NAMA in the Waste Sector: Waste to Resources for Cities in Vietnam

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National Strategy for Integrated Management of Solid Waste up to 2025, vision towards 2050 sets the vision that by 2050 that all kinds of solid wastes will be collected, reused, recycled and treated completely by advanced technologies which are environmentally friendly, suitable to each locality and limiting the landfilling waste to the minimal level.

Vietnam Green Growth Strategy
...in 2012-2020 it aims to reduce the intensity of GHG emission by 8 to 10% compared to the base year of 2010; energy consumption per unit of GDP by 1 to 1.5% per year; GHG emission from energy activities by 10% to 20% compared to BAU.

Plan "Management of greenhouse gas emissions; management of the activities of trading carbon credits to the international market" sets the target: by 2020 reducing GHG emissions by 8% compared to 2005 in energy and transport sectors; reducing by 20% in the agricultural; increasing 20% GHG absorption compared to 2005 in LULUCF and especially reducing GHG emissions by 5% in the waste sector.
GHG emissions from waste in 2000

GHG emissions by sector in 2000 in CO₂e
Mandates under National Policy

- In 2012, the Prime Minister issued Decision No. 1775/QD-TTg approving the plan "Management of greenhouse gas emissions; management of the activities of trading carbon credits to the international market". One of the plan’s targets is to reduce GHG emissions by 5% in the waste sector by 2020.

- Decision No.2139/QD-TTg (12/2011) for cleaner technology application which encourages application of 3R and advanced solid waste treatment technologies to reduce GHG emission from waste sector.

- Decision No.152/QD-TTg of the Prime Minister on the approval on the Strategy on solid waste management in the cities and industrial zones in Vietnam until 2020

- Directives No.199/Ttg (4/1997) : On urgent measures to manage the solid waste in the urban and industrial districts

- Decision No.1873/QD-TTg of the Prime Minister on the approval of the planning on developing the solid waste treatment zone in the key economic region of the Red River Delta until 2020
Institutional Framework on Solid Waste Management

Source: Le Hoang Viet et al., Journal of Energy Env., 2009, 10 (04)
Lack of awareness and capacities to fully implement existing policies and regulations on waste management

No mandate to close insanitary landfills, and open dumping is common practice

No mandate on capturing of methane from landfills, or the requirement of landfill liners or leachate collection to prevent the contamination of ground water

→ increased levels of CH4 emissions
Expenses incurred with solid waste management constitute a substantial portion of city budgets. Income generated from collection fees are not enough to cover investment requirements.

Local governments depend on the Central Government for subsidies or ODA funds for investment in new infrastructure and do not have a budget for capital and investment costs for new technology and capital in the waste sector beyond current BAU practices.

Local banks do not have the capital or technical capacity to finance waste management facilities, including those of source separation, recycling, composting, and biogas/anaerobic digestion.
NAMA Goal:
• The application of integrated municipal solid waste management practices across Vietnam to reach target of reducing GHG emissions in the waste sector by 5% in by 2020, relative to 2005 levels.
• Waste management polices will be developed and implemented based on financial viability of advanced waste management practices from pilot projects.

NAMA Objectives:
i. Improvement of waste collection services in cities in Vietnam, and the promotion of 3R principles;
ii. The diversion of waste streams from landfill disposal and other end-of-pipe solutions;
iii. Sorting out of the organic and inorganic components of waste streams through the separation of waste at source;
iv. Promotion of the biological treatment of the organic waste; and
v. The recycling and reuse of inorganic waste.
NAMA Contributions

• Propose the up-scale and adaptation of a decentralized municipal solid waste management model through a vertically-integrated and bottom-up approach to NAMA design;
• Promote the articulation among municipal and national authorities towards GHG mitigation action through the establishment of effective institutional arrangements;
• Foster inter-agency coordination and articulation of ongoing policies and strategies on climate change mitigation and the waste management sector;
• Put forth an inclusive approach to municipal solid waste management by including smaller cities and peri-urban areas under the umbrella of a NAMA programme; and
• Propose to move beyond the CDM framework by including under its scope and priorities mitigation actions that may be not viable as CDM projects, but whose sustainable development contributions are of relevance.
Phases of NAMA Concept

- **Preparation Phase** (July 2013 – Dec 2013)
  - Elaboration of a detailed study on the NAMA concept and design;
  - Conduct national kick-off workshop
  - Data collection in select pilot cities

- **Pilot phase** (Jan 2014 – June 2015)
  - Capacity building for local waste management stakeholders, e.g. URENCO under the People’s Committee
  - Implement pilot projects in cities across Vietnam.

