

# The NAMA Facility: A Snapshot



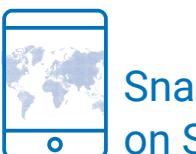
# Inspiring Climate Action

# Welcome

Bold, transformational action is urgently required to succeed in meeting any of the international community's global warming targets. At the NAMA Facility, we are working to close the gap between ambitious climate targets and real climate action. Based on the funding and guidance of our Donors and together with our partners in numerous countries around the world, we provide expertise and financial support to projects that trigger sustainable and scalable investments in low-carbon development.

We encourage governments and private actors to join forces in developing feasible, yet innovative approaches for greenhouse gas mitigation projects, spanning sectors as diverse as waste management, transportation, energy efficiency, agriculture and renewable energy. The projects our Donors select for support are driven by the commitment of national governments and are deeply embedded in countries' national frameworks to combat climate change. They also compel the private sector's significant involvement, as its participation is crucial for scaling climate action and creating bankable pipelines of mitigation projects.

Our ambition is to be a catalyst. We want transformative ideas to scale and multiply – locally and nationally, from sector to sector, worldwide. This is why we capture and share our experiences and disseminate our knowledge to empower others to close the gap between aspirations and action. As a proponent of fearless learning, we reflect on our experiences, both positive and negative, to continuously improve. With this publication, we invite you to discover our work and join the NAMA Facility in its mission to promote transformational change in the pursuit of concerted international action to protect our climate.



Snapshot  
on Screen

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of this publication – for your desktop,  
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Dr. Sören David  
Head of the Technical Support Unit, NAMA Facility

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## Abbreviations

AC (Air conditioning), AWD (Alternate wetting and drying), BAAC (Thai Bank for Agriculture and Agricultural Cooperatives), BAU (Business as usual), BEIS (United Kingdom Department for Business, Energy and Industrial Strategy), BMU (German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety), BRT (Bus rapid transit), CAUES (China Association of Urban Environmental Sanitation), CCAP (Center for Clean Air Policy), CH<sub>4</sub> (Methane), CICC (China International Capital Corporation), CO<sub>2</sub>e (Carbon dioxide equivalent), CONAVI (Mexican National Housing Commission), COP (Conference of the Parties), DPP (Detailed Preparation Phase), EC (European Commission), EEDSM (Energy Efficiency Demand Side Management), EEPSO (Energy Efficiency Project Support Office), EFKM (Danish Ministry of Climate, Energy and Building), ESCO (Energy service company), GAP (Good Agricultural Practices), GHG (Greenhouse gas), GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH), GWh (Gigawatt hours), HFC (Hydrofluorocarbons), HVAC (Heating, ventilation, and air conditioning), IDC (South Africa Industrial Development Corporation), IPP (Independent power producer), LED (Light-emitting diode), LLL (Laser land leveling), MINAE (Costa Rican Ministry of Environment, Energy and Telecommunications), MOAC (Thai Ministry of Agriculture and Cooperatives), mtCO<sub>2</sub>e (Million tonnes of carbon dioxide equivalent), MRV (Measuring, reporting and verification), MTC (Peruvian Ministry of Transport and Communications), N<sub>2</sub>O (Nitrous oxide), NAMA (Nationally appropriate mitigation action), NDC (Nationally determined contribution), NSP (NAMA Support Project), RRC (Thai Rice Research Center), SEDATUM (Mexican Secretariat of Agrarian, Land and Urban Development), SEMARNAT (Mexican Secretariat of Environment and Natural Resources), SME (Small- and medium-sized enterprises), tCO<sub>2</sub>e (Tonnes of carbon dioxide equivalent).

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### Legal Notice

# What Our Donors Say



"The exciting thing about the NAMA Facility is seeing ambitious climate action happening across such a diverse range of countries and sectors – from electric mobility, to coffee production to energy-efficient housing. In order to meet the goals of the Paris Agreement we need to address climate change and reduce emissions across all these sectors, and the NAMA Facility is helping countries to do that. We designed the Facility to be flexible and open to all developing countries, so we can support ambitious climate action wherever it exists."

Zoe Norgate, Head of Decarbonisation  
International Climate Finance (ICF), British Department for Business, Energy and Industrial Strategy (BEIS)



"The growing NAMA Facility portfolio illustrates how it is possible to design ambitious mitigation actions for a wide variety of sectors and countries. It is this transformative approach – not focused on any one sector or country alone – that will be necessary for a dramatic reduction in emissions in order to reach the goals we set for ourselves in the Paris Agreement. NAMA Support Projects facilitate the implementation of NDCs, as they serve as their building blocks and also offer insightful implementation experiences. The feedback and outcomes from the first NAMA Facility projects have inspired and motivated us, not only to get behind further NAMA Support Projects but also to continue disseminating experiences and lessons learnt more broadly."

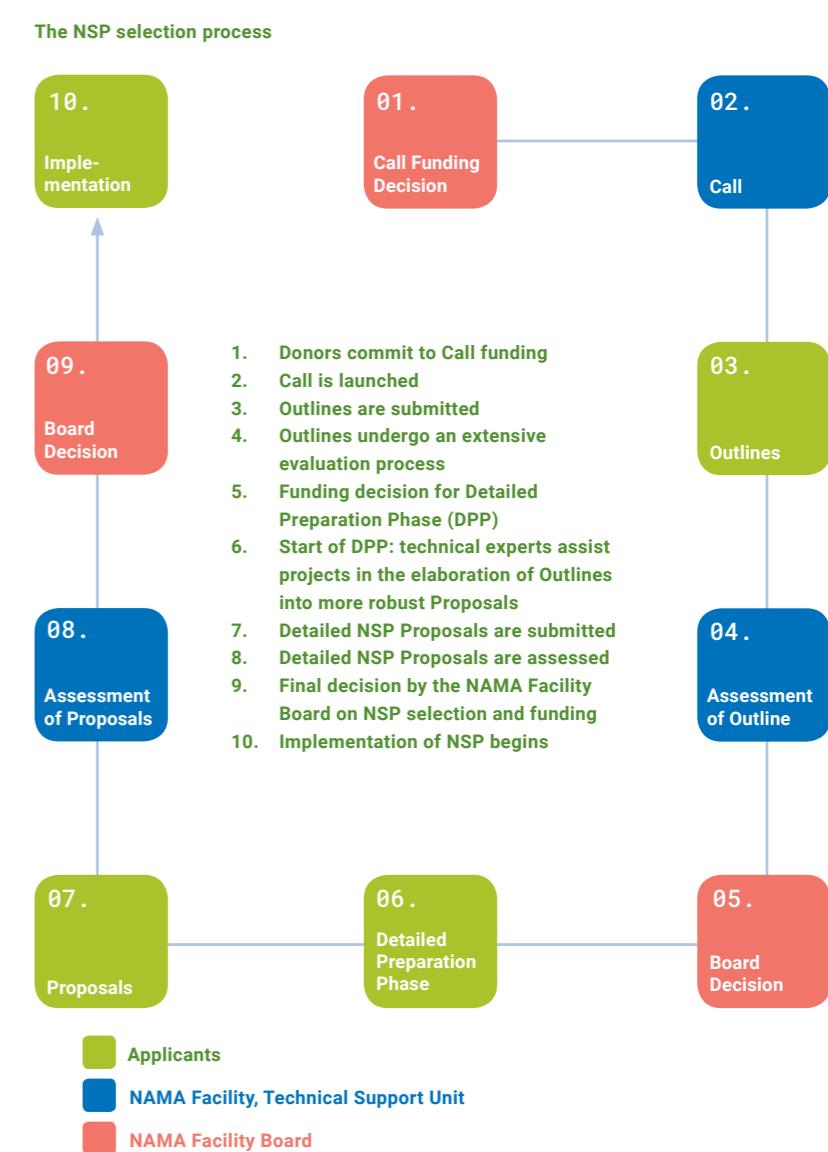
Norbert Görissen, Deputy Director General  
German Federal Ministry of the Environment (BMU)

# Enabling Transformational Climate Action

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he NAMA Facility's vision is to accelerate low-carbon development and support greenhouse gas (GHG) mitigation action in order to limit the global temperature increase to less than two degrees Celsius. In pursuit of this goal, the NAMA Facility supports ambitious climate action in developing countries and emerging economies that exhibit leadership in engaging with the issue of climate change. The innovative financial instruments and high-quality technical expertise we provide are key tools for igniting a shift towards sustainable, irreversible low-carbon pathways. In the context of the Paris Agreement, nearly every country across the world has made the commitment to limit future global warming to two degrees. Numerous countries have developed nationally determined contributions (NDCs), which aim to reduce GHG emissions through sector-specific and overarching emission reduction targets. The "building blocks" of these NDCs are projects developed to effect a reduction of GHG emissions in a particular sector, known as nationally appropriate mitigation actions (NAMAs). The NAMA Facility funds and supports NAMA Support Projects (NSPs) for the implementation of the most innovative and transformational NAMAs.

The establishment of the NAMA Facility was announced at the 2012 United Nations Climate Change Conference (COP 18) in Doha, Qatar, by Germany's Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the United Kingdom's Department for Business, Energy and Industrial Strategy (BEIS). In 2013 and 2014, BMU and BEIS provided funding for the first two Calls for the submission of NAMA Support Project Outlines. In 2015 the Danish Ministry of Energy, Utilities and Climate (EJKM) and the European

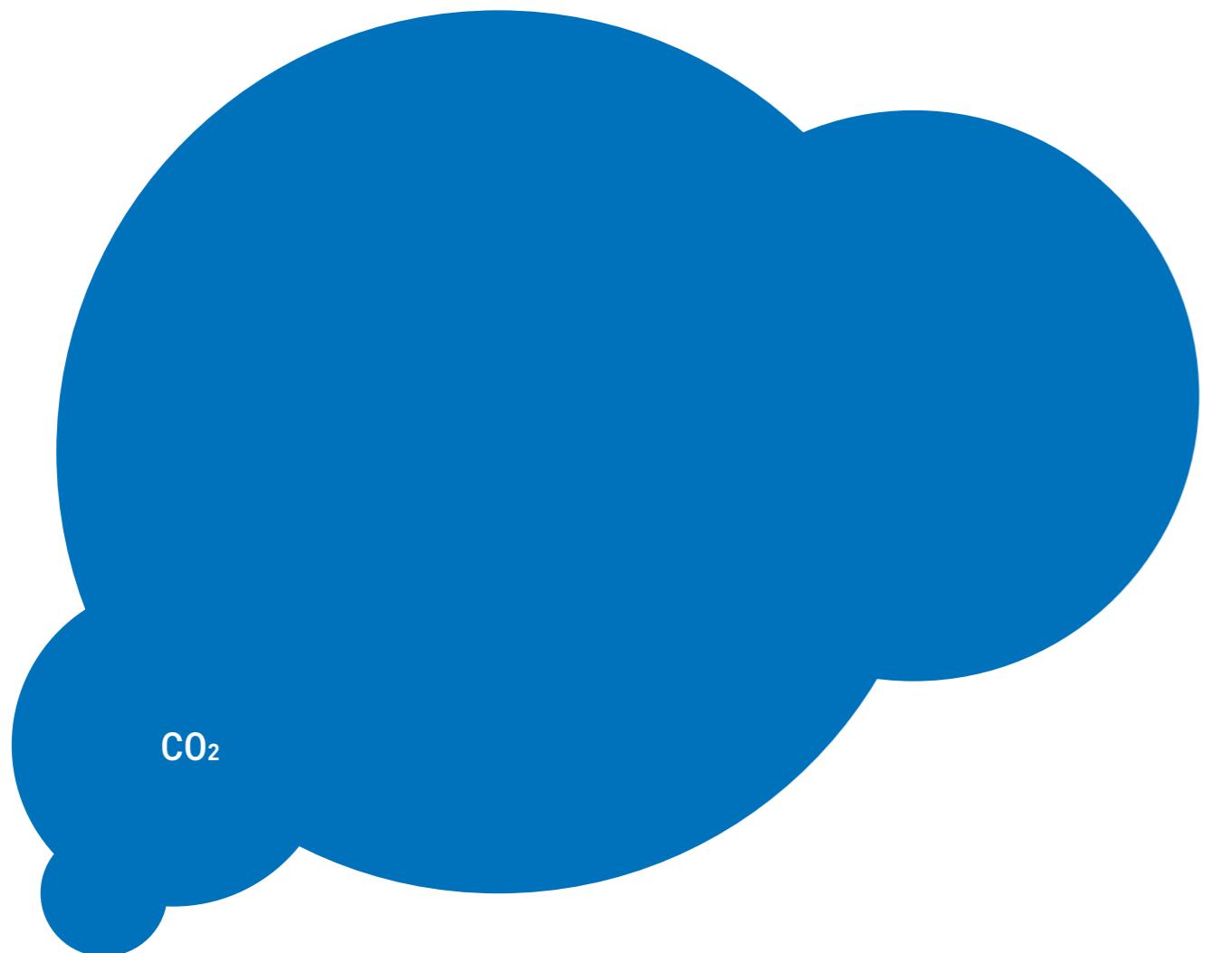


Commission (EC) joined BMU and BEIS as new NAMA Facility Donors and have since launched three additional Calls. The 5th and most recent Call was launched in November 2017 at the United Nations Climate Change Conference (COP 23) in Bonn, Germany. The NAMA Facility's portfolio from the 1st through 4th Calls consists of 20 NSPs located in 16 countries and spans a diverse array of sectors (see our portfolio on pages 30–34).

