ACHIEVING VIET NAM'S NDC IN THE URBAN SECTOR

Insight Brief 02/ Viet Nam/ March 2019

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ACHIEVING VIET NAM'S NDC IN THE URBAN SECTOR

GGGI

KEY CHALLENGES

Viet Nam's Waste Challenges

- 80% of MSW sent to landfills
- 83% of landfills are unhygienic
- 7% Annual GHG emissions
- 27.8 million tons Annual municipal waste

Viet Nam's Urban Sprawl

- Viet Nam adds 70 km² of urban space per year
- Private transportation leading to congestion & pollution
- Weak infrastructure
- Lack of green space

SOLUTIONS

"Waste to resource" approach

- Enhance policies for waste to energy
- Increase tipping fees
- Electricity generation from waste
- Composting
- Reduce, reuse & recycle
- Raise awareness

Sustainable Urban Planning

- Increase public transport
- Promote renewable energy through incentives & bankable PPAs
- Incentivize energy efficient home and solar rooftop

BENEFITS

- Improved well-being of citizens
- Increased economic growth
- Reduction in GHG emissions
- Efficient provision of transport & waste infrastructure

IMPACTS

- CO_2 emissions reduction
- Green jobs
- Resilience

VIET NAM'S NDC

RELEVANT SDGS

- 6 CLEAN WATER AND SANITATION
- 7 AFFORDABLE AND CLEAN ENERGY
- 8 DECENT WORK AND ECONOMIC GROWTH
- 11 SUSTAINABLE CITIES AND COMMUNITIES
- 12 RESPONSIBLE CONSUMPTION AND PRODUCTION
- 13 CLIMATE ACTION

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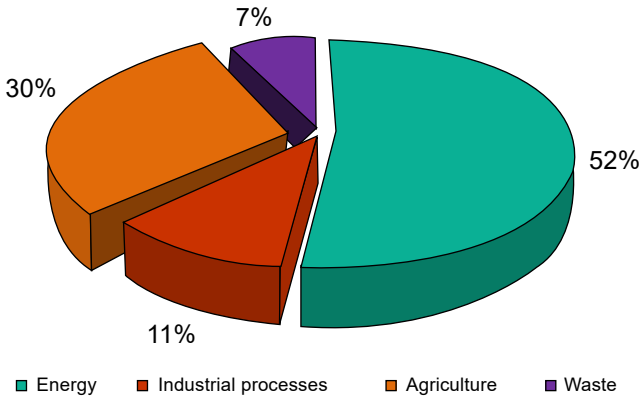
1. Introduction

Viet Nam's Nationally Determined Contribution (NDC) was issued in November 2015 as a commitment to reduce greenhouse gas (GHG) emissions, contributing to limiting global warming to less than 2 degrees by the end of the century. Viet Nam's NDC emission reduction target is 8% compared to BAU (unconditional scenario) and 25% with international support (conditional scenario). Viet Nam is currently reviewing and revising its NDC and it can increase its contribution. To be able to achieve these targets, in October 2016, Viet Nam issued the Plan for Implementation of the Paris Agreement which lays out activities to reach the emission reduction target.

Cities are major contributors to greenhouse gas emissions. Cities consume as much as 80 percent of energy production worldwide and account for roughly 50% of global greenhouse emissions[1]. The International Energy Agency (IEA) estimates that urban areas currently account for over 67 percent of energy-related global greenhouse gases, which is expected to rise to 74 percent by 2030. It is estimated that 89 percent of the increase in CO_2 from energy use will be from developing countries[2]. Urban design and mobility are crucial to GHG emission reductions. It is not urbanization alone that increases emissions, but rather how people move about the city, the sprawl of the cities, and how people use energy that make the difference in how cities pollute and contribute to climate change.

