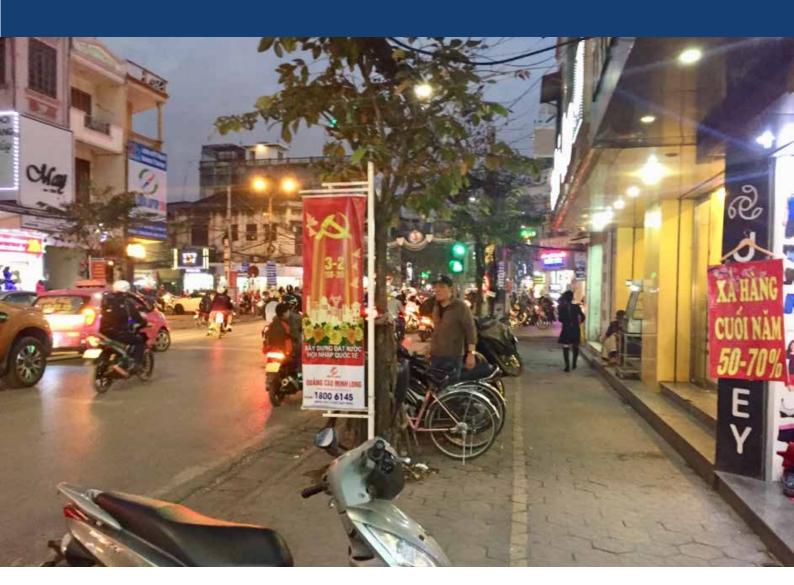


VIETNAM POLICY ENVIRONMENT PAPER

BERLIN, 2018









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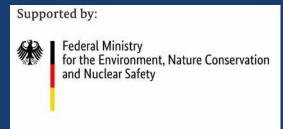
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The Urban Pathways project helps delivering on the Paris Agreement and the NDCs in the context of the New Urban Agenda and the Sustainable Development Goals. It has established a facility in close cooperation with other organisations and networks active in this area to support national and local governments to develop action plans and concrete implementation measures to boost low-carbon urban development. This builds on UN-Habitat's role as "a focal point on sustainable urbanisation and human settlements including in the implementation and follow-up and review of the New Urban Agenda". The project develops national action plans and local implementation concepts in key emerging economies with a high mitigation potential. The local implementation concepts are being developed into bankable projects, focusing on the access to urban basic services to create a direct link between climate change mitigation and sustainable development goals.

The project follows a structured approach to boost

Low Carbon Plans for urban mobility, energy and waste management services that deliver on the Paris Agreement and the New Urban Agenda. The project works on concrete steps towards a maximum impact with regards to the contribution of urban basic services (mobility, energy and waste management) in cities to global climate change mitigation efforts and sustainable and inclusive urban development. This project makes an active contribution to achieve global climate change targets to a 1.5°C stabilisation pathway by unlocking the global emission reduction potential of urban energy, transport and resource sectors. The project will contribute to a direct emission reduction in the pilot and outreach countries, which will trigger a longer term emission reduction with the aim to replicate this regionally and globally to make a substantial contribution to the overall emission reduction potential.

This project implements integrated urban services

solutions as proposed in the New Urban Agenda providing access to jobs and public services in urban areas, contributing to equality and social coherence and deliver on the Paris Agreement and the Sustainable Development Goals. This is the first dedicated implementation action oriented project, led by UN-Habitat to deliver on inclusive, low-carbon urban services. Securing sustainability and multiplier effect, the project aims to leverage domestic and international funding for the implementation projects that will follow from this initiative.

Urban Pathways

Project concept

Project aims





Urban Pathways Replication Cities

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ABSTRACT

In the context of formulating and implementing the Urban Pathways initiative for Vietnam, this paper analyses the administrative, legislative and political environment which influences policymaking at two levels of the government – the National and the Local/Provincial (Hai Phong). The paper outlines Vietnam's GHG emission reduction targets, as well as the parallel 'green growth' strategies and action plans currently being implemented within three sectors – energy, transport and resource management. The paper also identifies key decisionmakers within the country's public administration system.