In addition to supporting GHG mitigation actions and accelerating low-car-

bon development through NSPs, the NAMA Facility seeks to act as a learning hub. As such, the NAMA Facility captures lessons learnt across the scope of its actions and facilitates the exchange of knowledge and best practices throughout the broader climate finance community. To ensure the sustainability and the transformational, catalytic nature of NSPs, the NAMA Facility also works to ensure high levels of government commitment and the involvement of the private sector across its projects.

# What Our Partners Say

Direct mitigation potential over the lifetime of all NAMA Support Projects by sector in tonnes CO<sub>2</sub>:

Agriculture



Energy Efficiency



Renewable Energy



Transport



Waste Management

11,640,000

77,220,000

10,230,000

23,460,000

4,800,000



"The Thai Rice NAMA project is aligned with the government's policy and strategy in promoting sustainable rice farming. The project's inclusive value chain approach of developing a working model together with stakeholders, as well as members of the public and private sector, provides valuable insights that can be adopted in other areas. Farmers, consumers, mitigation technology service providers, millers, traders and others will all enjoy multiple benefits. The project will prepare the Thai rice sector and rice farmers to contribute to sustainable development and climate action, and also build long-term capacities in this area."

Anan Suwannarat, Director General Rice Department, Thai Ministry of Agriculture and Cooperatives



"The NAMA Support Project has been the key to promoting the transformational change we want to achieve in the coffee sector. I find it fascinating to see how we have advanced from identifying and measuring the main sources of greenhouse gas emissions to, finally, implementing the low-carbon technology needed to reduce them. It's also very exciting to be able to drink a cup of low-carbon coffee and know the work that goes into it."

Andrea Meza, Director of the Department of Climate Change, Costa Rican Ministry of the Environment and Energy



"Twenty years ago, the Chinese waste sector was driven to start reusing and recycling materials primarily for economic reasons. Then we saw a clear need for more environmental protection and we quickly implemented technologies for landfills and incineration plants with support from international experts. Today, the concept of a low-carbon circular economy is what determines transformations in Chinese society, and the idea behind the China Integrated Waste Management NAMA Project, as a major milestone, is to provide skilled guidance for the waste sector to implement the required changes."

Xu Wenlong, Vice President, China Association of Urban Environmental Sanitation

**“Sometimes private investors need an NSP pilot project that shows them, yes, investing in low-carbon development makes sense and it is a financially sound option.”**

Senior climate finance adviser **Waqas Batley** of the British Department for Business, Energy and Industrial Strategy (BEIS) explains how the NAMA Facility has carved out an important niche in the international climate finance landscape – and how it works to maximise the impact of its NAMA Support Projects.

**Q:** Mr. Batley, the NAMA Facility has helped create a global network of climate mitigation projects across various sectors. How do these projects enable real, sustainable change?

**A:** Our focus is on big-picture sustainable change. We have a highly effective selection process to ensure that the most transformational projects are selected – the ones that target structural barriers to set the stage for real change. We provide extensive support to ensure that the submitters can deliver on their objectives, and they can count on strong Donor commitment to sustainable and meaningful development.

**Q:** What makes the selection process of the NAMA Facility so effective?

**A:** The NAMA Facility helps ensure that projects are both ambitious and realistic. We assess ambition and deliverability at the first stage of submission. Next, we do an on-site assessment for shortlisted projects to give both sides a better understanding of the submitted Outline. Selected Outlines then move on to the Detailed Preparation Phase. Here the Outlines can benefit from the expertise of our technical consultants to address specific issues in the initial concept and maximise their project's impact through better design. Applicants have up to 15 months to fine-tune the project design before the Board makes its final decision. Another major success factor of our selection process is that it is competitive throughout. That provides the necessary incentives to create some really fantastic and well-designed projects.

**Q:** What level of commitment do you expect from governments that propose NSPs?

**A:** Government commitment is an essential part of our assessment. We understand the importance of political will in achieving project targets, and we expect that applicants secure this as part of the project selection process. Government commitment works in two ways: it helps deliverability and improves country ownership by ensuring alignment with higher-level priorities such as NDCs and other climate strategies.

**Q:** Do NSPs often build on existing low-carbon strategies in a specific sector?

**A:** Yes, and we expect the NSPs to complement them. These strategies are reviewed by most project owners to identify structural barriers that prevent them from being implemented or from reaching their maximum potential. That is a major focus, because once we can overcome structural barriers, it opens the gates and we hope to see a huge inflow of replication and benefits throughout that sector.

**Q:** Another core factor for the sustainability and scalability of NSPs is private sector involvement. Do the NSPs need to demonstrate the economic feasibility of low-carbon projects before the private sector decides to invest in them?

**A:** It is not just about the economic case; we expect to be strong in every regard. When we are trying something new and innovative in order to achieve structural change, there is a different level of risk involved. Governments can take greater and different types of risk than private investors. That is why we co-finance projects – to show that the risk is manageable and the investment proposal is attractive. It is important to make commercial investors feel comfortable. Sometimes they need more innovative financing mechanisms; sometimes they need an NSP pilot

project that shows them, yes, investing in low-carbon development makes sense and it is a financially sound option.

**Q:** In Colombia, the government, together with the Center for Clean Air Policy (CCAP), developed an NSP that combines a low-carbon public transit system with an urban development approach that will improve the living standard of thousands of families. Do many NSPs aim at benefitting the local population?

**A:** Yes, the NAMA Facility sees itself as part of the global sustainable development community. We do look at the benefits for the local communities and how the project could help improve their lives on a daily basis.

In Colombia, the low-carbon public transit system will help reduce air pollution and have a positive impact on people's health and access to infrastructure such as bike lanes and bus rapid transit. Another example would be the Low-Carbon Coffee



Waqas Batley, Senior Adviser on International Climate Finance, International Climate & Energy Directorate, British Department for Business, Energy and Industrial Strategy

NAMA in Costa Rica. If you speak to the beneficiaries there, they do understand the technical impacts, such as how the new technology can protect their crops from climate change, but what really stays with them is how the NAMA has helped to secure their livelihoods and those of future generations.

**Q:** Some NSPs, such as low-carbon coffee production in Costa Rica or low-carbon rice production in Thailand, have been adopted by other countries that proposed similar projects – is this the kind of positive diffusion of ideas that you are hoping for?

**A:** Knowledge sharing is extremely important to achieving large-scale transformational change. Seeing others analyse our NSPs to figure out how they can replicate even parts of a project has been very rewarding. We also try to encourage information sharing and the exchange of best practices among our NSPs on topics such as financial mechanisms, addressing specific barriers or bringing together different stakeholders. We encourage participants in our NSPs to build up a network to share inspiring examples.

**Q:** Looking at the global situation of climate politics, what is the future outlook for the NAMA Facility?

**A:** The NAMA Facility has carved out an important niche. I think with its design, it complements the existing climate finance landscape and plays a crucial part in pushing NAMAs forward and raising ambitions at a sectoral level. That is ultimately how it will add the most value in the global battle against climate change. We expect it to continue to play a leading role in championing NAMAs around the world. —

Thailand's **rice farmers** are increasingly affected by climate change. With the Thailand Rice NSP, they will contribute to national emission reduction goals for the first time – and increase their profits.



# Better Rice

In a flooded, muddy field, rice plants stretch out in long rows, their bright green leaves trembling in the wind. The monsoon rains are due here soon. Women wearing colourful straw hats and knee-high orange rubber boots stand in the fields. They pull and collect weeds, which they throw onto the surrounding embankments. Small brown signs on stakes buried in the soil read RD41, RD43, RD61, RD71. "Those are some of the rice varieties we grow here", says Duangporn Vithoonjit. The young Thai woman is an agronomist at the Rice Research Center (RRC), which has monitored rice production in Thailand since the 1960s on behalf of the Ministry of Agriculture and Cooperatives. The RRC maintains test fields and labs in several rice-growing provinces, like the one here in Chai Nat in central Thailand, and offers continuing education for farmers. "RD61, for example, is a rice variety with a short growing season and that reduces the risk of crop failure caused by climate-induced droughts", Duangporn Vithoonjit explains. Researchers at the RRC have worked for several years to adapt the growing techniques for rice to the tangible consequences of climate change, such as changing rain patterns, drought and flooding. Now, for the first time, the farmers will do their part to reduce greenhouse gas emissions caused by rice production.

Rice is Thailand's biggest staple. It grows on about 47 per cent of the nation's farmland, the most popular variety being aromatic jasmine. In the province of Chai Nat, that number even reaches 80 per cent. Large farms are generally few and far between. Each of the 3.7 million rice farmers in Thailand only cultivates about four hectares on average. Yet the combined results of their labour add up to around 19 million tonnes of rice every year, making Thailand the world's sixth largest rice producer, and the second largest exporter of rice to India.

This success takes its toll on the climate. Around 55 per cent of greenhouse gas emissions from agriculture in Thailand stem from rice farming, for an annual total of about 27.8 million tonnes of CO<sub>2</sub>e. To achieve a significant cut in these emissions and support national mitigation goals, the Thai Ministry of Agriculture developed the Thai Rice NAMA, which went into effect in August 2018, thanks to an NSP financed by the NAMA Facility. The objective of this NSP is to introduce around 100,000 rice farmers in six pilot provinces in central Thailand to low-emission farming techniques by 2023. Emissions in rice farming are projected to decrease by about 29 per cent compared to the business-as-usual scenario.

"We see ourselves as translators whose job it is to align the targets outlined in the Paris Agreement with the needs and livelihood of Thai farmers and to give them the necessary incentives to invest in low-emission technologies", explains Matthias Bickel, Program Director, Agriculture and Food at the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in Thailand, which implements the NSP for the NAMA Facility. "It is a huge task to set

transformational change in motion in such a large sector, but this NSP has united three ministries that are now all working to accomplish a common goal. And that's a great starting point." In addition to the leading role of the Ministry of Agriculture and Cooperatives, partners for the Thai Rice NAMA include the Thai Ministry of Natural Resources and Environment and the Ministry of Finance.

Rice farming mainly releases methane (CH<sub>4</sub>), a gas that is around 25 times more damaging to the climate than CO<sub>2</sub>. Methane is produced when the rice fields are flooded during the growing season and weeds and other organic matter living under water decompose under anaerobic conditions. For every hectare used to grow rice, up to 2.11 tonnes of CO<sub>2</sub> equivalent are released into the atmosphere. "But the rice plants do not always need to be submerged. They will also thrive when the soil is wet and the water table is no more than 15 centimetres below ground", explains Duangporn Vithoonjit. "When you adapt the water supply to the plants based on that knowledge, it is possible to achieve a substantial reduction in methane emissions."