There is also a strong correlation between GHG emissions and municipal solid waste. Rapid urbanization, coupled with population growth, has led to an increase of municipal solid waste (MSW) generation in Viet Nam by 10% per year[3]. Over 80% of municipal solid waste collected is buried in uncontrolled dumpsites. Cities are also large consumes of energy. Energy demand is forecasted that by 2035 the total final energy demand will be nearly 2.5 times higher than in 2015[4]. The energy and waste sectors represent 52% and 7% of Viet Nam's national GHG emissions respectively[5]. (See figure 1)

Figure 1: The 2013 GHG shares of emissions by sectors in Viet Nam



Source: Biennial Update Report 2, 2017

GGGI's project with Ministry of Construction (MOC) – Viet Nam's Urban Green Growth Action Plan – has been implemented since 2015. The aim is to strengthen the integration of green growth objectives into planning, development, and investment processes in the urban sector and to scale up green finance for implementation. To support MOC to implement the NDC, GGGI has conducted an assessment of the potential green city actions that would help achieve Viet Nam's NDC commitments. This paper outlines the findings from the assessment in two sectors contributing the majoring of urban GHG emissions: waste and energy.

1. WB 2010. Cities and Climate Change: An urgent agenda. Available at http://siteresources.worldbank.org/INTUWM/Resources/340232-1205330656272/4768406-1291309208465/PartIII.pdf
2. IEA (International Energy Agency). 2008. World Energy Outlook 2008. Paris: International Energy Agency
3. IMHEN (Institute of Meteorology, Hydrology and Climate Change of Vietnam), 2016. Nationally Appropriate Mitigation Action (NAMA) programme for the solid waste sector of Viet Nam, Design Study "Waste-to-Resources for Cities in Viet Nam." Available at: http://www.unescap.org/sites/default/files/ESCAP%20NAMA%20Waste-to-Resources%20in%20Cities%20in%20Viet%20Nam.pdf
4. MOIT and Embassy of Denmark. 2017. Viet Nam Energy Outlook Report 2017. Ministry of Industry and Trade, Viet Nam. Available at: https://ens.dk/sites/ens.dk/files/Globalcooperation/Official_docs/Vietnam/vietnam-energy-outlook-report-2017-eng.pdf
5. Viet Nam 2017. Biennial Update Report 2. Available at: https://unfccc.int/files/national_reports/non-annex_i_parties/biennial_update_reports/application/pdf/97620135_viet_nam-bur2-1-viet_nam_-_bur2.pdf

2. Overview of Viet Nam's regulations and commitments on emission reductions in the energy and waste sectors

Viet Nam has shown a high level of commitment towards climate change mitigation since 2008. For 10 years, Viet Nam has built up a strong legal framework and institutional setup for climate change mitigation.

The top national strategy of Viet Nam – the National Socio-Economic Development Strategy (2011-2020) – has stated the development pathway of Viet Nam towards sustainability and climate change resilience. Subsequently, Viet Nam has issued various policies to enhance its response to climate change both in mitigation and adaptation activities.

In 2011, Viet Nam passed the National Climate Change Strategy that sets out the overall targets and strategies for all relevant industries and ministries. This strategy reflects Viet Nam's concern over climate change and its commitment to take action. For example, within the urban sector, it sets the target of 90% of urban household solid waste to be collected and treated, of which 85% to be recycled, reused and recovered for energy generation. Reducing GHG emissions and promoting clean and renewable energy are the main tasks laid out in the National Action Plan on Green Growth.

In 2012, the Prime Minister approved Decision No. 1775/QD-TTg to "manage GHG emissions in order to implement the UNFCCC and other international agreements". The decision specifies the emission reduction target for the waste sector as 5% and for energy and transportation sectors as 8% (compared to 2005 level) by 2020.

Resolution No. 24-NQ/TW on "Pro-actively responding to climate change, enhancing natural resource management and environmental protection" (2013) and the National Strategy on Green Growth (2012) further stress the determination of Viet Nam to tackle climate change and transform its economic model to one of sustainable and green growth.

