Nationally Appropriate Mitigation Action (NAMA) programme for the solid waste sector of Viet Nam

– Design Study –

"Waste-to-Resources for Cities in Viet Nam"

July 2016

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Executive Summary

Nationally Appropriate Mitigation Actions (NAMAs) refer to strategies, programmes and projects that developing countries may voluntary adopt in order to support greenhouse gas emission reduction initiatives and sustainable development goals in their respective countries. Viet Nam has been one of the most active countries in the Asia-Pacific region in the development of NAMAs, with several initiatives conducted over the past few years. Among these, the government of Viet Nam has identified the management of solid waste as one the sectors of interest for NAMA development.

As the population grows and the country quickly urbanizes, dealing with solid waste has become an increasing burden for both national and local governments alike. Although an estimated 85% of solid waste is collected in Viet Nam, most of it is disposed in dump sites, resulting in severe environmental degradation, the spread of disease vectors and the emissions of methane, a greenhouse gas.

The government of Viet Nam recognizes the need to shift from current waste management practices to approaches that are focused in the recovery of resources from waste. Several policy documents have been approved by the national government in support of such approaches, amongst them the **National Strategy for Integrated Management of Solid Waste up to 2025 and Vision towards 2050** (2009), which sets ambitious targets for years 2020 and 2025 for the collection and treatment of waste. Other policy documents exist that are supportive of "waste-to-resource" approaches and a wider adoption of the principles of Reducing, Reusing, Recycling (3R), including the **National Climate Change Strategy** (2011) and the **Intended Nationally Determined Contribution** (INDC) of Viet Nam to the new climate change treaty that was agreed in Paris in December 2015.

In spite of the ambition of existing policies and strategies, to which the national government should be commended for, several difficulties hinder the implementation of "waste-to-resource" initiatives in Viet Nam. These have been identified with this study and are summarized as follows:

- **Lack of guidelines and regulations**, especially at local level, to stimulate and/or enforce the implementation of the targets laid out on the national policy documents;
- **Insufficient policy, regulatory and market incentives** for stimulating investment on solid waste management infrastructure which is compliant with the principles of Reducing, Reusing, Recycle (3R) and "waste-to-resource" approaches;
- **Institutional arrangements** for the climate change and waste sectors in Viet Nam are complex, often unclear and with an overlap of roles and responsibilities;
- **Limited funds** to finance "waste-to-resource" projects and initiatives at the local level;
- A general **lack of capacities, know-how and expertise** on "waste-to-resource" methods and technologies.

These barriers are expected to be overcome, partially or in full, with the support of the NAMA programme whose design elements are laid out in this study. This programme, which has been titled

as "**Waste-to-Resources for Cities in Viet Nam**", has as an **overarching goal** the reduction of greenhouse gas emissions from the waste sector through the application of integrated solid waste management practices that support the conversion of waste into resources, while at the same time contributing to sustainable development goals in Viet Nam.

The NAMA will address the barriers identified through the **establishment of a policy and institutional framework** that will:

- **Stimulate and encourage cities to voluntarily propose their own targets for reusing, reducing and recycling** solid waste, based on those laid out on the National Strategy for Integrated Management of Solid Waste up to 2025 and Vision towards 2050;
- Establish a **NAMA Management Board** to operate as a "one-stop shop" and steering committee for the activities under the NAMA, and as a coordinating entity among ministries with a stake in the solid waste sector;
- Set-up of a **dedicated financing vehicle** to channel funds from international and national sources to cities, provinces, and other entities, including the private sector, that implement measures aligned with those endorsed by the NAMA;
- Create **incentive schemes at national, provincial and city level** that enable the financial-economical viability of "waste-to-resource" initiatives. Incentives include, but are not restricted to, the payment of tipping fees to waste treatment plant operators, the set-up of local programmes for the purchase of compost, tax rebates on equipment, etc.
- Provide **technical and operational support** to officials and practitioners in the form of training programmes, "on-site" assistance by technical experts, the sharing of good-practices, both nationally and internationally, etc.

All cities in Viet Nam are eligible to be part of the NAMA as long as they voluntarily implement some of the measures endorsed by the programme. Below is a summary of **eligible measures of the Waste-to-Resource NAMA**, which will be subject to some type of monitoring, verification and reporting (MRV) procedures when implemented in cities:

i) Reduction of solid waste generated and implementation of waste segregation practices, preferably at source;

ii) Diversion of waste streams from final disposal sites, with diverted waste being treated applying the following measures:

   a. Biological treatment of the organic component of waste, particularly through composting and anaerobic digestion;

   b. Recovery, reuse and recycling of inorganic waste;

   c. Physical methods for treating waste, including the production of refuse-derived fuel and related briquetting techniques;

d. Implementation of integrated and sustainable waste management approaches in line with the principles of 3R, including good practices identified in Viet Nam such as the **Integrated Resource Recovery Centre (IRRC)** model;