The Rice Department in the Thai Ministry of Agriculture and Cooperatives introduced the described technique, known as alternate wetting and drying (AWD), three years ago in response to a severe drought in 2013 that left rice fields dry and barren in several areas. The original goal was to help farmers become better-equipped to adapt to dry conditions by reducing water consumption.

A simple perforated plastic tube inserted into the soil shows when the water level has receded to the point that reflooding is required to provide adequate nourishment to plants in the field. This way water usage can be reduced by around 30 per cent.

The Thai Rice NSP now plans to use AWD for the first time not only for adaption but for mitigation purposes. The technique will be made more efficient by combining it with laser land levelling (LLL) to prepare the soil. This advanced technique relies on a laser to detect and measure the land, and a large tractor to pull a two- to three-metre-wide metal bucket with scraper. This equipment is used to move soil from higher points in the field to lower ones for a precise levelling effect before sowing. The result is an even distribution of water and uniform growing conditions for all plants for a period of up to five years, as well as an improved crop yield.

Rice farmers will be introduced to two additional mitigation techniques over the course of the Thai Rice NAMA. Machine-based straw and rubble management will replace the traditional technique of burning rice straw and ploughing it under in the fields, a practice which pollutes the air and emits greenhouse gases. The organic material will be collected and can be sold and used as livestock feed or for bioenergy production. Site-specific nutrient management based on soil analyses that farmers can conduct themselves will be used to avoid an excessive use of mineral fertilisers and therefore unnecessary nitrous oxide (N<sub>2</sub>O) emissions. →



(1) Women weeding the rice fields at the Rice Research Center in Chai Nat. (2) Two-wheel diesel tractors, like this one at the Rice Research Center, are commonly used by Thai rice farmers to plough and level soil. The NSP will introduce far more precise LLL equipment in order to reduce water consumption and emissions. (3) Researchers at the Rice Research Center develop new rice varieties which help farmers adapt to the effects of climate change.

→ "We will provide formal training to farmers in these four techniques so that they can go on to train others", says Duangporn Vithoonjit from the RRC. The NSP plans to reach 100,000 farmers within five years based on this disseminator approach.

North of Chai Nat, Chaleo Noisang stands in a field where the plants all grow at the same height, creating a level green surface instead of the rippling waves visible in the neighbouring rice field. The low-hanging panicles are heavy with greenish yellow rice grains; the harvest will start in just two weeks. Chaleo Noisang heads an association of 220 rice farmers in Chai Nat who have joined forces to form a so-called "mega farm". They share equipment and a rice mill, produce their own rice seed and organise their own training and education. And they participate in an RRC-led pilot project designed to bring LLL to Chai Nat. "We used the technique this year for the first time in combination with alternate wetting and drying and we are very pleased with the results", he says looking out onto the bright green pilot field. "It is an extremely efficient method that leads to a higher yield and better rice quality, and it requires a lot less water and energy for the pumps."

Chaleo Noisang only started rice farming in 2004, when he was 45 years old, after serving for many years in the Thai Navy. Several other farmers in his collective have worked in the rice fields since their childhood, when water buffalos were still used to pull the ploughs and seed was planted by hand. Two-wheel diesel tractors came out later, in the 1970s, and are still popular in many places. Irrigation channels were also dug and new rice varieties introduced by the RRC for a better harvest (in the dry season) and higher earnings. "Our standard of living has improved quite a bit", says Chaleo Noisang. He and the other rice farmers in the mega farm collective are now facing another big change. "When we held our first meeting and asked for a show of hands as to who wanted laser land levelling, only ten people showed their support. But after the others saw the results and how much it improves the fields, almost everybody wanted to make the switch."

NSP consultants estimate that the introduction of the combined Thai Rice NAMA mitigation techniques will enable farmers to cut their costs by 53 per cent while boosting crop yields by about eight per cent. Profits will then increase by up to 157 per cent. The required investment (which will mainly be used to finance LLL, since AWD is virtually free) will pay for itself within the first year. With so many good arguments on its side, the next step for the NSP was to provide attractive financing options and make the technology available to farmers.

On the financial side, the Thai Rice NSP has developed a sophisticated financing mechanism. Because many Thai rice farmers go into debt (the average household debt in central Thailand is about 3200 euros), creating a situation that relied on more individual credit was out of the question. "We are currently in the process of setting up a revolving fund. The NAMA Facility will initially stock the fund with 8.4 million euros and it will gradually become self-sufficient", explains Matthias Bickel from the GIZ. Farmers can apply for advanced financing for the LLL from the revolving fund, which is managed by the Thai Bank for



12



(1)



(3)



13

(4)



(5)



(6)

Agriculture and Agricultural Cooperatives (BAAC). The revolving fund then pays a service provider to level the fields. "The farmers enjoy the first full year free of instalment payments and can pay back the loan from the BAAC over the three subsequent years using the additional money they earn because of the new techniques", says Bickel. The instalment payments include a surcharge, which is used to restock the fund so that other farmers may also benefit from the advance financing plan in the future. The first fields will be levelled with money from the fund before the wet season of 2019.

Around 2,000 laser land levelling units will be required to level the fields of 100,000 farmers within five years. But currently there are still no private businesses that own LLL equipment and offer the service. The BAAC has therefore initiated a credit line for the Thai Rice NSP to support investments in sustainable agricultural methods at low interest rates. Though the option has been in place since 2015 for green investments in general, the response has been hesitant. Private businesses and farmer groups (community rice centres, cooperatives, mega farms and water usage groups) will now all be eligible to receive these green credit loans as part of the Thai Rice NSP in order to invest in LLL equipment and other mitigation techniques, without adding to the personal debt of farmers. The revolving fund gives them the security that their services will be sought out and paid.

"The revolving fund and the green credit loans are complementary measures. Together they have the capacity to increase the productivity of farmers and the quality and safety of their rice and, in doing so, make the entire value chain in the rice sector more sustainable", says Morakot Pitharat, Senior Executive Vice President of the BAAC in Bangkok. "And when that success kicks in, everyone in the economy will soon be looking to us and wanting to understand our model – it could be the start of a larger low-carbon movement."

North of Chai Nat, Rueedeporn Thepsri walks through her yard, which is surrounded on all sides by rice fields. Ripe pink pitaya and green pomelos hang from the trees. Farmers drive around on two-wheel tractors and motorcycles wearing masks to shield their faces from the sun. Workers stand in the field pulling weeds. Rueedeporn Thepsri shows her rice field, located adjacent to her home, the rice grains are a deep yellow. "Next week I will start the harvest", she says, as she gently strokes one of the pinnacles and lets it slide through her hand. She and her sister jointly own two hectares, which Rueedeporn Thepsri runs by herself; her husband does carpentry work at construction sites. She too is a member of the mega farm in Chai Nat and wants to introduce the cultivation methods supported by the Thai Rice NSP as soon as possible. "I heard about how people have been able to use less water and save on diesel and fertiliser." She also looks forward to increased earnings as a fall-back for poor crop yields. "A few years ago, when we had the big drought, we were really in trouble. Two dry seasons in a row left a huge hole in our income", says the 53-year-old. When asked whether she has heard of climate change or harmful emissions produced by rice farming, Rueedeporn Thepsri gives pause. Though hesitant, her answer is simply "no". →

(4) At his home in Chai Nat, rice farmer Chaleo Noisang shows the perforated plastic tube which, combined with laser land levelling, helps to reduce water usage in the field by approximately one third.

(5) Paddy fields shape the landscape of Chai Nat in Central Thailand, where rice grows on around 80% of the province's farmland.

(6) For Rueedeporn Thepsri, climate change is a completely new concept. Her decision to introduce low-carbon technologies was motivated by prospective savings on fertiliser and fuel.



( 7 ) The Thai Bank for Agriculture and Agricultural Cooperatives (BAAC) in Bangkok manages the revolving fund which will grant financing for laser land levelling to rice farmers. The fund is expected to grow over time and gradually help transform the entire rice sector in Thailand. ( 8 ) Rice being sold at a market in Bangkok. ( 9 ) Cooked rice is served with almost every meal. Thailand is a major consumer of rice, and the second largest exporter to India.



(7)

→ "Climate change is a new topic for many rice farmers. It is also a bit far afield in terms of their everyday experience, which is why we need to start by providing financial incentives. Later we will explain the link to climate change and the emissions reductions we are trying to achieve with the new technologies", says Apichart Pongsrihadulchai, Advisor to the Director General of the Rice Department and former Deputy Minister of the Ministry of Agriculture. "Luckily, the methods we are introducing with the Thai Rice NAMA aim to boost crop yields and farmers' incomes while also cutting emissions, which is why the project is such a good fit for our situation and our national targets."

The mitigation goals of the Thai Rice NAMA will be integrated in a new sustainability standard for rice cultivation. The current Good Agricultural Practice (GAP) standard primarily consists of quality control and food safety criteria. A new national GAP++ standard will go into effect by 2023, and will be expanded to include social and ecological criteria – and the mitigation methods of the Thai Rice NSP. One major goal will be to get 31,500 out of the 100,000 rice farmers up to speed with the new GAP++ standard by the end of the NSP.

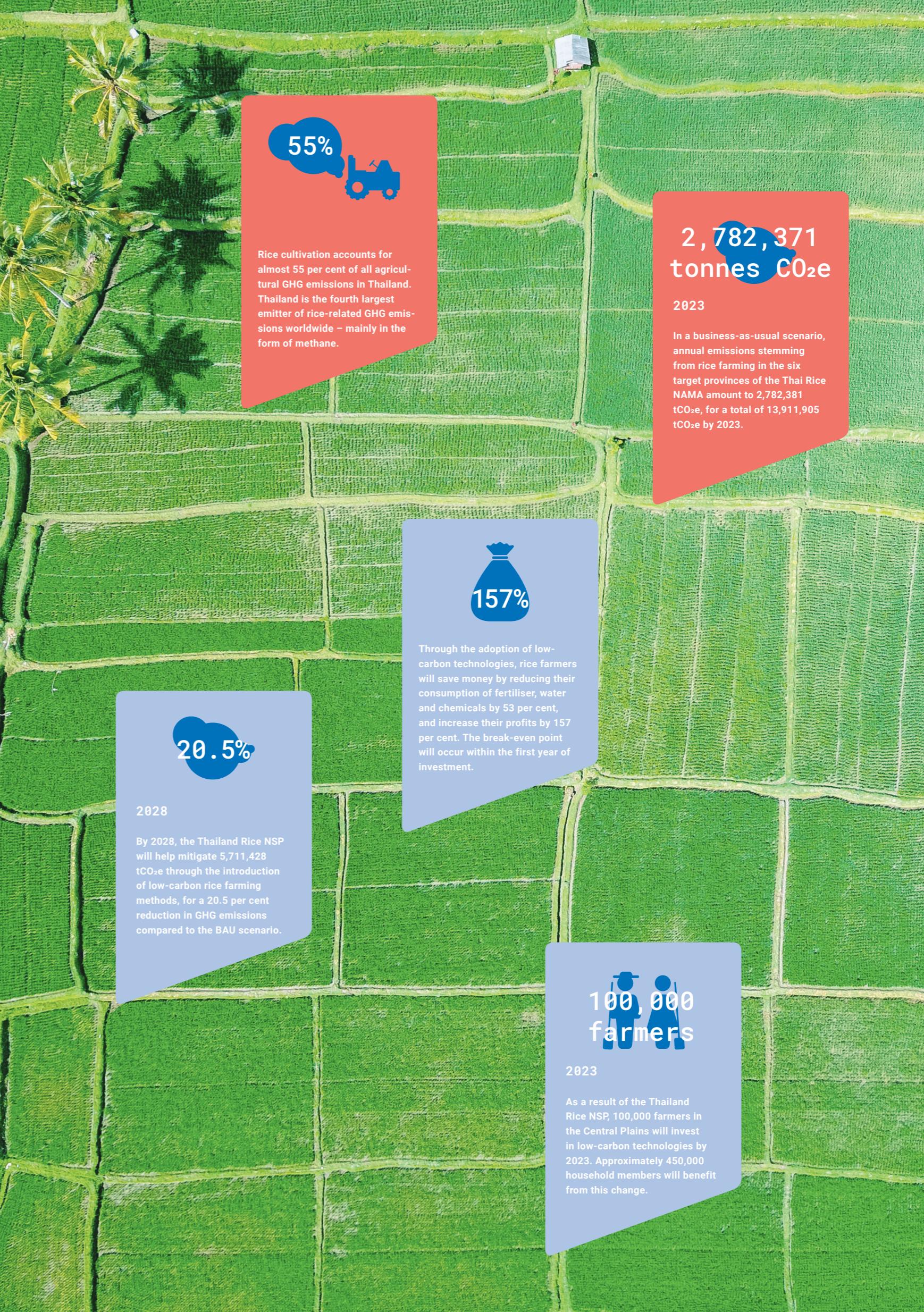
But first, the priority is to get as many farmers as possible on board with the new methods and show them that they really do live up to their promise in terms of added benefits and profit. "If we are successful in convincing them, I am certain that the model will spread very quickly", says Apichart Pongsrihadulchai. Easier cultivation methods and increased profits could also attract more young people and help them see rice farming as a viable option, especially because the average farmer in this rapidly ageing sector is 56 years old.

