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Nordic Council of Ministers



NORDIC PARTNERSHIP INITIATIVE:

WASTE SECTOR NAMA READINESS PROGRAMME IN PERU

The Nordic Partnership Initiative on Up-Scaled Mitigation Action (NPI) has been established in December 2011 to support climate change mitigation efforts in developing countries. The NPI is funded by Denmark, Finland, Iceland, Norway and Sweden and implemented in co-operation with Peru and Vietnam. The implementing partner in Peru is the Ministry of Environment of Peru (MINAM).

In Peru the NAMA Readiness Programme under the NPI has been implemented between August 2013 and June 2015, and it focused on municipal solid waste, i.e. household waste and waste from commercial and tourist activities. The Readiness Programme resulted in a full-scale NAMA proposal for the waste sector in Peru.



Photo: Jenna Hytti / GreenStream

NEW NORDIC CLIMATE SOLUTIONS



Waste sector NAMA Readiness Programme in Peru

The aim of the ongoing Nordic Partnership Initiative (NPI) is to demonstrate how innovative international climate finance solutions can achieve sector wide greenhouse gas emission reductions in developing countries. Using a bottom-up methodology that draws heavily on the input of local stakeholders, NAMA Readiness Programmes have been established in Peru and Vietnam. During the NAMA Readiness Programmes concrete financeable proposals of Nationally Appropriate Mitigation Actions (NAMAs) are developed as proof-of-concept activities that will drive the development and implementation of further NAMAs¹.

The NAMA proposals will include different types of actions (pilot projects, targeted policy instruments and policy reform, supported by financial schemes) that will take place over the short, medium and long term. Financial sustainability of these actions, including plans for phase-out of international support in the long term, is taken into account in the development process.

The NPI will provide lessons learned from early activities to the international climate negotiations and serve as a model to encourage other Parties to take similar actions. The principles of matching NAMAs with developed country support are in a nascent stage and the Nordic sponsors of the Initiative are confident that the NPI will enhance the tool box of options available to developing countries to address climate change.

Waste sector NAMA Readiness Programme

Peru's economy and population are growing rapidly and consequentially the issue of waste management

is of increasing importance to its development path. The implementation of an effective waste management strategy will have significant environmental benefits (including the mitigation of greenhouse gases) and secondary benefits for public health, productivity and quality of life. Social benefits also flow from an effective waste management policy.



Photo: Jenna Hytti / GreenStream

The recently completed NAMA Readiness Programme was focused on municipal solid waste, i.e. household waste and waste from commercial and tourist activities. Other waste types such as industrial and agricultural waste are outside of the scope of the NAMA.

“Municipal solid waste was chosen for this NAMA because of the importance of the waste sector in Peru and because it is a field that affects to people's health, social status, quality of the environment and creates emissions those have not yet been measured clearly enough.”

Eduardo Durand, Director General, Ministry of Environment of Peru (MINAM)

The budget for the NAMA Readiness Programme was €2.3 million and it was financed by NEFCO and the Nordic governments. The implementing partner was the Ministry of Environment of Peru (MINAM). The

NAMA Readiness Programme in Peru started in August 2013 and continued until June 2015.

Objectives of the NAMA Readiness Programme

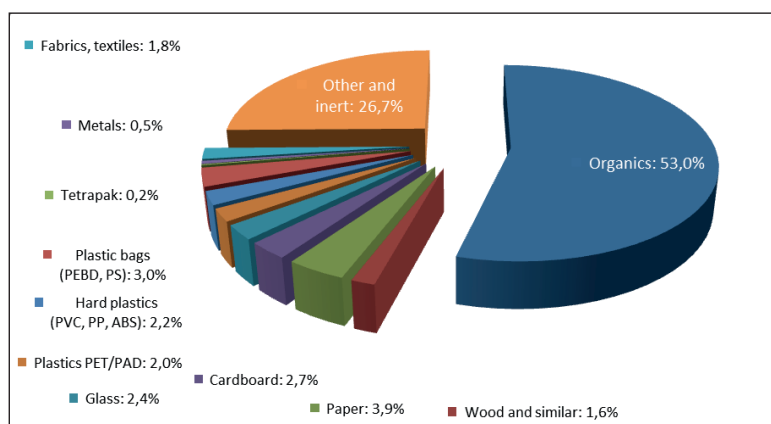
The overall objective of the Programme was to strengthen Peru's ability to prepare, propose and implement a full-scale NAMA in the municipal solid waste sector. The Programme identified and proposed suitable NAMA options to mitigate greenhouse gas emissions in the waste sector and enables Peru to benefit from international climate finance. As a basis for the development of the NAMA, gaps in data availability and data quality in the solid waste sector in Peru were addressed.

