



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

The POP Priority



UNIDO and the
Stockholm Convention

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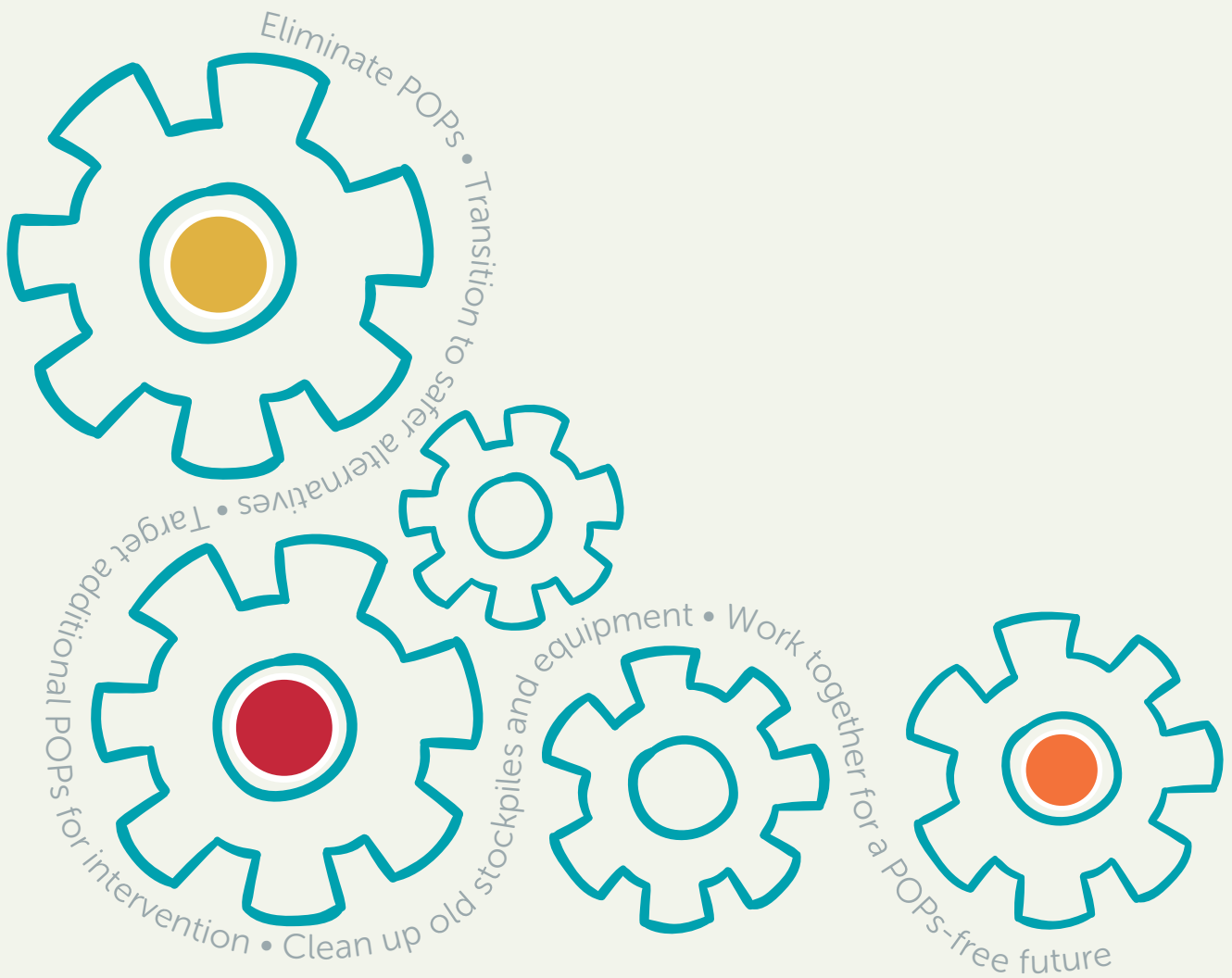
The POP Priority:

UNIDO and the Stockholm Convention

POPs (Persistent Organic Pollutants) are **harmful chemicals** which circulate globally, travel rapidly and cause widespread damage.



A global treaty designed to protect human health and the environment, the **Stockholm Convention** reduces or eliminates releases of POPs. The Stockholm Convention entered into force in May 2004, and it has been ratified by **more than 150 countries**.