Jarus Anusarnsonan is one of the few young farmers who recently joined the mega farm in Chai Nat. The 35-year-old started cultivating rice in 2015. Before becoming a rice farmer, he worked in an electronics factory in northern Thailand, where he struggled to make ends meet. "Out here in the countryside, I have a better quality of life and more freedom", he says. Next year he wants to introduce the mitigation techniques supported by the Thai Rice NSP on his own four hectares – and build a more sustainable livelihood for his family. ——



(8)

(9)



South Africa is implementing a NAMA to make **public buildings and infrastructure** more energy-efficient. An NSP will help generate trust among investors with partial credit guarantees – and ignite a transformation of the entire sector.



# Building Trust

**T**he example is convincing: the municipality of Polokwane in north-eastern South Africa updated its wastewater treatment plants with 36 new high-pressure pumps that perform far more efficiently than the older models due to new features that enable flexible adjustments in pumping output and a reduced power consumption. The new technology saves the municipality about 2,300 megawatt hours and 184,000 euros annually, and it paid for itself within just four years. At the same time, Polokwane reduced its annual emissions by 2,300 tonnes CO<sub>2</sub>e – and the municipality has brought South Africa one step closer to its national mitigation goals. By 2025, the country pledged to reduce greenhouse gas emissions by 42 per cent compared to the business-as-usual scenario.

Like Polokwane, many municipalities in South Africa have an enormous potential to curb their energy consumption and emissions. Mercury vapour lamps illuminate the streets, high-watt incandescent lightbulbs burn in public administration buildings, and old HVAC systems are prevalent in hospitals, jails and schools. The Department of Public Works alone maintains 90,000 buildings that partly operate outdated technologies. The same problem extends to thousands of public buildings and infrastructure at the provincial and municipal level.

The water pumps in Polokwane were subsidised by the South African National Treasury through the Department of Energy within the scope of its Energy Efficiency Demand Side Management (EEDSM) programme. Founded in 2009, the programme endeavours to help municipalities reduce energy costs and cut emissions. The subsidies can cover up to 100 per cent of the investments. But the programme has not had a broad-scale impact due to a lack of resources and expertise in running these types of projects in municipal administrations. In addition, South Africa still does not have enough energy service companies capable of implementing such projects.

But now, that situation is about to change. The South African Departments of Energy, Public Works and Environmental Affairs have teamed up to develop a NAMA that will accelerate the energy efficiency transformation in the public buildings and infrastructure sector. The new NAMA entitled Energy Efficiency in Public Buildings and Infrastructure Programme will help to achieve the government's ambitious goal of cutting the specific energy consumption of public buildings in half by 2030, compared to 2015 levels. It will also support the introduction of energy performance certificates for public buildings and a reliable monitoring system to chart the improvements.

A NAMA Support Project (NSP) will contribute to the implementation of the NAMA. "South Africa has shown a strong willingness to make advancements in the area of energy efficiency. The ministries have made this project their own from the very beginning; we only play a supporting role", says Gregor Schmorl from the German Gesellschaft für Internationale Zusammenarbeit (GIZ), which manages the NSP for the NAMA Facility in South Africa. "They have recognised that energy efficiency is a sleeping giant when it comes to lowering greenhouse gas emissions."

Over the next few years, the NSP will support several municipalities, provinces and the Department of Public Works in the development and realisation of energy saving projects in their portfolio of buildings and infrastructure through technical advisory services and an innovative financing model. "The core financial component of the NSP is a partial credit guarantee, which covers defaults and delays in loan repayments", says Schmorl.

This mechanism addresses a major obstacle to public energy efficiency projects: banks are often reluctant to lend money, because they assess the risk as being too high. Or they only lend at high interest rates. "Many municipalities are not in a strong financial position and credit defaults or late payments are a genuine risk."

To foster a low-risk environment for lender organisations, the partial credit guarantee provided by the NSP covers 50 per cent of the loan value. This puts energy service companies in a better position to receive affordable credit to carry out energy efficiency projects for public sector customers. The loans will be provided by the public Industrial Development Corporation (IDC). After a project has been successfully realised, the Department of Public Works, municipality or province pays the energy service company using the money saved by the energy-efficiency measure.

For South African municipalities, the model offered by the NSP is particularly attractive, because it permits them to combine the new IDC credit with the existing EEDSM subsidies. The South African government has agreed to pay around 4.5 mil-

**A support office for energy efficiency projects will provide consulting on best practices to public entities, which often lack time and expertise.**

lion euros in EEDSM subsidies for efficiency measures each year in combination with the NAMA.

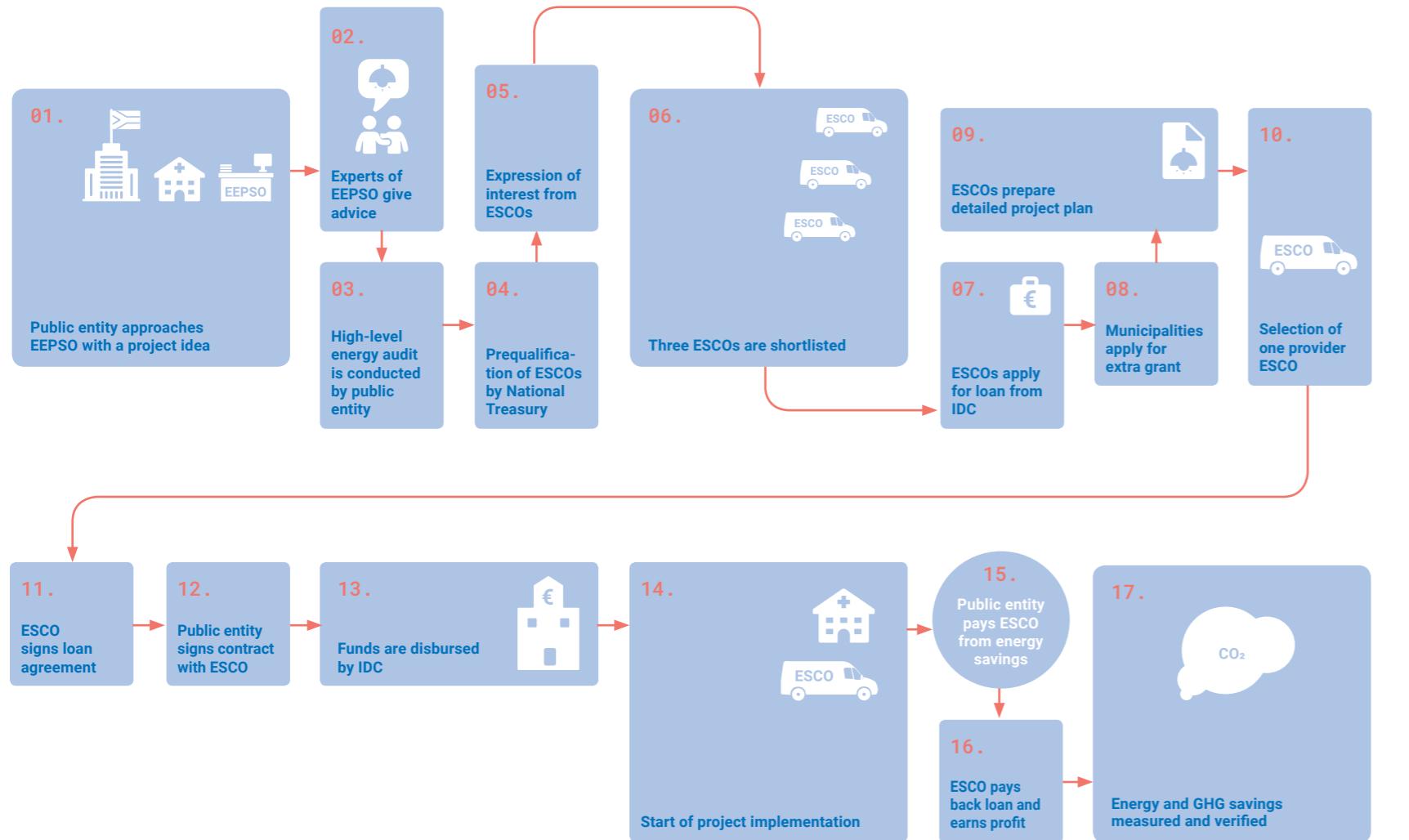
As a central point of contact for all technical queries, the NSP specialists are currently setting up a support office for energy efficiency projects in the Department of Energy, where experts provide consulting to public entities on best practices in this area. There, they will help project owners select suitable technologies, calculate savings potentials and prepare requests for proposals. "Public administrations often lack the resources, both in terms of time and expertise, to manage these types of projects without outside assistance, even though such measures are frequently mandatory", says Gregor Schmorl. "We want to close that gap."

A panel of pre-qualified ESCOs, established by the National Treasury, will be permitted to bid on the projects, which are developed and announced by the Energy Efficiency Project Support Office together with the various public entities. "For on-site implementation and subsequent maintenance, small and medium-sized companies will be contracted whenever possible", explains Gregor Schmorl. The objective is to grow the ESCO sector, particularly for small and emerging companies, and create around 2,000 jobs at the local level, with preferential hiring of black and female employees.

The project initiators hope that the idea will also gain traction in the private banking sector. "As soon as the first energy efficiency projects can serve as examples and the tendering process is standardised, the private banks will start to trust in the model and offer loans at good rates", maintains Gregor Schmorl, who hopes to get at least two commercial banks on board by the end of the project.

Upon completion of the NSP at the end of 2022, the South African government will take over day-to-day operations of the Energy Efficiency Project Support Office. The credit guarantee fund will be instrumental in proving the concept and reducing perceived risk. It will also be restocked at that time to create wider trust in low-energy projects – and ensure that investments in that sector become all but guaranteed in the future. —

## 17 steps towards a measurable mitigation effect: How the NSP will help develop and finance public energy efficiency projects in South Africa.