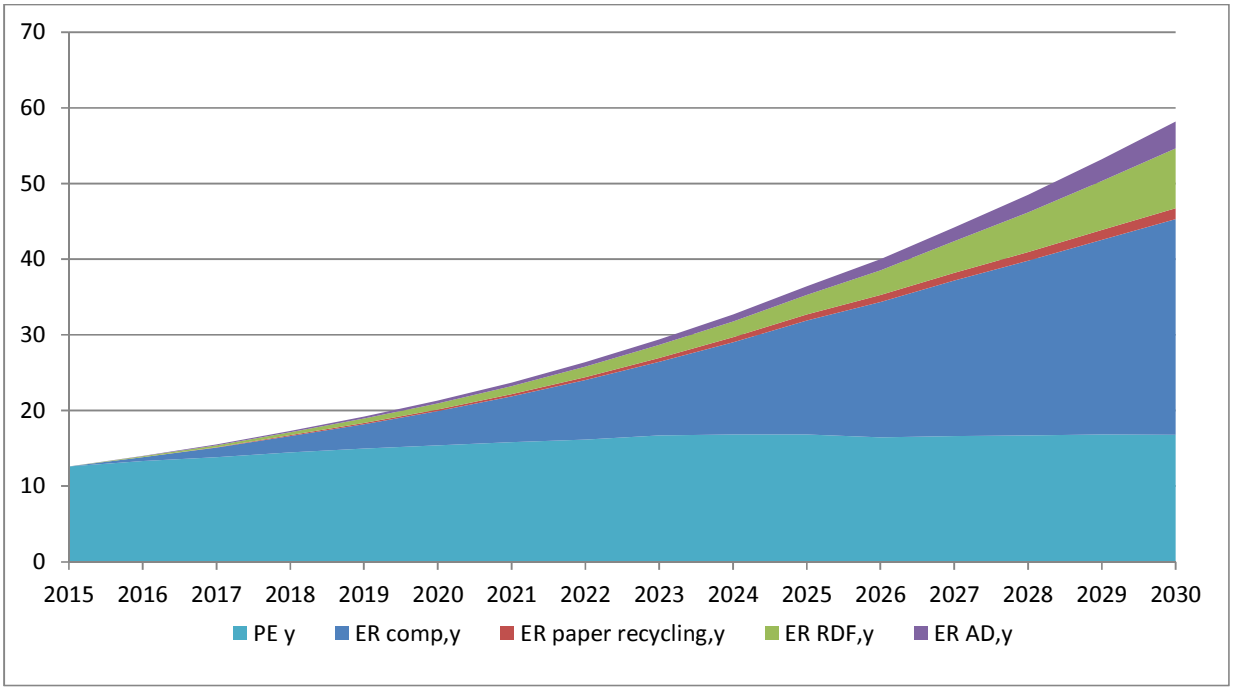
e. Strategies and policies designed at city or provincial level for a "**zero waste**" or "**carbon neutral waste sector**".

The eligibility of measures that are in line with 3R principles and waste-to-resource approaches but are not included in any of those laid out in this study will be considered on a case-to-case-basis by the **NAMA Management Board** referred above. This Board is proposed to be managed by the **Department of Science, Technology and Environment (DSTE)**, under the Ministry of Construction.

The implementation of the NAMA will result in **several benefits to Viet Nam**. Among these, the NAMA will lead to a cleaner and healthier environment through the adoption of improved waste collection and treatment methods, create business opportunities along the waste management value chain, and contribute to improved living conditions of populations throughout the country. The NAMA is fully aligned with existing national policies on climate change and solid waste management, and it also supports Viet Nam in achieving several **Sustainable Development Goals (SDGs)**, especially SDGs 11, 12 and 13, on more sustainable cities, increased sustainable consumption and production patterns, and enhanced climate action, respectively.

A **baseline** and **emission reduction (NAMA) scenarios** were modelled to assess the GHG emission reduction impacts of implementing the measures endorsed by the NAMA. The baseline – or business-as-usual – scenario assumes that ongoing practices of disposing and not treating waste continue unchanged, with waste generation rates increasing annually by 10% and waste compositions remaining the same over the 2010-2030 period. Under this scenario, it is expected that the solid waste sector of Viet Nam will be generating 2030 58.2 million ton of carbon dioxide equivalent (t CO_2eq) in year 2030, up from 14 million t CO_2eq in 2016.

The NAMA scenario reflects a complete transformation of Viet Nam's solid waste sector from practices currently observed, whereby all waste generated in 2030 is collected and treated through the methods and technologies supported by the NAMA, i.e. through composting (60%), recycling (20%), anaerobic digestion (10%) and the production of refuse-derived fuel (10%). This is expected to reduce the emissions of greenhouse gases from the solid waste sector of Viet Nam by 71% by 2030, i.e. by 41.4 t CO_2eq in relation to the business-as-usual scenario. Results of the modeling are shown in the following graph:



Graph above – Total emission reductions (expressed in million ton of CO_2eq) from the waste-to-resource NAMA. Legend: PE: project emissions, ER: Emission Reductions; comp: composting; RDF: refuse-derived fuel; AD: anaerobic digestion.