Toodle-oo, toxins: UNIDO's role

UNIDO supports **developing countries and economies in transition** to implement the Stockholm Convention.

UNIDO assists **government and industry** to follow the Convention's **five main aims**:

- **Eliminate POPs**, including those known as the "Dirty Dozen" and the "Nasty Nine"
- **Support the transition** to safer alternatives to POPs
- **Target additional POPs** for intervention
- **Clean up old stockpiles and equipment** containing POPs
- **Work together for a POPs-free future**

On the policy level, UNIDO **assists countries to formulate their National Implementation plans**, which lay out the most effective way for each country to comply with the Convention.

Working with industry, UNIDO helps to **optimize production processes** to avoid POPs emissions; **construct and operate facilities to safely manage material** containing POPs; and **establish new facilities and production lines** using alternatives to POPs.

UNIDO also works to establish **recycling and waste management programmes and facilities**, which minimize the generation and release of POPs throughout industry.

Most of the funding for these projects comes from the Global Environment Facility (GEF).



All of these efforts foster inclusive and sustainable industrial development, while protecting human health and the environment.

Our POP priority projects







One stop POP:

Penning policy on POPs



All parties to the Stockholm Convention need to formulate a **National Implementation Plan (NIP)** to define how they will comply with the Stockholm Convention.

In most cases, UNIDO begins by assisting a country to **prepare and develop a first national plan**. This kind of assistance has been provided to 41 countries, resulting in plans that tailor to specific national conditions, and are based on each country's unique institutional, policy and regulatory structures.

When new chemicals are added to the Convention, the Parties need to **review and update their national plans**, to show how they will address the recently listed POPs. UNIDO has assisted 48 countries to review and update their national plans, to ensure the best way to comply with the Convention, and reduce and eliminate POPs emissions.

Chemical reaction

"A model for other countries." When nine substances were added to the Stockholm Convention in 2009, **Honduras** turned a challenge into an example for others.



UNIDO helps formulate and update national POPs policy, promoting innovative solutions which benefit industry, infrastructure and the environment.





In 2009, nine additional substances – dubbed the Nasty Nine – were added to the Stockholm Convention. For the Honduran government, the need to reduce and eliminate these substances caused anxiety. While the government had already come up with a plan to eliminate the initial twelve POPs, it was initially unclear how they would deal with the Nasty Nine. Ana Gabriela Ramirez of the Secretariat of Energy, Natural Resources, and Mines (MiAmbiente) explained: **“these substances are part of items such as electronics, home appliances, and industrial processes.”**

But with the assistance of UNIDO and others, MiAmbiente worked towards reviewing and updating their National Implementation Plan (NIP) to reduce and eliminate the recently added chemicals. **“The project has been recognized for its transparency, as well as its ability to adapt to the challenges of a changing national context,”** Ramirez noted.

The UNIDO project involved new studies and strategic planning that allowed national authorities to make more informed decisions

about POPs. The Honduran government ensured that the documents were presented in everyday language, and made available for other users. Because POPs emissions disproportionately affect society’s most vulnerable groups, the project invited participation from organizations related to early childhood, such as the Secretariat of Health and the Pan American Health Organization, in information gathering and strategic planning.

“Thanks to the new studies and strategic planning,” said Ramirez, **“national authorities will be able to make more informed decisions regarding POPs in order to protect human health and the environment.”**

This project is not just relevant for Honduras, but for other countries too. Honduras was the first country in Latin America to present their updated plan to the Secretariat of the Stockholm Convention. **“As we are the first in our region to comply with our commitment to review and update our National Implementation Plan, we hope we can be a model for other countries in Latin America.”**





Persistent perils:

Parting with PCBs

A major part of UNIDO's POPs programme involves **PCBs** (polychlorinated biphenyls). PCBs are industrial products or chemicals mainly used in the energy sector. They are widely deployed as dielectric and coolant fluids in electrical apparatus, carbonless copy paper and heat transfer fluids. Generally, PCBs are very stable, which explains their persistence in the environment.

UNIDO's projects focus on the **safe management and disposal of PCBs**. **Capacity building** – for governments, industries, institutions and other entities involved in electricity distribution and transformation – helps countries to comply with their Stockholm Convention obligations. UNIDO's projects target regulatory and legislative infrastructure as well as institutions in order to **manage equipment** that contains PCBs, and to **safely dispose** of PCB-contaminated waste. **Raising public awareness** is also a major feature of all UNIDO's PCB projects.