- **NAMA-up-scaling phase** (July 2015 – Dec 2020)
  - Full implementation of the NAMA throughout cities in Vietnam
The inspiration and starting point for this NAMA has been the approach to MSW management that has been promoted by UN-ESCAP, in particular the key elements of the IRRC model.

An Integrated Resource Recovery Center (IRRC) is a facility where a significant portion (80-90%) of waste can be processed in a cost effective way, in proximity to the source of generation, and in a decentralized manner. The IRRC concept is based on 3R principles.
Sustainable Financial Mechanism

IRRC facility → Revenue

Operational costs → Profits

Capital investments costs → Profits

Local Government...

Private sector

Others...
Institutional Arrangement for Project Implementation

- People’s Committee
- Ministry of Natural Resources and Environment
- Other Ministries (e.g. MOC, MOIT, MOH, MPI...)
- Vietnam Institute of Meteorology, Hydrology and Environment
- UN-ESCAP
- The Steering Committee
- Local partners: URENCO Project 1, URENCO Project 2, URENCO Project n
- Donor 1, Donor 2, Donor n
In NAMA-readiness project, IMHEN calculated baseline emission of waste sector in 21 cities, particularly,
- Cities in the North: Bim Son, Cam Ranh, Da Nang, Hue, Nha Trang, Pleiku, Quang Binh, Quang Nam, Quang Ngai, Quang Tri, Quy Nhon, Sam Son, and Thanh Hoa;
- Cities in the South: Ben Tre, Ca Mau, Can Tho, Da Lat, Ho Chi Minh (Phuoc Hiep), Soc Trang, Tra Vinh and Vinh Long
Ex1. Baseline emissions of waste in Da Nang

(ton CO$_2$ eq)
Ex2. Baseline emissions of waste in Ca Mau

(ton CO$_2$eq)
GHG reduction benefits:

• The amount of GHG reductions achieved will depend on the number of projects implemented under the NAMA

• To provide an idea: a typical IRRC facility can process up to 20 ton organic waste per day, which can potentially reduce 6,600 tonnes of methane per year compared to BAU (according to rough estimation of IMHEN);

Non-GHG environmental benefits:

• Reduced dependence on inorganic fertilizers by capture and reuse of nutrients;

• The use of compost enriches soils with nutrients;

• Protection of groundwater and surface water resources.
**Economic benefits:**
- Reduction of waste disposal costs incurred by municipalities, such as in waste transportation and landfill volume;
- Potential source of revenues through the sale of compost, biogas, electricity, heat, RDF, etc.

**Social benefits:**
- Elimination of malodorous compounds;
- Reduction of vermin and pathogens;
- Deactivation of weed seeds;
- Potential for creating new jobs;
- One ton of waste processed can directly benefit 2,000-3,000 people;
- Increases the awareness of the community to 3R principles.
UN-ESCAP is willing to provide support on the following streams:

- Preparation of supporting studies and background documents for Phase 1;
- Identification and mobilization of stakeholders in Phase 1;
- Seed funding to selected pilot projects in Phase 2;
- Capacity building activities and knowledge sharing initiatives.

Financial Support and Expected Contributions

IMHEN in-kind contribution

Unilateral contribution (national and municipal governments)

Project Implementation

Establishment of IRRCs in pilot cities

Operational cost of IRRCs

Up-scaling IRRCs in 21 cities of which baseline emission is calculated by IMHEN

Awareness-raising in 21 cities

International Support (10 mil – 20 mil USD)

Private Sector (project to project basis)
Thank you!

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