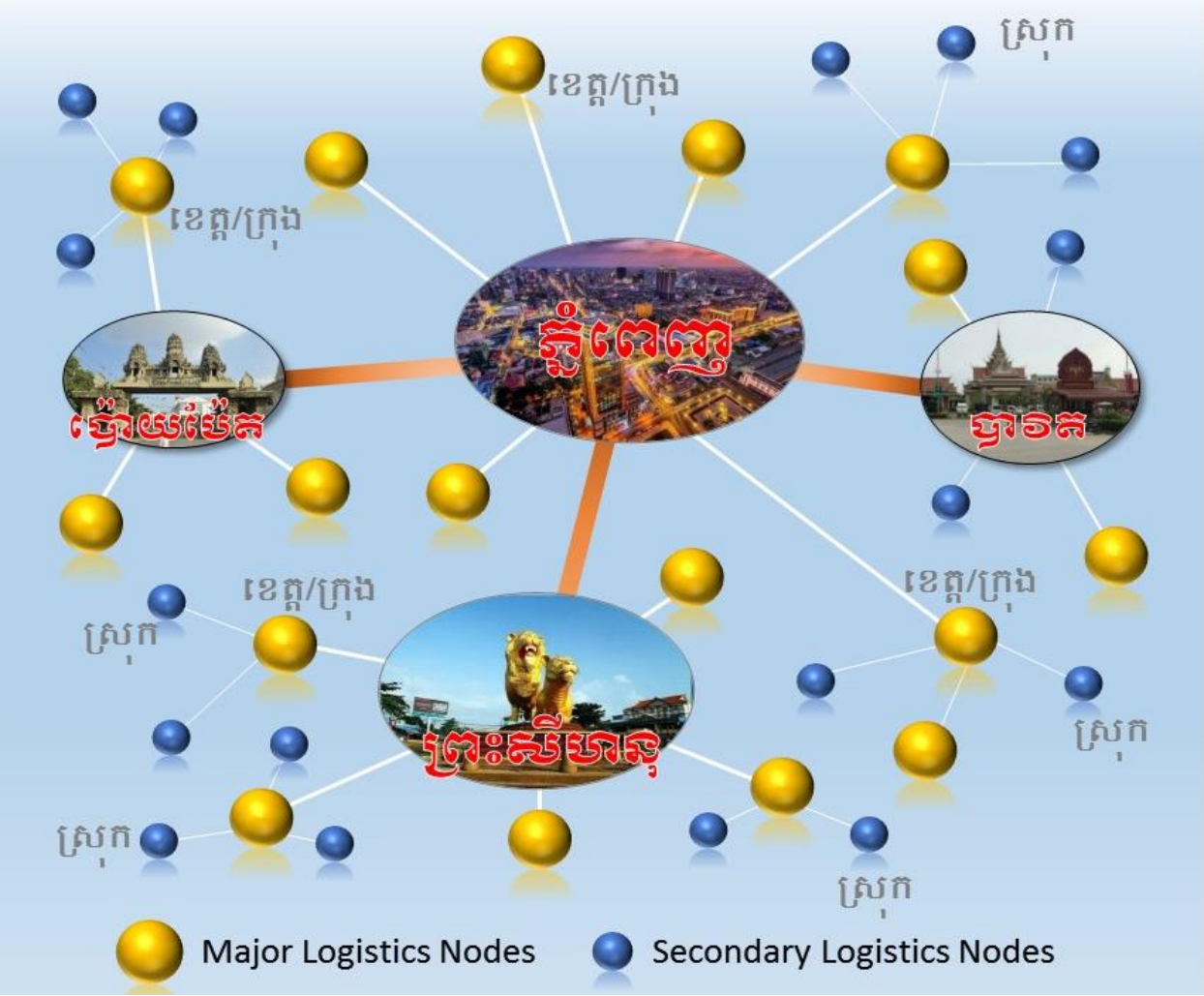
Map 3.3.2.A. Main layout of logistics



"3 Axis and 3 Belts " refers to the development of logistics system based on the approach of "three major transport corridors and three secondary transport corridors". Axis - Phnom Penh-Sihanoukville, Phnom Penh-Poipet, and Phnom Penh-Bavet, is a major transport corridor and plays a crucial role in the concentrated logistics service industry forming 3 Axis. Belt in Koh Kong and Kep, Phnom Penh and Steung Treng, and Poipet and O'Yadao are the secondary transport corridors forming the Belt 3 and additional connections to the cluster of logistics industry.

"Multiple logistics center" refers to a geographical location concentrated by logistics infrastructure and all kinds of logistics companies based on economic factors and the demand of industry for logistics services including warehouses, distribution services, transfer of goods operation of services, and port services. With the demand of the logistics industry and future development trends, it is necessary to push, to promote its logistics system and build transport nodes in the pattern of "2 core cities, 2 major poles and N logistics centers" or "2 logistics complexes, 2 logistics parks and N logistics centers" or 2-2-N.

Map 3.3.2 B. Layout of logistics system infrastructure (2 - 2 - N)



2 Core Cities / Logistics Complexes refer to Phnom Penh and Sihanoukville which are international freight gateways and geographical location concentrated by industry, population, dynamic economic activities, highest economic growth, and demand of logistics services.

2 Major Poles / Logistics Parks refer to Poipet and Bavet, which are international border gates, Cambodia-Thailand and Cambodia-Vietnam border, and also locations with high economic growth. These two cities have been playing an important role in collecting the services, including dry port, customs bonded warehouses, inventory, warehouse for distribution, and packaging etc.

Main Logistics Centers (N) refer to locations in Siem Reap, Kampot, Kampong Cham, Battambang, Banteay Meanchey, Pursat, and Kampong Thom province. Siem Reap province is rapidly developing in the tourism sector having a large population and high demands for logistics services to support business activities such as food and other daily commodities. Kampot province has a port as well as rapid growth in industrial development and high demand for logistics services

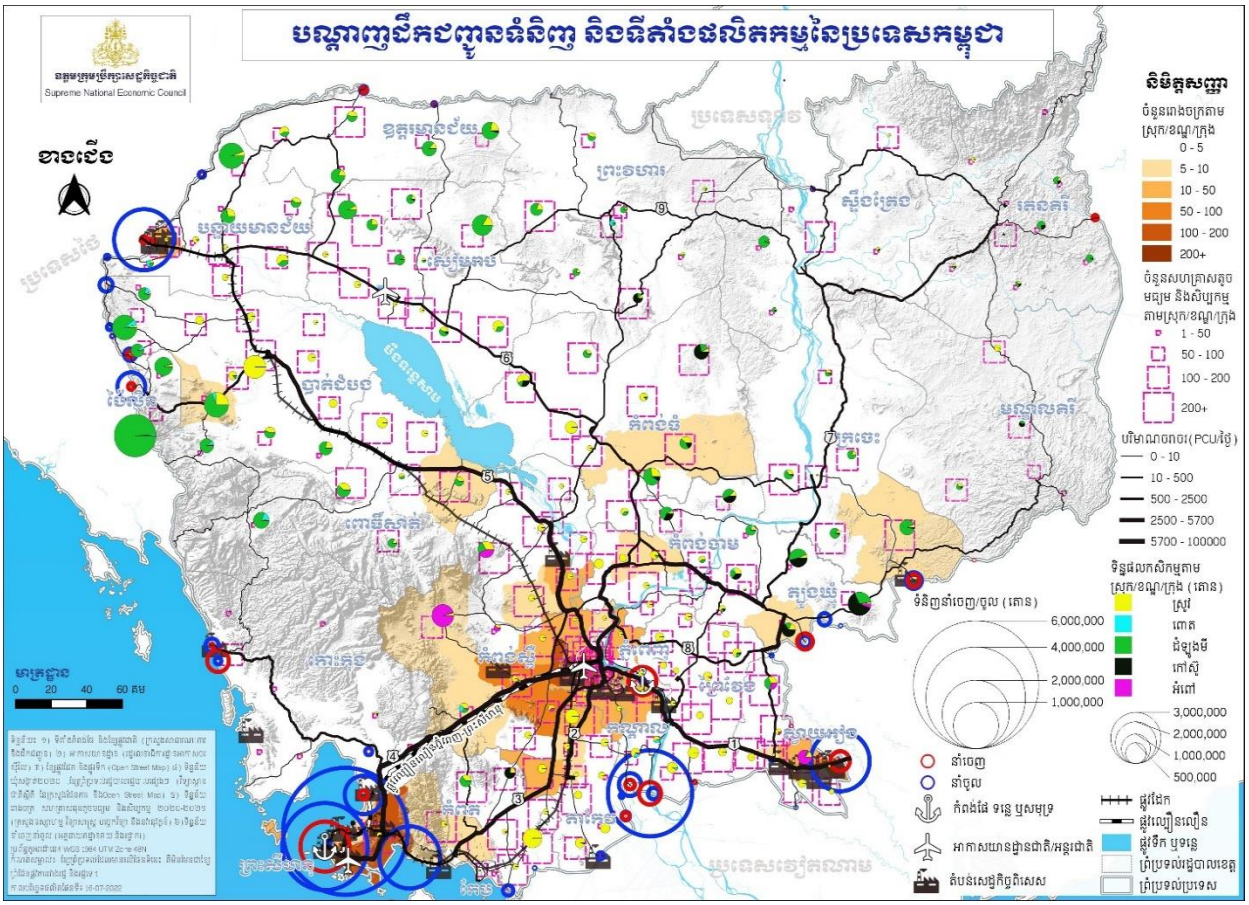
for products such as limestone and cement. Kampong Cham province has potential in the agricultural sector and a high demand for logistics services for rubber and rice products. Battambang, Banteay Meanchey, Pursat, and Kampong Thom provinces have potential for agriculture, such as paddy rice and rice exports, and high demand for logistics services for other agricultural products.

As Cambodia's economy has been growing rapidly with opportunities to connect with ASEAN and the Belt and Road Initiative (BRI), the industrial sector will be consecutively developed to become a region that has industrial diversification and high value-added, especially in new various areas where there is no industrial development, which is a reason to set up more and more logistics centers.

3.3.3. Long-term Transport, Traffic and Logistics System

The strengthening of the scope and capacity of the intermodal transport system is made by connecting key economic potential areas and regions through the interconnected networks into intermodal that complement each other to ensure the efficiency, effectiveness, and sustainability of transport. The road network is the main strategy that needs to continue to develop for achieving this connectivity through road network development, including expressways, national roads, provincial roads, ring roads and city or town center bypasses. The development of the expressway has the form of “1 Ring Road, roads with 7-radial pattern, roads with 1 horizontal line, and roads with 1 vertical line” and national roads with the pattern of “9 radius roads, 6 horizontal lines, 6 vertical lines” by 2050

Map: 3.3.3 Freight network and location of Production in Cambodia



3.3.3.1. Expressway

Seventeen expressway projects of which twelve expressways will be newly built with a total length of 2,720 km by 2030. Five more lines with a total length of 1,218 km are planned after 2050. Cambodia's Expressway network will be in the pattern of "1 ring road, roads with 7-radial pattern, 1 horizontal line, 1 vertical line". By 2033, the first phase of the expressway network with a total length of about 800 km will be constructed in the pattern of **"1 ring road and 3 radial-pattern roads"** (the 3rd ring road and 3 expressways Phnom Penh - Sihanoukville, Phnom Penh - Bavet, and Phnom Penh - Poipet).

Map 3.3.3.1. Patterns of future Expressway Development Plan in Cambodia

A)- 7 radial-pattern roads from Phnom Penh include: Radial-pattern Road No. 1: Expressway No.1 (EX1) Phnom Penh - Kandal - PreyVeng - Svay Rieng - Bavet, Radial-pattern Road No. 2, Expressway (EX2) Phnom Penh - Kandal (Cambodia - Vietnam border) along the Mekong River. Radial-pattern Road No.3: Expressway No.3 (EX3) Phnom Penh-Kandal - Takeo - Kampot - Sihanoukville. Radial-pattern Road No.4: Expressway No.4 (EX4) Phnom Penh - Kandal - Kampong Speu - Sihanoukville. Radial-pattern Road No.5: Expressway No.5 (EX5) Phnom Penh - Kandal - Kampong Chhnang - Pursat - Battambang - Banteay Meanchey - Poipet border gate. Radial-pattern Road No.6: Expressway No.6 (EX6) Phnom Penh - Kandal - Kampong Cham - Kampong Chhnang - Kampong Thom - Siem Reap. Radial-pattern Road No.7: Highway No.7 (EX7) Phnom Penh - Kandal - Kampong Cham - Kratie - Steung Treng - Trapeang Kriel border gate.

B)- 1 East - West Horizontal Road: Expressway No. 9 (EX9) Poipet - Banteay Meanchey - Siem Reap - Preah Vihear - Steung Treng - Ratanakiri - O'Yadao border gate.

C)- 1 South - North Vertical Road: This road has three sections which are expressway No.9 (EX9A), Siem Reap – Battambang – Pursat - Koh Kong, Expressway No.48 (EX48), Koh Kong - Sihanoukville, and Expressway No.33 (EX33) Preah Sihanouk - Kampot - Kep.

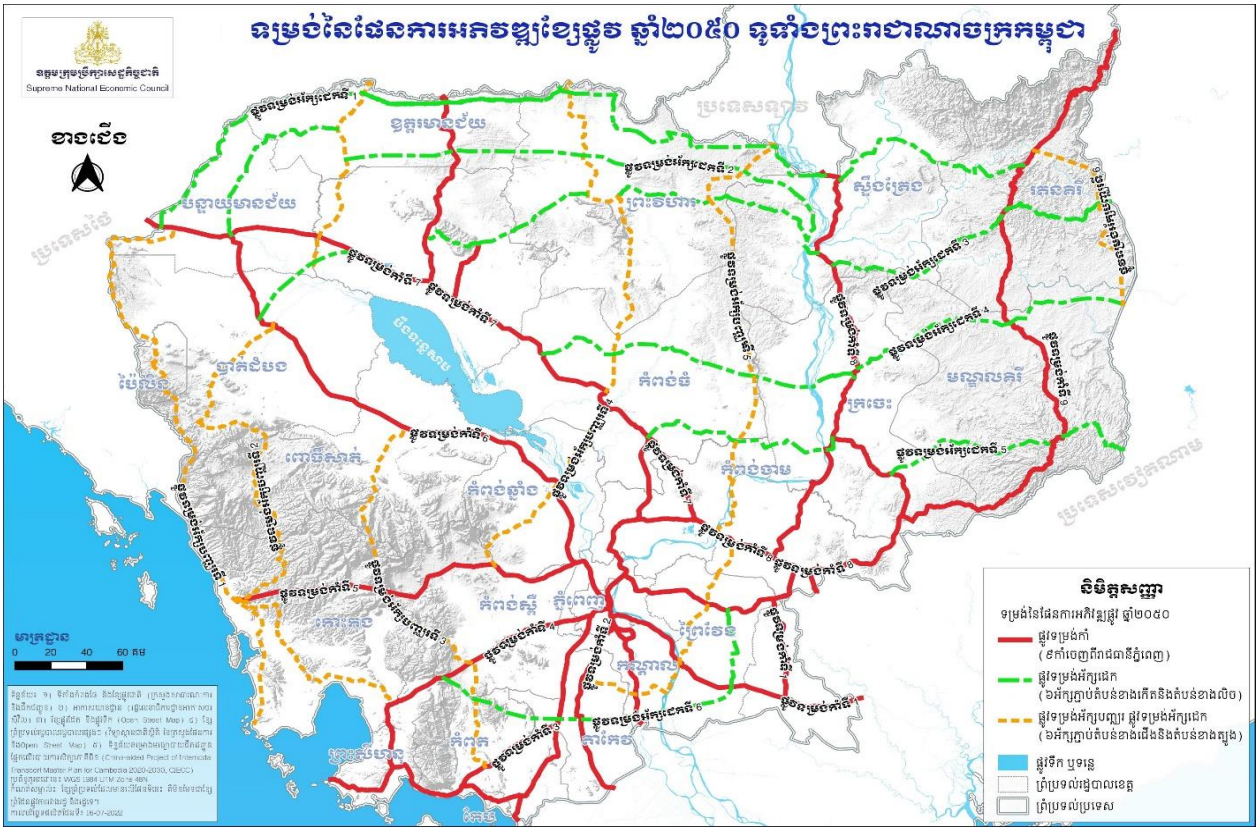
D)- 1 Ring Road: Phnom Penh ring road No. 3 (EXU1).

E)- Future Expressway Network planned for future development: Expressway N.8 (EX8) Phnom Penh - Kampong Cham - Kratie - Mondulkiri - Ratanakkiri, Expressway N.62 (EX62) Kampong Thom - Preah Vihear - Cambodia - Thailand Border, Expressway N.66 (EX66), Siem Reap - Oddar Meanchey - Cambodia - Thailand border, Expressway No. (EX44), Phnom Penh - Kampong Speu-, Koh Kong port, and Expressway N.76 (EX76) Kampong Thom - Kratie - Mondulkiri - Cambodia - Vietnam border.

3.3.3.2. National and Provincial roads

By 2050, the national and provincial road network will be constructed in the pattern of 9 radial-pattern roads, 6-line horizontal road, and 6-line vertical road, with a total length of 25,412 km, while national and provincial roads will be 21,000 kilometers long by 2033.

Map 3.3.3.2. Form of Cambodia's National Road Development Plan in 2050



A) 9 radial-pattern road: Radial-Pattern Road No.1: Phnom Penh - Kandal - Prey Veng - Svay Rieng - Bavet border gate. Radial-Pattern Road No.2: Phnom Penh - Takeo. Radial-Pattern Road No.3: Phnom Penh - Kandal - Takeo - Kampot - Sihanoukville. Radial-Pattern Road No.4: Phnom Penh - Kandal - Kampong Speu - Sihanoukville. Radial-Pattern Road No.5: Phnom Penh - Kampong Chhnang - Kampong Speu - Koh Kong. Radial-Pattern Road No. 6: Phnom Penh - Kandal - Kampong Chhnang - Pursat - Battambang - Banteay Meanchey - Poipet border gate. Radial-Pattern Road No. 7: Phnom Penh - Kandal - Kampong Cham - Kampong

Thom - Siem Reap - Banteay Meanchey. Radial-Pattern Road No.8: Phnom Penh - Kandal - Kampong Cham - Tboung Khmum - Kratie - Steung Treng - Trapeang Kreal border gate. Radial-Pattern Road No. 9: Phnom Penh - Kandal - Prey Veng - Kampong Cham - Tboung Khum - Kratie - Mondulkiri - Rattanakiri.

B) 6-line Horizontal Roads: Horizontal Road No. 1: Banteay Meanchey - Oddar Meanchey - Preah Vihear - Steung Treng - Ratanakkiri. Horizontal Road No.2: Banteay Meanchey - Oddar Meanchey - Preah Vihear - Steung Treng. Horizontal Road No.3: Battambang - Siem Reap - Preah Vihear - Steung Treng - Ratanakiri – O'Yadao border gate. Horizontal Road No.4: Kampong Thom - Kratie - Mondulkiri. Horizontal Road No.5: Kampong Thom - Kratie - Mondulkiri. Horizontal Road No.6: Kampong Speu - Takeo - Prey Veng.