The former Yugoslav Republic of Macedonia

Treatment transforms

“Our facility gives us hope.”

In the former Yugoslav Republic of Macedonia, a new facility to decontaminate transformers was part of a wider national project to tackle PCBs.



UNIDO's interventions not only benefit the environment, but also emphasize decent work and economic growth.





Rade Končar, a company in the former Yugoslav Republic of Macedonia, maintains transformers. A transformer is a box, commonly found at the top of a power pole, which shifts the voltage of an electric current to an appropriate level for people to use in their homes and businesses.

For many years, the industry used polychlorinated biphenyls (PCBs) in transformer oil, in order to eliminate the heat and sparks generated in the transformer, and therefore prevent fires and explosions.

When PCBs were found to be harmful to human health and the environment, changes had to be made. A multi-pronged UNIDO project assisted the public and private sector to create effective regulations and legislation to comply with the Stockholm Convention.

In collaboration with UNIDO and the Macedonian Ministry of Environment and Physical Planning, Rade Končar participated in a project to build a facility featuring new technology which could decontaminate PCB transformers. Although the Balkan region had a large quantity of PCB-contaminated transformers, the region had no treatment facilities. This was the first.

The project came at a tenuous moment for the company, according to the general manager, Ace

Antevski. **“Faced with a period of recession and unstable economic conditions,”** he said, **“our managerial team decided that it was the right moment to invest in a new potential source of income in order to maintain the financial condition of the company.”**

The project helped the company to get back on track, as well as benefitting the environment and human health. Maintenance workers had been particularly vulnerable to health problems, given that they came into direct contact with PCB oil and other contaminated transformer parts.

“Our facility gives us hope that we can eliminate the threat of PCBs to the environment,” Antevski says. **“Our goal is to create a good climate for the next generations, both in an environmental and an economic sense.”**

Since the installation of the state-of-the-art, reliable treatment technology, 500 tons of PCB-contaminated transformers have been treated. Furthermore, the company now provides an expanded range of services. When regional businesses send transformers in for maintenance, not only can the company diagnose and repair standard problems, but they can also identify contaminated transformers, treat them, and return them to the production process.





Persistent organic progress: Manufacturing without POPs

In manufacturing, POPs are often used as they are, or as ingredients in products. UNIDO supports industries to **manufacture chemical products** which can serve as alternatives to POPs. UNIDO also assists industries to **introduce these alternative chemicals** into the manufacturing process. Finally, where possible, UNIDO supports industries to **introduce non-chemical solutions instead of POPs**.

Some of UNIDO's diverse approaches include converting DDT (dichlorodiphenyltrichloroethane) production to non-DDT alternatives, introducing alternatives to PBDE (polybrominated diphenylether) as flame retardants in auto-part manufacturing, and phasing out HBCD (hexabromocyclododecane) flame retardants in the manufacturing of insulation foam boards.

In all cases, the intention is to **eliminate risk to human health and the environment**, while **ensuring inclusive and sustainable industrial development**.

Ditching DDT

"Health benefits worldwide." Natural pesticides and special mosquito nets provide cost-effective, sustainable alternatives to DDT in **India**.



By helping to reduce and eliminate Persistent Organic Pollutants, including DDT, UNIDO protects good health and well being.





India is the only country that still uses and produces DDT in large volumes in its public health programme.

DDT was used extensively in the 1940s and 1950s to control malaria and dengue fever. It played an important role in eradicating malaria around the world.

However, DDT is also a harmful pollutant. Its use in agriculture has been banned under the Stockholm Convention, but it is still allowed to be used in limited amounts because of its effectiveness against malaria infections. With the continued use of DDT, however, mosquitoes have become increasingly resistant to it, so that the recommended dose is no longer effective. According to a World Health Assembly resolution, member countries are urged to initiate sustainable action and reduce the use and dependency on DDT.

Despite the Indian government's extensive efforts, there are still around 1.5 million cases of malaria each year.

In the current project, UNIDO and other agencies attempt to prevent malaria through environmentally friendly methods. The project targets mosquitoes at the weak points of their life cycle. For early in the life cycle, neem-based botanical pesticides and Bt (*Bacillus thuringiensis*)-based biopesticides will be used.