- 01. Either the South African Department of Public Works or a province or municipality approaches the newly created Energy Efficiency Project Support Office (EEPSO) of the NSP with a potential energy efficiency project for a public building (school, hospital, prison etc.) or public infrastructure (streetlights, water treatment facilities etc.).
- 02. Technical experts of the EEPSO, financed by the NSP, provide advice on the development of a request for proposal for the specific energy efficiency project that fits the needs of the public entity.
- 03. The public entity carries out a high-level energy audit for the purposes of developing tender specifications. This involves quantifying the potential energy savings, and identifying the potential technologies like lighting, HVAC systems, and water heaters or pumps. This audit is supported by the EEPSO to ensure a standardised process. The public entity assumes the costs of the pre-feasibility study with additional government support.
- 04. For quality control, the National Treasury pre-qualifies a panel of Energy Service Companies (ESCOs) that are permitted to bid on tenders elaborated by public entities with EEPSO support.
- 05. ESCOs on the panel may submit an expression of interest for a specific project.
- 06. Expressions of interest are evaluated by the public entity. Three companies are shortlisted for the tender process.
- 07. ESCOs apply for loans from the Industrial Development Corporation (IDC), a national development financing institution, and receive a loan offer pending a credit check. In the later stages of the NSP, ESCOs can also apply for a loan from a commercial bank.
- 08. Municipalities are eligible to apply for an additional Energy Efficiency Demand Side Management (EEDSM) grant from the Department of Energy for project implementation, which is paid for by the National Treasury. The EEDSM reduces the loan and equity guarantees required of the IDC or commercial bank.
- 09. Shortlisted ESCOs prepare a detailed project plan with a concrete proposal for investments in energy-efficient technologies. In the process, they conduct an on-site visit to monitor and verify the energy consumption baseline, with EEPSO support, and calculate the concrete energy savings potential.
- 10. The ESCO offering the highest energy savings and the best technology and price is selected by the public entity as the provider for the project.
- 11. The IDC approves the loan. The IDC also grants a partial credit guarantee financed by the NSP for 50% of



As China's population grows, so does the need for **sustainable waste management**. The Integrated Waste Management NAMA Support Project implements best practices and low-carbon technologies in five demonstration cities. A portrait of change in Suzhou in Eastern China.



# Shaping the Future of Waste

It is 1 p.m. at Taste of Suzhou, a restaurant in Suzhou, a city in Southeast China with some ten million inhabitants. The last stragglers from the lunch crowd are sitting at round tables in the wood-panelled dining room and eating noodle soup, a local specialty. Each table has a turntable with bowls of chopped meat, fish, tofu and vegetables, which the guests dish into their bowls with chopsticks. Waitresses, dressed in red silk robes embroidered with black and gold flowers, arrive at the tables with an endless procession of toppings and ingredients – and clear away half-empty bowls and plates.

"People here often order large meals as a sign of generosity", says restaurant manager Liu Jun. "We try to encourage our guests to take home the leftovers." Small green signs on the tables also remind diners to cut down on food waste. They are the result of a private campaign launched in 2013 and subsequently promoted by the Chinese government. "The situation has already improved, but we still see a lot of waste at business meals and other events", says Liu Jin.

Taste of Suzhou and the nearby buffet restaurant operated by the same owner throw away about a tonne of food waste and kitchen scraps each day. A truck stops by twice a day to pick up the unwanted leftovers and bring them to a treatment facility at the edge of the city, where they are used to produce biogas and other resources.

In 2009, the burgeoning city of Suzhou was one of the first cities in China to initiate the collection of biodegradable food waste from restaurants for separate processing instead of continuing to burn it with residual waste, deposit it in landfills or allow it to be fed to pigs through informal channels. Currently, around 100 more Chinese cities have introduced the separate collection of food waste from restaurants.

For China, the concept of waste sorting is still relatively new. In 2006, a number of cities launched pilot projects that targeted household waste. Now, 46 cities have introduced the idea and that number has grown steadily since President Xi Jinping declared waste sorting a national goal and priority in December 2016. By the year 2020, the practice should be a reality in around 200 Chinese cities. It is a necessary step, because the volume of trash produced in China is growing at a colossal rate. Whereas in 2016, the country collected and treated 270 million tonnes of municipal solid waste, that number is expected to grow to 428 million tonnes by 2030. Around 41 per cent of that refuse is currently offloaded at waste incineration plants without any prior sorting, and 56 per cent is deposited in landfills.

"We want to combine waste sorting and climate-friendly waste treatment", says Liu Jinghao, an expert for urban municipal solid waste at the China Association of Urban Environmental Sanitation (CAUES). The association is an implementation partner for the China Integrated Waste Management NAMA, which was launched in 2017 with the goal of delivering pioneering impulses to the Chinese waste sector to promote low-emission development. In five pilot cities, an accompanying NAMA Support Project will help to establish an integrated waste management approach for the reduction, reuse, recycling and energetic recovery of waste products.

China, a country that has ramped up its climate policy targets and increasingly emphasized its own leadership role in this field, is keen to get the waste sector on board with a low-emission development approach. "We are currently in the midst of a change and the NSP is at the heart of that transformation", says Liu Jinghao. "With the state-of-the-art technologies and best-practice ideas that we will be introducing, we are looking at an enormous potential for the reduction of greenhouse gas emissions." In the five NSP pilot cities of Xi'an, Lanzhou, Tai'an, Bengbu, and Suzhou, which are home to a total of 26 million inhabitants, these efforts could result in an annual savings of up to 440,000 tonnes in greenhouse gas (GHG) emissions.

"We will start by analysing the status quo in the pilot cities and derive a baseline for CO<sub>2</sub> emissions in the waste sector in order to recommend relevant technologies that can be used to achieve a verifiable reduction in emissions", says Sandra Retzer, Director of Urbanisation, Transportation, Energy at the Deutsche

**"With the state-of-the-art technologies and best-practice ideas that we will be introducing, we are looking at an enormous potential for the reduction of greenhouse gas emissions."**



Liu Jinghao,  
China Association of Urban Environmental Sanitation (CAUES)

Gesellschaft für Internationale Zusammenarbeit (GIZ) in Beijing, the organisation in charge of conducting the NSP activities on the ground for the NAMA Facility. Waste management experts will provide training for municipal officials and consulting for private enterprises seeking to invest in low-carbon technologies. The project will also endeavour to raise awareness of responsible waste habits through online campaigns and activities in school classes. "Many people in China are simply not aware of the relationship between waste production and greenhouse gas emissions, and we want to achieve a transformation in awareness and action on all levels."

In the treatment plant for restaurant waste on the outskirts of Suzhou, Li Rongwei points to a digital display panel that maps the process occurring in his facility: sorting and shredding stations, the separation of solids and liquids, fermentation. Behind a glass window, visitors can see the shiny steel vats that contain organic materials. Li Rongwei works for Clean Environmental Technology Co., the company that runs the plant for the municipality. "The solid kitchen waste becomes larvae food for the shrimp industry and the wastewater is used to generate 20,000 cubic metres of biogas on a daily basis", Li Rongwei explains. This treatment approach can only be applied to about a third of the restaurant waste from Suzhou, or about 350 tonnes →



(1) Cooks preparing meals at Taste of Suzhou. Every day, the popular restaurant and neighbouring buffet receive up to 900 guests – and produce one tonne of organic waste. (2) Green signs on the tables remind guests to avoid waste. (3) A worker collecting kitchen waste for transport to a biogas plant. (4) Plant manager Li Rongwei explains the process of converting organic waste into biogas. (5) Zhang Chengqian manages one of the 53 neighbourhood recycling stations in the central district of Gusu in Suzhou. (6) Paper is collected at a municipal recycling plant for processing. (7) A worker at Suzhou's incineration plant steers a forklift to move household waste into the burning chamber. (8) Supervisors monitor the incineration.



→ daily; the rest is incinerated. But four additional plants are already under construction to handle all incoming waste from the food industry and the NSP will support that process.

"We will inspect the equipment on the new and existing systems and make suggestions for more efficient settings and operation", says Mingyu Qian, director of the NSP at GIZ. Larvae food production, for example, might be replaced by an efficient system for biogas production in the future.

In the historic centre of Suzhou, Zhang Chengqian is stacking piles of newspaper in an open garage packed with metal parts, cardboard and bags of plastic bottles. A fan is running, his arms are bare and his pant legs rolled up. On the wall, a message written in green Chinese lettering reads "Conserve resources". Next to it hangs a painting of a tiger as it leaps from the jungle. This garage is one of 53 recycling transfer stations operated by the municipal waste collection company in the central district of Gusu. "People from the neighbourhood bring paper, metal, plastic, glass and electric appliances in exchange for money", Zhang Chengqian says. "If they call, I can usually do a same-day pick-up." A green three-wheel flatbed truck is parked in front of the garage door that displays the Gusu district recycling hotline: 962030. An old man pushes a hand cart with a metal stove up to the garage while another carries a stack of boxes. Zhang Chengqian weighs the boxes and hands the man 15 yuan, or almost two euros, for nine kilograms of cardboard.

The transfer station is part of the municipality's efforts to gain greater control over the recycling sector in Suzhou. Until recently, recycling was mainly the province of informal trash collectors who travelled door to door on cargo bikes peddling their wares to private buyers. Zhang Chengqian, who also once worked as a trash collector, now delivers his recycling materials to one of four large municipal recycling plants for central processing. Six more of these plants are under construction, with plans to extend the network of recycling transfer stations over the entire municipal area by the end of 2019.

Despite many promising approaches, Suzhou still faces a long road to integrated waste management. The goal of the NSP



team is to accelerate that journey. Officials will receive support in expanding the recycling system into a full-coverage network and continuing to promote the separation of household waste and food waste. "In Suzhou we are working to find good ways to reuse different types of waste and make treatment facilities more efficient and connected." For the city's old landfill, which will soon close, this could mean that climate-relevant methane, produced by the decomposition of organic materials, could be fully recovered and reused for electricity production. "Right now, only about 30,000 of the 100,000 cubic metres of the daily methane emissions can be recovered for electricity production. The rest escapes into the atmosphere or is burnt", says Mingyu Qian. Furthermore, for the treatment plants, there is still great potential to be found in the reuse of waste heat by neighbouring companies.

When it comes to waste management, other cities in China, including most demonstration cities in the NAMA project, cannot hold a candle to Suzhou. Many locations are still working to close illegal landfills and to construct the first incineration plants. The NSP team hopes to create economically attractive models in the demonstration cities that will subsequently be adopted by a large number of municipalities and implemented with support from private investors. If all urban centres in China were to introduce an integrated waste management programme, annual savings in GHG emissions in the waste sector could add up to 118.7 million tonnes of CO<sub>2</sub>e compared to the baseline "business as usual" scenario.

In the eighth storey of a residential high-rise in the Gusu district, in the northeast of Suzhou's historic centre, Zhang Yang is helping her grandson Zhao Jinyang with his homework. This afternoon he is learning how to write Chinese characters. Neon tetras and guppies are swimming in an illuminated aquarium. In the bay kitchen with a panoramic view from the high-rise, the trash bin contains two sections: "regular trash on the left, food scraps on the right", explains Zhang Yang. "We've been separating our trash since December 2017 and we even get bonus points for it." The housing complex, which consists of 1,000 households, has a central collection point for trash and recycling materials.→

If all urban centres in China were to introduce integrated waste management, annual savings in GHG emissions could add up to 118.7 million tonnes of CO<sub>2</sub>e compared to "business as usual".



(5)



(6)



(7)



(8)



(9) Zhang Yang has separated her household waste since 2017. She receives bonus points for proper sorting, which she can see on a smartphone app. For her grandson Zhao Jinyang, sorting waste is simply a fact of life. (10) QR codes on the bags identify the origin of waste. (11) A worker inspects waste from 1,000 households in the housing complex before assigning bonus points and sending it off for further processing.

**"We want to support the move from local solutions to large-scale and highly efficient facilities where biodegradable household waste can be converted into biogas to eliminate the need for fossil fuels and cut greenhouse gas emissions."**

Mingyu Qian, Director of the NSP at Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)



→ A worker weighs and checks waste from the households, which is identified with a QR code. He sorts the bags if necessary and assigns points for sorting. Zhang Yang opens an app on her mobile phone. "I can always check my points here. Yesterday I had 27", she says. The points can be traded for small items. "We already used them to get soap or toothpaste, and even a house plant that my grandson took to his kindergarten classroom."

For Gusu district, the neighbourhood trash station is a flagship project. Organic waste is converted directly into compost; plastics, paper and other recyclables are collected and brought to the municipal recycling plants. But in terms of low-emission development, the station is merely an interim solution. "We want to support the move from these types of local solutions to large-scale and highly efficient facilities where biodegradable household waste can be converted into biogas to eliminate the need for fossil fuels and cut greenhouse gas emissions", says Mingyu Qian. Right now, only five per cent of all households separate food waste, but the city wants to increase that number to 30 per cent by 2020. Efficient technologies will be essential to exploit the full potential to reduce greenhouse gas emissions and convert waste to energy.