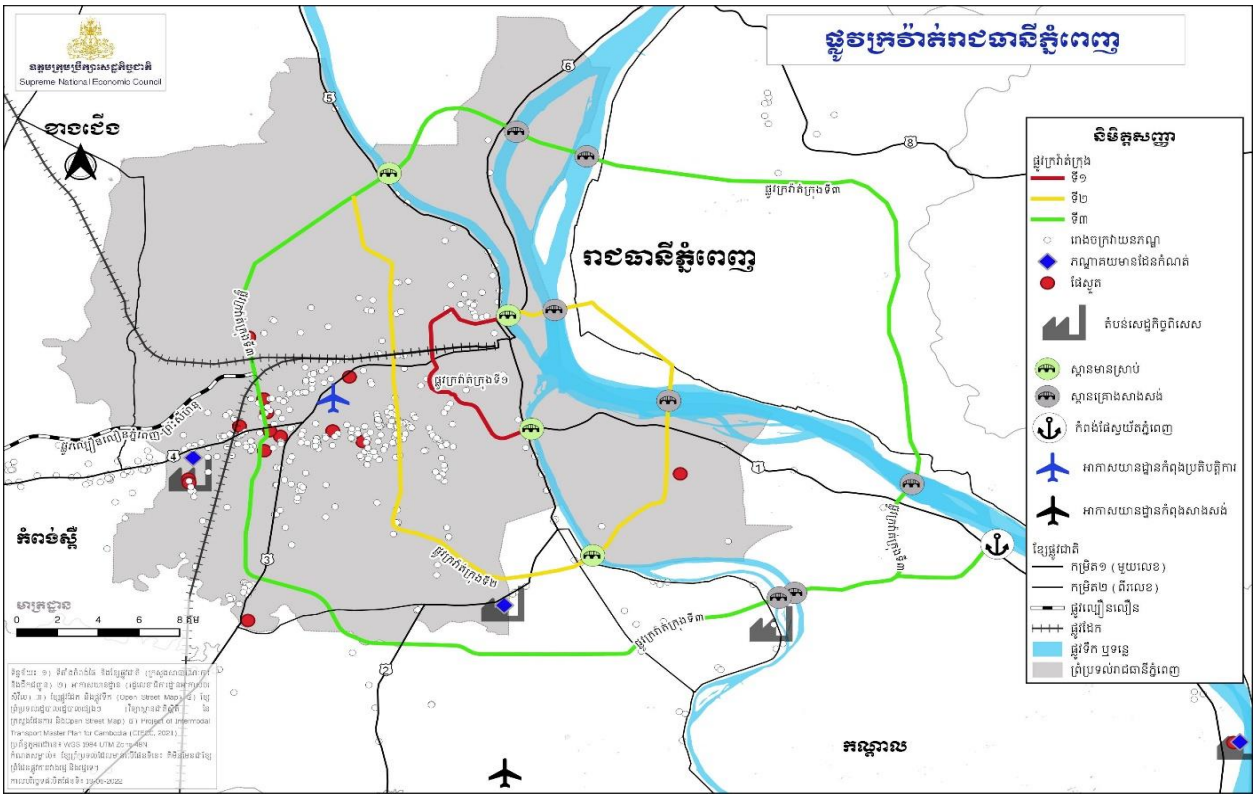
C) 6-line Vertical Roads: Vertical Road No. 1: Banteay Meanchey - Battambang - Pailin-Pursat - Koh Kong - Darasakor airport. Vertical Road No.2: Oddar Meanchey - Siem Reap - Battambang - Pursat - Koh Kong. Vertical Road No.3: Pursat - Kampong Speu - Kampot. Vertical Road No.4: Preah Vihear - Kampong Thom - Kampong Chhnang - Kampong Speu. Vertical Road No.5: Preah Vihear - Steung Treng - Kampong Thom - Prey Veng - Kandal - Takeo. Vertical Road No.6: Rattanakiri - Mondulkiri.

3.3.3.3. Ring Roads and Bypasses

Some ring roads and bypasses need to be planned and built for Phnom Penh and some provincial town centers to connect to different functional areas or cities and to meet the demand for long-distance transport, which distinguishes between fast and slow transport and long and short-distance transport to avoid transit and improve transport safety. All transit routes also play an important role in city and urban development.

A) Phnom Penh Ring Road: three ring roads have been planned for Phnom Penh with a total length of 161 km (as shown in map 3.3.3.3 below). The first ring road, with a length of 18 km, is the main road in Phnom Penh, which was completed and officially opened to use. The second ring road has a total length of 50 km, in which the road section on the west bank of the Mekong River was built and open to use. The third ring road has a total length of 93 km, in which 18 kilometers of road was completed, and the remaining section will be built in two phases. Currently, the first phase of 52 km is under construction.

Map 3.3.3.3 Locations of Phnom Penh Ring Roads



B) Ring roads and other bypasses: Bypasses are planned in the area of Ph'av, Skun, Kampong Thmor, Kampong Thom, Stoung, Siem Reap, Battambang, Pursat, Kampong Chhnang, Odong town centers and others, and the outer ring roads in the north side are planned in Sihanoukville, with a total length of 65 km and other five ring roads, including Ph'av, Skun, Kampong Thmor, Kampong Thom and Stoung, have completely been built and will open to traffic.

3.3.3.4. Railway Network

The railway network in Cambodia will be developed in two phases. The first phase will be by 2027, with the existing railway network, and it will be upgraded in the northern line Phnom Penh - Poi Pet to have the same capacity as the southern line with a speed of 80km/hour for passenger transport and 40km/hour for cargo transport. In the second phase, by 2033, three radial railway lines will be built, including (1) the Northern high - speed railway connecting the Cambodia - Thailand border, (2) Northeast high - speed railway connecting the Cambodia - Lao border, (3) High - speed railway connecting Cambodia - Vietnam, and there is also a Southwest high - speed railway connecting to deep sea port in Sihanoukville and the Northwest high - speed railway connecting from PP - Kampong Thom - Siem Reap - Serey Sophorn.

Map.3.3.3.4. Future railway network development plan

3.4. TRANSPORT AND LOGISTICS INFRASTRUCTURE DEVELOPMENT PROJECTS

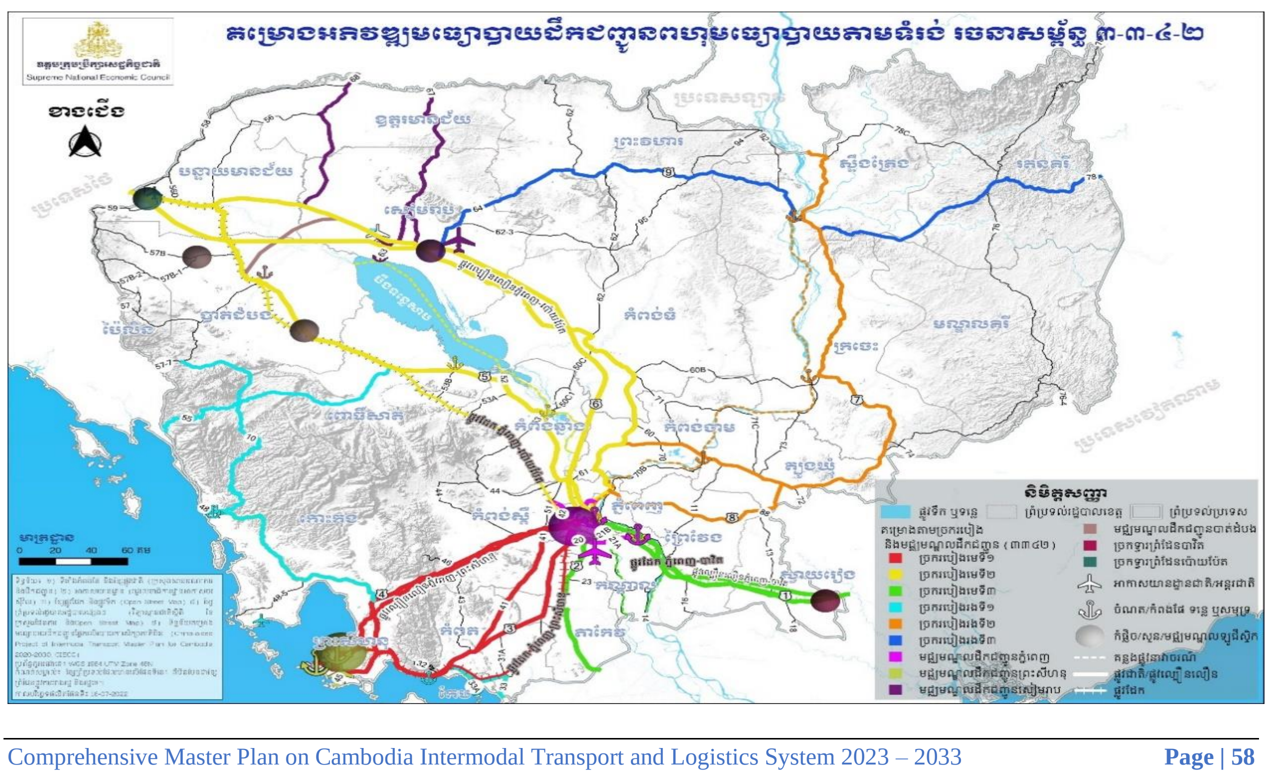
The result of the traffic forecast recalculation for 2030 based on the road network planned for development by 2030. ***(Map 3.4.A.)***

The railway network will extend to nine provinces covering about 48% of the Cambodian population. The main waterway corridors, such as Tonle Sap and the Mekong River will be used for transporting goods across the border, and the seaport covers a coastal area used for import and export goods and international tourists. Air transport will be expanded to cover 40% to 60% of the land and 70% to 80% of the population.

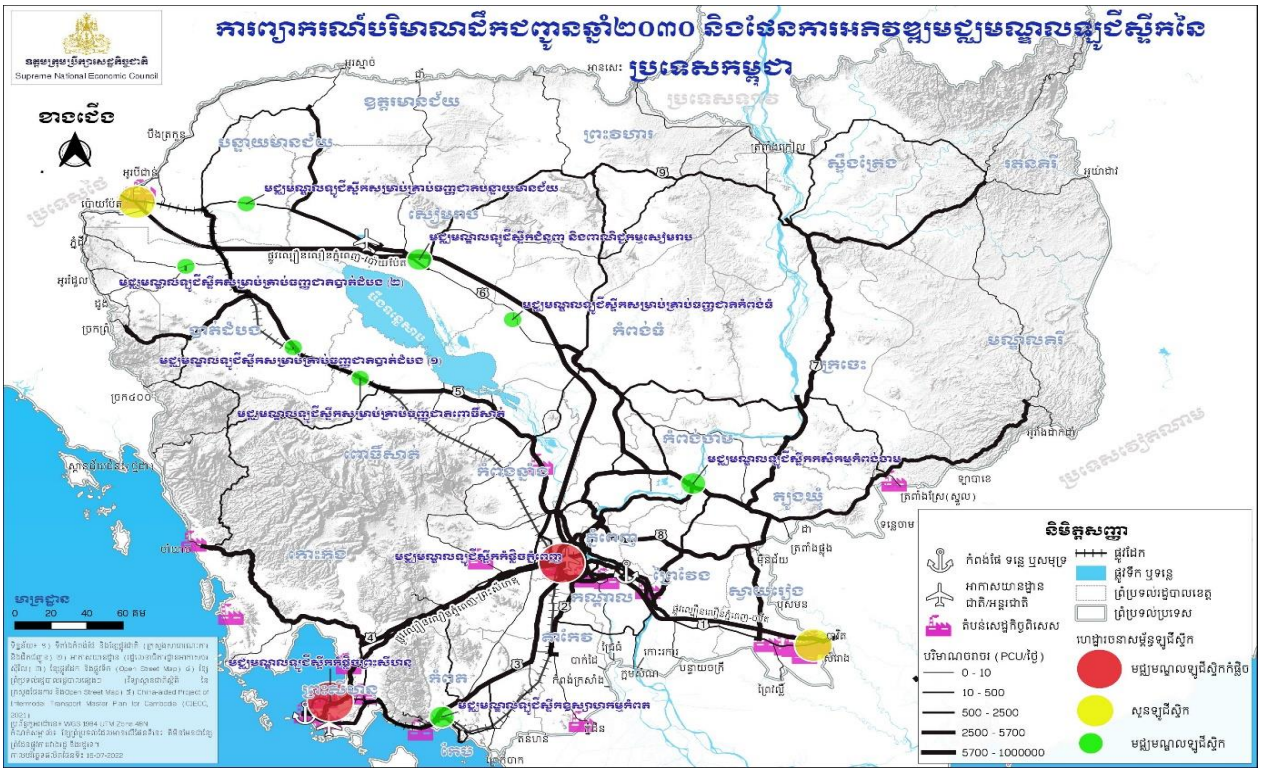
With the combination of future socio-economic development and the need for connectivity with the surrounding area as well as the need for logistics development, the construction of a comprehensive transport system by 2033 has plans as follow. ***(Map 3.4.B and 3.4.C)***

Map 3.4.A. Traffic volume forecast by road network plan for development by 2030 (PCU/day)

Map.3.4. B. Inter-modal transportation development projects in form 3-3-4-2



Map.3.4. C. Transport Volume Forecast in 2030 and Logistics Centres Development Plan in Cambodia



3.4.1. Transport Infrastructure Development Projects

3.4.1.1. Road Network and Related Infrastructure Development Projects

By 2033, to increase the interconnection of roads, expressways, national and provincial roads, roads connected to major transport hubs, main corridors and the other means of transportation, ring roads, and bypasses. it has been considered:

(A) Major expressways

- Construction of 4 expressways (Phnom Penh - Sihanoukville, Phnom Penh - Siem Reap - Poipet, Phnom Penh - Svay Rieng - Bavet, and Phnom Penh Ring Road 3).

(B) Hub and spoke and major transport links

- Completing the construction, improving, and rehabilitating roads with imbalanced in transport capacity and demand. The focus is on National Roads 1, 3, 4, 5, 7 and the new road of Battambang - Siem Reap, Battambang - Koh Kong (National Road No. 10), Kampong Thom - Kampong Chhnang (National Road 50C).
- Improving ring roads, bypasses, and transport connectivity point by continuing to construct the second and third Phnom Penh ring roads, Sihanoukville bypass and Udong town centre bypass, Kampong Chhnang city, Battambang city, Pursat city, Siem Reap city.

(C) National and provincial road connectivity

- Improving the road connectivity with major border gates, strengthening the link between national and provincial roads and among provincial roads.
- Strengthening the link between provincial roads and national roads on both sides of the Mekong River, and the construction of bridges across the Mekong River in the Kratie and Steung Trang district.

(D) Corridors for good consolidation and distribution at the border gates, ports, airports, and railway stations

- Improving the corridors for consolidation and distribution of goods by combining the construction plan of major transport links of airports, railway stations, border gates, ports, and logistics parks, such as Siem Reap Angkor International Airport (New), Techo International Airport (New), Phnom Penh Autonomous Port, Steung Hav Port, Union Port and other Special Economic Zones.

(E) Rural roads

- Strengthening the quality of rural roads through upgrading, expanding, maintaining, and connecting rural road networks in the northeast and mountainous areas with poor conditions of living in Steung Treng, Preah Vihear, Pursat, and Ratanakiri provinces, and also improving roads connecting to industrial parks, tourist sites and agricultural production area.

To enhance the efficiency, sustainability, and safety of road transport, supporting activities include:

(1) Strengthening the management of road maintenance and improving road safety based on the set and required technical standards

- National roads and provincial roads required timely and efficient maintenance.
- The preparation of road marking and the improvement of sufficient and proper traffic signs for conveniences of road utilization.

(2) Improving and disseminating traffic laws and legal regulations to raise awareness among road users and enhancing road safety

- Improving the dissemination and raising public awareness of relevant traffic laws and legal regulations on road safety to the road users and citizens living along the road and in communities to improve their awareness and obey the law as well as updating and revising road traffic laws and relevant regulations related to traffic.
- Strengthening monitoring, evaluation, and investigating the violations of transport, including improving the inspection of cargo trucks, passenger vehicles with installing global positioning system (GPS) devices and enhancing the inspection on overweight cargo trucks and the violation of traffic laws, laws on roads and related legal regulations.

- Strengthen the mechanism of technical inspection to prevent trucks and vehicles from processing and installing with no response to relevant safety standards and from traveling and ban illegal vehicle processing garages, aiming at eliminating the causes that endanger traffic safety by vehicles.

3.4.1.2. Railway Network Development Projects

By 2033, the major railways carrying passengers and cargos will be in radial pattern, connecting cities and major ports of the northwest, southeast, and southwest of Cambodia. These high-speed railways include Phnom Penh-Sihanoukville high-speed railway (the existing Southern railway has been upgraded to high-speed railway), Phnom Penh-Poipet (the existing Northern railway has been upgraded to high-speed railway), a new high-speed railway -Phnom Penh-Kampong-Thom-Siem Reap-Poi Pet, and a new high-speed railway Phnom Penh-Bavet (Railway connecting to Vietnam).

3.4.1.2.1. Rehabilitation of Phnom Penh-Poipet Railway Line (Existing Northern Railway)

Phnom Penh-Poipet Railway is an existing northern railway line that runs through one of the most densely populated areas on the southern side of the Tonle Sap Lake. It is not only a blood vessel of transport connecting Phnom Penh economic centres to Tonle Sap areas, but also an important corridor for travel and goods transportation between Cambodia and Thailand.

This section of the railway line is an important part of the eastern line of the Asia railway network. The existing Northern Railway is from Phnom Penh on the eastern side passing Kandal, Kampong Speu, Kampong Chhnang, Pursat, Battambang, and Banteay Meanchey province, continuing to the western side connecting with the Thailand railway at Poipet border gateway with a total length of 386 km. This line is planned to rehabilitate signs, information tools, and accessory equipment, problem solving at the railway station, railway, substrate under the railway, bridge, and railway line, the maintenance of the railway depot, the improvement of the waiting area and passenger exit-enter in terminal as well as connect with other modes of transportation, and the efficient transportation arrangements for passengers and goods. In addition, adjusting the radius of curvature of the existing railway line will ensure the safety of the train's operation and can accelerate the speed of the train.

3.4.1.2.2. Rehabilitation of the existing Phnom Penh-Sihanoukville southern railway line

Phnom Penh - Sihanoukville railway is an existing southern line mainly connecting Phnom Penh city to Sihanoukville Autonomous Port which is a significant deep-sea port in Cambodia and also a main gate for passenger and goods transport. In addition, it connects Eastern Asia railway to Phnom Penh - Vietnam railway. This existing Southern railway start from the North of Phnom Penh to the South along the national road 3 crossing Kandal, Takeo, and Kampot province and ends at Sihanoukville Autonomous Port with a total length of 266 km. It mainly focuses on simultaneous goods and passengers' transport. For this line, there are plans for rehabilitating signs, signalling and other equipment; tackling related issues at stations, railway, substrate under the railway, bridge, and railway track; repairing railway stations; improving the waiting area and

boarding gates; linking with other modes of transport; and arranging efficient passengers and goods transport. In addition, adjusting the radius of curvature of the existing railway line will ensure the safety of the train operation and can accelerate the speed of the train.

3.4.1.2.3. Construction of Phnom Penh-Bavet Railway (Cambodia - Vietnam Border)

Phnom Penh - Bavet Railway (Cambodia - Vietnam Border) is a main corridor connecting Cambodia and Vietnam, which connects Phnom Penh city to Ho Chi Minh city. It is also a transport corridor for Phnom Penh economic centre towards the East. In parallel, it is an important part of the eastern railway line of the Asia railway network, jointly connecting with the existing northern railway and Ho Chi Minh city-Moc Bai border railway in Vietnam. The railway line starts from Phnom Penh to the Southeast crossing Bassac River, the new terminal of Phnom Penh Autonomous Port, then extending to the eastern side along National Road No. 1 through Kandal, Prey Veng, and Svay Rieng provinces and ends at Bavet border (Cambodia-Vietnam border) with a total length of about 150 km. It provides main importance for simultaneous good and passenger transport.

After the construction of this railway, passenger trains can run once per day and with a speed of 160 km /hour. The most density of movement of cargos will reach 1.26 million tons/year with the speed of more than 80 km /hour.

3.4.1.3. Waterway Transport Development Project

The waterway system, planned to be built, has a total length of 930 km, including 500 km of Mekong River, 260 km of Tonle Sap Lake and Tonle Sap River, 96 km of Bassac River, and 74 km of Steung Sangke. In recent years, according to the rolling out of regulations and rehabilitation of the existing waterways, such as Tonle Sap River from Kampong Chhnang to Phnom Penh, and the improvement of the Mekong River waterway from Tonle Bet River port to Cambodia -Vietnam border formed a waterway network that is more accessible to navigate. Aside from the national waterway network, Cambodia currently also has rivers, canals, and streams with a total length of 820 km for navigation. Those waterways are classified as provincial waterway network levels due to low grade and unfavourable shipping conditions. To be noted, the construction of the provincial waterway network is not included in this master plan. To ensure the connection of domestic waterways in the country, including rivers, canals, and rivers to the sea is more effective and able to reduce the maximum cost of transportation and to ensure the independence of Cambodia's transport sector that can compete with neighbouring countries, the construction and navigation development project “Funan Techo Canal” with a length of 180 km long, connecting Prek Takeo of the Mekong River to Kep province, with 100 meters wide and 4.7meters depth, crossing four provinces such as Kandal, Takeo, Kampot, and Kep are necessary and historical and comprehensive projects with strategic conditions and economic benefits of Cambodia.

By 2033, the Tonle Sap, Kampong Chhnang - Phnom Penh waterway level will be improved, especially for accommodating 2,000-ton ships, the Mekong River waterway, Tonle Bet-Phnom Penh River port can accommodate 3,000-ton ships and the waterway of Mekong River Phnom Penh - Cambodia - Vietnam border can receive 5,000-ton ships, and Tonle Sap River - Kampong Chhnang - Pursat waterway will be able to receive 500-ton ships at appropriate time.