Both have proven very effective in eliminating larvae, and are also safe for humans and aquatic animals.

Any escaped larvae will be targeted by the use of Long Lasting Insecticidal Nets (LLIN), which are protected by a synthetic pyrethroid group of pesticides. This approach will be implemented alongside the continued use of neem-based pesticides. Neem is effective at all stages of a mosquito's life cycle, as adulticide, larvicide, and a growth inhibitor, resulting in a long lasting impact on the mosquito population.

The proposed alternatives are gentle on the environment. Biopesticides and botanical pesticides are entirely biodegradable and environmentally friendly. The mosquito nets with synthetic pyrethroids are green chemicals, due to their limited toxicity and high biodegradability.

The project also offers notable socioeconomic benefits to farming communities by creating jobs, with a particular focus on employing women and youth. Other advantages include the low price of biobotanical pesticides, the very low or complete lack of toxicity of pesticides, and the biodegradability of these alternatives, along with the take-back arrangements with LLIN vendors. New neem plantations will also create increasing green cover, which will contribute to mitigating climate change, land degradation and desertification.





POP culture:

The undoing of unintentional POPs

UPOPs (unintentional POPs) are another key focus of the Stockholm Convention. UPOPs are a group of chemicals that are unintentionally formed from thermal processes involving organic matter and chlorine, as a result of incomplete combustion or chemical reactions. Examples of UPOPs include dioxins and furans.

In minimizing and eliminating uPOPs emissions, UNIDO encourages **best available techniques (BAT)** and **best environmental practices (BEP)**. A diverse portfolio aims to **reduce and where possible eliminate uPOPs releases** from priority source categories as well as from specific industrial sectors.

UNIDO's interventions **increase energy efficiency** as well as reduce uPOPs releases, thus **assisting countries to address climate change** while ensuring they can meet their obligations under the Stockholm Convention.

Full steam ahead

"The opportunity to show the world." Investing in technology that avoided harmful pollutants led to business success for a company in **Lao People's Democratic Republic.**



UNIDO is committed to solutions that help to make cities and communities sustainable.





The Lao Agro Industry Company (LAICO) owns Lao's first and only fruit and vegetable processing factory, which was established in 1994.

The company's most important product is whole-kernel corn, which is mainly exported to European countries such as Germany, the United Kingdom and the Netherlands. Another product is canned sugar-palm seed, a dessert product that the country exports to Southeast Asian countries such as Thailand, Viet Nam, Malaysia and Cambodia. LAICO also make sweet corn milk for the local market, although 95 per cent of the company's products are exported.

For all of these products, the company uses steam. Up until recently, the company used an old boiler, which was not only inefficient, but had no mechanism to prevent the release of harmful pollutants.

In cooperation with UNIDO and the Ministry of Natural Resources and Environment, the company took part in a pilot programme, which established a demonstration facility to help Lao meet its obligations under the Stockholm Convention and mitigate climate change.

Following an initial assessment, the company opted to install a new boiler, rather than retrofit the old boiler. The company invested in the new infrastructure. The new boiler is far more efficient, making 5 tons per hour of steam, rather than the old boiler's 2 to 3 tons per hour. Not only has this resulted in financial gains for the company, but also the quality of steam is improved, leading to greater efficiency.

Due to increased capacity and savings, the company can afford to lower their prices, and also to invest in new products for export, such as pineapple juice. LAICO is also committed to employing more members of the local community in their factory. In Lao, more than 70 per cent of the population makes a living from agriculture, so boosting agricultural exports is beneficial to national prosperity.

"It's nice to have the opportunity to show the world," said Khammanithip Vongxay, Assistant Managing Director of LAICO, **"that even though ours is a small country, we're capable of producing this kind of agricultural product for the international market."** While industry benefits, so does the environment, with the elimination of pollution and climate impacts.

Benin

Net benefit

“To sell our fish is really easy.”
Women in particular benefit from new ways to smoke fish in **Benin**.



UNIDO is committed to gender equality and women's empowerment.





Substantial emissions can be produced by the smallest businesses. In Benin in West Africa, individual fish smokers in marketplaces, on the beach and by the roadside use traditional ovens, which unintentionally create POPs that are harmful to communities.