COUNTRY OVERVIEW

ietnam has a population of 93.5 million (2015) and is located in Southeast Asia between the Mekong River Delta to the south, the Red River Delta to the north and the South China Sea to the east. Between the period of 1980-2015, Vietnam's rate of population growth in rural areas significantly declined to near zero, while the resultant migration has led to rapid urbanisation across all major cities. Although the country's current level of urbanisation is low at around 35.7%, it is projected that urban areas would accommodate over half of the country's population by 2045 (Vietnam Habitat III National Report, 2016). While one-third of the current urban population is presently concentrated in the two largest metropolitan regions of Hanoi and Ho Chi Minh City, Vietnam's secondary tier of the next three largest cities, namely, Can Tho, Hai Phong and Da Nang, is also deemed critical in addressing the future challenges of low-carbon growth.

Vietnam's economic transition to a lower-middle income country is achieved through intensive policy reforms which shifted a centrally-planned economy to a market-driven one and led to greater agricultural yields, manufacturing output and foreign investments. In 2016, Vietnam's GDP was 202.62 billion USD, while the GDP per capita was 2,060 USD in 2016 (World Bank, n.d.).

Vietnam currently contributes 0.6% of the world's total greenhouse gases (GHG) emissions and ranks 27th globally in terms of GHG emissions (Vietnamnet, 2017). For the period of 1990-2014, the country's cumulative GHG emissions were 252 MtCO₂e. During the same period, GHG emissions for energy (electricity sub-sector) were 50 metric tons, for transport: 31.9 metric tons and waste: 9.4 metric tons (WRI-CAIT, n.d.).

SUMMARY OF VIETNAM'S NATIONALLY DETERMINED CONTRIBUTION (NDC)

Vietnam's Intended Nationally Determined Contributions (INDC) specify mitigation and adaptation targets for the period of 2021 to 2030. The INDC also differentiates between conditional and unconditional contributions with respect to the country's mitigation targets. Unconditional targets are defined as actions implemented using domestic resources, while conditional contributions are measures whose implementation is subject to receiving international finance, technology transfer and

capacity building. Accordingly, the INDC specifies an unconditional GHG emission reduction target of 8% by 2030 under a Business as Usual (BAU) scenario. The conditional benchmark for 2030 is specified to be 25%. This also includes 20% reduction in the emission intensity per unit of GDP compared to 2010 levels (The Socialist Republic of Vietnam, 2015). However, given that the GHG emissions for 2030 are projected to triple to 787.4 MtCO₂e compared to 2010 level of 246.8 MtCO₂e, the committed conditional

reduction still falls below the BAU scenario (Vieweg et al., 2017). It is therefore essential that Vietnam's GHG mitigation efforts go beyond the INDC-mandated strategies.

As emphasised by the INDC, Vietnam has a range of policies that specifically govern climate change related programmes. These include -Law on Environment (2014), Law on Economical and Efficient Use of Energy (2010), National Climate Change Strategy 2011 (NCCS) as well as the National Action Plan on Climate Change 2012-2020 (NAPCC). This list of policies also includes two national resolutions for 'Pro-actively responding to climate change, enhancing natural resource management and environmental protection' (2013) and 'Management of GHG emissions; management of carbon-credit trading activities to the world market' (2012). Additionally, the Vietnamese government also intends to develop a national GHG inventory to aid Measurement, Reporting and Verification (MRV) of mitigation actions at national and provincial levels (The Socialist Republic of Vietnam, 2015). Vietnam ratified the Paris Agreement in November 2016 and provided a strong legal basis for implementing the measures prescribed in the INDC. Towards this, Vietnam has officially adopted 'Paris Agreement Implementation Plan' which articulates sectoral mechanisms, periodic reforms in relevant national legislation as well as ministries responsible for the initiatives therein (outlined in the later sections). The plan states that Vietnam's short-term actions would continue to focus and fund on climate adaptation, while GHG mitigation remains a long-term goal, primarily financed by private investments and

the state playing an enabling role (The Socialist Republic of Vietnam, 2016).