Re-navigation of the section of waterways in Mekong River, Steung Treng - Tonle Bet River and Tonle Bassac river, relying on natural waterways, forms river corridors by using Phnom Penh Autonomous Port as its core, and other major ports alongside Tonle Sap and Mekong River to facilitate transportation directly and to transport agricultural products around the Tonle Sap Lake and international business goods in Phnom Penh, as well as oil and gas along the river. This master plan focuses on (1) the construction of Phnom Penh Autonomous Port includes: multi-purpose port (TS3), passenger and tourist terminal (TS1), container terminal LM17, Tonle Bet multi-purpose terminal (UM2), Prek Anchanh terminal (UM1), multi-purpose terminal (TS11), Mekong port (LM5), Koh Roka multi-purpose terminal (LM26), Prek Kdam port, Kampong Chhnang port,

Kampong Leng terminal port, Chong K'neas port, Sovannaphum port, Boeung Ket port, Chhlong port and O' Smach port, (2) the construction of Pursat port and Siem Reap port at any convenient time, and (3) Reopening transport functions of Steung Treng, Kratie and Battambang port in order to gradually improve the waterway infrastructures, increase the capacity of river ports to receive goods, expand the coverage of the port and improve the services of the port, (4) Rehabilitation and excavation of the Tonle Bassac waterway to connect to the sea in Kep province with a length of 180 km, of which requires the digging of a new waterway to connect from Prek Takeo of the Mekong River linking to Prek Ta Hing of Tonle Bassac to the Kep sea. This project will build three canal locks located on Prek Takeo in Kien Svay district of Kandal Province, Svay Daun Keo city of Takeo Province, and Damnak Chang' aeur district in Kep Province. This project will construct two strategic ports in Takeo province and Damnak Chang' aeur in Kep province which are logistics complex areas, intermodal transport hubs, and other four feeder ports, including Kampong Trach, Angkor Chey, Angkor Borei, and Sa'ang district, which serve as sub ports and stock and distribution warehouses for the surrounding ports. It shall also build two main roads on either side of this waterway and build some bridges along this waterway from Kien Svay district to the sea in Kep province.

3.4.1.4. Maritime Transport Development Projects

Cambodia's coastal ports are divided into three groups: the western port group, the central port group, and the eastern port group. Among them, the central port group, which has the Sihanoukville Autonomous Port as its core has more potential due to the important gates connecting Cambodia to the world, and is an economic corridor of Phnom Penh - Sihanoukville Autonomous Port. The western port group and eastern port group mostly serve the industry near the ports and promotes local economic development.

A) Western Port Group

This group has Koh Kong port as its core and plays a key role to drive the development of coastal and surrounding areas. The master plan includes the construction of two new multi-purpose ports with a capacity of 20,000 tons in Koh Kong port.

B) Central Port Group

This group has Sihanoukville Autonomous Port as its core, Union port in Koh Kong province, Steung Hav port, and Smart port in Koh Kong Province. The development plan includes:

- **Union Port in Koh Kong Province:** construct a multi-purpose port with a capacity of 50,000 tons and a container terminal with a capacity of 50,000 tons for a short-term plan and a cruise terminal with a capacity of 100,000 tons for a long-term plan.
- **Sihanoukville Autonomous Port**: construct a container terminal phase 1 with a length of 350m, 14.50-meter depth that can accommodate containers with 4,000 TEUs or vessels with 60,000 DWT. Construct container terminal phase 2 with a length of 400m, 16.50-meter depth that can accommodate containers with 10,000 TEUs or vessels with 120,000 DWT are able to dock and construct a container terminal phase 3 with a length of 430m, 17.50-meter depth that can accommodate containers with15,000 TEUs or vessels with 160,000 DWT are able to dock.
- **Steung Hav Port**: (Atwood investment group port, Cambodian Energy Limited Port, CIIDG Erdos Hongjun Electric Power Port, Sok Kong Co., Ltd. terminal port, Cambodia-Tela terminal port, L.X.R ASEAN Investment terminal port, and Oknha Mong Port). Construct a container port 2 with a capacity of 50,000 tons and dredging work for access channel for ship with a capacity of 50,000 tons for a short-term plan, construct multi-purpose ports with a capacity of 50,000 tons, and one terminal with a capacity of 50,000 tons for coal transportation for a long-term plan.
- **Smart port of Koh Kong province**: construct a terminal port, storage station, and dredging work for access channel for a short-term plan, two multi-purpose ports with a capacity of 50,000 tons, two maritime ports for general uses with a capacity of 50,000 tons as well as constructing one fishing base for long-term plan.
- Other ports such as Tomnob Rolork port, LHR port and PTT port etc.

C) Eastern Port Group

The Eastern Port Group is dominated by Kampot International Port, Power Clean Energy Port Co., Ltd, Kampot International Tourism Port, Kep Tourist Port, Jing Kor Import Export Port Co., Ltd, Kampot Port and other development plans:

- **Kampot Port:** construct a multi-purpose port with a capacity of 10,000 tons.
- **Power Clean Energy Port Co., ltd:** construct two container ports with a capacity of 50,000 tons, construct two bulk cargo terminals, with a capacity of 20,000 tons and dredging work for access channel for ships with weigh of 50,000 tons.

3.4.1.5. Civil Aviation Development Projects

By 2033, four airports, including Darasakor International Airport, Koh Kong Airport, Poipet Airport, and Mondulkiri Provincial Airport will be built and operated. The layout and

aviation network will be further renovated, namely Phnom Penh International Airport, Siem Reap International Airport, and Sihanoukville International Airport by further adding support capacity and extending the scope of transport services and level of services to boost competitiveness. The existing Phnom Penh and Siem Reap International Airports will no longer operate after the opening of Siem Reap Angkor International Airport (new) and Techo International Airport (new). Thus, development Plan, including Techo International Airport (New) will become a 4F category airport, and Siem Reap Angkor International Airport (new), Sihanoukville International Airport, and Darasakor International Airport will become a 4E category airport, while Koh Kong Airport (new), Poipet Airport (new) and Mondulkiri Airport (new) will become a 4C category airport.

3.4.1.6. Transport Hub Development Projects

(1). Phnom Penh

Phnom Penh Transport Hub Project includes: (1) to improve and modernize the transportation system, and set up a diversified international transport hub with regional competition, (2) to promote the construction of a diversified transport hub to strengthen connectivity of all means of transportation, to improve the consolidation and distribution system, and to fulfil a better role in supporting and a leading transportation system in the Phnom Penh Economic Centre and (3) to strengthen the construction of the Phnom Penh Autonomous Port, new Phnom Penh International Airports, expressways, ring roads, railways, and the logistics complexes. The development plans are as follows:

(A) to improve the functions of the International Aviation Gateway for Phnom Penh International Airport through establishing "flight networks nationwide in Cambodia, connecting with ASEAN and East Asia, the Middle East, West Asia, and Europe" for Phnom Penh International Airport with the amount of 11 to 12.5 million passengers and 280,000-310,000 tons of goods and integration of a new Phnom Penh International Airport with urban transport and railway development plan.

(B) to construct a National Railway Centre: (1) to establish a railway transportation system with Phnom Penh as its core and connect to Poipet, Bavet, and Sihanoukville, (2) to construct a Phnom Penh - Cambodia - Vietnam border as well as repair and upgrade the existing railways for integration with ASEAN and regional economic cooperation, (3) to give a full role and take advantages of rail freight through improving consolidation and distribution systems of intermodal transport, road-railways and railway-waterways and increase the efficiency and level of rail transport services. Major construction projects are the reconstruction and expansion of Phnom Penh Railway Station, including the construction of the new Phnom Penh - Bavet railway (Cambodia-Vietnam border) and railway section connecting Phnom Penh - Phnom Penh Autonomous Port, which is under a new railway construction plan of Phnom Penh - Bavet.

(C) to construct a road network in the pattern of "3 ring roads + 7 radial-pattern roads", construct a new Phnom Penh International Airport and a corridor for consolidation and distribution of goods in Phnom Penh Autonomous Port. Major construction plans include Phnom Penh expressway - Sihanoukville Autonomous Port, expressway Phnom Penh - Bavet, expressway Phnom Penh-Poipet, Phnom Penh Ring Road II (Phase 2), Phnom Penh Ring Road III, National Roads 20, 21 and 42.

(D) to construct waterway transport hub: to focus on tackling difficulties in the construction of inter-modal transportation, railways-waterway and waterways-waterway, and dredging for expansion of waterways, rehabilitation of waterways from Phnom Penh to the Cambodia-Vietnam border, from Phnom Penh to Tonle Bet Port and from Phnom Penh to Kampong Chhnang, and start the construction of bulk cargo terminal and expansion of container port terminal phase 4 and 5 of container port terminal, LM17 and development project of river terminal port along the rivers, including multi-purpose terminal TS3 and TS1, multi-purpose Tonle Bet Port (UM2), Prek Ang Chanh multi-purpose port (UM1), multi-purpose port (TS11), Koh Roka multi-purpose port (LM26) and other port terminals.

(E) to construct Logistics Complex: to construct Phnom Penh Logistics Complex, to improve some functions such as filling out customs clearance procedures for import and export goods, consolidation and distribution of goods, goods flow, inspection of goods and logistics information services, etc. Major construction projects include a railway connecting to the container terminal of Phnom Penh Autonomous Port, roads connecting a new Techo International Airport with the terminal port of Phnom Penh Autonomous Port, and the construction of Phnom Penh Logistics Complex project.

(2) Preah Sihanoukville

Sihanoukville transportation hub project includes : (1) to improve a comprehensive and modern transportation system through constructing a competitive international coastal port centres in the region, promoting the integration of a diversified transport hub, strengthening inter-modal transport connectivity to improve the consolidation and distribution system, and developing the economy with ports as its core and (2) to construct Sihanoukville Transport hub and major airports, to strengthen the construction of expressways and ring roads along the coastal areas and southern transport corridors, and the construction of Sihanoukville Logistics Complex. Specific development plans are as follows:

- To construct a container terminal phase 1 with 350m long, 14.50m depth that can accommodate containers with 4,000 TEUs or vessels with 60,000 DWT (2022-2026), and to construct a container terminal phase 2 with 400m long, 16.50m depth that can accommodate containers with 10,000 TEUs or vessels with 120,000 DWT. To construct a

container terminal phase 3 with a length of 430m, 17.50m depth that can accommodate containers with 15,000 TEUs or vessels with 160,000 DWT (2026-2030).

- To construct two new expressways, including Phnom Penh-Sihanoukville Expressway and Koh Kong-Sihanoukville-Kampot Expressway, to construct Sihanoukville highway to be a Sihanouk ring road, to renovate National Roads No. 4 and No. 45, and to construct a railway connecting to Steung Hav Port.

- To rebuild the existing southern railway to extend volume of transit cargo with the amount of two million tons/year by 2030 and build a railway connecting to Steung Hav port.

- To expand and promote Sihanoukville International Airport. After upgrading the airport to category 4E, the runway, airport terminals and landing areas will expand and freight facilities will be improved. The annual number of passengers will increase from 3 million to 4 million.

- To construct Sihanoukville Logistics Complex which can operate the customs clearance procedures for import and export goods, customs bonded warehouse and intermodal transport connectivity, etc.

3.4.2. Logistics Infrastructure Development Projects

The logistics corridors, which will be improved, include: (1) to closely link between economic transport and the demand of logistics distribution, (2) to promote the construction of transport infrastructure to improve the logistics corridor situation, (3) to further concentrate on connecting and intermodal transport, (4) to strengthen the functions of collection, distribution and transportation services and (5) to improve the status of fast and efficient freight services. The logistics centres support the external transport nodes and shall be developed in the form of "2 core cities, 2 major poles, and N-centres (2-2-N)" by geographical locations, enriching with industrial hubs and high logistics demand such as Phnom Penh, Preah Sihanoukville, Poipet, Bavet, Siem Reap, Kampot, Kampong Cham, Battambang, Pursat, Banteay Meanchey and Kampong Thom.

3.4.2.1. 2 Core Cities / Logistics Complexes

The foundation location of logistics is a common core of the logistics infrastructure network in the region and focuses on large-scale logistics operations and broaden and busy services. The strategy of location selection is an intersection of the main freight corridor and transport hubs, which are mostly near the intersection of expressways, airports, train stations, etc., and shall select the locations, being at the linkage of the transport hubs that are far from town centres to access adequate land areas for development;

A) - Phnom Penh Logistics Complex (Complex) improves main functions such as customs clearance for import and export, intermodal transport, consolidation and distribution of goods, inspection of goods and logistics information services depending on the Phnom Penh

comprehensive transport hub and linking with industrial development and the demand of import and export in Phnom Penh to improve the level and efficiency of logistics services. The selected location should be an intersection between means of transportation. In the northwest of Phnom Penh near the airport and warehouses, the train station is a good location for building branches of the Phnom Penh Logistics Complex at the northwest, which is along National Roads 3 and 4. In the southeast of Phnom Penh near Phnom Penh Autonomous Port, it is the ideal location for building another branch of Phnom Penh Logistics Complex at the southeast (along the national road 1 and 2). Phnom Penh Logistics Complex will be built on an area of 150 hectares which can be constructed by phases and targets based on the actual requirements.

B) - Sihanoukville Logistics Complex (Complex) improves main functions such as completing the customs clearance for import and export, customs bonded warehouses, intermodal transport, consolidation and distribution of goods, inspection of goods and logistics information services and depending on the Sihanoukville Autonomous Port as well as connecting with the needs for industrial development. The selected locations shall link together with the development projects of the Inland Container Deport of PAS. Sihanoukville logistics complex has been constructed on an area of 100 hectares.

3.4.2.2. 2 Logistics Parks

The logical park is a joint connected area of logistic infrastructure networks and a location or enterprise that provides a variety of logistic activities and a comprehensive information network. The principles of location selection should be built in conjunction with freight corridors and main transport hubs which normally located in the intersection of expressways or a large concentration of road transportations. The location should be far away from the town centres to have enough land for the construction.

A)- Poi Pet Logistics Park functions to promote trade development, industrial production transfer on the Cambodian-Thai border, export-import services along the Cambodian-Thai border and helps improve the quality of logistics services along the border and boosts the competition in the region. It should be in the economic zone of Poipet border and along National Road 5 (Phnom Penh - Poipet) near the warehouse of Poipet Railway station and it should be built on an area of 80 hectares.

B) Bavet Logistics Park functions to promote trade development, industrial production transfer on the Cambodia-Vietnam border, export and import services along the Cambodia-Vietnam border and helps improve the capacity of export process and the quality of logistics services along Cambodia border and boost the competition in the region. The location of the park should be selected along National Road 1 (Phnom Penh - Bavet) near the warehouse of Bavet Railway station in the economic zone of the Bavet border next to the Manhattan SEZ and it should be built on an area of 70 hectares.

3.4.2.3. N Centres

The N Centre is a logistics linkage point of a highly professional logistics infrastructure network which provides supporting services to logistics sector needed for trading, agriculture, and industry at certain locations. The selected location based on the status and operation of the types of industry, N Centres shall be developed along expressways, cities, and regions with various functions.

A) - Siem Reap business and trade logistics Centre functions to provide logistics supporting services for the needs of tourism and international trade, as well as improve the quality of logistics services and boost the development of tourism and international trade. It can be in the economic park of Siem Reap Angkor International Airport (new) and on an area of 50 hectares.

B) - Kampot industrial Logistics Centre functions to provide supporting services for the needs of logistics of the industrial sector in Kampot province, focusing on the main products such as steel, cement, etc. In addition, it also helps to improve the quality of logistics services for the industry and promote the modernization of Cambodia's industry as well. It shall be in the location of Kampot Port along National Road 3 near the warehouse of train station in Kampot Province and it shall be built on an area of 50 hectares.

C) Kampong Cham Agricultural Logistics Centre functions to provide logistics services to support the transportation of agricultural products such as rice and rubber in Kampong Cham and surrounding areas, particularly to improve the quality of logistics services for agriculture, which will be able to promote the agricultural industrialization in Cambodia. It should be in the outskirts of Kampong Cham near the Mekong River along the road from Phnom Penh to Steung Treng and on an area of 50 hectares.

D) - Logistics centres for grain in Battambang, Pursat, Banteay Meanchey, and Kampong Thom province functions to provide the location for storage, packaging, distribution and other supporting services for rice transportation and export to other provinces in Cambodia to improve the quality of logistics services and help boost the export of Cambodian agricultural products. The location of the park shall be selected by using a multi-centre model focusing on five locations, including Maung Russey and Bavel districts in Battambang province, Bakan district in Pursat province, Preah Net Preah district in Banteay Meanchey province and Stoung district in Kampong Thom province. Each location shall be on an area of 30 hectares. Based on the needs of new industrial development and areas for the construction of future logistics complexes, namely Kampong Chhnang, Takeo, Koh Kong, and Kratie. Thus, the location for logistics complex development shall be reserved and in an appropriate scheduling for logistics complex construction to establish an intertwining logistics connection hub system.

3.4.2.4. Logistics Services Promotion

(1) Launching advanced technologies and new logistics businesses

The public sector provides physical infrastructure and public services to make private sector to run business and provide services effectively. In this sense, there is necessary to promote the quality and diversification of logistics services by enhancing the capacity of private service providers. The provision of rich transportation, and diversified and modern logistics services with boosting competitiveness in the sector will help achieve international standards and increase competitiveness in the local market.

In the global logistics industry, modern technologies and new businesses have developed in response to the diversification and modernization of the export, but many of these new technologies and businesses have not yet been developed in Cambodia. During the implementation, the master plan requires logistics expertise in the context of technologies and modern business types which are expected to significantly increase as follows:

- Less-Container Load (LCL)
- E-Commerce
- Last-mile Delivery for the needs of domestic and international distribution of goods and online shopping which are on the increasing trends
- Tracking and Tracing using GPS
- Cold Chain responding to the need of fresh and frozen food and development of agro-industry
- Vendor Management Inventory (VMI)
- Green logistics and transport, etc.

These projects mainly encourage to utilize new technologies and services which are mostly the initiatives of private sector and expected the investments will be made by the private sector as well.

(2) Establishment of Smart logistics information platform

The modernization of information technology and smart logistics sector is a strong sign and guarantee in the transition toward a modern field of logistics. These goals can be achieved through building a national data management system for the interconnected logistics sector, as well as establishing a public logistics information platform, focusing on three levels: government, logistics parks, and association and enterprises that will help establish Smart Logistics Information System to promote logistics software knowledge in Cambodia. The development of effective and smart logistics platform includes:

(A) Big data centre for logistics sector based on the internet plus (Internet+), the logistics sector necessarily needs some development, including building a big data centre for intertwining national and sub-national logistics level combining with data from private sector using modern

technology (Cloud and big data technology), setting up road management system and tracking systems for movement of vehicles and cargoes via data collection, smart sharing and analysis technology, facilitating the implementation of logistics standards and promoting information sharing and exchange within the entire logistics industry chain. The three functions, which are necessary for utilising data, includes data display, forecasting, and decision support.

(B) Logistics Services Management Platform of the Government the management platform preparation is based on the foundation of licensing, information, data exchange, and service system". It has to focus on some necessary tasks, including establishment of smart and standard logistics systems and user-friendly, low cost, promote the development and environment for logistics sector through collecting, transferring and managing data, inspecting safety operation and assessing the credit of enterprises.

(C) Information System Platform for Smart Logistics Park the system has been directed and developed by a company that manages the park to ensure the storage, transfer, and process of information are made in an intertwining, timely and interactive manner. The key functions of the system include information sharing (disclosure of information), project data collection (corporations), financing and supporting services for enterprises in the logistics park. The information management of the logistics park is organized by an interconnected system, interconnected and advanced technology platform such as transferring wireless video and card utilizing services.

(3) Strengthening management and human resources capacity in logistics sector

The logistics sector in Cambodia requires strengthening and expansion of logistics training to ensure the level of enterprises services and highly professional human resources and construct an effective logistics management system. Thus, there is an importance to establish an entity or institution which is responsible for promoting human resources development and services focusing on three levels namely logistics associations, logistics companies, and providing trainings to employees of companies

The strengthening the capacity of management and human resources in logistics sector are as follows:

(A). Establishing the Secretariat of National Logistics Council and National Logistics Steering Committee of Cambodia the establishment of the Secretariat of National Logistics Council and National Logistics Steering Committee to monitor and evaluate the annual reports on the implementation of the master plan at the national level, to strengthen services management, to allocate resources, and to upgrade the technology of logistics companies, to promote the development and the establishment of information systems include big data centres for the logistics

sector and the implementation of the logistics master plan. The responsible entity, secretariat, has the responsibility for carrying out daily tasks and reporting directly to the National Logistics Council and the National Logistics Steering Committee.

(B) Establishment of logistics associations at national and provincial level provides support to Cambodia Logistics Association for facilitating with various logistics companies through working together with other associations. The General Department of Logistics of the Ministry of Public Works and Transport should take lead in the integration and establishment of the national logistics association and the establishment of branches in the provinces to strengthen relations with logistics companies, especially large companies aiming at promoting the development and progress of logistics companies through integration and resource allocation mechanisms.

(C) Preparation to establish the educational and development institutions for logistics companies establishing educational and development institutions for logistics companies in conjunction with policies includes promoting investment and supporting business capital, providing support both services and policies, and encouragement to attract foreign direct investments. They will play an active role in disseminating and stimulating private companies to have integrations and restructuring, promoting growth of small and medium companies, and strengthening the institutional capacity by focusing on education and development.