The readiness activities consisted of the following:

- A solid waste inventory including data gathering of waste and waste streams and calculation of greenhouse gas emissions
- Assessment of mitigation options in the waste sector
- Identification of barriers to implement the mitigation options and how to overcome those barriers
- Development of a NAMA proposal integrated in the national solid waste strategy
- Setting up a system for monitoring, reporting and verification (MRV) according to international standards
- Identifying relevant institutional arrangements
- Identification of financing options and setting reference levels for possible emissions trading or results-based finance
- Capacity building and training.

Some further studies and preparatory work are still needed to make the NAMA ready for implementation and to receive international funding.

¹ NAMAs are large-scale host country driven emission reduction actions that are supported and enabled by international and domestic financing, technology, and capacity building



Composition of MSW in urban areas of Peru Source: Diagnosis of Solid Waste in Peru (NIRAS et al)

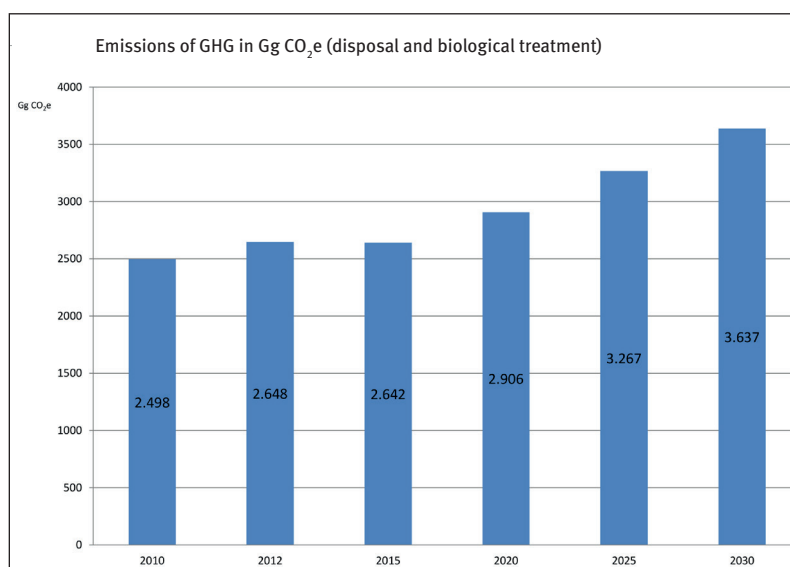
Peru's solid waste sector

Waste sector emissions amount to around 5% of the national GHG inventory and are continuously rising. Therefore the sector has plenty of climate change mitigation opportunities.

The country is still in the process of consolidating its waste management infrastructure and implementation of an effective waste management strategy will have significant environmental and public health benefits like mitigation of GHGs, toxic chemicals and other harmful substances released in rivers and groundwater contamination.

To meet the waste sector's development needs, Peru is currently modifying its general waste law. The proposed modification of the waste law promotes waste sector policies that encourage alternative treatment technologies to minimize waste and reduce greenhouse gases before the next generation of landfills are built.

Currently Peru is making investments in sanitary landfills and has set the goal of building more landfills to reach 100% proper waste treatment by 2021. However, methane emissions will increase as Peru builds more sanitary landfills. Long-term objectives of Peru's waste sector include sustainable waste management, moving more towards waste avoidance and recycling.



BAU GHG emissions from MSW in Peru 2010-2030, Source: MINAM, 2015.