In the energy sector, the strategies specified in the INDC are – (a) Establish management and operation procedures for efficient and effective use of energy in production, transmission and consumption; (b) Reduce fossil fuel usage for energy generation and industrial/domestic consumption by phasing out fossil-fuel subsidies; (c) Promote renewable and low-emission energy sources by developing and implementing market, financial and technological mechanisms; and (d) Improve energy efficiency in the residential, trade and services sectors by establishing energy-saving standards, as well as applying market instruments for greater uptake of energy-saving equipment.

In the transport sector, the strategies mentioned in the INDC are - (a) Development of faster modes of public transport in large urban centres; (b) Encourage buses and taxis to transition from conventional fossil-fuels and instead use natural gas or Liquified Petroleum Gas (LPG); and (c) Implement solutions to address fuel quality, emission standards and vehicle maintenance. The INDC does not explicitly mention promotion and development of electric mobility. Addressing the resource sector, the INDC proposes the following strategies - (a) Enhance waste management capacity and planning by promoting the idea of reducing, reusing and recycling; (b) Application of advanced waste and waste-water treatment technologies; and (c) Increase waste-to-energy conversion through solid waste incineration and utilisation of land-fill gases.

POLICIES & STAKEHOLDER MAPPING

Governance and Institutions

The Socialist Republic of Vietnam follows a one-party system of governance, where the governance is highly centralised at the national level. Vietnam's political and economic system is particularly governed by a cycle of Socio-Economic Development Strategies (SEDS) which are formulated for a period of 10 years each. Additionally, Vietnam also prepares Five-Year Plans, termed as Socio-Economic Development Plans (SEDP), which focus on the implementation the SEDS. This process constitutes a 'topdown system of planning', whereby the central authorities not only establish a development trajectory but also monitor and ensure that the programmes are duly implemented by all local governments (Albrecht et al., 2010).

At present, national policymaking at the highest level is directed by both the SEDS 2011-2020 and the current SEDP 2016-2020. From a low-carbon urban development perspective, there are three other major policies driving Vietnam's sustainable growth. These include – National Sustainable Development Strategy for 2011-2020, the National Green Growth Strategy 2012 (VGGS) and its corresponding National Green Growth Action Plan 2014 (VGGAP). Vietnam's current policy environment is composed of multiple legislations addressing similar issues, parallel solutions and action plans with overlapping timeframes.

The following sections outline Vietnam's administrative system and the key decisionmakers therein.

NATIONAL GOVERNMENT

National Assembly:

The National Assembly is the premier legislative body in Vietnam deciding all domestic and foreign policy, and is democratically elected for a term of five years. The National Assembly creates the framework of legislation, while the National Government is responsible for providing guidance to all executive authorities on implementing the legislation (LSE and Grantham Research Institute, n.d.). Additionally, there is a Standing Committee which represents the National Assembly between its two annual meetings. The Standing Committee is tasked with the formulation of draft policy, which is subsequently approved by all the members of the Assembly for it to be legislated (UNDP, 2012). The National Assembly also elects the President as head of the State as well as the Prime Minister as head of the Central Government.

Central Government:

The National Government constitutes the executive arm of the National Assembly and the highest organ of State administration for the Socialist Republic of Vietnam (UN DESA, 2004). All legal and policymaking responsibilities are distributed between the National Assembly and the National Government. The responsibilities and sectoral tasks of National Ministries, as articulated in the INDC (The Socialist Republic of Vietnam, 2015), and those related to urban development (OECD, 2018) are elaborated as follows –

a. Ministry of Natural Resources and Environment (MONRE):

<u>Lead and coordinate</u> the periodic assessment of INDC-related GHG mitigation efforts with relevant ministries, sectors and localities <u>Develop</u> National Adaptation Plan (NAP)

Assess risks and vulnerability, determine adaptation needs and addressing loss and damage (L&D) issues; conduct related pilot projects independently

Raise public awareness regarding climate change and the Paris Agreement

Establish the MRV system for national scale GHG emission mitigation action

b. Ministry of Construction (MOC):

<u>Lead and coordinate</u> across ministries and provincial authorities the implementation of National Programme for Urban Development 2012-2020; guide local government agencies on implementing their Urban Development programmes

<u>Pilot application of mechanisms</u>, policies, market instruments in mitigation of GHG emissions in the construction sector, including adaptation in urban areas, low-carbon urban development and smart city projects