(D) Establishment of logistics vocational training centres *sets up* logistics vocational training centres to provide trainings to the government officials, employees of private companies and students. The centres can be built in Phnom Penh and gradually expanded to target provinces such as Sihanoukville, Bavet and Poipet. To enhance the capacity of private logistics services, especially for drivers as well as heavy trucks, trucks with trailers, and specialized vehicles is also essential to reduce traffic accidents and traffic law violations, which lead to unreasonable and unexpected delays and unsafe cargo transportation. Improving driving skill is a prerequisite for improving logistics services.

(4) Public-private dialogue and marketing promotion mechanisms

In line with the rapid growth of the economy and population in Cambodia, logistics services are expected to be more effective in the future. The public-private cooperation is considered as the most importance for creating a better business environment, but the consideration and cooperation are still limited. The opportunities for public-private dialogue should be established, especially the regular discussions on transport and logistics industry to modernize the logistics services and meet the demand of logistics which will increase in the future. Strengthening a marketing mechanism should be held through establishing exclusive competitiveness and promoting the efficiency and logistic services via starting up private businesses, including public sector participation (PSP) and fair competition.

(5) Trade procedure improvement and regional connectivity enhancement

The master plan will focus on facilitating cross-border activities and trade through promoting cross-border operations and export-import procedures and cross border transport. Fast border crossing, low cost, and transparency needs simple measures and high compliance electronic systems. Thus, this measure is form based on Port Electronic Data Interchange (Port EDI), Port Management System, and Cambodia National Single Window (CNSW) implementation etc. It also includes increasing the number of traders who well apply the measures through improving incentive mechanisms for the best traders and building institutional capacity for customs, customs brokers, and logistics service providers.

The efficiency of cross-border trading and ports with the facilitation of import-export licenses and adequate technology utilization such as the Cambodia National Single Window (CNSW) and the ASEAN Single Window (ASW) will enable seamlessness, convenience, fast, fair price, transparency, and flexibility for traders and passengers who comply with the requirements of good governance. In parallel with the implementation of the ICT system, customs clearance procedures will be inspected based on increasing the number of best traders, installing service counters between the office and waiting areas and the implementation of accepting "original copy" for the attachment of customs declaration documents. They are expected to promote better cross-border business management and trade procedures.

The Container Terminal Management System (CTMS) and Single Window System (SWS) are already connected to the shipping agencies and railway companies to exchange the necessary information. However, there is no relationship between trucking companies and dry port operators. Within the connection with the transport companies, Sihanoukville Autonomous Port (PAS) is able to reduce congestions in front of and in the compound of the port. Single Window System (SWS) receives invoicing information on port utilisation and creates invoices for fees and service charges. However, payments are made manually (not fully use a computer system).

The Cambodia National Single Window System (CNSW) is a system developed and launched for relevant competent ministries and institutions in issuing licenses, certificates, and other documents (LPCO) in electronic form for export and import goods, replacing paperwork document utilisations. Currently, the system is connected to Automation System Customs Data (ASYCUDA) in exchanging electronic data for customs clearance. ASYCUDA has a special function which is rarely available in the systems of the government. It is risk management module which functions to assess the level of risk of exported and imported goods and allows customs officials to focus on high-risk goods and provide maximum facilitations for non-risk goods, which is an important part of implementing the policy of trade facilitation through risk management of the Royal Government of Cambodia.

The capacity of ship inbound-outbound procedures and port management will be enhanced through the implementation of Port EDI and port management systems. The Port Electronic Data Interchange system (Port EDI) is a large-scale modernization of vessel traffic controls in Cambodia via transforming from manual to online work. Nowadays, all ship inbound-outbound procedures are taking long times and complicated. However, when the Port EDI system is operated, it will make an easier process, time saving, efficiency and transparency as well. Providing the information in advance through Port EDI will facilitate effective port managements to reduce congestions since port management systems (CTMS and SWS) will be directly connected to shipping companies and dry port operators.

The reciprocal connectivity of means of transportation is a catalyst for efficient and seamless freight traffic in international and domestic markets. The effective intermodal transport and logistics systems will contribute to the operations through reducing time and cost of delivering goods to consumers and increasing competitiveness for local industries. In other words, it is a powerful tool for accelerating connectivity to global supply chains and helping connect key export industries to international markets as well. The transport infrastructure investments are important not only for the economic point of view, but also important for promoting public transport, and region to region connectivity to better improve the supply and distribution of goods. Therefore, Cambodia's participation in Cross Border Transport Agreement (CBTA) is significant to ensure the smooth flow of goods, services, and passengers at the border crossing, trade facilitation and promote the competitiveness of the country.

(6) Measures, Policies, and Regulations supporting frameworks (strategy) of Intermodal Transport Development

Based on existing laws, regulations, and policies related to the logistics sector in Cambodia and the experience of logistics policies of other countries around the world, Cambodia is able to organize, disseminate, and strengthen the implementation of policy frameworks to support logistics sector through focusing on the development of laws and regulations, research, feasibility studies, environmental impact assessment, and cost and benefit analysis.

Strengthening the legal framework for transport and logistics systems, and the establishment of self-sustaining mechanisms should be conducted for the implementation of the master plans and improvement of future logistics services in response to the trade and international transport volume, global agreements as well as relevant local institutions. Accelerating cross-border trade agreements and strengthening relevant legal frameworks such as law on inland water and port transportation, law on railways, law on land transport, and technical and regulation standards are essential to strengthen Cambodia's competitiveness in ASEAN and the Greater Mekong Subregion.

Further negotiations on Cross Border Trade Agreement in the Greater Mekong Subregion (CBTA), Bilateral Agreements and ASEAN Framework Agreement on Facilitation of Goods in Transit (AFAFGIT) are highly compulsory. Tariff and non-tariff barriers along the Cambodian border remain the main problems and disadvantages for the export industry and increasing import prices. In addition, as a member of World Trade Organisation, the Greater Mekong Subregion and ASEAN, Cambodia has obligations under these agreements. Legal framework coordination such as consensus of Harmonisation of Standards needs continue discussing and negotiating with neighbouring countries to expedite fast and comprehensive implementation of these agreements.

4. THE MASTER PLAN IMPLEMENTATION

The master plan will implement based on the determination of priority project list, common financing and facilitating framework mechanisms and monitoring the implementation of the Royal Government.

4.1. Criteria for Project Priorities and Project Implementation Cycle

This master plan identifies a list of preliminary priority projects that will be a solid foundation during the implementation phase for improving and reinforcing through the arrangement of investment framework and specific project lists based on principles and rules aligning with the mechanism of public investment management:

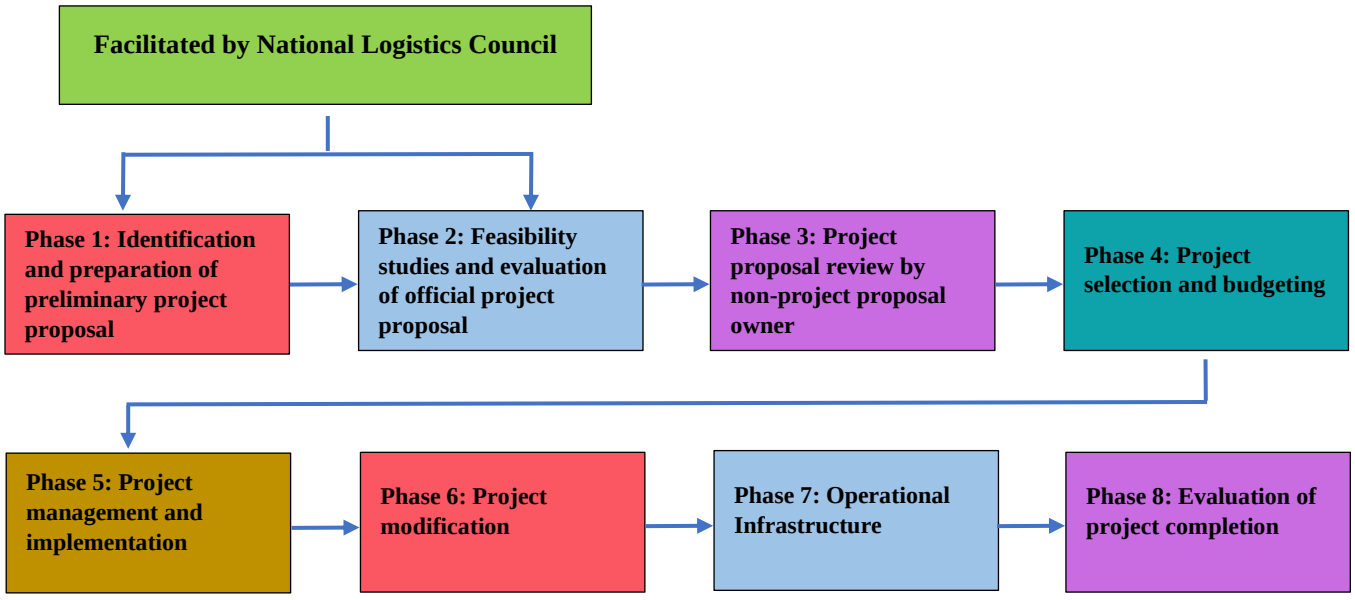
- **Rationalization principles:** are necessary or important projects to socio-economic and environmental aspects as well as responding to the priority needs of the National Strategic Development Plan, and policy and other related strategies.
- **Economic and financial principles:** have economic and financial benefits by the set conditions.
- **Best option principles:** have comparative advantage and higher economic and social benefits compared to other project options.
- **Budget affordability principles:** budget requirements for investment, operations, and maintenance shall be within budget sustainability and integrated into the medium-term public financial framework, medium-term budget framework, budget strategic plan, and annual budget.
- **Applicable principles:** project components, approaches, mechanisms, structures, and the institutional capacity for project management and implementation shall meet the actual needs and context of Cambodia.
- **Green development principles:** there shall be a balance between economic and environmental, social and cultural development to achieve national economic development goals.
- **Project implementation readiness principles:** there shall be consideration and guideline preparation on project management, project implementation and resettlement plan resulting from development projects, environmental management plan, project procurement plan, and as well as annual activities and budget plan.

In parallel, the project implementation process shall be aligning with common procedures and cycles of public investment projects, including:

- Project identification and preparation of preliminary project proposals
- Feasibility study and evaluation of project proposals
- Review and evaluation of project proposals
- Selection of project proposals and budgeting
- Project management and implementation
- Project revision
- Utilisation of construction infrastructure under the projects, and
- Evaluation of project completion.

The cycle of the project preparation and implementation in this master plan will abide by the public investment projects with eight phases as described above. In more detail, the first and second phases, which are the stages of identification and preparation of preliminary projects and feasibility studies and evaluation of official project proposals are under the jurisdiction of the National Logistics Council to decide and approve, while the National Logistics Steering Committee is in charge of coordinating based on basic technical principles and the participation of relevant ministries and institutions according to their respective functions and responsibilities as technical institutions.

Figure 4.1. Flow or stages of the project cycle under the Comprehensive Master Plan on Intermodal Transport and Logistics in Cambodia 2023-2033



4.2. Financing Framework

This master plan framework has 174 priority projects and are divided into modes of transportation, but mostly are road construction projects. These projects have the investment cost of around 36,679 million dollars, conducted before the COVID-19 outbreak and with a low inflation rate. Responding to the demand of investment, supporting financing will abide by the principles of public investment with three major sources, including (1) national budget financing, (2) oversea financing, and (3) public-private partnership mechanism:

- ***National Budget Financing****:* focuses on public investment projects (both national and sub-national) aiming at responding to urgent and low hanging fruit priority demands from the Royal Government and with a small amount of money and less complexity that attract domestic companies and enterprises to engage. In general, this type of project does not have the feasibility study and preparation of comprehensive project proposals, as there is no financial mechanism to support the study. However, in the context of new development, public investment projects financed by national budget are becoming more complex, requiring larger amount of budget and longer time for implementation.

- ***Overseas Financing****:* contraries to public investment projects financed by the national budget, oversea financing is used to support large and complex investment projects and requires foreign expertise and experience through the participation of construction companies and international consultants. With a large amount of money, the project takes a long time (over a year or more than one year), especially needs to go through comprehensive feasibility studies before a decision made by the government and generally supported by grants, technical assistance, or development funds from development partners.

- ***Public-Private Partnership Mechanism***: focuses on projects with huge amounts of financing which are hard for national financing to meet or to alleviate the national fiscal burden. On the other hand, it is also in the category of projects the country has to rely on skills or techniques of the private sector to operate or manage physical infrastructures before transferring skills to government officials to carry on. To be noted, the previous public-private partnership mechanisms of both solicited and unsolicited projects focus on several priority sectors include hydropower, expressways, airports, railways, etc. At the same time, the feasibility study relies heavily on the support of the private sector, especially companies being interested in those investment projects or request for support from development partners, while the government is studying the possibility of establishing a financing mechanism to support the study.

In general, these public investment financing mechanisms are limited or respective limited threshold to ensure sustainability, fiscal sustainability and public debt. Through the annual public financial framework, domestic financing investment has steadily increased from US $ 593 million

(2.96% of GDP) in 2016 to US $ 1,203 million (4.44% of GDP) in 2019[3]. Of this amount, about 85% is spent on physical infrastructure projects, which focus on maintenance and repair and small-scale investment projects, especially rural roads and small-scale irrigation project. At the same time, most projects focus on transport infrastructure, accounting for about 60% of the country's financing. However, the possibility of investment from both sources entirely depends on domestic revenue collection which generally has a close connection with economic growth and activities. It means, if GDP is expected to grow well for the next year, the potential for domestic revenue collection will increase and lead to more well-planned investment expenditures in the country.

Foreign financing investment has the same growth trend, rising from US $ 945 million (4.72% of GDP) in 2016 to US $ 1,240 million (4.57% of GDP) in 2019. Generally, about 80% of this size is used to support physical infrastructure investment, mostly transport infrastructure, or in other words, the transport sector investment absorbs between 45% and 50% of foreign investment. In addition, the limited threshold of foreign financing investment depends on the ability of Cambodia to borrow oversea public debt. Through the Public Debt Management Strategy 2019-2023, the Royal Government sets the size of new oversea loans for 2019-2023 in the range of US $ 1.5 billion to US $ 2 billion / year and will increase in necessary circumstances to around US $ 3 billion / year, but the size of new overseas loans in the next five years should not exceed 11 billion US dollars (equivalent to about 15 billion US dollars). In this sense, the size of sustainable debt can reach an average of about 3 billion US dollars per year.

In separation, public-private partnership investments from 1995 to 2021 have amounted to 6,365[4] million US dollars, of which transport infrastructure investment accounted for about $3,285 million, of which 51% were on airport and expressway projects. However, this mechanism is in the process of **"Learning by doing"**, which needs to build trust between the public and private sector through the development of comprehensive legal and standard frameworks in all aspects and promote transparent implementation. This means that the mechanism has not become a leading financing mechanism for Cambodia in the near future.

The financing framework to support the implementation of this master plan has been considered in stages, aligning with a time frame of the prioritized project list preparation, but focusing on a short and medium-term framework (2023-2027) while the long-term framework (2028-2033) will be considered in the next phase (during the mid-term evaluation). Generally, the total financing requirement for a short and medium term (5 years) is approximately 19,926 million US dollars, equivalent to 10.2% of GDP between 2023-2027. Through this total financing requirement, the average annual financing is around US $ 3,985 million, which needs to be divided into three major sources of financing:

[3] *Investment financing in Cambodia has risen rapidly from the year 2000 (1,583 million USD) and 2021 (1,684 million USD) and extended to 2022 and 2023 because of the Covid-19 prevention policy.*
[4] *The size of investment may be even larger if the data entry is much more accurate.*

- ***National Budget Financing***: is expected to play a significant role in supporting the demand of public investment, especially transport infrastructure. On average, national budget financing can afford the demands of public investment on transport infrastructure for around 2.9% of GDP and with a steady growth trend for a medium and long term. It is expected to be uncertain due to local income levels and other factors.

- ***Overseas Financing***: total sustainability is in 2.1% of GDP on average per year and with a steady trend for a medium and long term. This is highly stable compared to other sources but challenges with the division of another priority, which is also a burden of the Royal Government, especially a social aspect.

- ***Public-Private Partnership Mechanism****:* based on the above estimates, the public-private partnership mechanism necessarily needs to be supplemented at 5.3% of GDP on average, which is a large scale. However, the financing demand from this source will decrease for a medium- and long-term trend, while the availability of the national budget financing is getting better.

The following table details the sources of financing to support the annual implementation of the master plan, which is variable depending on the availability of funding sources. At the same time, this consideration is made in the scenario of economic growth returning to a high growth trend (around 7% / year) as the Gross Domestic Product is able to maintain growth around 10% for a long term, while the fiscal tax sector should be kept within the budget balance and the projected budget deficit does not exceed 7.0% of GDP. In this regard, the risk of financing for supporting projects within the master plan framework is high, especially the national budget financing and public-private partnership mechanisms. Therefore, setting an actual financing amount by respective source will be decided at the implementation stage in parallel with the actual action plan, based on the list of preliminary priority projects.

Financing by main sources for short and medium term (2023-2027)

Million USD	2023	2024	2025	2026	2027	Average
National Budget Financing	1,491	741	955	1,135	1,286	1,122
Overseas Financing	759	764	783	833	1,020	832
Public-Private Partnership Mechanism	1,734	2,481	2,246	2,017	1,679	2,031

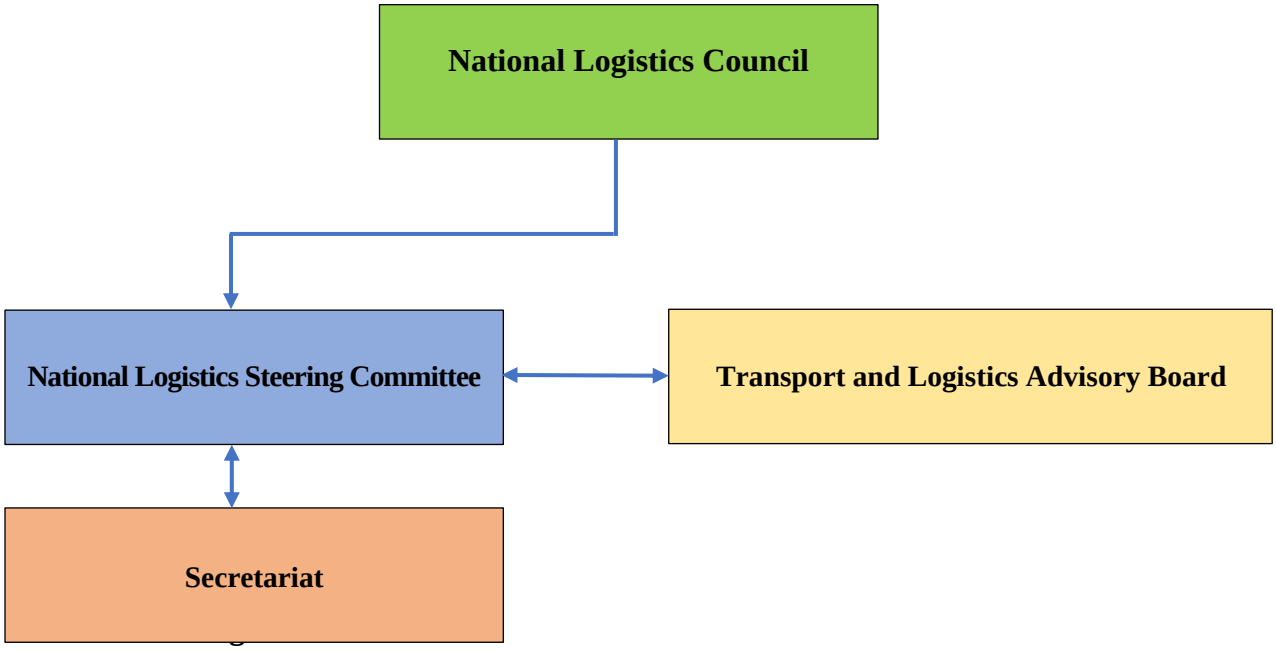
(Compared to GDP %)	2023	2024	2025	2026	2027	Average
National Budget Financing	4.6	2.1	2.5	2.7	2.8	2.9
Overseas Financing	2.4	2.2	2.0	2.0	2.2	2.1
Public-Private Partnership Mechanism	5.4	7.1	5.8	4.8	3.6	5.3

4.3. Implementation Facilitation, Monitoring and Evaluation Mechanisms

4.3.1. Institutional Mechanisms

A simple and effective mechanism is considered to use the basic existing mechanisms linking with strengthening and improvement to ensure the successful implementation of this master plan. The institutional mechanism to promote the implementation of this master plan consists of: (1). National Logistics Council (NLC), (2) National Logistics Steering Committee (NLSC), (3) Transport and Logistics Advisory Board, and (4) Secretariat. The NLC, NLSC, and the Secretariat, which are the existing mechanisms, will have more roles and responsibilities in facilitation and boosting the implementation of the Comprehensive Master Plan on Cambodia Intermodal Transport and Logistics System 2023-2033. At the same time, the Transport and Logistics Advisory Board, an additional and new institutional mechanism, will be organized through the management and decision of the National Logistics Council.