Zhang Yang is certain that someday every Chinese household will sort and separate trash. "It took me just a few months to adjust and my grandson is growing up with this new system; for him, sorting and recycling waste is a fact of life", she says. "If we want something to change, we need to do our part to make that new future a reality." ——



Smog and congestion are par for the course in Lima. Now, with the support of an NSP, the city is working to promote a more **sustainable and integrated transit system** and effectively reduce greenhouse gas emissions.

hen María Carlos Paico leaves her house in the morning, her journey is just getting started. From her home in Ventanilla in northern Callao to her workplace in Lima's banking district, she travels nearly 35 kilometres – a trip that usually takes two-and-a-half hours. "Some days when the traffic is very heavy, it takes even longer", says the 52-year-old, who is employed as a cleaning worker with a five-day work week. When she returns in the evening, exhausted, she has to sit or, more often than not, stand for just as long in the bus, as seats can be hard to find. "It's incredibly stressful and it happens every day."

The Peruvian capital has experienced rapid growth. Back in the 1990s, the city had about six million inhabitants. Today, that number has risen to 10 million. More and more cars crowd the streets and the transportation infrastructure is still lagging behind this growth. Congestion is commonplace and traffic in the city creeps along at an average speed of 14 kilometres per hour.

**"Our goal is to expand public transit as well as the use of non-motorised vehicles. We want to link the different means of transport and create an integrated transit system."**



Luis Vilela,  
Advisor, Peruvian Ministry of Transport and Communications

The need for a modern public transit system is clear, but infrastructure remains spotty. In 2012 the city installed its first subway line and in 2010 it inaugurated the "Metropolitano", a 36-kilometre bus rapid transit (BRT) system with 21 feeder lines that is used by more than half a million people each day. But the subway and BRT network operate in parallel universes, with little coordination between the two systems. The respective stations are often far apart and there is no standard ticketing for both forms of transport.

Now, this situation is set to change. The Peruvian Ministry of Transport and Communications is laying the groundwork for an improved transportation situation with less greenhouse gas emissions. The metropolitan region of Lima, which includes the port city of Callao, is one of its main targets. So, in 2015, the government established the NAMA TransPerú. "Our goal is to expand public transit as well as the use of non-motorised vehicles. We also want to link the different means of transport

and create an integrated transit system", says Luís Vilela, legal advisor for land-based transport at the Peruvian Ministry of Transport and Communications. Passengers will soon be able to use a single ticket for the bus and subway; better transfers will be set up between the stations, and new feeder lines for the Metropolitano will be created. Moreover, a central authority will coordinate the future development of public transport in Lima and Callao. The NAMA will also implement measures to remove old buses and private cars from the streets and introduce 60 kilometres of bicycle lanes in central city areas.

"The Peruvian transport sector has been left to market forces since the nineties and now the government is taking back the reins", says Georg Schmid, who will provide support for the NAMA TransPerú as part of the Peru Sustainable Urban Transport NAMA Support Project. Members of the NSP team will provide technical advice to the Ministry of Transport and Communications in order to facilitate an effective implementation of the NAMA TransPerú, and those efforts will be expanded in the coming years. "Our international consultants offer intensive capacity building on topics such as integrated transit systems, non-motorised modes of traffic and innovative technologies for public transport", says Schmid. The NSP team will conduct studies and analyses to provide the Ministry with crucial information for the introduction of norms and laws that will set off the transformation of the transportation sector in Peru. This NSP will provide direct benefits to approximately 1.5 million persons in Lima and Callao through an improved public transport system, and mitigate up to 4.3 million tonnes CO<sub>2</sub>e until 2025.

"We finally need some order in our local traffic situation", says Vilela. "Right now, there are too many private bus routes competing with the Metropolitano and its feeder lines." The reason: in the nineties under President Alberto Fujimori, more than 600 private concessions were granted for bus routes. This uncontrolled proliferation has resulted in serious congestion, environmental pollution and impaired road safety. Every day, around 15,000 private buses and mini-buses, many of them running on outdated engines, engage in a fierce battle for passengers. In addition to those vehicles, the city's streets are clogged with 130,000 official taxis, more than 100,000 three-wheeled mototaxis and an unknown number of illegal buses. Lima has become the city with the worst air quality in all of Latin America.

Maria Carlos Paico's daily commute is not only long and exhausting, but also incredibly complex: first, she takes a moto-taxi to the next main road, where she can then catch a private micro bus and finally transfer to a public bus for the last hour of her trip. The fare for each leg of her journey must be paid separately. "The micro drivers are always stopping so they can make more money. But for me that means an even longer commute", says María Carlos Paico. "And many of the micros are old. Sometimes you can even smell the exhaust when you're sitting inside the bus." Residents of Lima who live near the express bus route are luckier. Travelling a similar distance with the Metropolitano saves them about half the time – and half the cost. →

(1) Every morning, María Carlos Paico travels for more than two hours to her place of employment, using three different modes of transportation which she has to pay separately: She first takes a mototaxi from near her home to the next main road. (2) Then she catches one of the old private micro buses that compete for passengers on the congested streets of Lima. (3) For the last hour of her trip, she boards a crowded public bus.

## Implementing the NAMA TransPerú is a race against time. According to surveys, the residents of Lima and Callao view public transit as the second most negative factor affecting quality of life after criminality.

→ Initial successes of the NAMA TransPerú are already visible. Peru has introduced the Euro 4 emissions standard and as of April 2018, vehicles must comply in order to be registered. At the same time, many public buses as well as taxis have switched over to natural gas drives, a change which is not climate-friendly but does result in less air pollution. "Those are important steps that we will be able to build on", says Georg Schmid. "Now we are gearing up to introduce Euro 6 in the near future."

Since its start in 2015, the NSP has been preparing to develop a solid foundation in the area of measurement, reporting and verification (MRV), which is important for documenting reductions in greenhouse gas emissions. "This will allow us to directly assess the climate-related effects of various measures and policies in the future," explains Schmid.

Nevertheless, implementing the NAMA TransPerú is ultimately a race against time. According to surveys, the residents of Lima and Callao view public transit as the second most negative factor affecting quality of life, coming in after criminality and before environmental pollution. Those who can afford it purchase a car, and thanks to sustained economic growth, more people are joining the ranks of car owners. In Lima and Callao, 200,000 new vehicle registrations are filed each year. "The goal of the NSP must be to improve local transit to the point that less people want to drive cars", says Schmid.

Maria Carlos Paico cannot afford a car. She hopes that one of the public feeder buses will soon make a stop near her neighbourhood in Ventanilla. "Then I would be able to commute downtown in one go with just one ticket", she says. "And I would finally have more free time." —



(1)



(2)



(3)





# Our Projects for Climate Action

The NAMA Facility funds **NAMA Support Projects** across a diverse array of sectors in developing countries and emerging economies worldwide.



**01**  
Brazil  
Resource Efficiency Programme for Brazil's Beef Supply Chain

The growing beef industry is the single largest contributor to Brazil's greenhouse gas (GHG) emissions. In 2014, it was directly responsible for up to 17 per cent of GHG emissions, and indirectly for another 24 per cent resulting from deforestation. This NSP aims to enhance the beef sector's efficiency through proven best-practice interventions across the entire supply chain. Enhanced pasture and herd management strategies, among other resource-efficient solutions, will be implemented and their commercial benefits demonstrated. Industry partners will receive technical assistance during the implementation phase and financial support packages for investments in best-practice technologies will be made available.

Status: Detailed Preparation Phase  
Selection round: 4th Call  
Direct mitigation potential: 5 million tonnes CO<sub>2</sub>e



**02**  
Chile  
Self-Supply Renewable Energy

Chile is continuously expanding its use of renewables in electricity production. This NSP advises small and medium-sized businesses on investing in renewables for self-supply – from photovoltaic systems to biogas plants. It aims to remove barriers to the use of decentralised renewable energy systems, for example the lack of incentives or experience among investors and financial institutions. This project will provide co-financing for activities such as feasibility studies, investment grants for businesses to finance renewable energy projects, and training and advisory services for the financial sector.

Status: Implementation  
Selection round: 1st Call  
Direct mitigation potential: 1.5 million tonnes CO<sub>2</sub>e



**03**  
China  
Integrated Waste Management NAMA

China has recently stepped up efforts to reduce GHG emissions in the waste sector and to increase the percentage of urban waste that is reused in energy production. This NSP aims to demonstrate how integrated waste management and waste-to-energy systems can be operated as profitable business cases through new income streams from the energy markets. Best available practices will be implemented in five pilot municipalities in China and policy advice will be provided to the Chinese government to reduce market barriers. Co-benefits will include a reduction in pollution and the integration and training of informal "waste pickers" as qualified workers.

Status: Implementation  
Selection round: 3rd Call  
Direct mitigation potential: 4.8 million tonnes CO<sub>2</sub>e

\*See our story on pages 20–25



## Transit-Oriented Development NAMA

The transport sector is the fastest-growing sector in terms of greenhouse gas emissions in Colombia. Urban areas increasingly suffer from intense traffic congestion and poor air quality. This NSP aims to transform urban planning policy in Colombia by demonstrating how transit-oriented urban development can reduce the current rise in car traffic and urban sprawl, improve air quality, significantly reduce greenhouse gas emissions and enhance overall quality of life. The NSP will create an attractive policy framework that will serve as a role model for municipalities throughout the country, coordinate support, develop the expertise and resources of private and public institutions, and leverage private and public financing.

Status: Implementation  
Selection round: 1st Call  
Direct mitigation potential: 3.6 million tonnes CO<sub>2</sub>e



## Investing in Grid-Connected Solar PV

The Gambia will bring electricity to rural areas of the country and expand its share of renewable energy sources. This NSP will support funding for grid-connected independent power producers (IPPs), which will supply electricity based on solar PV and increase the share of renewable energy production in regional grids to 43%. The project will also provide technical assistance to develop both demand assessments and tendering schemes for connection sites. Its overall aim is to add up to 12 megawatts of solar PV to the country's energy mix by 2023.

Status: Detailed Preparation Phase  
Selection round: 4th Call  
Direct mitigation potential: 0.13 million tonnes CO<sub>2</sub>e



## NAMA for the Domestic Refrigeration Sector

Emissions from the Colombian refrigeration sector are projected to double by 2030. This NSP aims to reduce GHG emissions by up to 50 per cent compared to the business-as-usual scenario. This will be facilitated by banning the use of harmful hydrofluorocarbons (HFCs) as refrigerants in domestic refrigerators, increasing refrigerants' efficiency and supporting the conversion of production lines to enable the manufacture of more efficient devices that rely on these natural refrigerants. In the domestic sector, efficiency standards will be enhanced and consumers will be encouraged to trade in old appliances for more efficient ones through incentives from an innovative replacement programme.

Status: Implementation Funding Approved  
Selection round: 3rd Call  
Direct mitigation potential: 16.8 million tonnes CO<sub>2</sub>e



## Efficient Use of Fuel and Alternative Fuels in Indigenous and Rural Communities

Around two million households in Guatemala rely on firewood as their main energy source, mainly in rural and indigenous communities. Due to population growth and a high poverty rate, every year around 65,000 additional families start using firewood to cook their meals. This NSP will support the Guatemalan government in its commitment to introduce more sustainable and efficient technologies in this sector. It aims to stimulate the supply and demand for energy-efficient cookstoves through technical and financing mechanisms. It also seeks to directly benefit over one million people over the NSP's lifetime. Possible co-benefits include less forest degradation and improved indoor air quality for better health.

Status: Appraisal  
Selection round: 3rd Call  
Direct mitigation potential: 9.02 million tonnes CO<sub>2</sub>e



## Low-Carbon Coffee NAMA

Coffee production in Costa Rica is responsible for nine per cent of Costa Rica's GHG emissions. This NSP supports a climate-friendly end-to-end transformation of the value chain in the sector. More than 6,000 farmers and 50 coffee mills will have received technical advice to support the introduction of more sustainable farming methods and low-carbon technologies, such as GHG-efficient waste treatment systems, fertilisers and milling technologies. Grants and soft loans are provided to incentivise private sector investments.