<u>Prepare proposals</u> for GHG mitigation from construction sector and funding of projects through Government Grants for the period of 2021-2030

c. Ministry of Transportation (MOT):

<u>Pilot application of mechanisms</u>, policies, market instruments in mitigation of GHG emissions from the transport sector, including, mode shift from private vehicles to public transport

<u>Prepare proposals</u> for GHG mitigation from transport sector and funding of projects through Government Grants for the period of 2021-2030

<u>Plan and develop</u> national and regional traffic systems in accordance with approved regional and urban development plans

d. Ministry of Industry and Trade (MOIT): Prepares electricity development plans at the

<u>Prepares electricity</u> development plans at the national level

Implementation of the 2030 Action Plan for the development of renewable energy

<u>Development of policies</u> to promote wind and solar energy generation

<u>Develop mechanisms</u> and policies to mobilize climate finance with a focus on development of renewable energy, economical and efficient usage of energy

<u>Under MOIT</u>, the Energy Efficiency & Conservation Office (EECO) supports implementation of National Energy Efficiency Programme

e. Ministry of Planning and Investment (MPI):

Issue guidance on how to implement the VG-GAP at the provincial level

Balance the annual budget to ensure expenditure by ministries for implementing the National Urban Development Programme; mobilise Official Development Assistance (ODA) and promote investment from domestic and international sources in programmatic activities

Integration of climate change into

<u>Develop national guidelines</u> for climate change finance and investment; coordinate and allocate funds for energy sector proposals by line ministries and sectoral agencies

f. Ministry of Finance (MOF):

<u>Allocate funding</u> to all concerned ministries for the implementation of the National Urban Development Programme

<u>Provide guidance</u> on the payment and settlement of funds for the formulation and implementation of urban planning by provincial and local governments

- Formulation taxation and tariffs for the energy sector

g. Ministry of Home Affairs (MOHA):

<u>Elaborate specific regulations</u> and functions for urban governance; conduct research and propose models of urban authorities for managing urban systems



GOVERNANCE/ADMINISTRATIVE STRUCTURE

The National Government is headed by the Prime Minister (PM), who is in-charge of the general administration, issuing national decrees, and taking the decisions regarding all national programmes. The PM is also a member of the National Assembly and her/his term follows that of the Assembly. The PM is assisted by multiple Deputy Prime Ministers and Cabinet Ministers who head their respective National Ministries. Each Cabinet Minister is assisted by numerous Vice-Ministers and bureaucrats. The PM has the right to nominate and dismiss the members of her/his cabinet with the approval of the National Assembly as well as cancel the ministries' directives (UN DESA, 2004). The general hierarchy of Vietnam's public administration is illustrated in Figure 2.

POLITICAL LANDSCAPE

The Communist Party of Vietnam (CPV) is the single largest party which bears the responsibility for all political decisions. The Party Congress of the CPV meets once every five years to elect the Party's leadership and its Central Committee and to deliberate on policy direction. The CPV is headed by the General Secretary and the Political Bureau (Politburo) is responsible for implementing the agenda decided by the Party Congress.

The CPV oversees the national policymaking procedure through the Central Committee which reviews draft bills. Moreover, this Central Committee also appoints the officials of the National Assembly, including its head, termed as the Deputy (UNDP, 2012). Such decision-making interconnections indicate a high degree of influence exercised by the CPV over both the National Government and the National Assembly.

Therefore, in the case of Vietnam, it is impossible to separate the political sphere of low-carbon/sustainable development from its administrative and legislative ones.

The resolutions passed in both the 11th Party Congress (2016) indicate the CPV's strong commitment to rapid economic development which is accompanied with sustainable development. The 11th Congress established sustainable development and environmental protection as a cross-cutting requirement for the Vietnam's SEDS 2011-2020 and SEDP 2016-2020. Furthermore, the 12th Congress also emphasised the relation between the county's economic development with the UN's 2030 Sustainable Development Goals (SDGs), and the need to proactively address climate change (Ho Chi Minh National Academy of Politics, 2017).