Figure 4.3.1. Institutional mechanisms



The National Logistics Council[3]

The National Logistics Council is a top executing agency of the Royal Government in leading, managing and promoting the development of the logistics sector of the Kingdom of Cambodia. In addition to the core and general roles in term of logistics sector, the National Logistics Council will have an additional and specific role with an aim to promote the effective implementation of the Comprehensive Master Plan on Cambodia Intermodal transport and Logistic System 2023-2033 as follows:

[5] *Royal Decree on Roles and Responsibilities of the National Logistics Council dated 24 November 2017*

- Provide policy recommendations to guide the effective implementation of this master plan and respond to the set goals and timeframe
- Make recommendations to the Royal Government on action plans (priority projects) and investment plans on intermodal transport infrastructure development projects for a short, medium and long term
- Provide recommendations and coordination on promoting cooperation among the ministries and institutions in charge of implementing the action plans of this master plan framework.
- Provide recommendations on monitoring and evaluation the implementation of the master plan and effective implementation mechanisms and
- Perform other duties as necessary.

The National Logistics Steering Committee

NLSC, an existing institutional mechanism, will act as a direct executing agency, adding to its general roles, to support the National Logistics Council in implementing this master plan through the following significant roles:

- Prepare and promote the implementation of short-medium and long-term action plans in accordance with the list of preliminary projects of this master plan
- Prepare short-medium and long-term public investment plans in accordance with action plans identified and prioritized in public investment project proposals, based on the direction of the master plan to request supports from the Royal Government through the National Logistics Council
- Engage in promoting domestic and international partnerships and cooperation for the construction and development of intermodal transport system
- Engage in mobilizing financial resources, technical resources and human resources in an intention to construct and develop intermodal transport system

- Encourage engagement and support the participation in promoting the construction and development of the intermodal transport system from all stakeholders
- Promote the constructing and sharing data to increase synergy and innovation among the public and private sector to accelerate the development of intermodal transport system
- Perform other roles and responsibilities assigned by the National Logistics Council.

The Secretariat

The Secretariat serves as a technical executing agency for the National Logistics Steering Committee. Therefore, to fulfil this role and responsibilities successfully, the capacity of the secretariat will be strengthened by providing adequate resources according to specific needs, including human and financial resources. The Secretariat has the following roles and responsibilities:

- Provide technical assistances to the National Logistics Sterring Committee as mentioned above

- Coordinate the internal tasks for the inter-institutional working groups
- Wrap up the reports and report to the National Logistics Steering Committee
- Organize and coordinate meetings of the National Logistics Steering Committee
- Perform other duties as necessary.

The Transport and Logistics Advisory Board

The Advisory Board is an adhoc working group set up to provide policy advice to the National Logistics Steering Committee to support and promote the implementation of this master plan effectively. The Advisory Board composes of various components namely development partners, research institutions, educational institutions, private sector and other key stakeholders. The Advisory Board has the following roles and responsibilities:

- Provide advice and recommendations in term of transport and logistics sector to the NLSC, based on actual practice and experiences
- Provide inputs to develop specific action plans and investment plans
- Participate in mobilizing financial, technical and human resources to promote the implementation of the master plan
- Attend the meetings to monitor the progress of the master plan implementation and provide recommendations and inputs for improving and promoting the master plan and
- Perform other duties as necessary.

4.3.2. Implementation Monitoring and Evaluation

The mechanism of monitoring and evaluation on the implementation is essential for this master plan framework requiring a comprehensive and highly realistic consideration. In this regard, the development of a framework and mechanism for monitoring and evaluation on the implementation will be considered at the start of the master plan implementation based on the list of priority projects and action plans prepared by the relevant ministries and institutions. The diagram below shows the stages of setting up the monitoring and evaluation, focusing on the main components as follows:

A. Action Plan preparation

Monitoring and evaluation framework will be developed based on the theory of change, starting with the process of identifying inputs through actions and then turns them into final outcome or impacts, and it takes the form of a chain of outcomes at the level of indicators from the master plan, including the priority project lists and the annual action plan level.

In this sense, the monitoring and evaluation mechanism divides the indicators into five levels, including (1) Impact, (2) Outcome, (3) output, (4) Action/Operation, and (5) Input. The key performance indicators are designed based on necessity, measurement, and qualitative or quantitative manner, based on data availability in which the quantitative data may not be possible or insufficient data for measurement. The key indicators for measurement will be attached by detailed explanation, baseline and target for measurement, as well as measurement methods and data sources that can verify indicators.

The preparation and coordination on the implementation of the monitoring and evaluation framework in the master plan shall be submitted to the National Logistics Steering Committee. Therefore, NLSC will prepare a complete and feasible monitoring and evaluation framework with the direct participation of the relevant ministries and institutions and use the inputs of the annual action plan and investment plan of the implementing ministries/institutions and finally request for approval from the National Logistics Council. At the same time, consideration of risk reduction and mitigation measures will be an important part of this monitoring and evaluation framework as decided and indicated by the National Logistics Council.

B. Monitoring and Evaluating Meetings

After the monitoring and evaluation plan has been approved by the National Logistics Council, the National Logistics Steering Committee has to hold internal monitoring meetings every semester (every six months) to monitor progress and achievements and establish a coordination mechanism in case of no progress as planned or have a strong variation comparing to the outcome indicators as well as prepare for follow-up measures.

At the same time, the National Logistics Council will hold annual meetings (once a year) and other extraordinary meetings as needed to review key progresses and address challenges, as well as revise action plans, achievements and timelines as necessary.

Meanwhile, the National Logistics Council will hold meetings to review the strategic measures, common action plans and financing framework every two years in addition to the mid-term review (during 2028) to improve the effectiveness of the implementation of the master plan to achieve the goals as well as to respond to an update of the key policies and strategies, changes and evolution of the economic and social situation and the transport and logistics sector in the country, the region and the world.

C. Progress and Achievement Report Preparation

In general, the report on the process of monitoring and evaluating to implement this master plan has been prepared in two levels, including (1) progress report and (2) achievement report.

C.1. Progress Report

Based on the action plan, the NLSC shall prepare a progress report on work performances, challenges or solution proposals every semester and submit it to the NLC for review and may be the subject of the annual meeting of the NLC with the Secretariat of the NLSC as the facilitator.

C.2. Achievement Report

At the same time, the NLSC has to prepare an achievement report describing the progress of the implementation of the action plan based on the annual key indicators and submit it to the NLC for review and comments and set the direction for further action. It can also be used as a basis for mid-term review and report to the Royal Government.

5. RISK MANAGEMENT

Based on the forecast, the process of implementing the Comprehensive Master Plan on Cambodia Intermodal Transport and Logistics System 2023-2033 will face a number of risks arising from both internal and external environment. This requires the Royal Government to be ready with proactiveness, caution and high attention to the management to avoid the risks that could impact directly and indirectly to the process of development of transport and logistics systems within the master plan framework in Cambodia. The main risks include:

5.1. The National Budget Financing and Public-Private Partnership Mechanism

The financial capacity to support or respond to the needs of annual and medium-term plans based on the priority project list, which may be one of the biggest risks to implement this master plan successfully, especially the source of national budget financing and public-private partnership mechanisms. As highlighted in the section above, the sustainability of the three potential sources of financing is limited due to many factors with high uncertainty. Obviously, the financial capacity of the national budget, which is expected to grow annually, is closely related to the overall macroeconomic situation, but the macroeconomic situation in Cambodia is highly dependent on both regional and global factors. At the same time, the possibility of financial mobilizing through public-private partnership mechanisms has not gained the trust or interest from private sector yet, as it seems relatively new to the transport sector as well as the potential for profitability, and the consideration of medium-term financing framework, it is expected to offset the deficit in the national budget financing and overseas loan, especially in the first half of the timeframe of the master plan. In separation, the mechanism of foreign loan is recently the most realistic and in the medium term, but the challenges are the changes of the loan conditions, especially the increments in interest rates from concession to ordinary due to the changes of income status in Cambodia.

In this sense, the Royal Government will choose a flexible approach in handling the three main financing such as restriction or thresholding of each source that can vary based on the reality

by avoiding the hard ceiling that cannot be modified. At the same time, the Royal Government will continue to consider the possibility to increase new financial sources, including the expansion of the issuance of government securities, which is in the piloting phase, and the initiatives of the establishment of transport infrastructure funds etc.

5.2. Cost Estimation Versus Actual Cost

The cost estimation for the priority projects with more than $ 36,679 million for the master plan framework has been developed without in-depth study or complete feasibility study, but it is a consideration and preliminary estimate based on the existing information and data; moreover, it was estimated amid low inflation rate before Covid-19. Therefore, actual cost may deviate from estimates due to the possibility of changes in the actual alignment or project location, as well as challenges during the construction phase, especially the delay of the project. As a result, the actual cost overrun will lead to a lack of financing to implement the project as planned or to necessarily cancel some projects or delay to save money for other projects or for the priority projects.

Although the actual cost is higher than the estimated cost in some cases, the Royal Government has considered measures to respond to the risks through redesigning the annual action plan (priority projects), which is highly realistic, especially connecting with the annual financing framework to ensure the annual financing feasibility is sustainably supported.

5.3. Trends of Increasing Climate Changes and Natural Disasters Resilience

The trend of improving the resilience of transport infrastructure to climate change and natural disasters is rising and with much attention from all stakeholders through focusing on better quality and specific planning from the outset. In general, the additional consideration for increasing resilience will increase the total cost, leading to bigger financing burden for the government. It means the government necessarily needs to choose between quantity and quality for investment in transport infrastructure. However, due to Cambodia's current development context, the threat of global climate change and natural disasters, Cambodia is at a turning point that needs to strengthen the quality of its infrastructure to increase resilience.

In this regard, the allocation of budgets or financing for the Royal Government's public investment for transport and logistics infrastructure projects needs to be streamlined by strengthening the mechanism and process of selecting priority projects that meet specific needs and provide high value added to economy and society. At the same time, project implementation also needs to increase efficiency and effectiveness to ensure the expected quality.

5.4. Maintenance and Repair Needs

Along with the quality and the climate change and natural disasters resilience, the cost of maintenance and repair is also expected to continue increasing as the scope of infrastructure becomes huge and modern, which excludes the current maintenance and repair costs for most of dilapidated transport infrastructure. This means that the maintenance and repair action plans need to be carefully planned and linked to a sustainable budget plan, mainly focusing on preventive maintenance as a priority.

In this regard, the Royal Government will strengthen the mechanism of planning, maintenance and repair with high efficiency in accordance with technical standards, including periodic maintenance, routine maintenance and emergency repair. At the same time, the government will examine the possibility of sharing the burden or responsibility for maintenance costs to private partners, especially for projects under the public-private partnership mechanism. The relevant ministries and institutions of the Royal Government will strengthen mechanisms to prevent the overweight transport, as well as disseminate and encourage the public and users to pay more attention on preserving those infrastructures.

5.5. Regional and Global Crises

In the aspect of high uncertainty or fragility resulting from crises such as the economy, finance, society, security and public health, is becoming a major risk for the development process as a whole and for transport infrastructure. The experience of the Covid-19 crisis and the war between Russia and Ukraine provided practical lessons from the enormous effects of those risks. Besides the general disruptions of project initiation, project approval and implementation, those risks generally cause the rising of inflation leading to increase the public investment costs on transport infrastructure and leading to a lack of funding to support the approval and ongoing projects as well as causing the planned projects to be reduced. At the same time, the government has, in times of crisis, diverted some of its budget to support urgent needs to cope with the effects of the crisis, leaving capital investment plans on transport and logistics infrastructure aside.

With the risk leading the major impacts, the Royal Government will try to manage the situation by increasing the size of the reserved budget as much as possible, mostly through the sources of government savings that are easy to use when needed, as well as finding new sources of financing, including issuance of government securities and the creation of other funds to expand the financing base, as well as reduce dependences on overseas loans and increase Cambodia's ownership.

5.6. Inter-institutional Coordination and Human Resources

The successful implementation of this master plan largely depends on the participation of relevant ministries and institutions in their respective disciplines and responsibilities under the guidance and coordination of the National Logistics Council. The ministries and institutions of the Royal Government, especially the Ministry of Public Works and Transport and the State Secretariat of Civil Aviation, play a significant role in the implementation of this master plan, especially in the process of setting action plans and preparing annual investment plans that are realistic and highly effective. In this spirit, the capacity of institutions necessarily needs strengthening through specific roles and responsibilities, especially enhancing knowledges and skills of the government officials. At the same time, the private sector is an indispensable actor for the process of developing transport infrastructure, especially the provision of financial support and technical skills to fill the government's shortcomings. In addition, bilateral and multilateral development partners continue to play significant role through the provision of both credit and grant funding, technical assistance and research, which has become an essential basis for the Royal Government to formulate policies and strategies to develop this sector.

Ensuring the effective institutional coordination can be a challenge during the implementation phase of this master plan. Therefore, to avoid the risk of problems arising from the lack of functional institutional coordination, the role of the National Logistics Council will be more important in facilitating relations and cooperation between relevant institutions, especially among ministries and government through defining responsibilities between institutions, promoting transparency of work performance and increasing ownership as well as fostering and enhancing institutional capacity. At the same time, the strengthening capacity building for human resources by providing trainings to relevant officials, planning, project management and coordination with private sector and development partners will contribute to the capacity building of government institution on transport and logistics.

6. CONCLUSION

Cambodia's strong and sustainable economic growth over the past four decades clearly shows the contribution of transport infrastructure and logistics through the indispensable supporting role to all economic and social activities. Transport and logistics infrastructure continue to play a significant role in promoting and developing sectors based on favourable conditions of geographical and political location, as well as supporting the process of connecting Cambodia to the region and the world under the framework of the bilateral and regional free trade agreement, aiming to contribute to transforming Cambodia into an upper-middle-income country by 2030 and a high-income country by 2050. This further showcases the correct and long-term vision of the Royal Government, having launched and continued Cambodia's four priority policies, including People, Water, Road and Electricity since 1997.

The Comprehensive Master Plan on Cambodia Intermodal transport and Logistics System 2023-2033 is a road map for guiding the development of joint transport infrastructure and by sector in accordance with the necessity and urgency of Cambodia, indicated in the significant national strategic documents, including Rectangular Strategy Phase 4 and Industrial Development Policy 2015-2025. This responds to the indispensable requirements of planning framework which is intertwining and connecting with financing framework in supporting the development of transport and logistics infrastructure in Cambodia. In the overall perspective and framework, the master plan sets out the Transport network pattern of “3-4-4-2” and the logistics node system pattern of “2-2-N” and identifies land transport as a priority sub-sector, focusing on the quality rather than quantity. These strategies are well linked and complementary, which will help Cambodia prepare and gradually participate in regional and global integration.

The implementation of this master plan requires effective and efficient coordination, monitoring and evaluation. Thus, the National Logistics Council, which is an existing institutional mechanism, will take additional roles in leading and promoting the implementation of the master plan with the support of relevant institutions, especially the National Logistics Steering Committee, which play the roles to promote and organize the implementation of action plans set in accordance with priority project principles and implementation procedures of public investment projects as

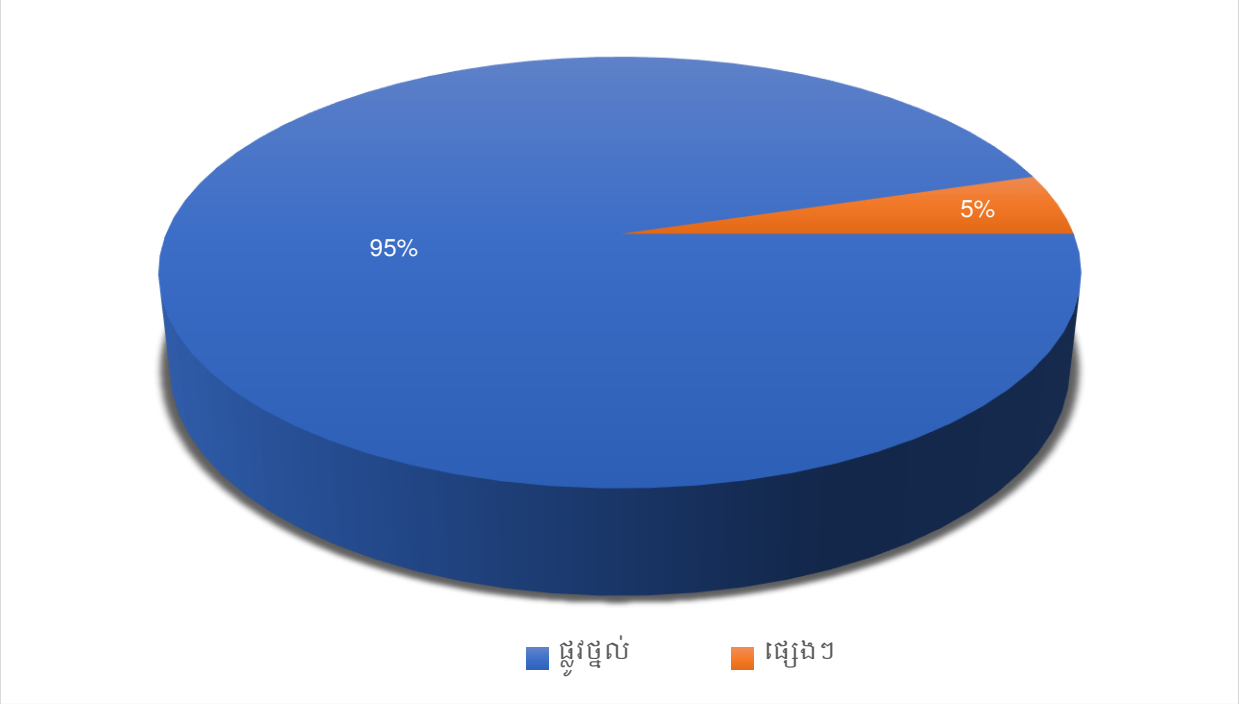
well as crucial duties in mobilizing the financial and technical resources to ensure the effectiveness of implementing the master plan. At the same time, relevant ministries and institutions necessarily provide good cooperation during the implementation of the projects and monitoring and evaluation of work achievement in a highly responsible spirit.

APPENDIX

APPENDIX 1. BASE YEAR 2017[6] VOLUME ESTIMATION

The estimation of traffic volume for the base year 2017, the foundation year for developing this master plan, has been conducted based on surveys of traffic indices and passenger and transit data across the country. Total passenger traffic volume across the country in 2017 is about 184 million people / year, and the majority of passengers (95%) used roads as the main mode of transport. The number of civil aviation passengers ranked second (about 4%), but more than 90% of these passengers were from overseas. Other modes of transport, including railways, inland waterway, and seas, contribute less to passenger transport across the country.