The implementation of these ambitious targets is estimated to require **an average minimum investment of 110 million USD per year** in waste treatment facilities up until 2030. It is expected that 80% of these investment requirements could be met by domestic sources of financing, both public and private, with the remainder (approx. 22 million USD per year) proposed to be made available through international climate support programmes. The required support could be channeled in the form of loans and grants through international climate financing mechanisms (particularly the Green Climate Fund), bilateral ODA, market-based schemes, and/or "pay-for-performance" programmes. Depending on the outcomes and impacts resulting from the piloting phase of the NAMA, international climate funding could account for a higher proportion of the total costs of implementing the programme.

As part of this NAMA, it is proposed that the **Viet Nam Environmental Protection Fund (VEPF)** is established as the **national-level financing entity** that is responsible for gathering funds from both national and international sources and disbursing them to cities, provinces and other eligible entities that implement activities that can be considered as part of the NAMA. An illustration of the institutional architecture proposed for the NAMA is provided in the following page.

Prior to the full deployment of the NAMA programme, a **piloting phase** is proposed to be conducted for at least 1.5 years. During this phase, specific elements of the programme will be tested and operationalized, including the basic requirements for the MRV system and a methodology to measure sustainable development benefits ("co-benefits"). This phase would also serve to set-up the institutional framework of the NAMA and build-up the capacities of key individuals working on a day-to-day basis in the coordination and implementation of the programme.

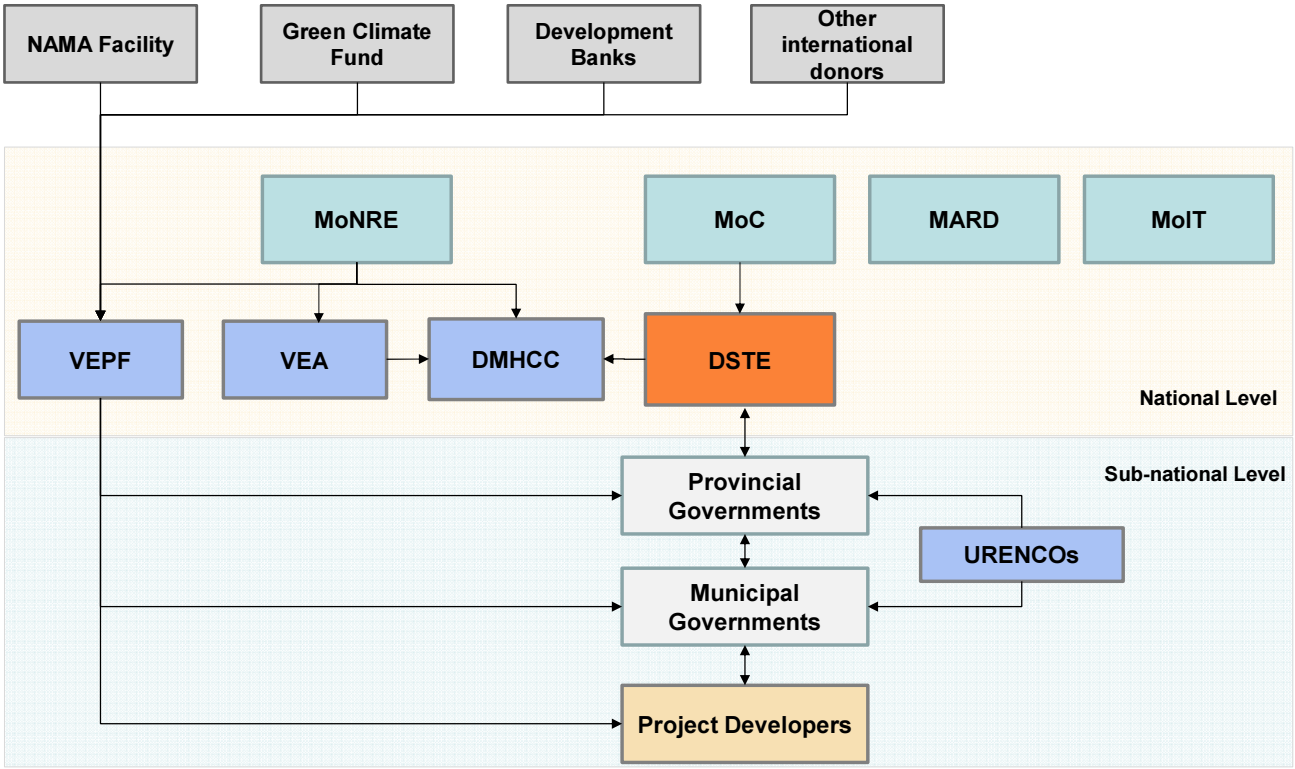


Figure above – Proposed organizational structure for the Waste-to-Resource NAMA.