Fish is a popular part of the country's diet, and a large proportion of the fish are smoked or treated in other ways. Unfortunately, using a traditional oven does not entirely combust plant fuels, and generates POPs which can injure workers and contaminate food. **"Because of the smoke,"** a woman who smoked fish for sale complained, **"I was coughing and I frequently had pain in my eyes."**

With the Direction Générale de l'Environnement, a UNIDO pilot programme replaced several of these traditional ovens. The new technology was developed in Senegal in collaboration with the UN Food and Agriculture Organization (FAO). The technology minimizes the production of pollutants by using specialized accessories such as a new furnace and filter. These can be made locally for under \$600, and have yielded very promising results.

In this project, there were also clear benefits for women. Traditionally, women are responsible for most of the fish preparation. In the pilot project, 30 women of Djéffa Beach and 12 women of the market of Gbégamey used these new ovens. This contributed not only to women's health but also women's economic empowerment.

Other local businesses also benefitted, as building new ovens requires the skills of local artisans. Furthermore, the new ovens collect fat as a by-product, which can be used in manufacturing soap.

The ovens are environmentally friendly and energy efficient. They use around half of the fuel of traditional ovens. They also utilize other businesses' waste; the women of Gbégamey market, for instance, use firewood, manioc peels, and sugar cane waste for smoking. Euloge Lima, a biologist and environmental scientist in the Direction Générale de l'Environnement testified to the success of the project. **"The new ovens have a bigger capacity, and also generate better quality products,"** he noted. And the sellers of Djéffa Beach stated that now, **"to sell our delicious smoked fish is really easy."**





Popping out again:

Recycling chains

Recycling industries – and particularly e-waste recycling – carry with them the potential risk of recycling or reforming POPs. UNIDO emphasizes the **safe management of plastics** which contain PBDE, a flame retardant. In addition, UNIDO works towards supporting regional initiatives aimed at **enhancing information exchange** and **knowledge sharing and management**. This occurs through not only policy and technical forums, but also by enhancing **South-South** and **North-South cooperation**. These efforts are all part of UNIDO's commitment to the **circular economy**.

In terms of e-waste management, UNIDO ensures **safer recycling schemes** through policy and legislation guidance, detailed inventories, and designing and financing collection schemes. The results are scaled and made economically sustainable by establishing long term financial models, supported by linkages to downstream markets, and by conducting **capacity building** and **awareness raising** exercises.

Ethiopia

Treat it right

A project to manage e-waste in **Ethiopia** will provide benefits for the community, country and continent.



Promoting chemical safety around the world is part of UNIDO's commitment to responsible consumption and production.





Of all the world's waste streams, e-waste (waste electrical and electronic equipment) is among the world's fastest growing as well as the most problematic on a social and environmental level.

Ethiopia's Information and Communications Technology (ICT) sector is growing rapidly. An increased volume of electrical and electronic equipment, insufficient capacity to manage this waste, and lack of knowledge regarding treatment technologies led national authorities to act. In collaboration with UNIDO and other international partners, the Ethiopian government decided to design an e-waste management strategy before the situation hit crisis point.

The project strengthened and upgraded the Computer Refurbishing and Demanufacturing Facility in Akaki, on the outskirts of Addis Ababa, to create a national and regional training centre. Not only does the facility promote the sound management of e-waste, but also the highest possible recovery rate for valuable materials, as well as secure handling of non-recyclable materials. The facility is connected to international smelters and downstream recycling centres for the end processing of hazardous material such as motherboards, to recover precious metals.

As part of the project, existing infrastructure is reviewed and updated in order to treat high volumes of e-waste in compliance with

environmental and health standards. This includes designing and implementing an e-waste collection scheme, developing a business model for the dismantling facility and raising awareness of how to manage e-waste.

