



International Environmental
Technology Centre

Annual Report
2019



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Technology Centre

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2019



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Message from the Director



Keith Alverson
Director,
International Environmental
Technology Centre
United Nations
Environment Programme

Waste has become a ubiquitous sight in our environment.

PET bottles wash up on shores of the most distant islands, plastic has been found in the deepest trenches of our oceans and grocery bags litter the slopes of the tallest mountains. People routinely burn electronics to extract precious metals, without awareness of the impact it has on their health or the environment. Given the growing amount, complexity and visibility of waste, proper waste management is more crucial now than ever. Individuals, cities and nations all need to become more proactive and pursue a more holistic approach to waste. Such an approach begins with reduction, and is followed by reuse and recycling of waste.

Even with these efforts, residual waste will need to be managed using state of the art technologies that ensure it is handled in an environmentally sound manner. The work carried out by the UNEP International Environmental Technology Centre in Osaka, with support and cooperation of its partners, is therefore more relevant than ever. This 2019 annual report highlights recent knowledge products published by the centre on incineration technologies, electronic waste and gender aspects of waste management, and illustrates how good practices are being deployed in countries around the world. IETC, together with the rest of UNEP, is working to change attitudes towards waste. We must all start treating it as the valuable resource it is.

A handwritten signature in blue ink, appearing to read 'Keith Alverson', written in a cursive style.

IETC's Vision

The International Environmental Technology Centre (IETC) works with developing countries to implement sustainable solutions to environmental challenges, with focus on holistic waste management.

To realize this vision, we provide technical and advisory support to national and local governments to enhance their use of environmentally sound strategies and approaches. We also implement in-country demonstration projects using innovative waste prevention and management methods and technologies to improve human well-being, reduce the impact of climate change, increase resilience and create jobs. We work with governments as well as academia, civil society and the private sector. We provide learning opportunities around the world and organize public outreach activities, expert groups and policy dialogues.

Working with a wide range of partners and in line with relevant multilateral environmental agreements, our mission is to serve as a global centre of excellence on environmentally sound technologies with focus on holistic waste management.

The Maishima incineration plant in Osaka is one of the city's waste management facilities and a famous landmark, designed by artist Friedensreich Hundertwasser



© yoko ken chow / ianestock.com

IETC's International Advisory Board



IETC's International Advisory Board at their 11th meeting in Osaka, Japan, 20 May 2019

The International Advisory Board of IETC provides IETC Director with policy-level and technical advice on the strategic direction and content of the Programme of Work of the Centre. The board consists of members from all geographical regions with various backgrounds including senior policy advisors and technical experts.

Yuriko Koike, Chair	Governor of Tokyo, Former Minister of the Environment of Japan
Khaled Fahmy	Former Minister of the Environment of Egypt
Linda Godfrey	Principal Scientist, The Council for Scientific and Industrial Research, South Africa
Wu Jiang	Executive Vice President, Tongji University, China
Bettina Lorz	Senior Legal Officer, European Commission
Antonis Mavropoulos	President, International Solid Waste Association
Lina Pohl	Former Minister of the Environment and Natural Resources of El Salvador
Jairam Ramesh	Former member of Parliament for Andhra Pradesh, India
Noelle Eckley Selin	Director, Technology and Policy Program, Massachusetts Institute of Technology, USA
Judi Wakhungu	Kenyan Ambassador to the French Republic, Portugal, Serbia & Holy See