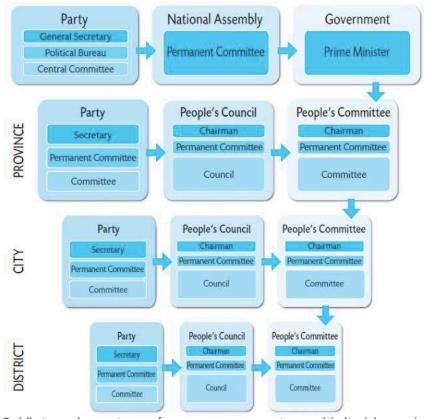


Figure 2: Vietnam's system of governance system with its hierarchy of four administrative tiers (Source: Albrecht et al., 2010)

PROVINCIAL/LOCAL GOVERNMENT

Vietnam's local government system is composed of three levels of public administration – (a) Provincial, (b) Districts, and (c) Wards/Communal. The provincial government forms the second level of governance below the State and also includes the five cities that are administered directly by the Central Government. The five largest 'provincial cities' include – Hanoi, Ho Chi Minh City (HCMC), Danang, Can Tho and Hai Phong.

Vietnamese cities are further classified in 6 classes – 'Class I' to 'Class V' along with a 'Special Category' at the apex, based on demographic characteristics, infrastructure development and socio-economic importance. This classification has significant implications on the city's policy-related and administrative autonomy as well as access to development funding. The 'Special Category' includes two of the largest urban centres of Hanoi and HCMC, which produce a combined GDP over a one-third of the national GDP (OECD, 2018). Hai Phong is Vietnam's third largest city and categorised as 'Class I'.

Governance/Administrative structure:

All provincial governments in Vietnam are divided into two primary bodies – the executive body (Provincial People's Committee) and the legislative body (People's Council). Both these bodies are closely connected in terms of organisation, functions, tasks and power (OECD, 2016). The People's Committee is headed by the Chairman who is the equivalent of the city's mayor. The members of the People's Committee are appointed by the People's Council which is itself democratically elected for a term of five years. Provinces are further divided into administrative units which contain urban districts, rural districts and island districts, where applicable. For example, the 15 districts of provincial Hai Phong are further sub-divided into 223 smaller governance units, comprising of 70 wards, 10 towns and 143 communes.

From a legal perspective, Vietnam's local government forms the embodiment of the State administration at the city level (Albrecht et al., 2010). In other words, local governments serve primarily to implement the nationally-sanctioned plans. This is also reflected in the fiscal dependency of the provinces over the Centre. Additionally, individual departments of the provincial government are tasked with the responsibilities which directly correspond with their National Ministries. For e.g., the Department of Transport reports to both the Ministry of Transport and to the local People's Committee.









Implementing a low-carbon development projects is not the prerogative of a single department but a shared responsibility between multiple authorities. These functions are outlined as follows –

a. Urban development planning:

- Department of Construction
- Provincial People's Committee (PPC)

b. Urban transport:

- Department of Construction (DOC)
- Office of Urban Management
- Provincial People's Committee (PPC)

c. Solid waste management:

- Office of Urban Management
- Department of Construction (DOC) urban waste
- Department of Natural Resources and Environment (DONRE) – rural waste

d. Electricity generation, supply and transmission:

 Vietnam Electricity (EVN), a public-sector company and its subsidiary (North Power Corporation)

e. Air quality/GHG emissions monitoring:

- Department of Natural Resources and Environment (DONRE)
- Department of Transport (DOT)
- Department of Industry and Trade (DOIT)

f. Financial planning and management:

- Department of Planning and Investment (DPI) – inter-departmental coordination for investments
- Department of Finance (DOF) budget preparation and execution

g. Vietnam National Shipping Lines (Vinalines):

The Port of Hai Phong, which is a prominent driver of the city's economic development, is owned, managed and operated by the National Government through this public-sector company

All administrative functions undertaken by line departments are supervised by the People's Committee. The People's Committee also performs the critical task of coordinating, developing and executing an overall budgetary plan based on the individual plans of all aforementioned administrative units. The budgetary plans are discussed and approved by the People's Council and passed on the Central Government for a final approval. Lastly, the People's Committee is also in-charge of implementing the National Socio-economic Development Plan (SEDP) within their administrative territory.