Solid waste overview

It is estimated in the NAMA Readiness Programme that 17,000 tons of municipal solid waste (MSW) is produced daily in Peru. Over half (53%) of the solid waste is organic waste. Currently only 20% of the total disposed solid waste in Peru ends up in sanitary landfills and a large amount of waste is deposited in local rivers and the sea. Approximately 14% of recyclable waste is actually recycled. Annual emissions from MSW have grown: At 2010, the emissions were at 5.3 Mt CO₂eq and they follow an upward trend of almost 50% compared with 2030 (10 Mt CO₂eq).

Generally, it is due to the rapid growth of both population and economy, that the amount of municipal waste will be growing in Peru rapidly also in the future. Around 47% of the MSW-related emissions will be generated in Lima-Callao area. The cities in the coastal zone with over 50,000 inhabitants represent the second most important group in terms of MSW-related emissions with 12.5% of the total, while the lowest emissions are generated in the jungle municipalities with less than 10,000 inhabitants (2.4%).

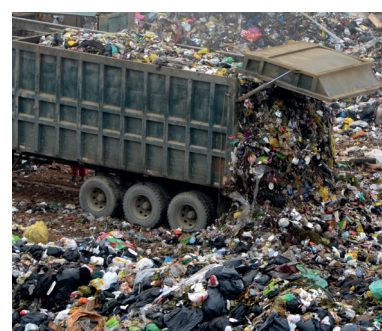


Photo: Jenna Hytti / GreenStream

MRV system developed

During the NAMA Readiness Programme the MRV systems for the most potential mitigation actions in the sector; landfill gas capture with and without electricity production, composting were developed. The MRV system enables Peru to take into account accurate and double-checked emission reductions from the MSW sector for their future greenhouse gas inventories.

Waste sector NAMA proposal of Peru

Mitigation actions

The waste sector NAMA proposal was finalized by June 2015, and it is ready to progress to the next stage. The following mitigation actions have been selected by Peru to be included in this NAMA based on a number of factors, including their mitigation potential, cost effectiveness, and consistency with Peru's sustainable development goals:

1. Landfill gas to electricity (LFGE);
2. Landfill gas flaring; and
3. Composting of organic waste separated at the source.

LFGE is the cheapest option based on abatement cost and provides considerable mitigation potential. This mitigation action would be implemented in the capital area since to be economically viable LFGE projects require a landfill that serves at least 400,000 people. The mitigation potential of LFGE projects is 6.6 million tCO_{2e} in 2015-2030.

Peru already has experience with gas flaring and this technology offers important mitigation potential in cities with 200,000 to 400,000 people. Mitigation potential of gas flaring projects is 1.5 million tCO_{2e}.

The composting of organic waste can be implemented as part of MINAM's separation at source plan. Ideal locations are agricultural areas and the mitigation potential of composting projects is 273,000 tCO_{2e} in 2015-2030. The NAMA could contribute to formalizing Peru's tens of thousands of informal waste pickers and provide them with more sustainable lives.

Policy reform

Peru's NAMA proposal includes substantial regulatory and policy changes in the municipal waste sector, and improving incentives for implementing the mitigation actions.



Photo: Jenna Hytti / GreenStream

The proposed regulatory changes consist of the proposed modification to the waste law that includes inter alia guidelines for municipalities to establish specific quantitative targets for each element of the waste policy (recycling, composting, segregation of organic material, capturing methane from landfills, etc.). The proposed law will require regular monitoring and reporting of GHG emissions associated with waste facilities and activities from both municipalities and the private sector operators. Methane capture will be required in all new landfills. In addition, the proposed law will require municipalities to provide equal or greater tipping fees to alternative waste treatment technologies. It also aims to raise technical standards for disposal sites and ensure an adequate tipping fee is provided to maintain the facility quality standards.

The proposed incentive policies include the aim to support and create markets for waste-based commodities, i.e. creating a certification programme for high quality compost. The key goals of the proposed policy package include expansion of the existing technical support platform for municipalities to incorporate training and capacity building, and formalization programmes for informal recyclers. In addition, the policy should act as incentive to reward alternative treatment technologies with higher tipping fees.