Viet Nam's NDC sets out mitigation priorities through increasing renewable energy and energy efficiency (Section 2.5.2 and 2.5.3), and waste management (Section 2.5.7). The NDC aligns with Viet Nam's revised National Power Development Plan 7 (revised PDP 7), which sets a renewable energy target of 6.5% by 2020 and 10% by 2030.

In 2016, Viet Nam issued Decision 2053/QD-TTg on the Plan for Implementation of the Paris Agreement, requiring all ministries to take action to reduce GHG emissions of their mandated sectors, including the Ministry of Construction, Ministry of Industry and Trade, and Ministry of Natural Resources and Environment which are in charged of solid waste management and energy.

3. Challenges in achieving NDC targets in the urban energy and waste sectors

Viet Nam is facing a number of challenges in achieving NDC targets. All mitigation options require high investment costs for infrastructure and mitigation technologies. The funding needed to implement the mitigation options and achieve the GHG emission reduction targets is 1,894.3 million US$.

1. Challenges to improved and integrated solid waste management

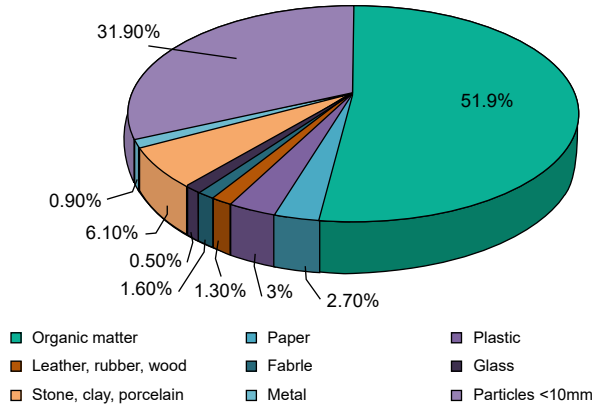
- **None to extremely low waste separation at source:** due to lack of awareness, no policy guidance on waste separation and lack of infrastructure (no separate bins, collection and transport equipment keeps all waste mixed).

- **Collection and transport:** average 85%collection rate (higher in big cities) which needs more investment to meet the target of 100% by 2025[6]. Fees for collection and transport are only for operational costs, which are not adequate for investment costs to upgrade equipment, especially for separated waste collection and transport.

- **Waste management:** Municipal solid waste with a high organic content (52-77%), mostly from food waste, releases large amounts of methane. Figure 2 shows the solid waste proportion in Ha Noi which is 52% organic waste. This high organic waste content results in the disposal of municipal solid waste in land ills (primarily open dumps) and / or through composting. Rural areas also practice open burning to manage waste. Approximately 8-15% of the municipal solid waste (e.g. paper, plastic, metal) is recycled. However, recycling businesses mainly use obsolete technologies which cause severe environmental pollution[7].

6. Decision No. 2149/QD-TTg dated 17 December 2009 on National Strategy for Integrated solid waste management to 2025 and vision to 2050
7. Viet Nam. 2016. National Environment Report 2016: Urban Environment. Viet Nam

Figure 2: Solid waste proportion in Ha Noi[8]



Source: Hanoi Urban Planning Institute, 2015

- **Institutional challenges:** Although there are a significant number of policies and regulations on solid waste, Viet Nam does not have a legal system of enforcement in cities and provinces. The coordination challenges between concerned agencies result in overlapping responsibilities between national, provincial and city governments.

2. Challenges in urban energy

- **Households and businesses are fastest growing demand of energy in urban areas**

Viet Nam's Second National Communications Report provides estimates of the GHG emissions from the commercial and residential buildings at 19.6, 36.0 and 67.3 million tons of CO_2 emissions in 2010, 2020 and 2030 respectively[9]. The combined electricity consumption of the administration and household sector and the service and commercial sector accounted for about 43% of the total annual electricity consumption or about 45,000Gwh, corresponding to 25.7 million tons of CO2 emissions[10]. Commercial services and household appliances are projected to be the fastest growing sector in terms of end-user energy demand.