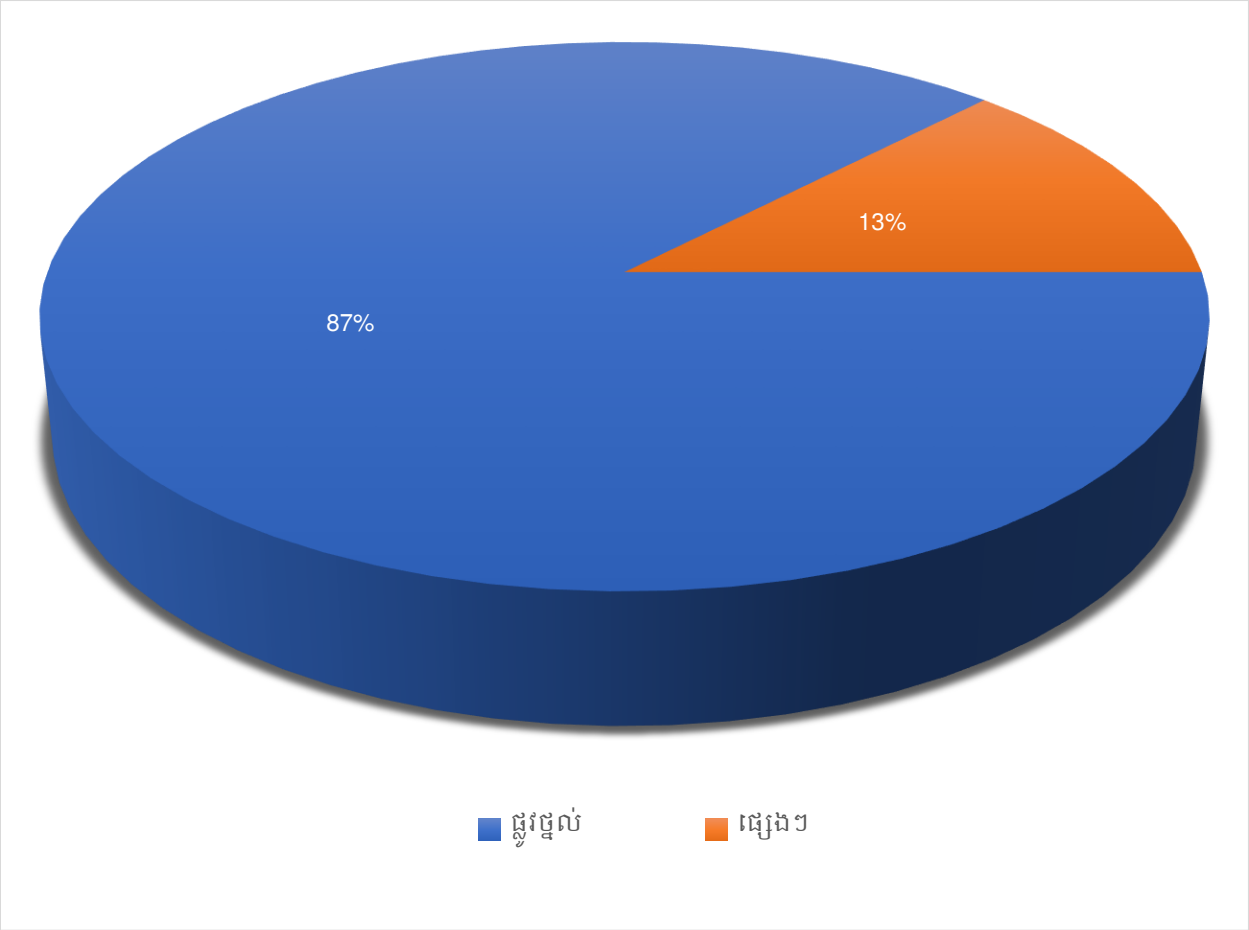
Figure 1. A. Proportion of passenger traffic volume using other means in 2017



Similarly, the volume of freight in 2017 was about 82.51 million tons / year, which the majority of about 87% mainly used road transport. Other modes of transport partially contributed for the transit of goods to the destinations across the country. The option for traffic model analysis is used to study in detail the flow of passengers and cargos between each area or province in order to facilitate traffic volume forecasted by 2030.

[6] *Study Report on Comprehensive Master Plan on Intermodal Transport System 2021*

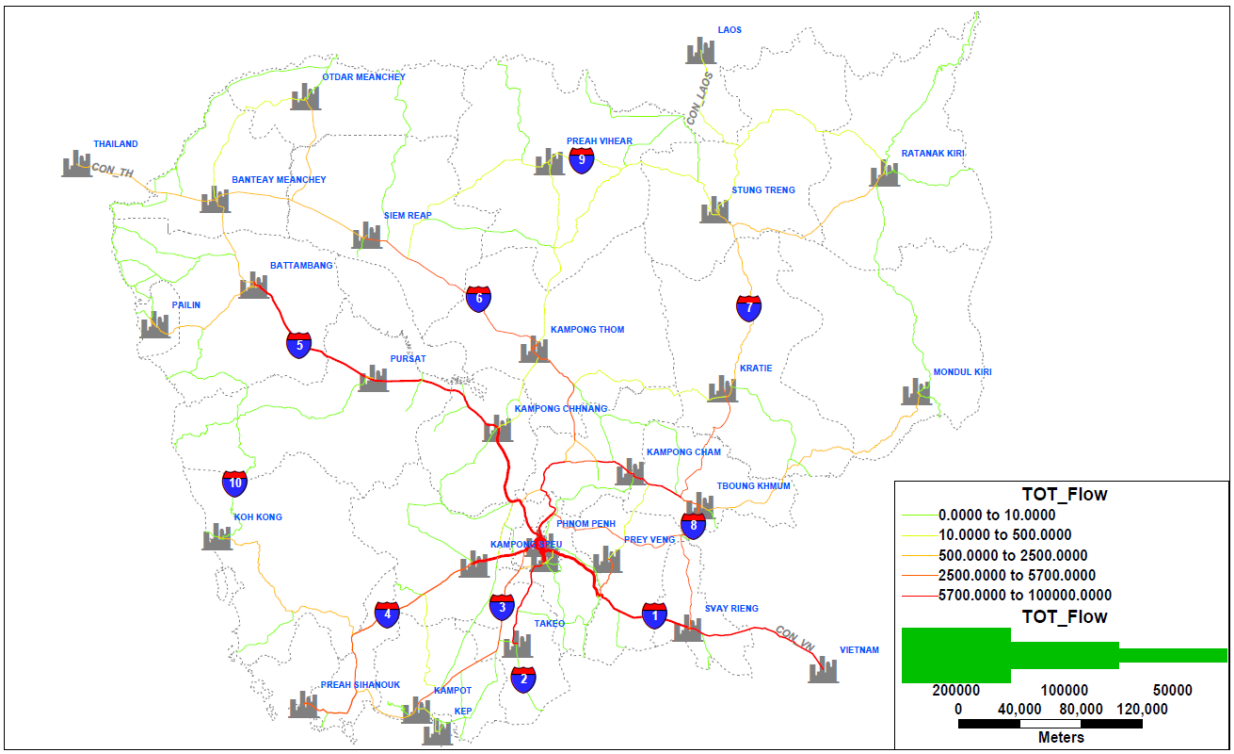
Figure 1. B. Proportion of traffic volume of consumer goods in 2017



1.1. Roads

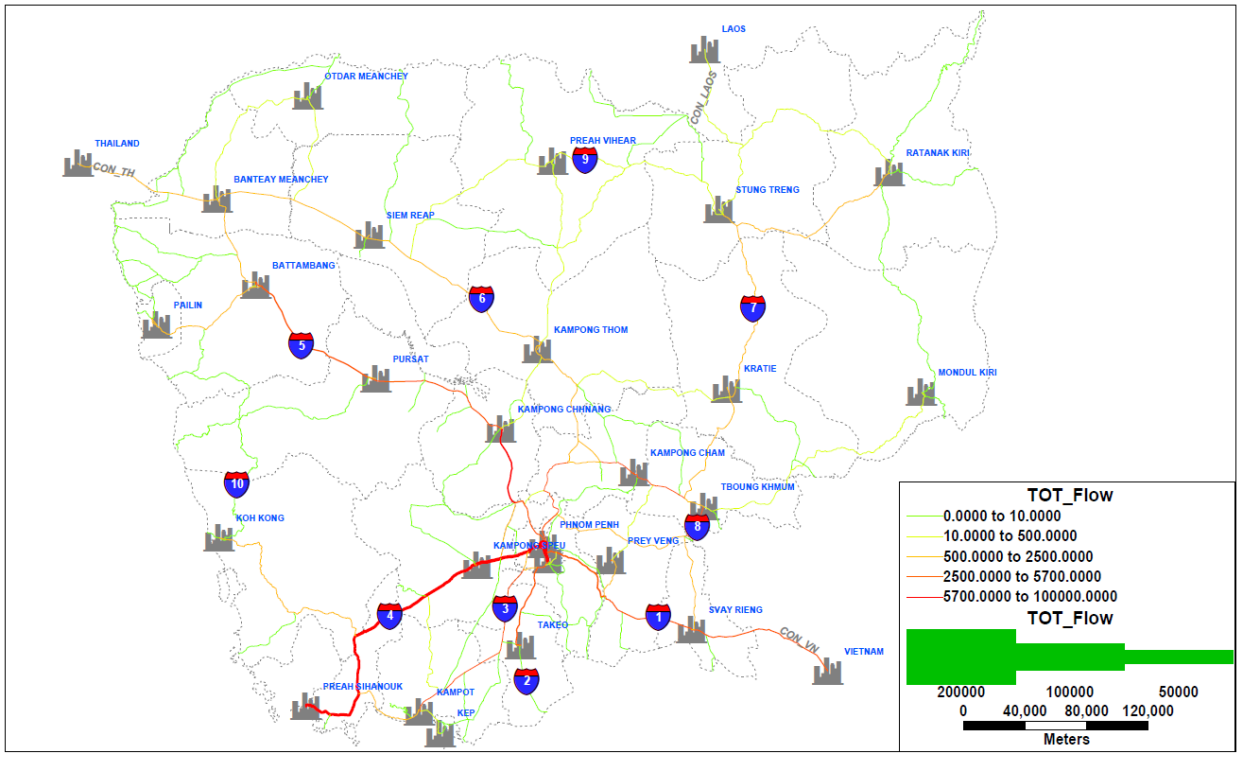
Based on the traffic flow model analysis, the results of the estimation of both passengers and cargos transport show a similar traffic flow pattern with the accumulation of congested traffic in Phnom Penh. Transport flow is congested on the main national roads connecting Phnom Penh to the provinces of the Northwest zone (through Kampong Chhnang, Pursat, Battambang, Kampong Cham, Kampong Thom, Siem Reap and Banteay Meanchey), Southwest zone (through Kampong Speu, Kandal, Takeo, Kampot province and Sihanoukville) and the Eastern zone (passing through Kandal, Prey Veng, Svay Rieng, Kampong Cham and Tbong Khmum province).

Map 1.1.A. The estimates of passenger traffic on the national road network in 2017 (PCU/Day)



The traffic volume of passenger transport is busier along the main national roads such as National Road No. 5 (between 2,500 PCU/day to 10,000 PCU/day), National Road No. 1 (between 7,000 PCU/day to 10,000 PCU/day), National Road No. 4 (approximately between 5,000 PCU/day to 10,000 PCU/day), National Road No. 6 (between 1,500 PCU/day to 8,000 PCU/day), National Road No. 2 (between 5,000 PCU/day to 6,000 PCU/day), National Road No. 3 (between 1,200 PCU/day to 4000 PCU/day), National Road No. 7 (between 2500 PCU/day to 6,000 PCU/day) and National Road No. 8 (between 2000 PCU/day to 3,000 PCU/day).

Map 1.1. B. The estimation of cargo traffic on the national road network in 2017 (PCU/day)



Traffic volume of cargo transport across National Road 4 ranges from 10,000 PCU/day to 13,000 PCU/day. Freight activities across major national roads are also moderate such as National Road No. 1 (between 4,000 PCU/day to 6,000 PCU/day), National Road No. 5 (between 2,000 PCU/day to 6,000 PCU / day), National Road No. 6 (between 2,000 PCU/ days to 4,000 PCU/day), National Road No. 2 (between 4,000 PCU/day to 5,000 PCU/day), National Road No. 6 (between 1,000 PCU/day to 4,000 PCU/day), National Road No. 2 (between 1,000 PCU/day to 3,500 PCU/day), National Road No. 7 (between 1,000 PCU/day to 3,000 PCU/day) and National Road No. 8 (between from 1000 PCU/day to 1,500 PCU/day).

1.2. Railways

The existing railway system has a total length of 652 km and is divided into southern and northern lines. Based on the data collected in 2017, there were 391,100 passengers using the railway, and the freight transport was about 759,700 tons.

The results of the survey of the main stations in Phnom Penh, Takeo, Kep and Sihanoukville show the distribution of traffic flow from the capitals to the provinces through the following railways:

The Number of rail passengers in 2017 (10,000 passengers/year)

Area/Province	Phnom Penh	Takeo	Kep	Sihanoukville	Total
Phnom Penh	-	0.85	0.04	0.49	1.38
Takeo	1.46	-	-	0.03	1.49
Kep	0.08	-	-	-	0.09
Sihanoukville	0.90	0.02	0.03	-	0.96
Total	2.44	0.88	0.07	0.52	3.91

The Volume of goods in 2017 (10,000 tons/year)

Area/Province	Phnom Penh	Takeo	Kep	Sihanoukville	Total
Phnom Penh	-	14.32	1.10	23.96	39.38
Takeo	7.71	-	-	0.35	8.06
Kep	0.02	0.06	-	-	0.08
Sihanoukville	25.25	2.74	0.45	-	28.45
Total	32.98	17.13	1.55	24.31	75.97

1.3. Waterways

The volume of passenger traffic by inland waterway concentrates and passes through the Phnom Penh Autonomous Port and Siem Reap Port, which are mostly tourists traveling from Vietnam~~ese~~-Phnom Penh-Tonle Sap and divides the flow of passenger traffic from each region or province as follows:

The Number of inland waterway passengers in 2017 (10,000 passenger/year)

Area/Province	Phnom Penh	Siem Reap	Vietnam	Other countries	Total
Phnom Penh	-	0.69	0.32	1.34	2.35
Siem Reap	0.69	-	-	-	0.69
Vietnam	0.32	-	-	-	0.32
Other countries	1.34	-	-	-	1.34
Total	2.35	0.69	0.32	1.34	4.70

Phnom Penh Autonomous Port is the only large river port equipped with modern facilities for loading and unloading services, while other river ports provide the secondary cargo transport service. The flow of freight transport mainly depends on Phnom Penh Autonomous Port and Siem Reap Port, which is mostly transported to or from Vietnam and other countries in the region.

The Volume of goods along the rivers in 2017 (10,000 tons/year)

Area/Province	Phnom Penh	Siem Reap	Vietnam	Other countries	Total
Phnom Penh	-	-	137.89	-	137.89
Siem Reap	-	-	-	-	
Vietnam	137.89	-	-	-	137.89
Other countries	-	-	-	-	-
Total	137.89	-	137.89	-	275.77

1.4. Maritime transport

Currently, the main seaports include Sihanoukville Autonomous Port, Steung Hav Port, Petrol Station in Sihanoukville, Koh Kong Port, Sre Ambel Port, Oknha Mong Port in Sihanoukville Province, Kampot Port in Kampot Province and Kep Tourism Port in Kep Province. The traffic volume of passengers and goods passing through major seaports in 2017 is estimated as follows:

The Number of passengers passing through seaports in 2017 (10,000 passenger/year)

Area/Province	Kep	Sihanoukville	Koh Kong	Other countries	Total
Kep	-	-	-	-	-
Sihanoukville	-	-	-	12.8	12.8
Koh Kong	-	-	-	-	-
Other countries	-	12.8	-	-	12.8
Total	-	12.8	-	12.8	25.6

The Volume of goods crossing seaports in 2017 (10,000 tons/year)

Area/Province	Kep	Sihanoukville	Koh Kong	Other countries	Total
Kep	-	-	-	13.00	13.00
Sihanoukville	-	-	-	325.65	325.65
Koh Kong	-	-	-	11.40	11.40
Other countries	13.00	325.65	11.40	-	350.05
Total	13.00	325.65	11.40	350.05	700,10

1.5. Air Transport

The international airports which are in operation include Phnom Penh International Airport, Siem Reap International Airport, and Sihanoukville International Airport. The volume of goods transported by air is less than the other means of transport. Therefore, the estimation of traffic distribution for passengers has the following results:

The volume of passengers through the airports in 2017 (10,000 passenger/year)

Area/Province	Phnom Penh	Sihanoukville	Siem Reap	Other countries	Total
Phnom Penh	-	0.75	16.49	194.76	212.00
Sihanoukville	0.75	-	0.63	15.62	17.00
Siem Reap	16.49	0.63	-	193.38	210.50
Other countries	194.76	15.62	193.38	-	403.75
Total	212.00	17.00	210.50	403.75	843.24

APPENDIX 2. THE SUMMARY REPORT ON THE MASTER PLAN ON CAMBODIA INTERMODAL TRANSPORT AND LOGISITCS SYSTEM

The Master Plan Study Report on intermodal transport system has been developed under the grant financing of the People's Republic of China and direct participations of the ministries and institutions of the Royal Government of Cambodia in English language and consists of seven documents:

1. Comprehensive Master Plan on Cambodia Intermodal transport and Logistics System 2023-2033 (Whole Master Plan)
2. Road Transport Plan
3. Railway Transport Plan
4. Inland Waterway Transport Plan
5. Maritime Transport Plan
6. Civil Aviation Development Plan and
7. Logistics System Development Plan

The study report of the whole master plan on Cambodia Intermodal Transport and Logistics System 2023-2033 is a blueprint document indicating the direction and overall framework of planning for the transport infrastructure by all modes, including the logistics sector. The study report is used as a basis for preparing the Comprehensive Master Plan on Cambodia Intermodal Transport and Logistic System 2023-2033 in Khmer language.

Moreover, the master plan report on 6 sub-sectors details the development plans by each transport sector, which is the key component for action plan preparation for the implementation phases of the comprehensive master plan. The study reports are summarized as follows:

2.1. Road Transport Plan

The road development plan is developed based on an assessment of Cambodia's development situation and the needs of the socio-economic and transportation sector, both quality and quantity of passengers and goods, as well as regional successful experiences. Road development focuses on expressways, national roads, and provincial roads. The list of road development projects includes a total of 94 projects with a total investment of 13,602.43 million USD, including 9 expressways with a total investment of 7,173.69 million USD and 85 projects of national/provincial roads equivalent to 6,428.74 million USD.

There are 35 short-term and medium-term projects (2023-2027) worth USD 7,141.83 million, including 4 expressway projects worth USD 4,184.81 million and 31 projects of national/provincial roads equivalent to an investment of 2,957.02 million USD. There are 59 long-term projects (2028-2033) worth USD 6,460.60 million, 5 expressway projects, worth USD 2,988.88 million, and 54 projects of national/provincial roads worth USD 3,471.72 million.

2.2. Railway Transport Plan

The railway transport plan is developed based on an analysis of Cambodia's development situation, linking with the socio-economic and transport sectors, as well as experiences and successful practices in the region. The development of the railway focuses on the rehabilitation and upgrading of existing lines (south and north) as well as the consideration of new routes (new rails and lines) connecting neighboring countries. There are 8 railway transport projects with a total budget of 10,010 million USD, of which has 4 short and medium-term projects in (2023-2027) that cost 3,800 million USD, and also have 4 long-term projects (2028-2033) that cost 6,210 million USD.

2.3. Waterway transport plan

This waterway transport plan is developed based on the analysis and study of the geographical situation, natural conditions, economic and social situation of Cambodia, the situation of waterway transport, study report on the development of related waterway, waterway transport network plan, identification of key development projects, investment plans and sources of funding, measures to support the implementation of the plan and the experience of countries in the region. This is designed for implementation from 2023-2033.

There are 23 waterway transport projects with a total investment of 3,251 million USD, of which 16 short and medium-term projects (2023-2027) cost 2,561 million USD, and there are 9 long-term projects (2028-2033) worth 690 million USD (2 short and medium-term projects will continue until 2033).

2.4. Maritime transport plan

The maritime transportation plan is developed based on the analysis and study of the status of maritime transport and challenges through direct surveys at seaports in four southwestern provinces (Koh Kong, Sihanoukville, Kampot, and Kep). Traffic volume estimations have been conducted to determine the strategy of a seaport network by region.

There are 20 maritime transport projects with a total investment of USD 5,461 million, of which 14 short and medium-term projects (2023-2027) accounted for 2,494 million USD and 9 long-term projects (2028-2033) accounted for 2,967 million USD (3 short-term will continue until 2033).

2.5. Civil Aviation Development Plan

This civil aviation development plan is developed based on an analysis and study of the socio-economic situation in Cambodia, air transport, and challenges in the forms of airport network connectivity, operational status, and management by the State Secretariat of Civil Aviation. Based on the economic aspect, demography, tourism, infrastructure, airline, and civil aviation development policy, the study analyzes key factors influencing the demand of air freight and passengers in Cambodia.

There are 10 civil aviation development projects with a total investment budget of 3,297.90 million USD, including short and medium-term projects (2023-2027).

2.6. Logistics Development Plan

The logistics system development plan is developed based on an assessment of the current situation and problems in the logistics sector in Cambodia. Opportunities and challenges of logistics development, forecasting and analysis of the needs of logistics, and practical experience from China are used in the creation of the development of a comprehensive logistics system development plan for Cambodia. It includes a conceptual approach to the logistics system, objectives, policies, plans, investments, and financing, as well as measures to ensure the implementation.

There are 15 logistics projects with a total investment of 957.50 million USD, including 9 short and medium-term projects (2023-2027) accounted for 630 million USD and 8 long-term projects (2028-2033) accounted for 327.50 million USD (2 short and medium-term projects will continue until 2033).