Status: Implementation  
Selection round: 1st Call  
Direct mitigation potential: 0.94 million tonnes CO<sub>2</sub>e



## Sustainable Urban Transport Program Indonesia

Transportation is the third largest source of energy-related GHG emissions in Indonesia, making up 23 per cent of national emissions. This NSP aims to transform urban transport in Indonesia into a sustainable low-carbon sector. Measures will include the replacement of individual passenger transport with non-motorised and shared transport solutions, support for more energy-efficient public transport, co-funding of infrastructure improvements such as 'park and ride' facilities and the building of sidewalks and bicycle networks in five pilot cities. Technical assistance for effective project development and implementation will also be provided to local governments.

Status: Implementation  
Selection round: 1st Call  
Direct mitigation potential: 13.9 million tonnes CO<sub>2</sub>e



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## Mass Rapid Transport System for Nairobi

Transportation in the Kenyan capital of Nairobi is mainly dominated by individual travel. This NSP aims to achieve a significant shift toward commuter rail transport and create a new bus system, which will be Kenya's first mass rapid transit system. The project will finance critical components of a rapid bus line with the goal of initiating a transformational change towards a sustainable urban mobility system. It will also help establish poverty-oriented tariff schemes within a private business model. To create political support and public acceptance, the project aims to ensure the participation of key stakeholders such as transit system employees as well as private shared taxis and taxi businesses as investors.

Status: Appraisal  
Selection round: 3rd Call  
Direct mitigation potential: 0.36 million tonnes CO<sub>2</sub>e



## Energy Efficiency in Small and Medium Enterprises as a Contribution to a Low-Carbon Economy

Small and medium enterprises (SME) are responsible for around 12 per cent of all GHG emissions in Mexico. This NSP seeks to raise private sector awareness of both the mitigation potential and other benefits of greater energy efficiency, such as lower energy costs and increased competitiveness. It creates a guarantee fund, which provides an attractive environment for commercial banks to offer financial services to energy efficiency projects in SMEs. Furthermore, financial institutions, especially commercial banks, will be offered training to promote a better understanding of clean technologies. These efforts will contribute to the development of a dynamic and robust market for energy efficiency in Mexican SMEs.

Status: Detailed Preparation Phase  
Selection round: 4th Call  
Direct mitigation potential: 10.6 million tonnes CO<sub>2</sub>e



## Implementation of the New Housing NAMA

Based on current demographic trends and population growth, approximately 500,000 new dwellings will be built in Mexico each year over the next decade, primarily for low-income residents. This NSP supports the Mexican government's ambitious new climate and urban development agenda, which focuses on the re-densification of inner-city districts and more compact, vertical sustainable building designs. The agenda also commits to an overall reduction in GHG emissions by 50 per cent until 2050. This project promotes cost-effective energy-efficient building concepts and technologies as well as the use of renewable energies across the residential housing sector, with a particular focus on low-income housing.

Status: Implementation  
Selection round: 1st Call  
Direct mitigation potential: 2.7 million tonnes CO<sub>2</sub>e



## TRANSPeru – Sustainable Urban Transport NAMA

Peru is laying the groundwork for sustainable urban transport to combat heavy passenger car use, road congestion and poor air quality. This NSP aims to support an enhanced policy framework that includes improved fuel economy standards and integrated mass public transport, along with additional infrastructure such as new metro and rapid bus lines and cycle lanes for non-motorised travel. The project supports the creation of a Public Transport Authority for Lima and Callao, which will act as a central planning office for urban transport development. GHG emissions and local pollutants from motor vehicles will be monitored and mitigated by the NSP.

Status: Implementation Funding Approved  
Selection round: 2nd Call  
Direct mitigation potential: 5.6 million tonnes CO<sub>2</sub>e

\*See our story on pages 26–29



## NAMA for Sugar Mills

Currently only a small number of Mexican sugar mills produce power for the grid, despite ample quantities of bagasse (plant residue from sugar cane), which can be used as a renewable power generation source. Long distances to connection points on the grid often makes investments unviable. This NSP will help establish a non-profit grid operating facility as a foundation for loans to finance grid connections for up to 43 sugar mills, facilitating private investments of approximately USD 740 million. These investments are made financially viable by combining non-profit grid operation, extended loan maturity and the grouping of adjacent mills on shared connections to lower costs.

Status: Detailed Preparation Phase  
Selection round: 4th Call  
Direct mitigation potential: 3.6 million tonnes CO<sub>2</sub>e



## Enabling Distributed Solar Power in the Philippines

The Philippine energy sector relies heavily on fossil fuels and is the largest contributor to national GHG emissions in the country. This NSP aims to accelerate the penetration of new distributed solar power in the domestic sector by reducing technology risks, lowering transaction costs and creating financing options. It plans to improve the permitting process, accredit installers and support the development of a pipeline of projects. A technology certification programme and a financing support fund will also be created. Financial sector capacities will be developed to better evaluate distributed photovoltaic projects and offer a variety of financing options for businesses and other investors.

Status: Detailed Preparation Phase  
Selection round: 4th Call  
Direct mitigation potential: 1.8 million tonnes CO<sub>2</sub>e

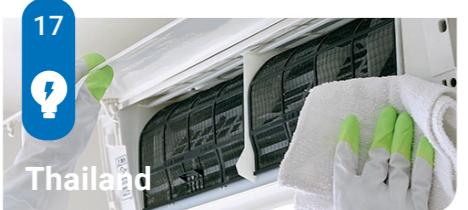


## Energy Efficiency in Public Buildings and Infrastructure Program

By 2030, South Africa intends to cut the specific energy consumption of public buildings in half compared to 2015. So far, however, provinces and municipalities have only engaged in this objective to a very limited extent. This NSP will help to identify, promote, finance and implement energy efficiency measures for public buildings and public infrastructure in South Africa, for example efficient LED lighting, central cooling or water heating. The overall goal of the NSP is to ensure that all spheres of government, from the national to the municipal level, contribute to greenhouse gas mitigation and help achieve energy efficiency and energy security targets.

**Status:** Implementation  
**Selection round:** 3rd Call  
**Direct mitigation potential:** 1.3 million tonnes CO<sub>2</sub>e

\*See our story on pages 10–19



## Refrigeration and Air Conditioning NAMA

Refrigeration and air conditioning account for approximately 20 per cent of total greenhouse gas emissions in Thailand. Emissions from this sector are forecast to triple by 2030. This NSP aims to introduce natural refrigerants for ACs and refrigerators in the domestic and commercial sectors and enable manufacturers to produce more technically advanced, sustainable and competitive products, both for the Thai market and for export. It will promote tighter energy efficiency standards and raise awareness of the need for behavioural change and the associated benefits, such as lower energy bills.

**Status:** Implementation  
**Selection round:** 2nd Call  
**Direct mitigation potential:** 19.4 million tonnes CO<sub>2</sub>e



## Thai Rice NAMA

The Thai rice sector is responsible for nearly 55 per cent of Thailand's agricultural GHG emissions, emitting mainly methane. This NSP will benefit up to 100,000 rice farmers in Thailand by promoting a shift from conventional to low-emission farming. It will support farmers with technical training and financial instruments to facilitate investments in advanced and more sustainable farming practices, such as laser land levelling, alternate wetting and drying and improved fertiliser use. The NSP will work with commercial providers of low-emission agricultural services to develop their capacities and help increase access to loans.

**Status:** Implementation  
**Selection round:** 4th Call  
**Direct mitigation potential:** 5.7 million tonnes CO<sub>2</sub>e

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Facts & Figures

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## Scaling-Up Renewable Energy and Energy Efficiency in the Building Sector

Energy consumption in the building sector represents 22 per cent of total energy consumption in Tunisia and is expected to increase to 35 per cent by 2030. This NSP supports national programmes promoting the use of solar water heaters and photovoltaic systems in residential buildings that have faced previous financial, technical and communication-related challenges. The NSP will address barriers such as insufficient access to capital, especially for photovoltaic investments, and the lack of technical and institutional capacities. It will also raise awareness of the benefits of renewable energy systems.

**Status:** Detailed Preparation Phase  
**Selection round:** 4th Call  
**Direct mitigation potential:** 3.2 million tonnes CO<sub>2</sub>e



## Revolving Loan Fund for the Uptake of Improved Institutional Cookstoves in Schools

Uganda possesses enormous potential for a reduction in GHG emissions through the replacement of inefficient cookstoves in public schools. This NSP aims to introduce improved institutional cookstoves in 17,110 Ugandan schools, which represent 75 per cent of all schools in the country. To address the main barrier to investments in energy efficiency technologies a revolving loan fund will be established to provide affordable financing to schools and local stove manufacturers to buy and manufacture improved institutional cookstoves, respectively. In addition, the NSP intends to both introduce a carbon off-taker programme as an alternative delivery channel for schools and increase private sector engagement.

**Status:** Detailed Preparation Phase  
**Selection round:** 4th Call  
**Direct mitigation potential:** 14.7 million tonnes CO<sub>2</sub>e

**Legend**

NAMA Facility NSPs each have a status that indicates the project's individual level of progress. Below is a detailed look at the individual NSP statuses:

**Detailed Preparation Phase:**  
Outlines which are submitted during a Call for project applications and are subsequently selected by Donors proceed to enter the Detailed Preparation Phase as NSPs. Here they receive funding and support from the NAMA Facility expert pool to elaborate the submitted Outlines into more detailed and comprehensive NSP Proposals over a period of five to 15 months.

**Appraisal:**  
Appraisal: A term formerly used in Calls 1 through 3, NSPs in this stage are undergoing a process similar to that of the Detailed Preparation Phase.

**Implementation Funding Approved:**  
Donors have approved funding for the Implementation stage, however progression into Implementation is on hold due to an outstanding consideration.

**Implementation:**  
Donors have approved the Proposal and the NSP is now a fully fledged NSP.

**The NAMA Facility's Donors make all final decisions regarding the progression of NSPs through the different project stages. There is no guarantee that an NSP in the Detailed Preparation Phase, Appraisal or Implementation Funding Approved stages will proceed to become an NSP in Implementation.**

Direct mitigation potential figures include all emission reductions directly attributable to the NSP over the lifetime of its projected impact.

Estimated number of direct beneficiaries of NAMA Support Projects by sector until 2024 (projects in implementation):



6,000



263,300



350



25,000



3,000,000

The NAMA Facility is a strong proponent of fearless learning. Our goal is to foster a rigorous learning culture in which our experts derive lessons learnt from all outcomes – both positive and negative – to improve processes and guide our efforts in the future. By extracting this knowledge, we strive to **act as a learning hub** that shares and exchanges these lessons across the wider climate finance community, and to support our main target group: countries that seek to be at the forefront of climate mitigation action. Some key insights gained over the lifetime of the NAMA Facility are outlined here.

#### Capturing and Sharing Added Value through Feedback Calls

In the past, Outlines submitted to the NAMA Facility's NSP selection process that did not receive Donor approval were simply notified of the decision. However, applicants had spent considerable time and effort on the creation and development of their Outlines, and the NAMA Facility would have expended considerable resources in assessing them. To rectify this situation, we began offering feedback calls for all rejected Outlines. In these calls, our Outline assessors speak directly with Outline submitters to explain why they did not make it to the Detailed Preparation Phase and offer insight into potential areas for improvement.

Feedback calls support applicants who wish to refine their concept for a future NAMA Facility Call, or to submit their proposal to another organisation – thereby potentially contributing to the quality of the global climate finance project pipeline. This new approach also helps to ensure that unique concepts can continue to be pursued beyond the decision of the NAMA Facility, and added value created by applicants in the application process will not be lost.

Feedback during these calls happens in both directions; the NAMA Facility requests feedback from Outline submitters as well. Information collected from past applicants has already been used to enhance the NAMA Facility's processes and to update different NAMA Facility application documents and knowledge products, thus increasing their quality and improving the process for future submitters.