- **Transport is inefficient and heavily polluting**

i. ***Energy in transportation:*** The Initial Biennial Update Report projects transport sector energy consumption to rise from 14.4 MTOE in 2015 to 19.5 and 31.8 MTOE in 2020 and 2030 respectively, implying a 5.4% average annual growth rate[11]. Many cities in Viet Nam have set targets for public transport to increase its modal share to 25-45% in 2020-2030, whereas currently few have higher than 10%, though this is increasing. Motorcycles appear to be more attractive to most people, while providing higher accessibility in many urban areas. There is no comprehensive national urban transport policy in place or planned.

ii. ***High emissions from current transportation systems:*** According to the Motorcycle Emission Control in Major Cities Program in Viet Nam[12], more than a quarter of the motorcycles in circulation are 10 years old and above. A survey in Ho Chi Minh City shows that although most of motorcycles in the city are not very old, their pollution share is significant[13].

8. HUPI. 2015. Ha Noi Urban Planning Review Report to 2030, Vision to 2050. Urban Planning Institute, Ha Noi, Viet Nam
9. Viet Nam. 2017. Viet Nam's Second National Communications Report. Ha Noi, Viet Nam. Available at https://unfccc.int/files/national_reports/nonannex_i_parties/biennial_update_reports/application/pdf/97620135_viet_nambur2-1-viet_nam_-_bur2.pdf
10. IFC. 2012. Building Survey Report, Green Building Program in Viet Nam. International Finance Corporation
11. MONRE. 2014. The Initial Biennial Update Report of Viet Nam.Ha Noi, Viet Nam. Available at http://unfccc.int/resource/docs/natc/vnmbur1.pdf
12. Viet Nam Register Agency. 2007. "Urban Air Pollution Caused by Transportation and Motorcycles: Emissions Control Solutions for Major Cities." Proceedings of the "Conference on Motorcycle Emission Control: Vietnamese and International Experiences," Hanoi, Vietnam, March 8.
13. Ho, B. Q., & Clappier, A. (2011). Road traffic emission inventory for air quality modelling and to evaluate the abatement strategies: A case of Ho Chi Minh City, Vietnam. Atmospheric Environment. Vol. 45, Issue 21, pp. 3584–3593.

- **Lack of incentives on renewable energy and energy efficiency**

  i. ***Financial mechanisms:*** Renewable energy and efficiency projects require high investment in infrastructure, long-term financial planning and sufficient resources to secure continuous operation and maintenance. However, those projects are generally treated as regular financing with short term loan periods. Suitable and effective financial mechanisms and fiscal products (e.g.: tax incentives) to support renewable energy and energy efficiency building designs and investment are not yet available in Viet Nam. Therefore, these projects get low incentives from the private sector.

  ii. ***Lack of market incentives:*** Similar to other countries, building developers and investors are not responsible for utility costs, especially in office space for rent - a major portion of the overall stock of commercial and high-rise residential buildings in Viet Nam. Since tenants do not have demand for energy efficiency and green buildings, building developers and investors in Viet Nam rarely integrate energy efficiency and green features in their new project developments. Moreover, the subsidized electricity tariffs have concealed the real and attractive economic benefits of energy efficient and renewable energy investment, and electricity end-users usually do not consider energy efficiency investment as priority actions.

  iii. ***Barriers in technology:*** The adoption of and transition to the new application of modern energy efficiency designs and techniques is a slow process due to a lack of technical capacity in energy efficiency building design. The role of energy service companies (ESCOs) to support energy efficiency investment in the building sector is not acknowledged and proven in Viet Nam. Existing ESCOs are engineering consulting firms with limited experience in operation and management of energy performance contracts. Building managers and developers are not convinced on cost saving to engage ESCOs to support design and implementation of energy efficiency projects.