APPENDIX 3. GLOSSARY

No.	In Khmer	In English	Definition
1	កម្មន្តសាល	Manufacturing	Producing large amount of goods by using machine or industrial production.
2	ការដឹកជញ្ជូនគោលដៅចុងក្រោយ	Last Mile Delivery	Delivery of goods from the nearest distribution centre to the final destination, such as home or business location.
3	ការដឹកជញ្ជូនត្រជាក់	Cold Chain	Supply Chain or distribution of goods controlled by cold temperature using refrigerators, cold rooms for producing, storing and distributing to maintain quality of the products
4	ការបញ្ចេញទំនិញពីគយ	Customs Clearance	Procedures for processing the release of goods exported or imported from customs.
5	ការសិក្សាសមិទ្ធិលទ្ធភាព	Feasibility study	The study on the proposal of project including technical analysis, cost, risk, economy, finance, law, environmental and social impacts, budget sustainability, as well as institution's mechanism and capacity to manage and implement the projects
6	កំពង់ផែឆ្លាតវៃ	Smart Port	The port is equipped with smart technologies and solutions that improve operations, security, infrastructure, and management.
7	ខ្សែច្រវាក់តម្លៃសកល	Global Value Chain (GVC)	Distributing supply chain for production to other countries or regions by section and functions of productions.
8	ច្រករបៀង	Corridor	Gateways connecting countries or neighbouring regions.
9	សន្និធិ	Inventory	Goods in the warehouse, property or goods registered in the inventory.

10	ឋបនីយកណ្ឌដែ	Port Facility	Location, Equipment, facility and other related infrastructures used for the operation of ship and port, including wave protection dam, basin/channel, anchorage, waiting area, dock and other equipment.
11	ថ្លៃសន្និធិ	Inventory cost	Cost of storing the goods
12	ទស្សនាទាន	Concept Note	Ideas or principles
13	ទីក្រុងឆ្លាត	Smart City	Cities that use technology as an aid for solving problems that occur in the city in order to strengthen the effectiveness of operations, promote the quality of public services, and improve the quality of life and well-beings of the people as well as to ensure the sustainability of development.
14	បណ្តុំ និង បណ្តាញ	Hub and spoke	A transport network with a central complex (hub) and connecting in starry pattern (spoke or radius).
15	បរិយាប័ន្ន	Inclusiveness	Practices or policies providing rights to access equal opportunity and resources.
16	បមាណីយកម្ម	Standardization	The process of making something conform to a standard
17	ប្រព័ន្ធដឹកជញ្ជូនគ្រប់ជ្រុងជ្រោយ ៣-៣-៤-២	Comprehensive Transport System 3-3-4-2	3 major transport corridors, 3 secondary transport corridors; 4 major transport hubs; 2 external transport nodes
18	ប្រព័ន្ធដឹកជញ្ជូនពហុមធ្យោបាយ	Multi-modal Transportation System	Transportation system operating under a single transportation agency using multi-modal transportation (multiple means) under the control or ownership of single operators.

19	ប្រព័ន្ធដឹកជញ្ជូនអន្តរមធ្យោបាយ	Inter-modal Transportation System	Intermodal transport is the transport of goods in a single unit or vehicle using two or more means of transport to move the load from its origin to its destination where it is not handled when moved from one vehicle to another.
20	ប្រព័ន្ធឡូជីស្ទីក ២-២-N	Logistics System 2-2-N	Two cores, two poles, multiple N centres, or 2 Logistics Complex, 2 Logistics Parks and Logistics Centres in everywhere.
21	ផ្លូវជាតិ	National Road	Refers to the road with a lot of traffic: A. Road connecting Phnom Penh to each provincial town across the country B. Road connecting from one city to another C. Road connecting from the national road to the national road D. Road from a national road to a provincial town E. Road junction from national road or connecting road from provincial town to major areas such as port, train stations, airports, special economic zones, tourist resorts, border gates, areas with other important economic potentials F. Main roads of the country with lots of traffic and determined by the government as requested by MPWT
22	ផ្លូវជាតិកម្រិត១	National Road one-digit	National road with 1 (one) digit
23	ផ្លូវជាតិកម្រិត២	National Road two-digit	National road with 2 (two) digits
24	ផ្លូវទឹក	Inland Waterway	Including river, lake, canal and stream that can be used for navigation.
25	ផ្លូវនាវាចរណ៍	Navigation route	Section that located in waterway for navigating based on purposes in any season.
26	ផ្លូវល្បឿនលឿន	Expressway	A road with median strips separating roadways for the two opposite directions of traffic, without at-grade crossing with any road, with adequate equipment and facilities to ensure non-stop and safe traffic flow, reduce travelling time and there are toll gates at the exit.

27	ផ្លូវសមុទ្រ	Maritime	Including costal area, gulf, bay, stream along the sea and deep sea that can be used for navigation
28	ពិពិធកម្ម	Diversification	Many different kinds and varieties
29	កណ្តាគារគយមានដែនកំណត់	Customs Bonded Warehouse	A building, place or an area that is authorized to store goods for a specified period of time under the customs control.
30	ភាគលាភប្រជាសាស្ត្រ	Demographic dividend	Economic growth as result of the shift in the population's age structure in one country
31	មជ្ឈមណ្ឌលដឹកជញ្ជូន	Transportation Hub	Central location for gathering, arranging, exchanging means of transport and distribution of goods or passengers.
32	មជ្ឈមណ្ឌលទ្បៀដីស្ទឹក	Logistics Complex	It is the primary node of regional logistics infrastructure network, and the place where all kinds of logistics facilities and logistics enterprises are centralized in space. It mainly undertakes large-scale, wide-range, high-frequency and high-intensity logistics exchange activities, with certain scale and comprehensive service functions.
33	មណ្ឌលទ្បៀដីស្ទឹក	Logistics Centre	It is the tertiary node of logistics infrastructure network, and mainly undertakes the professional supporting logistics services required for trade circulation, agriculture and manufacturing industry in respective areas.
34	របៀងដឹកជញ្ជូនមេ	Main Transport Corridor	Major corridor connecting from one region to another region by one or more modes of transport such as expressway, roads, railways, and waterway.
35	របៀងដឹកជញ្ជូនរង	Sub-Transport Corridor	Sub corridor connecting from one region to another region by one or more modes of transport such as expressway, roads, railways, and waterway.

36	សួនឡូជីស្ទីក	Logistics Park	It is the secondary node of regional logistics infrastructure network, the place where all kinds of logistics facilities and logistics enterprises are centralized in space, and the rally point of logistics enterprises with a certain scale and multiple service functions.
37	សំណង់សិល្បការ្យ	Drainage Infrastructure	Bridge, drain, drainage system, water storage for national road, railway and other physical infrastructure that provide safety efficiency and stability of national road and railway.
38	ហិរញ្ញប្បទាន	Financing	Providing finance or loan
39	ឡូជីស្ទីកឆ្លាតវៃ	Smart Logistics	Combination of management structure preparation and traffic analysis for transport and logistics management (develop the cargo flow management and operation plan) through using the data effectively.
40	អាកាសយានដ្ឋានកម្រិត 4F, 4E, 4C	4F, 4E, 4C Airport	Standard levels of airports that can accommodate different categories of aircraft (4F, 4E, 4C).

APPENDIX 4. List of Intermodal Transport Projects

No.	Type of Project	Investment Cost Estimate (USD Million)	Number of Projects	Short & Medium term (2023-2027)		Long term (2028-2033)	
				Number of Projects	Investment Cost Estimate (USD Million)	Number of Projects	Investment Cost Estimate (USD Million)
1	Road Projects	13,602.43	94	35	7,141.83	59	6,460.60
1.1	Expressway Projects	7,173.69	9	4	4,184.81	5	2,988.88
1.2	National Road, Provincial Road, and other main roads	6,428.74	85	31	2,957.02	54	3,471.72
2	Railway Projects	10,010	8	4	3,800	4	6,210
3	Inland Waterway Projects	3,251	23	16	2,561	9	690
4	Maritime Projects	5,461	20	14	2,494	9	2,967
5	Air Transport Projects	3,297.90	10	10	3,297.90	0	0
6	Logistics Projects	957.50	15	9	630	8	327.50
7	Additional Projects	99.30	4	2	1.30	2	98
Total		36,679.13	174	90	19,926.03	91	16,753.10

Note: - The calculation of each investment project is made based on the related cost estimation through the discussion and clarification from the relevant departments.

- Some projects are implemented across different period of times (from short term to long term) including 2 Inland Waterway projects, 3 Maritime Transport projects and 2 Logistic projects.

A. List of Expressway Project

No.	Transport Corridor, growth pole, and poles connecting the growth	Name of Project	Length of roads to be constructed	Number of lanes	Investment Cost Estimate (USD Million)	Short & Medium term (2023-2027)	Long term (2028-2033)
1	Southeast Transport Corridor	Phnom Penh-Bavet Expressway (EX1)	From Ring Road 3- Lvea Em (Phnom Penh-Bavet) 135.1km	4	1,376	1	
2			Bridge crossing the river from Ring Road 3 and its connecting road 3.7km	4	233.56	1	
3	Northwest Transport Corridor	Phnom Penh-Siem Reap-Poi Pet Expressway (EX6 &EX5)	From Ring Road 3 (Phnom Penh-Siem Reap) 250km	4	2,500	1	
4			Siem Reap-Poi Pet 150km	4	1,500		1
5		Ring Road 3 Construction project at Eastern Section of Mekong River phase 1 (2 bridges crossing Koh Dach and 30km of road	36.17km	4&2	210		1

6		Ring Road 3 Construction project at Eastern Section of Mekong River phase 2 (Bridge crossing Mekong River and 3km of road)	2.425km	4	130		1
7		Ring Road 4	46.59km	4	298.88		1
8		Second Ring Road construction project connecting from Cambodia-Korea friendship bridge (Night Market-Arey Ksat) to Phnom Penh-Bavet Expressway	21.5km	4	75.25	1	
9		Tunnel from Samdach Songe Choun Nath – Arey Ksat	3.5km	4	850		1
Total			**647.985km**		**7,173.69**	**4**	**5**

Note: Calculation of each investment project is made based on the related cost estimation through the discussion and clarification from the relevant departments.

- Medium and long term (2023-2027): roads to be constructed are 409.30Km and estimated investment budget accounted for 4,184.81 million USD
- Long term (2028-2033): roads to be constructed are 238.685Km and estimated investment budget accounted for 2,988.88 million USD

B. List of National Road (NR), Provincial Road (PR), and other Main Road Projects

No.	Transport Corridor, growth pole, and poles connecting the growth	Name of Project	Length of roads to be constructed	Number of lanes	Investment Cost Estimate (USD Million)	Short & Medium Term (2023-2027)	Long term (2028-2033)
1	Battambang and Siem Reap Growth Pole	New road of Battambang-Siem Reap (NR5 PK302+325 – Sorsor Sdom NR6 PK343+100)	72.15km	2	288.80	1	
2	Southeast transport corridor	Reconstruction of National Road 1 (NR1)	Km 10+500 – Phnom Penh Port 19.64km	6	78.56	1	~~1~~
3	Southeast transport corridor		Phnom Penh Port – Nak Loung Bridge 29.85km	4	74.62		1
4	Southeast transport corridor	Maintenance of NR2&22	Ta Khmao (Kandal Province)-O' Chambok-Ang Tasom 72.17km	4	72		1
5	Southwest transport corridor	Reconstruction of NR3	Bek Kous – Kampot 63km	4	94.5		1
6	Northwest transport corridor	Rehabilitation of southern NR5 Project	(Prek Kdam -Thlea ma'am) 135.25km	4	246.35	1	
7	Northwest transport corridor	Rehabilitation of central NR5 project	Thlea ma'am-Battambang and Serey Sophorn-Poi Pet 146.04km	4	161.90	1	

8	Northwest transport corridor	Construction of Siem Reap Ring Road	45.77 km	2	100	1	
9	Northwest transport corridor	New roads connecting NR5 and NR6	Samroang Village-Ph'av 21km	4	80		1
10	Northeast transport corridor	Rehabilitation of NR7 (Ro Meat commune-Laos Border)	Ro Meat commune - Trapaing Kreal 96.63km	2	55.5	1	
11	Northeast transport corridor	Rehabilitation of NR 7 (Skun-Kampong Cham City)	45.49 km	4	114.89	1	
12	Northeast transport corridor	Rehabilitation of NR7 (Kampong Cham city-Preah Theat NR73)	36km	4	36		1
13		Rehabilitation of NR8	Prek Ta meak-Kreak 123.4km	4	120	1	
14	Northern transport corridor	Rehabilitation of NR9	Preah Vihea-Steung Treng 143km	4	64		1
15	Coastal transport corridor	Rehabilitation of NR10	Battambang-Koh Kong 197.36km	2	188.36	1	
16		Rehabilitation of NR11 (including road crossing Svay Rieng Boundaries and Peam Chor Rubber Farm)	Nak Loeung-Thnol ToToeng 101km	4	118		1

17		New National Road No.23 (NR21-NR14)	NR21-Peam Raing 20km	2	21.69	1	
18		Rehabilitation of NR31	Thnol Bek Kous-Kampong Trach 53.53km	2	58.78	1	
19	Coastal transport corridor	Rehabilitation of NR33 (Kampot-Kampong Trach)	Kampot-Kampong Trach 52.57km	2	59.98	1	
20		Rehabilitation of NR41	Thnol Totoeng-L'ang 95.26km	2	65.89	1	
21		Rehabilitation of NR42	Bek Chan-Tek Phos 69km	4	112		1
22		Rehabilitation of NR43	Treng Trayoeng-Tvea Thmey 79km	2	73		1
23		Rehabilitation of NR45	Kang Keng-Prei Nob 69km	2	60		1
24	Coastal transport corridor	Rehabilitation of NR48 including bridge	Chamkar Luong-Cham Yeam 136km	4	250		1
25		New NR50C and bridge crossing Tonle Sap Kampong Chhnang-Kampong Thom province (Bridge length of 3.9km)	Kampong Chhnang-Kampong Thom 58km	2	248	1	
26		Rehabilitation of NR53	Kampong Chhnang-Am Laing 62km	2	50		1

27		Reconstruction of NR53A	Phsar Village-Kdol 29km	2	20		1
28		Reconstruction of NR54	Kror Kor-Kampong Luong 5km	2	5		1
29		Reconstruction of NR55	Svay At-Thmor Da 182km	2	100		1
30		Reconstruction of NR56	Serey Sophorn-Samroang 114km	2	45		1
31		Reconstruction of NR57	Battambang-O' Preah 103km	2	40		1
32		Reconstruction of NR59	Kon Damrei-Pailin 140km	2	50		1
33		Reconstruction of NR60B (Kratie City-Kampong Tmor/Kampong Thom)	120km	2	100		1
34	Northern transport corridor	Reconstruction of NR62	Tnol Bek-Preah Vihea city 125km	2	37.5		1
35			Preah Vihea city-Preah Vihea Temple 118km	2	35.5		1
36		Reconstruction of NR62-3	NR62-NR64 90km	2	115		1

37		Reconstruction of NR64	Bakong Temple-Tbeng Meanchey 112km	2	60		1
38		Reconstruction of NR68	Kralanh-O' Smach 117km	2	60	1	
39		Reconstruction of NR70	Prey Totoeng-Peam Chi Korng 13km	2	7		1
40		Reconstruction of NR70B Tonle Bet (NR7) Srey Santhor-Prek Ta Meak-Lvea Am-Peam Ro (RN11)	145km	2	139		1
41		Reconstruction of NR71	Treung-Kampong Thmor 58km	2	61.88		1
42		Reconstruction of NR71C (Sror Lop-Steung Treng-Cham Ka Leu)	114.62km	2	129.98	1	
43		Reconstruction of NR72	Krek-Trapaing Phlong 14km	2	10	1	
44		Reconstruction of NR73	Pratheat-Kratie 92km	2	80	1	
45		Reconstruction of NR74	Sre Cha-Trapaing Sre 21km	2	15	1	
46		Reconstruction of NR76	Snuol-Ban Lung 306km	2	144		1
47		Reconstruction of NR78	O’ Pong Morn-O' Ya Dav 192km	2	73		1

48		Reconstruction of NR78C Doung Kralor (Steung Treng Province)- Siem Pang- Vin Sai- O' Chum- Ban Loung (Rattanakiri province)	132km	2	123		1
49		NR78-5 (Rattanakiri Ban Loung- Kan Touy Neak Cambodia-Vietnam border)	170km	2	250		1
50		Reconstruction NR92	Som Ang-Kampong Sro Lav 137km	2	120		1
51		Reconstruction of Provincial Road 94 and 95 (PR94 & PR95)	Phnom Dek-Kampong Sra Lav 147km	2	120		1
52		Reconstruction of PR147	Yor Thin Pika-Taken Koh Sla 22km	2	10		1
53		Reconstruction of PR159C, 159D, and 159E	Borvil-Village 30-Phnom Proek 47km	2	25		1
54		Reconstruction of PR310	Village 2-Koh Roka 45km	2	30	1	
55		Reconstruction of PR312	Lvea-Pro Sva 29km	2	24.90	1	
56		Reconstruction of PR312B	Prasat Commune-Roung 22km	2	15		1

57		Reconstruction of PR312C	Kroal Kor-Kraing Lvea 21km	2	10		1
58		Reconstruction of PR316A	Chi Phou-Chantrea 16km	2	8		1
59		Reconstruction of PR371	Pen Commune-Chhloung 90km	2	150	1	
60		Reconstruction of PR377 & 377A	48.59km	2	25.72	1	
61		Reconstruction of PR1577	Ratanak Mondol-Battambang 52km	2	20		1
62		Reconstruction of PR1578	Steung Kach-Roka Bos 17km	2	7		1
63		Reconstruction of PR2561	Ta Pen-Boeng Snor 26km	2	10		1
64		Reconstruction of PR2624	Phnom Dek-Skun 79km	2	50		1
65	Siem Reap Growth Pole	New PR 2662	Siem Reap-Siem Reap 18km	4	20	1	
66		Reconstruction of PR2625, 2648, and 2686	Kirivorn-Cham Ksan 148km	2	100		1
67		Reconstruction of PR3762	Kronhoung Senchey Cherng-Chey Khlaing 27km	2	10	1	
68		Reconstruction of PR3764	NR76-Cambodia-VN Border 52km	2	25		1

69	Siem Reap Growth Pole	Access road to New Siem Reap Airport	Airport-Siem Reap Ring Road 19.59km	4	58.40	1	
70	SHV Growth Pole	Access road to SHV	Prey Nob-SHV 45km	4	100	1	
71	Phnom Penh Growth Pole	Access to New PP Airport (Widening Hun Sen Blvd to the South)	Ring Road 3- New Phnom Penh Airport 7km	4	50		1
72	Phnom Penh Growth Pole	Access road to PPAP	10km	2	50		1
73	Coastal transport corridor	Access road to Koh Kong Port	NR48-Koh Kong Port 8km	2	20	1	
74		Tonle Bassac Bridge project (Chak Ang Re Krom-Prek Pra)	0.845km	4	58.25	1	
75		Bridge crossing Mekong River Kdei Ta Koy project	2.59km	2	138		1
76		Road Project (Mae Sang-Ro Meas Heak)	28km	2	19.6		1
77		Road project (Chum Kiri RN41-Chhouk-Kampong Trach RN33)	42.30km	2	24.27		1
78		Rehabilitation NR67	134km	2	26.05	1	
79		Road project 2565A, 2565B, 2561	23.20km	2	15.80		1
80		Road project No59, 57B2, 57B1, 159C, 156D	120km	2	26.31		1

81		Road project 266E, 166F	80km	2	18.42		1
82		Cambodia-Korea friendship bridge project (Night market-Arey Ksat)	3.50km	2	330	1	
83		Samdech Hun Sen Tmor Rieng road (from PR146A in Keo Pus commune, Prey Nob district, Sihanoukville province to Km 23+510 NR48 in Boeung Preav commune, Srea Am Bel district, Koh Kong Province	23.51km	2	15		1
84		PR149 (NR4 at Km 133+600 in Kampong Sei La district to Km 55+50 NR3 at Km 195+480 st Prei Nob district, Sihanoukville Province)	55.59km	2	40		1
85		PR1440	44.30km	2	64.32		1
Total			**6,245.745km**		**6,428.74**	**31**	**54**

Note: Calculation of each investment project is made based on the related cost estimation through the discussion and clarification from the relevant departments.

- Short-term and medium (2023-2027): 1,988.235km construction length of road and 2,957.02 million USD of investment budget
- Long-term (2028-2033): 4,257.51km construction length of road and 3,471.72 million USD of investment budget.