#### Ensuring Project Readiness: the Detailed Preparation Phase

During the NAMA Facility's first years of operation, it had been assumed that there was an existing global pipeline of climate mitigation projects ready for immediate development. However, it became apparent that the expected level of readiness was not yet a reality. Upon grasping that situation, the NAMA Facility reflected on its processes in order to better support applicants with a new feature in the selection process: the Detailed Preparation Phase (DPP).

Outlines that are approved by Donors to enter the DPP receive initial funding and the opportunity to draw from the NAMA Facility's expert pool to elaborate their project concept over a period of five to 15 months. The DPP helps bring projects in line with the high level of readiness expected by the NAMA Facility before Donors make their final funding decision and the project advances to the Implementation phase. It also supports improved feasibility and the design of a suitable financial mechanism for the projects. The DPP phase has helped ensure that NSPs are truly prepared for success upon entering Implementation. Despite these revisions to the process, the NAMA Facility continues to expect high levels of quality and readiness in submitted Outlines, and the Call application process remains highly competitive.

#### Increasing Leverage and Mitigation Impact through Bespoke Financial Mechanisms

The importance of well-designed financial mechanisms has become increasingly evident over the years through our lessons learnt from NSPs. Project concepts simply based on subsidy mechanisms often exhaust available funds once disbursed – and significantly limit the potential financial impact. Moreover, traditional finance structures can also be economically imprudent in the context of innovative low-carbon projects:

perceived risk on the part of banks or investors can lead to prohibitively high interest rates on loans, for example. For these types of projects, it is essential to design financial mechanisms so risks can be mitigated to encourage greater private sector leverage. To potentially mediate such a situation, guarantee mechanisms or other de-risking tools can be developed and applied to maximise the use of project funds and the climate mitigation impact of NSPs.

One of our NSPs that works with financial institutions to deploy guarantee mechanisms and attract private capital is the Mexico Housing NAMA. This NSP seeks to increase the energy efficiency of new housing and close the supply gap of available housing stock in the country. The integrated financial mechanism in this project includes unique de-risking measures for financial intermediaries that facilitate developers' access to reasonable commercial financing rates in this new field of energy-efficient housing construction. By de-risking lending for financial intermediaries, the NSP spurs private sector lending and promotes the development of more sustainable housing. Furthermore, local financial institutions and developers can gain experience and undergo capacity building to enhance their practices in lending and building for energy efficiency, respectively.

#### Ensuring Catalytic Shifts Through Government Buy-In

Another key lesson extracted from our work has been the importance of ensuring that our NSPs effect a transformational and catalytic shift across an entire national sector. Solutions offered by a project should not remain within the confines of an NSP, but rather transcend national frameworks to ensure that improvements are realised throughout the sector and country. NSPs thus need to enjoy high levels of national government buy-in and strong embeddedness within the larger national framework for combatting climate change, typically within the framework of NAMAs as building blocks of NDC implementation.

One example is the Thai Refrigeration and Air Conditioning NAMA, an NSP that seeks to reduce emissions from private refrigerators and air conditioning units as well as from manufacturers' production processes. But project participants have also collaborated with government officials and policymakers to effect change across the entire sector by supporting the development and practice of measurement, reporting and verification (MRV) processes; product safety standards; updated building codes and safe servicing practices. These initiatives work to effect permanent change across Thailand's cooling sector, well beyond the direct scope of the NSP.

#### Spreading Good Ideas through Worldwide Learning

The transformational nature of the NAMA Facility's NSPs is also illustrated through their replication throughout the world. Other countries have actively sought to replicate the success of some NSPs. Guatemala, the Dominican Republic and Peru, for example, have all expressed interest in learning from the first-hand knowledge generated by the Low-Carbon Coffee NAMA in Costa Rica, in order to better confront climate change in their own countries and mitigate emissions. With our work and our NSPs, we seek to support transformational climate action, through which concepts developed by our projects can be applied to a host of other countries and contexts – all as part of the global effort to reduce greenhouse gas emissions and combat climate change.

# Capturing and Sharing Knowledge

# “Once people understand and live the NAMA concept, it will spread.”

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**Q:** Mexico has developed three NAMAs, more than any other country. Why did the country decide to build on NAMAs as a way to reduce its carbon footprint?

**A:** Mexico adopted the notion of NAMAs back in 2010 and has incorporated it into its national climate policy. We see NAMAs as a strategic option to bolster our mitigation activities. In fact, we have approached the NAMA Facility with several proposals, because the NSPs provide a crucial source of technical assistance, financial support, and interaction with partners who are willing to facilitate the realisation of our climate goals. The NAMA Facility has helped us throughout the process, from initial feedback to the execution of full-fledged projects. It has been a success story, and that is why we keep coming back to the NAMA Facility with new ideas.

**Q:** What makes NAMAs different from other mitigation instruments?

**A:** From the very start, NAMAs were conceived as large-scale mitigation projects that require innovative concepts and financing as well as the collaboration of different institutions. They are a sort of catalyst that brings together diverse stakeholders to achieve a common goal. That is a big difference from traditional technical assistance from national, bilateral or multilateral institutions, which is also often restricted to pre-defined sectors or policies that may not be suitable for NAMAs. The NAMA Facility creates a new “ecosystem” of practitioners, decision makers, and so on, who all share one interest: making NAMAs work.

**Q:** What has motivated Mexico to invest in climate change mitigation?

**A:** Our constitution guarantees access to a healthy environment. To live up to that promise, we participate in the global fight against climate change by adopting national targets and policies. But of course, it is not easy to transform a society. For us at SEMARNAT, which is the Mexican federal ministry in charge of the environment and climate change issues, we

Mexico is presently implementing three NAMAs with the support of the NAMA Facility. **Juan Carlos Arredondo Brun**, climate expert at the Mexican Ministry for the Environment and Natural Resources, talks about the reasons for their success.

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parameters for housing design and building. We also initiated a sustainable housing round table to bring together the National Housing Commission (CONAVI), the Secretariat of Agrarian, Land and Urban Development (SEDELU), and private housing developers. They meet on a regular basis to discuss how to support the transformation of the housing sector for greater sustainability, including the definition of MRV mechanisms to ensure that climate change mitigation results are in fact obtained. All of these achievements can be traced back to the NSP. So we are starting to observe transformative developments throughout the entire sector. The market for sustainable housing is growing, people are buying sustainable homes and many housing developers are supporting the idea.

**Q:** Has the Mexico Housing NAMA benefitted many Mexican families?

**A:** The NAMA promotes new technologies and retrofits that make homes more efficient. Besides contributing to mitigation, residents and home owners can enjoy reduced costs through lower energy bills. Based on the numbers of the Mexico Housing NAMA, we estimate an average savings of around 10,000 euros over a 30-year period, or about 330 euros a year – per household. While that may not sound like much, we need to remember that these numbers apply to social housing and units with an area of 40 to 70 square metres.

**Q:** Two other NAMAs have followed, one for the sugar industry and one for small and medium-sized enterprises (SMEs). How are these projects making an impact?

**A:** Sugar mills had been largely forgotten in Mexico; they use old technology and consume large amounts of heat and electricity. Heat is used to evaporate the juice extracted from the sugar cane and transform it into sugar. Traditional mills use heat generators that burn fossil fuels. Some also buy their electricity from the public grid. The NSP will give mills the opportunity to invest in co-generation units that can efficiently generate heat and electricity. They will also be able to connect their systems to the public grid, so they can sell any excess energy. This will bring significant changes to the sector. Most mills, 40 to 50 of about 65 in the whole country, have decided to participate. The NAMA Facility is providing the resources to get our idea off the ground. They went and talked to people, arranged meetings, commissioned technical studies and created the finance mechanisms.

**Q:** Could you tell us about the NAMA for SMEs?

**A:** With the SME NAMA we experienced a similar situation. The NAMA is helping small and medium-sized enterprises become more energy-efficient and change their perceptions of green technologies. Mexican SMEs do not usually see this as an important topic, since they are mainly concerned about their day-to-day operations. But this project allows us to approach SME owners and managers and share valuable insights on the opportunities and benefits of improved energy efficiency so we can involve them in mitigation activities for the first time.

**Q:** Will the transformation of the SME sector make a significant contribution toward helping Mexico achieve its NDCs?

**A:** In principle, yes. Even if a single SME saves just a few hundred tonnes of CO<sub>2</sub> per year as a result of the NAMA. Over time it

all adds up. We are slowly transforming how people understand their businesses and how they decide to invest and measure the outcomes of investments from an economic as well as an environmental standpoint. So, in the long run they will feel that they are contributing to a greater good – the fight against climate change. If you look at our three NAMAs, they are in sectors that might not be “top of mind” when you think about ambitious mitigation measures. But by targeting sectors like SME, we have been able to create a broad basis for mitigation and get closer to people’s lives.

**Q:** Do you plan to expand the NAMA concept to even more sectors?

**A:** Yes, we are trying to enter additional sectors and use this instrument as much as possible, because it can demonstrate that people can do business differently and have more positive effects. That is the most important contribution of the NAMA concept in my eyes. Once people understand and live the idea, it will spread. Currently, we are putting together a new NAMA on electromobility, which could have an important impact on transportation.



Juan Carlos Arredondo Brun,  
Director General for Climate Change Policies,  
Mexican Ministry for the Environment and Natural Resources

**Q:** What would you recommend to other countries that want to engage in similar climate actions?

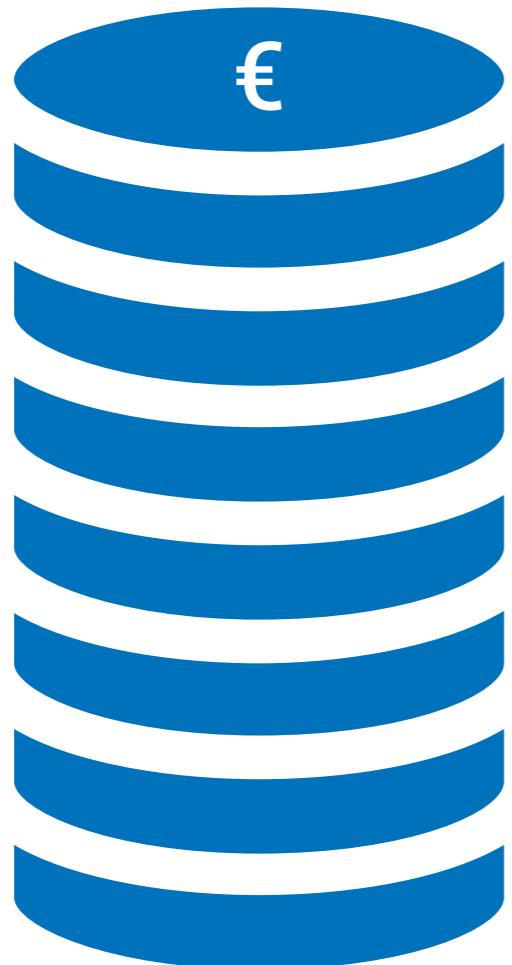
**A:** They have to be very clear that NAMAs are a real option, not just a way to receive resources. And they need to make NAMAs a vital part of their mitigation policy. That is the first step. Then they must develop a clear vision about where NAMAs can fit into the overall climate action landscape in their country. In Mexico, we use NAMAs in sectors that are usually not addressed by other policies but where we know they can make a big difference. Once people are clear on those points, they can choose the sectors and priorities, and define nationally appropriate measures.

**Q:** The fight against climate change is an extremely difficult task. What are your hopes for the future?

**A:** Even with the current noise about whether climate change is real, we know it is here to stay. Our policy makers understand that; people in Mexico understand that. So our national policies and sectorial strategies need to keep pushing ahead with that knowledge in clear view. It is not something that will disappear just because someone has a different opinion. We are firmly convinced that the battle against climate change must be a priority for all world leaders and citizens. I believe that more and more countries will soon start to change how they define and implement their policies and take a firmer stance against climate change in the future.

# NAMA Facility

On behalf of



Estimated volume of private funds to be mobilised by NAMA Support Projects by 2024 in euros (projects in implementation):



8,000,000



480,000,00



Renewable Energy

30,700,000



Transport

31,100,000



Waste Management

300,000,000

## Inspiring Climate Action

The NAMA Facility: A Snapshot

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