4. Recommendations

Cities contribute 70% of total greenhouse gas emissions globally and achievement of Viet Nam's NDC will only be possible with changes in how cities are planned and operate. The recommendations below can only be implemented if the government ensures clear and effective coordination of NDC activities across ministries, with lessons and knowledge shared between cities and provinces. Finally transitioning to a green economy and achievement of the NDC will require funding consistent with the challenges cities face – both from government and the private sector. Now is the time to engage local and regional governments in delivering national commitments and raise ambitions globally.

The national government should provide guidelines for mainstreaming NDC activities into provincial and urban plans. The guidelines would help provinces and cities to understand what sectors they could invest in to reduce their GHG emissions and how they should mainstream NDC targets and activities as an integral part of urban energy and waste management plans and programs.

City governments in Viet Nam should set GHG reduction targets and develop programs and policies to reach that target. Achieving the Paris Agreement and Viet Nam's Urban Green Growth Development Plan (Decision 84/QD-TTg)[14] requires significant changes to urban institutions, planning, infrastructure, and behavior patterns. Such changes are not easily made and may fall outside the formal authority of city governments. However, city governments should take up this challenge because of the threat of climate change and the opportunity to embrace green growth, increase development and reduce GHG emissions.

City governments need to review the current regulations to implement the NDC. This should aim to provide an improved urban regulatory framework and incentive mechanisms for investment and recommended technologies for waste management and urban energy use.

14. Decision 84/QD-TTg dated 19 January 2018 on Aprroving the Viet Nam Urban Green Growth Development Plan up to 2030.

Each city should develop its own effective institutional arrangement for NDC implementation. Cities are in a good position to provide a laboratory setting to pilot new and innovative approaches. Cities can explore the positive synergies that occur when urban activities are planned together and can use the opportunity to create a more inclusive and compassionate society. An effective, efficient, institutional arrangement would also help ensure the implementation and enforcement of the Urban Green Growth Development Plan, as well as to reach the city's GHG reduction targets.

Cities should enable investments in green infrastructure, public transport, renewable energy and energy efficiency. Recent UNDP report also shows that at least 10 billion of external capital is available to support Viet Nam's transition to cleaner energy and energy saving[15]. Public-private partnerships leveraged by green infrastructure funds have great potential to reduce the burden on local finances. Cities can generate strong markets for green investment with financial and tax incentives and effective regulations and institutional arrangement.

Mitigation options for urban solid waste management should focus on waste prevention, minimization, reuse and recycling (see figure 2). Waste prevention would help avoid emissions from the use of primary resources and waste recovery in many sectors. A circular economy would encompass waste avoidance, selective dismantling of products to enable the reuse and recycle of materials and components. Implementation of the NDC in the waste sector requires investment in infrastructure and a careful choice between different technological options that require support by appropriate policy instruments.

Cities can tackle the waste challenge by deploying waste to energy (WTE) at scale. It would help transform the waste sector by treating waste as a resource using modern WTE technologies. WTE is a more convenient process than simply landfilling of waste, because of the beneficial side effect of producing useful energy in different forms. The cobenefits include reducing GHG emissions and contribution of renewable energy in Viet Nam, reducing the reliance on coal-fired power plants. It also creates green jobs for the local economy and environmental benefits to be derived from moving away from the use of landfills.

Viet Nam must enable the necessary energy and transportation transformation. Renewable energy sources, such as wind, solar and WTE, will be an important and growing source of energy for cities, but as currently envisaged, they will likely not be able to replace hydroelectricity and coal-fired power plants in Viet Nam. Major changes in energy supply for the purpose of reducing GHG emissions will also require changes to the energy use habits-including the expanded use of public transportation, promoting fuel switching transportation vehicles, and decreasing the CO_2 intensity of local transport fuels, and more energy efficient buildings.