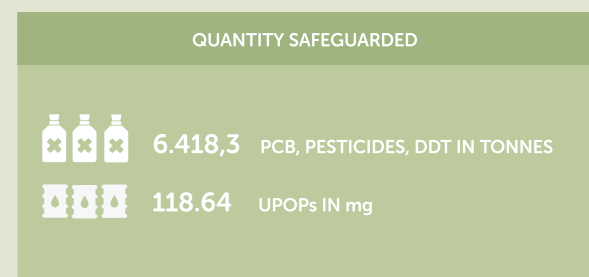
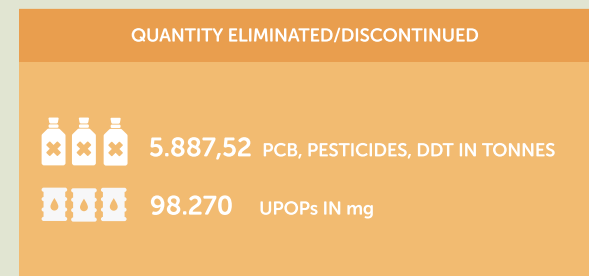
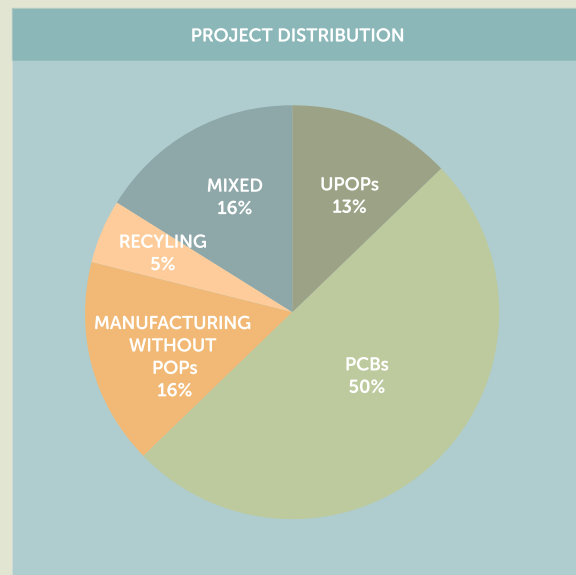
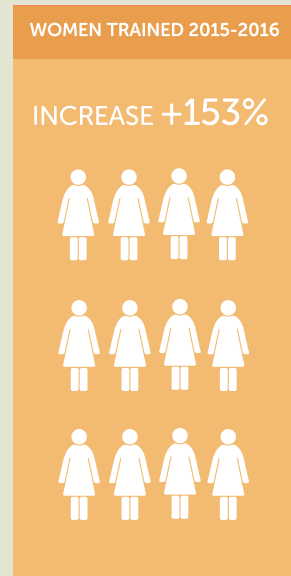
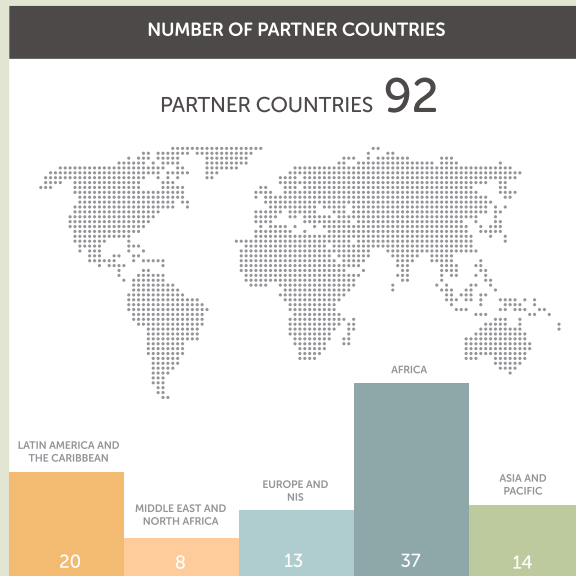
It also includes improving and adjusting the Akaki facility's operations to serve as a model for Eastern Africa. The centre is now in a position to host regional workshops and capacity building activities to bring these issues to the attention of all countries in the wider region. Eastern African countries can learn from this project and tackle the problem in its early stages.