POLITICAL LANDSCAPE

As with the national level, the Communist Party of Vietnam (CPV) is an important actor in the local government. At this scale, decision-making is shared between the CPV and the Fatherland Front, which is an equally important political stakeholder. Fatherland Front (FF) is a coalition of social movements, sectoral and professional organisations, and aligned towards the CPV's agenda. The FF serves as a public interface for the CPV and enables the mobilisation of public support and participation for the Party's programmes.

All administrative decisions are taken according to the Party's directives, while the FF plays an

essential role in appointing candidates for various political functions (Albrecht et al., 2010). However, despite such an omnipresence of CPV across the political spectrum, implementation of the State's sustainable development agenda remains weak at the local level (Ho Chi Minh National Academy of Politics, 2017). This is attributed to inadequate coordination between agencies, unclear communication between Central and local governments, as well as conflicting actions due to the prioritisation of economic activities over environmental protection (OECD, 2018).



SECTOR REVIEW: ENERGY

Vietnam's energy sector is the largest contributor to its GHG emissions, accounting for over half of the country's total emissions (WRI - CAIT, n.d.). Energy generation is characterised by high reliance on fossil-fuel sources, with coal and oil each accounting for one-third of the current energy mix. The National Government considers coal-fired power generation to be essential for energy security, which is projected to account for half of the energy mix by 2030 (IEA and OECD, 2016). Moreover, the nationwide demand for electricity is estimated to increase four-fold by 2030, driven by the present and future high rates of both economic development and urbanisation (Social Republic of Vietnam, 2015). With such forecasts, the promotion and rapid implementation of energy efficiency and renewal energy-related measures is essential for Vietnam to achieve its INDC targets.

Vietnam's clean energy transition is in-principally supported by all three climate-related Central policies, namely, the National Climate Change

Strategy, National Green Growth Strategy and Environmental Protection Law. Based on these, legislations and strategies focussed towards implementation have also been recently framed. These include - (a) Law on Economical and Efficient Use of Energy, which prescribes energy audits, tax incentives for manufacturers, and mandatory energy efficiency labelling; (b) Renewable Energy Strategy 2015, which set targets for increased share of renewable energy, promotion of natural gas usage, fixed price and subsidies for wind power; (c) An Investment Law which provides fiscal incentives and export credits to increase renewable energy investment; and (d) Energy Efficiency Building Code which lays down technical specifications for design, construction and retrofitting of all civil buildings. However, despite the presence of an elaborate national policy framework, the implementation of its underlying strategies has been slow and often lacks enforcement at the local level (Vieweg et al., 2017).



TRANSPORT

Vietnam has the highest per capita ownership of motorcycles in the world, with motorbikes accounting for 96% of the country's total number of vehicles (OECD, 2018). In urban areas, motorcycles are the most preferred choice for mobility because of its low relative price as well as lack of reliable public transportation. Furthermore, given the rapid economic development of the country, there has been a steep growth of car-ownership. Car-sales in Vietnam have recorded an annual growth of 39% since 2012, which is one of the highest in the region (ASEAN Automotive Federation, 2016).

Vietnam's high dependence on private motorised vehicles powered by fossil fuels has resulted in negative consequences in three critical transport-related attributes – (a) GHG emissions: Transport presently accounts for 12.7% of the total GHG emissions of Vietnam (WRI – CAIT, n.d.); (b) Air quality: Air pollution in urban areas, particularly, Particulate Matter concentration, is significantly higher compared to other Asian cities (OECD, 2018); and (c) Road Safety: Vietnam registered one of the highest rates of traffic-re-

lated fatalities in Southeast Asia at 25 deaths per 100,000 inhabitants, a majority of which involved motorcycle riders (WHO, 2015).

The current national policy framework that addresses urban transport is a resolution termed 'Strategy for Development of Vietnam's Transport through 2020, with a vision toward 2030' (2013). The policy identifies the development of public mass transit systems as one of most effective solutions to decongest Vietnam's urban centres and improve road safety. Although construction of roads and highways still accounts for the largest share of transport-sector investments, this is gradually changing. The two largest cities of Hanoi and HCMC, in cooperation with international development agencies, have initiated a range of public transport projects. These include - Hanoi's Bus Rapid Transit (BRT) system (14.5 km; operational since January 2017) and Metro (13 km; under construction), and HCMC's BRT (23 km; planned) and Metro system (19.7 km; under construction). Whether these projects enable a successful modal shift to low-carbon mobility in Vietnamese cities remains to be seen after they become fully operational.