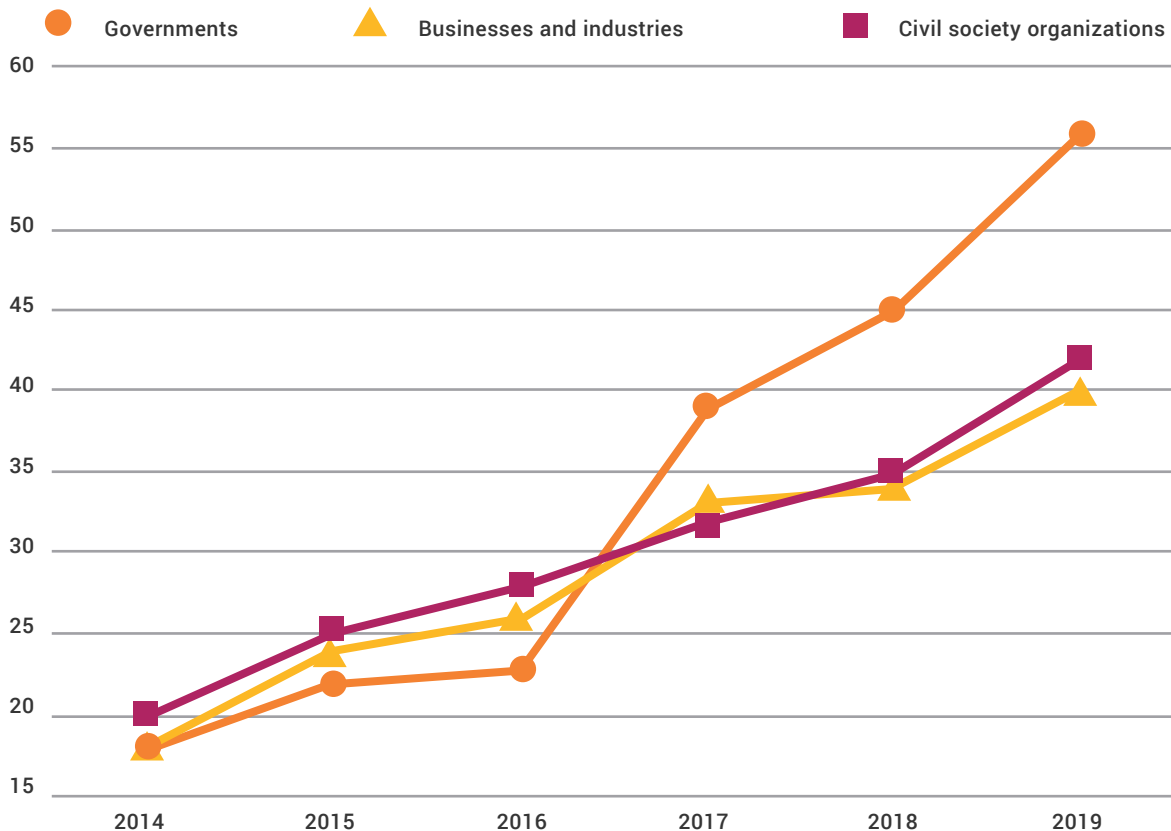



Results Achieved

IETC plays a key role in achieving one of the three expected accomplishments of UNEP's Programme of Work on chemicals, waste and air quality, namely, to work with governments, private companies and civil society organizations to develop and adopt environmentally sound management of waste. We have been particularly effective in promoting scientific and technical knowledge and tools. The number of partners using risk

assessment and management tools for sound waste management with IETC support is increasing steadily over the years (2014-2019). Our partners include governments that have implemented national and city-level waste management strategies, businesses that have implemented best practices to prevent and manage waste soundly, and universities and non-governmental organizations.

Number of partners that have implemented sound waste management practices with IETC support





In 2019, **eleven** governments, **six** private-sector entities, and **seven** civil society organizations began using sound waste management tools and technical knowledge with the support of IETC. This exceeded the year's targets by **120%**, **20%** and **40%**, respectively.

Examples

● IETC worked with governments to develop environmentally sound waste management strategies. Our partnership with the Government of Bhutan resulted in the launch of its **National Waste Management Strategy 2019**, published in both English and Dzongkha, which covers municipal solid waste and targets specific waste streams such as medical waste and e-waste. Additionally, the strategy places emphasis on waste prevention, a crucial aspect of holistic waste management.

▲ During the Private Sector Dialogue hosted by IETC in May, three private companies signed pledges. The **Green Technology Bank** committed to work on updating IETC's handbook on Sustainability Assessment Technology and to adopt recommendations from the handbook. **Kaneka Corporation** pledged to upscale its investment in innovative green technologies. **SUS Environment**, the largest solid waste incinerator supplier and leading developer of integrated municipal solid waste management in China, pledged to work with IETC on capacity building activities in developing countries, as well as to co-organize workshops on waste sorting, waste-to-energy and promotion of circular economy practices.

■ IETC worked with universities to add holistic waste management to their curricula. Within the framework of the UNEP-led consortium of universities for Latin America and the Caribbean, the **Pontificia Universidad Católica de Valparaíso** in Chile consolidated its international programme on sustainable waste management by developing training materials on holistic waste management. Additionally, the largest university in Latin America, **National Autonomous University of Mexico**, as well as **Sichuan University** in China and **Suez Canal University** in Egypt have successfully carried out pilot programs on holistic waste management.