Beside the proposed incentive policies, the proposed waste law will allow the municipalities to sell materials directly to industry. It will as well provide incentives to provincial

municipalities to form associations to consolidate waste management infrastructure. The proposed law will also include education programs in the NAMA to influence public behaviour to complement public policies.

Policy reform is crucial in overcoming barriers to effective climate change mitigation and creating an enabling environment for private and public actors in the sector. Policy actions are important for the long term sustainability of the sector and to drive transformational change.

Markets and financial mechanism

Beside the support to Peru waste sector's regulatory and policy changes, the NAMA aims to create markets for waste-based commodities. Such markets could utilize a certification program for high quality composting and incentive financing for municipalities who pursue regional aggregation of waste and regional waste reduction facilities including LFGE and composting.

The proposed financial mechanism to catalyze investment from public and private sectors aims to create a competitive selection process for investing in implementation of alternative technologies in municipalities. Those technologies should reduce both GHGs and other impacts of waste. The main financing solution proposed in the Programme for initial action phase of the NAMA is establishing a Peru NAMA Carbon Fund. For the longer term, financing could be a NAMA Fund for Low Emissions Solid Waste Management, including debt and equity financing.

Challenges, opportunities and lessons learned

A significant challenge in Peru is to increase the public awareness of the benefits of waste sector improvements and make the regulatory regime attractive to individuals and organizations to encourage participation in these improvements. Also the lack of technical capacity particularly at the municipality level is a barrier to NAMA implementation. Therefore the NAMA will also include a technical assistance component.

In addition, there is substantial unofficial labour in the country working in the waste sector. The livelihoods of over 200,000 families in Peru depend on waste picking and around 2/3 of the recycling in the country is done by the informal sector. To improve the waste sector in conjunction with improving the waste pickers' social position in the country is one of the main challenges of the NAMA. The NAMA proposal includes waste picker formalization programmes to overcome this challenge.



Photo: Jenna Hytti / GreenStream

Moreover, there are several opportunities in the waste sector. The waste NAMA can help in mainstreaming mitigation aspects in waste legislation, as well as in the concepts and strategies of municipal solid waste management. Peru is currently in the process of updating several dumpsites to more organized sanitary landfills, and the NAMA will help taking mitigation issues into account in the process.



Photo: Jenna Hytti / GreenStream

Improving Peru's waste sector includes opportunities for economic growth. The solid waste NAMA Readiness Programme will increase economic activity in the sector by aiming to encourage new technologies and new management processes. The NAMA to be implemented will produce waste-based commodities like recyclables, compost and refuse-derived fuel, and aims to create a market for them. A challenge so far has been that municipally run recycling plants are not allowed to sell materials directly to industry. The proposed modification to the waste law would allow this.

Barriers for implementation of mitigation technologies, including lack of national experience regarding proposed technologies, need to be overcome by policy instruments. An organizational barrier is inter-ministerial coordination. The future NAMA coordination structure needs to ensure participation of all relevant stakeholders and institutions, including the informal sector.

The activities to be implemented under the waste NAMA will reduce GHG emissions in landfills and reduce environmental degradation from landfills. They will also reduce production of toxic landfill leachate.

Partners involved in the Pilot Programme

- The Nordic Council of Ministers
- The Nordic working group for global climate negotiations (NOAK)
- Nordic Environment Finance Corporation (NEFCO)
- Ministry of Environment of Peru (MINAM)

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Did you know that...

- Peru's population is 30.4 million, growing 1 % per year. 1/3 of population live in the capital area.
- 8% of population live on less than 2 USD per day, 24 % are considered poor.
- Per-capita GDP of Peru is 11,360 USD. Average annual GDP growth rate in 2004-2013 was 6.5%.
- Main economic activities of Peru: mining, manufacturing, agriculture, fishing.
- Daily amount of municipal solid waste in Peru is estimated at 17,000 tons.
- Waste sector emissions account for around 5% of Peru's greenhouse gas emissions and are constantly growing.