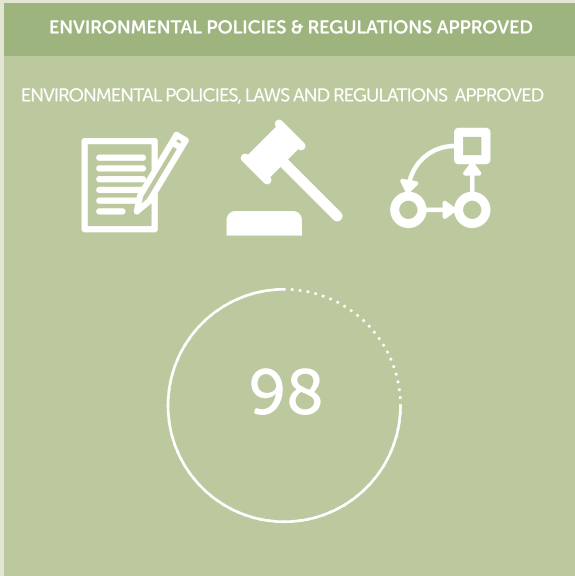
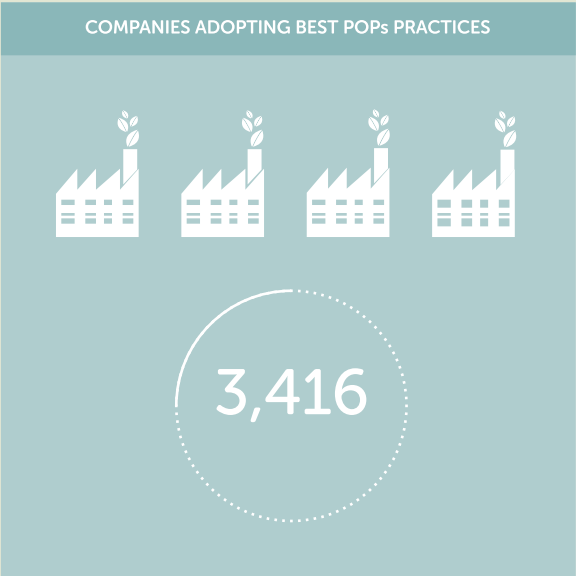
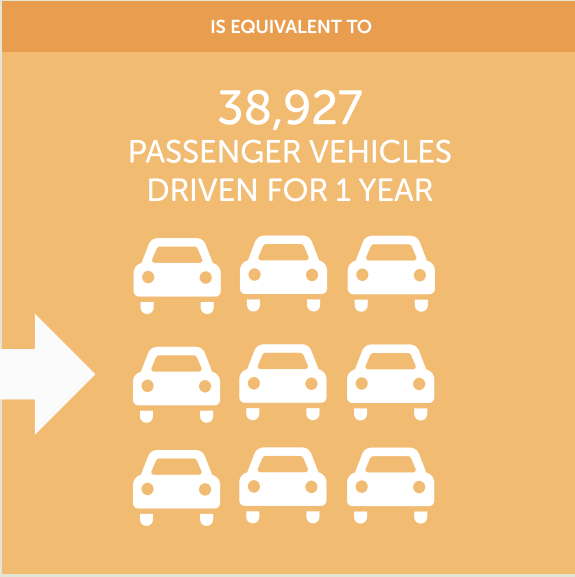
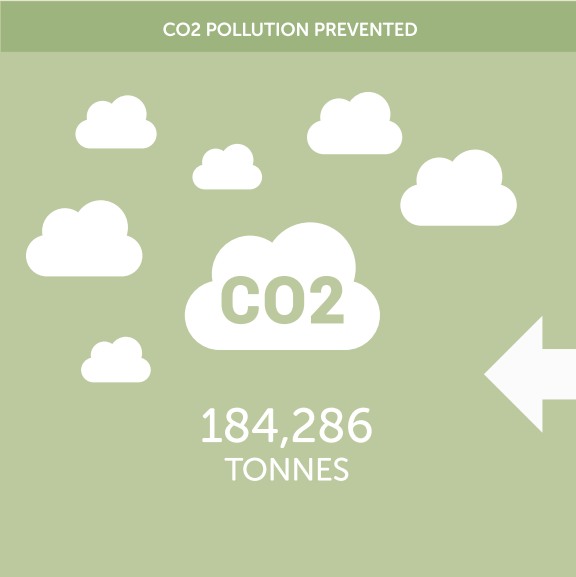
Poor e-waste disposal is particularly harmful for disadvantaged communities situated near dumping grounds. It is often women or children who resort to methods such as open burning to try to acquire valuable material such as copper, and consequently expose themselves to toxic substances. Sound e-waste management and awareness raising helps to protect these communities against exposure to hazardous substances.

The beneficiaries of this project include the government of Ethiopia, other countries in Eastern Africa who wish to develop better strategies for e-waste management, relevant parts of the private sector, and finally, local communities.

Ending POP culture

RESULTS FROM UNIDO'S POPS PROGRAMME







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