WASTE MANAGEMENT

Vietnamese cities have significantly high rates of solid waste generation compared to other Asian cities, which is also the case of Hai Phong. Comparatively, the current waste management capacities are insufficient with only 60% of the total urban solid waste generated nationwide being recycled or treated in sanitary land-fills. According to the MONRE, out of the 98 open landfill sites operational in urban areas, only 16 are scientifically considered hygienic. The waste sector also accounts for 6% of the country's total GHG emissions.

In the past decade, the National Government

has issued three successive decisions, approved by the Prime Minister, that serve as policies for governing solid waste management. These comprise of – (a) The 2008 Decision which outlined a plan up to 2020 for the nation-wide construction of treatment facilities; (b) The 2009 Decision which set targets for treatment of industrial, hazardous and non-hazardous waste up to 2025; and (c) The 2012 National Strategy for Environmental Protection which supplements the 2008 Decision in order to strengthen the implementation of waste treatment-related initiatives.

CITY EXAMPLE: HAI PHONG

With a population of 1.96 million (2015), Hai Phong is the third largest city in Vietnam. The city plays a critical role within the region owing to its strategic location within the Red River Delta and along the coast of the South China Sea, as well as its proximity to the capital city of Hanoi, situated 100 km to the east. The Port of Hai Phong is the largest container port in northern Vietnam, which has resulted in the city becoming one of the largest marine distribution centres with a concentration of multiple large-scale manufacturing, industrial complexes and international free-trade zones.

From the perspective of low-carbon urban development, Hai Phong's local governmental policies are connected with corresponding national strategies. Three of these policies are especially important. The first one is the National Green Growth Strategy (2012) which aims at a 30% GHG emission reduction by 2030. Based on this policy, the city has framed its own Green Growth Strategy Action Plan (2014). Along with the intent of achieving low-carbon growth for urban and industrial areas, this plan also aims at developing Hai Phong as a 'Green Port City'.

The second major policy document is the National Socio-economic Development Plan (SEDP). Based on the SEDP's directives, the local department for planning and investment (DPI) prepares the city's five-year master plans (the current one being for the 2016-2020 period). The plan sets targets for GDP growth, poverty reduction, industrial production, taxation and public expenditure.

Thirdly, Hai Phong also adheres to a spatial master plan prepared at the national level by the MOT, which guides the city's urban planning and port development projects. For effective implementation of these multiple plans, it is essential that the local government builds synergies

between diverse actions and facilitates coordination among all line agencies.

Hai Phong's sectoral challenges and solutions which align with the city's 'green growth' plans are outlined below –

- (a) Energy: Hai Phong's electricity consumption is set to triple by 2020 compared to 2013 levels (OECD, 2016). As a result, the city faces the challenge of supplying a growing demand for power, especially for the industrial and construction sectors, through sustainable sources. This is being addressed by promoting solar water heaters, incentivising solar-panel sales and using solar energy for street-lighting.
- (b) Transport: Similar to with all other Vietnamese cities, the dependence on motorcycles is extremely high in Hai Phong. 78% of households own a motorbike (2014) and the mode accounted for over two-thirds of total trips (OECD, 2016). To address the present lack of efficient public transport, the city could invest in strengthening the existing bus network. The city also has a proposal of introducing 220 electric buses, which is yet to be implemented.
- (c) Waste: Hai Phong produces significantly higher solid waste per person at 475 kg annually compared to megacities such as Bangkok (640) or Hong Kong (490). Also, the city's future urban waste generation is likely to increase given the high rate of urbanisation (OECD, 2018). Hai Phong's solid waste generation is estimated to grow fourfold by 2025 (OECD, 2016). This is particularly alarming, since a significant portion of the city's waste is of hazardous type released by the industrial sector. Although the 'Class I' cities in Vietnam, including Hai Phong, have a high rate of waste treatment at 87%, the system could further benefit from waste-to-energy conversion plants and recycling facilities.

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More information about the Urban Pathways project can be found at:

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