C. List of Railway Project

No.	Transport Corridor, growth pole, and poles connecting the growth	Name of Project	Description of Key Construction	Investment Cost Estimate (USD Million)	Short & Medium term (2023-2027)	Long term (2028-2033)
1		Upgrading of Phnom Penh-Poi Pet railway to a railway with the same load capacity and speed as the southern railway line (passenger line speed of 80 km/h and freight line speed of 50 km/h.	The first phase: Upgrade Phnom Penh-Poi Pet railway to a railway with load capacity and speed as the southern railway line. It includes changing existing sleepers to concrete sleepers, changing fastening from small to large, preparation railway foundations, bridges and buildings, signal and information equipment, railway facilities, solving problems in railway stations, railway line, repair railway depot, the improvement of waiting areas and passenger enter-exit terminal, connect with other modes of transportation, and the efficient arrangement for passenger and cargo transport. In addition, adjusting the radius of curvature of the existing railway line will ensure the safety of train operation and can accelerate the speed of train. (Passenger line speed of 80 km/h and freight line speed of 50 km/h).	300	1	
2	Southwest transport corridor	Reconstruction of Phnom Penh-SHV to high-speed railway	Next phase: Reconstruction of Phnom Penh - Sihanoukville Railway to a high-speed Railway. It is a new construction of railway with a width of 1,435 mm, a passenger line speed of 160 km/h and a freight line speed of 80 km/h, and load capacity of more than 20 tons/axle. Installation of	1,330		1

			signal and information equipment, railway facilities, solving problems at railway stations, railway lines, railway foundations, bridges and railways, maintenance of railway depot, the improvement of waiting areas and passenger enter-exit terminal, connecting with other modes of transportation, and efficient transportation arrangement for passengers and goods. In addition, adjusting the radius of curvature of the existing railway line will ensure the safety of train operation and can accelerate the speed of train safely			
3	Northwest transport corridor	Reconstruction of Phnom Penh-Poi Pet to high-speed rail	Next phase: Reconstruction project of Phnom Penh-Poi Pet railway to high-speed railway. It is a new railway construction with a width of 1.435 mm, a passenger line speed of 160 km/h and a freight line speed of 80 km/h, a load capacity of more than 20 tons/axle. Installation of signal and information equipment, railway facilities, problem solving at railway stations, railway lines, railway foundations, bridges and railways, repair railway depot, the improvement of waiting areas and passenger enter-exit at station, connecting with other modes of transportation, and efficient transportation arrangement for passengers and goods. In addition, adjusting the radius of curvature of the existing railway line will ensure the safety of train operation and can accelerate the speed of train safely	1,930		1

4	Southeast transport corridor	Construction of high-speed railway Phnom Penh-Bavet Vietnam border (New)	The railway from Phnom Penh to southeast passes through the new Phnom Penh Autonomous Port to the east along National Road 1 through Kandal, Prey Veng and Svay Rieng provinces, and ends at the Bavet border gate (Cambodia-Vietnam border) that has a total length of 150km. It is mainly focused on both passenger and cargo transport. After the construction, the passenger speed will be 160 km/h and the freight speed will be up to 80 km/h.	800		1
5	Northwest transport corridor	Construction of high-speed railway Phnom Penh-Kampong Thom-Siem Reap-Poi Pet (New)	The new railway from northwest Poipet passes through Siem Reap, Kampong Thom, Cheung Prey (Kampong Cham), Phnom Penh. It focuses on the transportation of goods and passengers. After the construction, the passenger speed will be 160 km/h and the freight speed will be up to 80 km/h. Load weight over 20 tons/axle.	**2,150**		**1**
6	Tourist and passenger growth pole	Railway construction (1) Phnom Penh-New Airport (Takhmao, Kandal province) (New) (2) Siem Reap-New Airport (Sot Nikum, Siem Reap province) (New)	(1) This new railway is for light train carrying tourist leaving the new airport (Takhmao, Kandal province) to Phnom Penh, and from Phnom Penh to Techo International Airport (Takhmao). It is estimated to be 20 km long. (2) This new railway is for light trains carrying tourists leaving New Siem Reap Angkor Airport (Sot Nikum, Siem Reap Province) to Siem Reap city, and from Siem Reap city to New Siem Reap Angkor Airport. The project is estimated to be 30 km long. (3) It is a kind of Mono rail, AGT and subway railway in Phnom Penh for the type of light train with high safety, low noise, avoid traffic jams,	**3,500**	**3**	

		(3) Transportation in Phnom Penh city (Mono rail, AGT, Subway) (New)	reduce pollution and sanitation. It is estimated to be 20 km long.			
Total				**10,010**	**4**	**4**

Note: Calculation of each investment project is made based on the related cost estimation through the discussion and clarification from the relevant departments.

D. List of Waterway Project

No.	Transport Corridor or growth pole, poles connecting the growth	Name of Project	Description of Key Construction	Investment Cost Estimate (USD Million)	Short & Medium term (2023-2027)	Long term (2028-2033)
1	Phnom Penh Growth Pole	Expansion of LM17 Phase 4	The construction of 3 container terminals with a capacity of 5,000 tons each and with a width of 150m (excluding the equipment), and a container yard of 5.5 hectares	16	1	
2	Phnom Penh Growth Pole	Development of Container Yard at LM17	Develop two cargo terminals with a capacity of 3,000 tons each and a width of 150m for phase 1	70	1	
3	Northwest transport corridor	Study and development of breakbulk, multipurpose port terminal and tourist port at Tonle Sap Lake (Chong Beoung Thom)	The study, architectural design and engineering work for the development of 2 multipurpose ports with a capacity of 2,000 tons each and a width of 130m	50	1	
4	Northwest transport corridor	The study and construction of Pursat multipurpose port terminal	The study, architectural design and engineering work for the development of one multipurpose port with a width of 70m with cargo handling capacity of 80,000 tons annually	20		1

5	Northwest transport corridor	The study and construction of Pursat Tourist Port Terminal	The study, architectural design and engineering work for the development of 2 tourist ports, a capacity of 100GT with a width of 90m and capacity to accommodate 100,000 tourists annually	5		1
6	Northwest transport corridor	The study and construction of multipurpose port terminal in Siem Reap province	The study, architectural design and engineering work for the development of one multipurpose port with a capacity of 500 tons, a width of 70m, and cargos handling capacity of 80,000 tons annually	20		1
7	Northwest transport corridor	The study and construction of tourist port in Siem Reap province	The study, architectural design and engineering work for the development of two tourist ports, a capacity of 100GT with a width of 90m and capacity to accommodate 100,000 tourists annually	5		1
8	Northwest transport corridor	The study and rehabilitation of waterway from Tonle Sap lake-Phnom Penh-Kampong Chhnang province	The study, architectural design and engineering work for the rehabilitation and improvement of waterway to facilitate the navigation for vessel with a capacity of 2,000 tons from Tonle Sap in Phnom Penh to Kampong Chhnang. The total length is 120km with the depth of 3.5m.	10	1	

9	Northwest transport corridor	The study and rehabilitation of the Tonle Sap waterway from Kampong Chhnang to Pursat	The study, design, rehabilitation and improvement of waterway for the navigation for vessels with the capacity of 500 tons from Kampong Chhnang to Pursat. The total length of the waterway is 50km with the depth of 2.7m	100		1
10	Northwest transport corridor	The study and rehabilitation of Tonle Sap waterway from Pursat to Siem Reap	The study, architectural design and engineering work for the rehabilitation and improvement of waterway to facilitate the navigation for vessels with capacity of 500 tons from Pursat to Siem Reap. The total length of waterway is 90km with the depth of 2.7m	130		1
11	Northwest transport corridor	Study and construct Preak Kdam port terminal along Tonle Sap River	The study and engineering design for the development of two multipurpose ports for vessels with capacity of 3,000 tons width of 150m, and cargos handling capacity of 80,000 tons annually	20	1	
12	Northwest transport corridor	Construction of Sub-feeder Multipurpose Port Terminal (TS11) along Tonle Sap River	Construction of two multipurpose ports able to accommodate vessels with capacity of 3,000 tons, width of 150m, and cargos handling capacity of 80,000 tons annually	20	1	
13	Northwest transport corridor	Construction of Sub-feeder Multipurpose Port Terminal (UM2)	Construction of two multipurpose ports able to accommodate vessel with capacity of 3,000 tons, width of 150m for phase 2, stage 2 and next phase.	30	1	

14	Northeast transport corridor	Study rehabilitation and improvement of waterway from Phnom Penh to Tonle Bet terminal along Mekong River	After rehabilitation and improvement, waterway, that accommodate only vessels of 1,500 tons, is expanded to 3,000 tons for sea-going vessel. The waterway to be rehabilitated and improved has a total length of 110km with a width of at least 100m and a depth of 5m. The Soil for rehabilitation is approximately 12,333 million cubic meters.	260	1	
15	Northeast transport corridor	Develop Sub-feeder Multipurpose Port Terminal (UM1) along upper Mekong River	Construction of two multi-purpose port with a capacity of 3,000 tons each and a width of 150m, which can accommodate cargos of 80,000 tons annually	20	1	
16	Southeast transport corridor	Develop Sub-feeder Multipurpose Terminal LM26 in Prey Veng province	Construction of two multi-purpose port terminals with a capacity of 3,000 tons each and a width of 150m during the phase 1 at Cambodia-Viet Nam which can accommodate cargos of 80,000 tons annually	70	1	
17	Southeast transport corridor	Study and rehabilitation of Mekong waterway from PPAP to Cambodia-Viet Nam border	After rehabilitation and improvement of Mekong waterway at 4 locations from PPAP to Cambodia-Viet Nam Border, the capacity of the existing waterway transport shall be increased from 3,000 tons (during the dry season) to 5,000 tons for sea-going vessel. The waterway to be rehabilitated is 102km long with a depth of 7.5m.	160		1

18	Southeast and Northwest transport corridor	Installation of aids to navigation along the Mekong River, from Tonle Bet Port terminal to PPAP	The study and engineering work for installation of aids to navigation for 180 locations	13	1	
19		Navigation project “Funan Techo Canal”	The rehabilitation and dredging of Bassac river connecting to the sea in Kep province with a length of 180km, including dredging a new route connecting Prek Takeo, Mekong River to Prek Ta Hing Bassac river and extending to the sea of Kep province. • 3 canal locks is to be constructed in Prek Takeo (Kean Svay district, Kandal province), Svay Daun Keo city (Takeo province), and Damnak Chang Er (Kep province) • 2 strategic ports are to be constructed in Takeo city and Damnak Chang Er district (Kep province) which are a logistic center area, the exchange of multimodal transport, and 4 feeder ports located in Kampong Trach, Angkor Chey, Angkor Borey, and S' ang district which play the roles as support and warehouse to stock and distribute goods for the surrounding area. 2 main roads are planned for construction along this waterway	1,700	1	

			and some bridges along the waterway from Kean Svay district to the sea in Kep province.			
20	Northwest transport corridor	Study and installation of aids to navigation along Mekong River from Phnom Penh to Cambodia-Viet Nam Border	The study and engineering work for installation of aids to navigation at 220 locations	17	1	
21	Northwest transport corridor	Study and installation of aids to navigation along Tonle Sap River from Kampong Chhnang Port to Phnom Penh	The study and engineering work for installation of vessel traffic signals at 200 locations	15	1	
22	Others	Develop electronic data interchange platform for waterway transport along the river	The study and development of information system such as port management system and Electronic Data Interchange platform, VTS and AIS as well as data center	250	1	1
23		Build the capacity of MPWT in data collection, inspection and measurement system	Purchase essential equipment and programs for measuring and collecting data for safe navigation and transport as well as to Search and Rescue (SAR)	250	1	1
Total				**3,251**	**16**	**9**

Note: Calculation of each investment project is made based on the related cost estimation through the discussion and clarification from the relevant departments.

E. List of Maritime Transport Project

No.	Transport Corridor or growth pole, poles connecting the growth	Name of Project	Size of Construction	Investment Cost Estimate (USD Million)	Short & Medium term (2023-2027)	Long term (2028-2033)
1	Maritime transport corridor	Starting new Koh Kong Port Project	2 multi-purpose terminals with capacity of 20,000 tons each	80	1	
2	Maritime transport corridor	New general port terminal at Koh Kong (Union Development)	1 multi-purpose terminal with capacity of 50,000 tons and 1 container terminal with a capacity of 50,000 tons	500		1
3	Maritime transport corridor	New tourist port terminal at Koh Kong (Union Development)	The capacity to accommodate cruise ships of 100,000 tons	300		1
4	Maritime transport corridor	New multipurpose port terminal at Kampot, (Kampot International port)	Multi-purpose port terminal with a capacity of 10,000 tons	50	1	
5	Maritime transport corridor	New port in Kampot (PAPA Petroleum Port)	Two container terminals with capacity of 50,000 tons each and two multipurpose terminals with a capacity of 20,000 tons each	400	1	
6	Maritime transport corridor	Development of deep water navigation channel for sea-going vessel	This navigation channel has length of 30km, and the length to be rehabilitated is 13km for oil tanker and cargos vessel of	50		1

		with capacity of 50,000 tons for Kampot Port	50,000 tons, with a width of 200m and a depth of 15m			
7	SHV growth pole	Project on Modification of General cargo terminal to container port terminal (additional work)	Container port with a length of 253m and a depth of 10.50m which can accommodate vessel with a capacity of 20,000 tons (1,500 TEUs). Installation of container lifting equipment, 2 QC and 6 RTG.	31	1	
8	SHV Growth Pole	New container terminal at SHV Port phase 1	New Container terminal phase 1 with a length of 350m and a depth of14.50m that can accommodate vessel of 60,000 tons and capacity of 4,000 TEUs. - navigation channel length of 4.5km for vessel container with the capacity of 60,000 tons, width of 150m and depth of 13.50m	203	1	

9	SHV Growth Pole	New container terminal at SHV Port phase 2&3	- New container terminal phase 2 with a length of 400m and a depth of 16.50m that can accommodate vessel with a capacity of 120,000 tons (10,000 TEUs). New Container terminal phase3 with a length of 400m, and a depth of 17.50 m that can accommodate vessel with the capacity of 160,000tons (TEUs 15,000). - Navigation channel length of 4.5km for vessels with the capacity of 160,000 tons, width of 150m and depth of 14.50m	547		1
10	SHV Growth Pole	New Steung Hav Port Terminal at SHV	Two container terminals with a capacity of 50,000 tons each	500	1	
11			Multi-purpose port terminal with a capacity of 50,000 tons, coal port terminal with a capacity of 50,000 tons and equipment supporting to an industrial park	650		1

12	SHV Growth Pole	Development of new deep water navigation channel for vessel with capacity of 50,000 tons at Steung Hav Port in SHV	navigation channel with a length of 22.8km, a width of 140m and a depth of 15m	50	1	
13	SHV Growth Pole	New combined-cycle Power Plant located in SEZ and Power Area of Koh Kong Smart Port	1 LNG port (1 LNG Storage facility, 1 LNG plant)	500	1	
14	SHV Growth Pole	New port terminal at Koh Kong Smart Port	Two multipurpose port terminals with a capacity of 50,000 tons each, two general port terminals with a capacity of 50,000 tons each, and one big fishing port	500		1
15	SHV Growth Pole	New deep water navigation channel at Koh Kong Smart Port	It has a length of 40km, which is planned for LNG Carrier with a capacity of 180,000 cubic meters, navigation channel width of 260m, and depth of 14m	200	1	
16	SHV Growth Pole	Railway connecting to Steung Hav Port of SHV	Length of 5km	30	1	

17	SHV Growth Pole	Road connecting to Steung Hav Port of SHV	Length of 5km	30	1	
18	Others	Establishment electronic data interchange platform for waterway transport	Develop information system such as establishing port management system and Electronic Data Interchange Platform, VTS and AIS, DNSS as well as data center	400	1	1
19		Build capacity of MPWT in data collection, inspection and measurement system	Purchase measuring equipment and data collection for safe navigation and transport	400	1	1
20		Study on the modernization of port equipment, upgrade the safety equipment at port	- Study on modernization of essential port equipment - Training course and technical inspection of port safety equipment	40	1	1
Total				**5461**	**14**	**9**

Note: Calculation of each investment project is made based on the related cost estimation through the discussion and clarification from the relevant departments.

F. List of Air Transport Project

No.	Transport Corridor or growth pole, poles connecting the growth	Name of Project	Description of Key Construction	Investment Cost Estimate (USD Million)	Short & Medium term (2023-2027)	Long term (2028-2033)
1	Phnom Penh Growth Pole	New Phnom Penh International Airport (Techo)	Design Category 4F airport, construct the runway of 3800m, 60m width, build a station of 120,000 square meters which can accommodate 10 million passengers annually	1500	1	
2	Phnom Penh Growth Pole	Project for improvement of the eastern terminal ground of Phnom Penh International Airport (current airport)	Improve the eastern terminal of 8,831 square meters by constructing 3 terminals with category C	1.2	1	
3	Phnom Penh Growth Pole	Project for improving runway A&C of Phnom Penh Airport	Improve runway A&C with AC concrete, in which laid 27,320 square meters and pavement with 19,390 square meters	5	1	
4	Siem Reap Growth Pole	Development of Siem Reap Angkor	Design Category 4E airport, construct runway of 3,800m, 45m width, building station of 80,000 square meters which can	1100	1	

		International Airport (New)	accommodate 10 million passengers annually			
5	Siem Reap Growth Pole	Expansion of Phase 6 of Siem Reap International Airport	Expand the eastern terminal of 10,981 square meters and construct 3 terminals of Category C with supporting equipment including sewerage system	3.7	1	
6	SHV Growth Pole	Expansion of SHV International Airport	Upgrade into Category 4E, widen the runway to 3,300m, construct airport station, airplane terminal, aligned runway as well as supporting equipment such as: transport of cargos, fire extinguishing, air traffic control, airplanes maintenance, fuel for airplane, basic services, wastewater treatment, and defined operation bases which can accommodate flow of passengers of 4 million per annum	300	1	
7	Coastal transport corridor	Construction of Dara Sakor International Airport (New)	Design Category 4E airport, construct runway of 3,200m, 45m width, building station of 5,700 square meters as well as with relevant equipment	150	1	

8	Coastal transport corridor	Improvement of Airport in Koh Kong province	Design Category 4C airport, strengthen the existing runway, and develop longer runway into 1800m, and expanding the station as well as installing the additional equipment	43	1	
9	Northwest main transport corridor	Construction of New Poi Pet Airport	Design Category 4C airport, strengthen the ground of runway, develop longer runway into 2,500m, and construct the station of 600 square meters as well as install the additional equipment	45	1	
10	Northeast sub transport corridor	Change the location of Mondulkiri Airport	New Mondulkiri Airport shall be constructed as Category 4C airport	150	1	
Total				**3,297.9**	**10**	**0**

Note: Calculation of each investment project is made based on the related cost estimation through the discussion and clarification from the relevant departments.

G. List of Logistics Project

No.	Transport Corridor or growth pole, poles connecting the growth	Name of Project	Size of Construction	Investment Cost Estimate (USD Million)	Short-medium term (2023-2027)	Long term (2028-2033)
1	Development of key Logistics Complexes and Poles	Development of Phnom Penh Logistics Complex (PPLC)	There is a northwest and southeast external transport node of PPLC and Air Cargo Hub on areas of 150 hectares	220	1	
2		Development of Sihanoukville Logistics Complex (SHV-LC)	100 hectares	120	1	
3		Development of Bavet Logistics Park	70 hectares	80		1
4		Development of Poi Pet Logistics Park	80 hectares	90		1
5		Development of Siem Reap Logistics and Commercial Centre	50 hectares	60		1
6		Development of Kampot Industrial Logistics Center	50 hectares	60		1

7		Development of Kampong Cham Agricultural Logistics Center	50 hectares	60	1	
8		Development of Grain Logistics Center	Each logistics center covers areas of 30 hectares and there are 5 logistics center in total	200	1	
9	Information platform of Project for SMART and Effective Logistics development	Logistics Big Data Centre		8	1	
10		Government's monitoring and services platform		10		1
11		Logistics Association and Enterprise Resources Information System development		15		1
12		SMART Logistics Park Information System platform development	Covering the PPLC and SHV-LC and Bavet and Poi Pet Logistics Parks	20	1	1
13	Enhancement of Logistics Management Institution	Secretariate of NLC (National Logistics Council) and NLSC (National Logistics Steering Committee)		4	1	

14		Logistics Professional Training Centre development	2,000 square meters for Phase 1	6	1	
15	Improvement of Logistics Policy Framework			4.5	1	1
Total				**957.5**	**9**	**8**

Note: Calculation of each investment project is made based on the related cost estimation through the discussion and clarification from the relevant departments.

H. Additional projects

No.	Project's name	Summary of the objective of the project	Investment Cost Estimate (USD Million)	Short & Medium term (2023-2027)	Long term (2028-2033)
1	Development of railway strategic framework	Main transport corridor, transport hub and external transport nodes - main transport corridor of Southwest and Northwest. Strengthening the railway regulatory framework in Cambodia for increased safety and efficient railway operation.	1	1	
2	Kaam Samnor One Stop Processing Center Project	Main transport corridor, transport hub and external transport nodes - main transport corridor at Southeast. Improvement of facility and capacity of cross-border transport at Kaam Samnor Mekong River border toward realizing seamless border crossing.	68		1

3	Development of Port and Inland Waterway Regulatory Framework	Main transport corridor, transport hub, external transport nodes - main transport corridor at Southeast and Southwest. Enactment of the port law and maritime transport law, enactment of the inland waterway law and strengthening of the regulatory framework.	0.3	1	
4	Bavet Border Improvement Project	Main transport corridor, transport hub, external transport nodes - main transport corridor at Southeast. Enhancement of the capacity of cross-border transport in Bavet Area to achieve seamless border crossing.	30		1
Total			**99.3**	**2**	**2**