Cities can reduce energy consumption of buildings via key policies reforms. For example by imposing more aggressive energy codes for new buildings and promoting energy efficiency measures in existing buildings. City governments should integrate energy efficiency in city climate change and green growth programs and sectoral planning policies and promote the development of roof-top solar energy in governmental and commercial buildings. Recent research shows that GDP growth in Viet Nam in the period of 2020-2030 is higher than business as usual by from 0.24% (unconditional scenario) to nearly 2% (conditional scenario). Moreover, GDP growth is highest if the energy efficiency investment is doubled. It proves the importance of energy efficiency in national as well as city economic development.[16]

The government should promote densification of cities through sustainable spatial planning. Energy use and carbon emissions are mostly driven by how electricity is produced and how energy is used in buildings and transportation. Increase density could significantly reduce energy consumption in urban areas. As density increases, people use more public transportation and non-motorized forms of transport, lowering transportation energy use per capita. However, high density may induce more urban heat island effects; poorer ecosystem quality; loss of direct sunlight; and reductions in people's physical and mental wellbeing. More energy may be needed for air conditioner and in-house lighting in buildings. Therefore, both urban density and spatial planning are crucial elements that influence energy consumption in transportation and buildings.

15. UNDP. 2018. Private funding opportunities for renewable energy and energy efficiency investments in Viet Nam. Ha Noi, Viet Nam

16. UNDP 2018. Long-term greenhouse gas emission mitigation opportunities and drivers in Viet Nam: Meeting Paris Agreement targets and accelerating progress towards the SDGs. Ha Noi, Viet Nam

5. Conclusions

In general, Viet Nam has a strong legal framework to support the implementation of the NDC. The NDC plan has a strong legislative foundation with several laws, national strategies, national action plans, and other provincial and sector legal documents which are currently regulating climate change mitigation activities. However, the implementation of the NDC in urban areas, especially in waste management and energy sectors, still faces many challenges.

Reducing GHG emissions in cities in Viet Nam is a complex endeavor. Two very different sectors contribute the majority of urban GHG emissions: (i) energy use in buildings and transportation (a function of both energy sources and energy demand); and (ii) waste management. The relative contribution of each sector can vary significantly between cities, and the investments and actions needed for GHG reductions vary significantly between sectors.

For example, reducing GHG emissions from transportation systems requires public and private capital investments in public transit, while reducing GHG emissions from energy use in buildings requires thousands of building owners to install energy efficient appliances. Reducing the GHG emissions from electricity production means replacing coal power plants with renewable energy farms such as solar and wind power, which will require cities to work closely with the government.

City governments each have a unique set of capacities and political opportunities for reducing GHG emissions. Reducing GHG emissions requires individuals and organizations to make new choices about how they invest, what they buy, how they behave, and what they build. It is not just what city governments do, but also how they do it that matters.

Due to the impacts of climate change, provincial and city governments have rightly placed a priority on adaptation. Many actions to adapt urban areas to climate change also have positive mitigation impacts, and vice-versa, providing a win-win for city climate action. Actions that provide both adaptation and mitigation benefits should be prioritized by cities and there are opportunities for cities to access climate finance to both invest on low-carbon solutions as well as to increase climate resilience.

While city government action might not be sufficient for reducing global GHG emissions to acceptable levels, it is certainly necessary. City governments are critical climate change actors and will be for the foreseeable future. Building cities that are green, inclusive and sustainable should be the foundation of the national climate change agenda. This requires better management of cities, mobilization of a global array of stakeholders, additional financing, and strengthened partnerships, as well as specific sector policy reforms such as urban transport policies, sustainable city planning, and enhancing city resilience and energy efficiency.

Mitigation measures in the waste and energy sectors not only target GHG emission reductions but are also driven by their strong environmental, social, and sustainable development benefits. Given that over 50% of Vietnamese will live in cities by 2030, Viet Nam cannot achieve the SDGs and Paris Agreement without implementing the recommendations contained within this policy note. City leaders in Viet Nam have the drive to create sustainable urban centres for future generations – given the right enabling environment the targets in the NDC can be achieved and even exceeded.

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