Knowledge Products

Waste Management Outlooks

The [Global Waste Management Outlook](#) was published in 2015 in response to the Rio+20 outcome document [“The Future We Want”](#) (2012) and a decision ([GC 27/12](#)) taken by the United Nations Environment Governing Council (now the United Nations Environment Assembly). It provides a pioneering scientific global assessment on the state of waste management and a call to action to the international community. It establishes the rationale and the tools for a holistic approach to waste management and recognizes waste and resource management as a significant contributor to sustainable development and climate change mitigation.

In response to the positive reactions to the *Global Waste Management Outlook* and avid interest from countries, a request was made through [United Nations Environment Assembly resolution 2/7](#) that UNEP produce a series of regional waste management outlooks. The outlooks would identify gaps and challenges and provide up-to-date data on waste and waste-related activities while highlighting progress made. IETC therefore developed regional and thematic Waste Management Outlooks for [Asia](#), [Central Asia](#), [Africa](#), [Latin America and the Caribbean \(LAC\)](#), [mountain regions](#) and [Small Island Developing States \(SIDS\)](#).

The resolution also requested UNEP “to issue an update of *Global Waste Management Outlook* and ensure complementarity with the update of the *Global Chemicals Outlook* and the ongoing process for regional waste management outlooks”. A first draft of the *Global Waste Management Outlook II* was completed in December 2019 and is scheduled for release at the 5th UN Environment Assembly in February 2021.



IETC Director Keith Alverson at the 4th session of the United Nations Environment Assembly for the launch of the SIDS Waste Management Outlook in Nairobi, Kenya

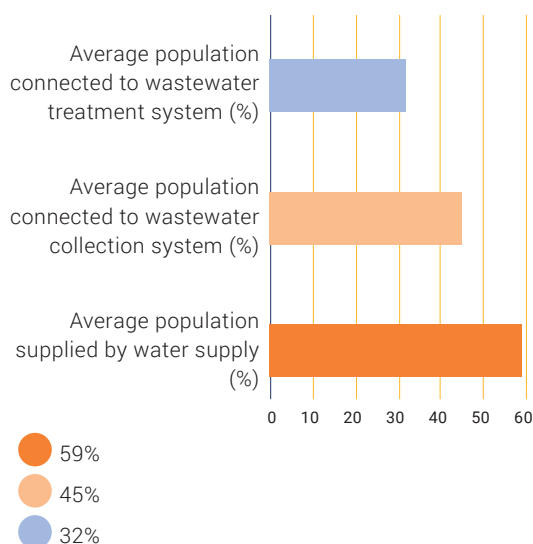
The outlooks identify gaps and challenges and provide up-to-date data on waste and waste-related activities while highlighting progress made.

Small Island Developing States Waste Management Outlook

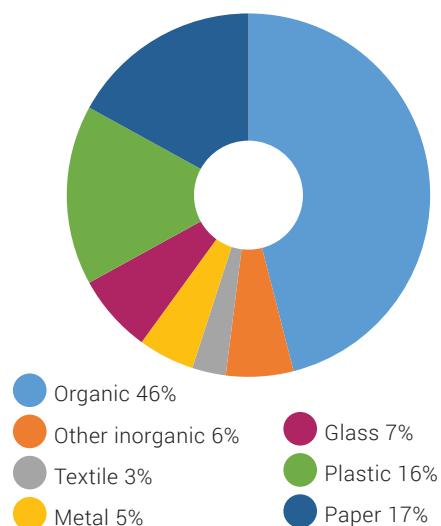
While the municipal solid waste collection rate in SIDS is relatively high at 85%, the **average waste generation per habitant** is **48% higher** than the world average. However, governance, behavioural and **infrastructural challenges** still hinder the implementation of sustainable waste disposal practices. Similarly, the **per habitant emission of greenhouse gases** in SIDS is at least **30% higher** than the world average, and whilst waste is not the main source of gaseous emissions, **open burning** of municipal solid waste is still a significant source of particulates.

The Waste Management Outlook for Small Island Developing States (SIDS) was launched at UNEA 4 (United Nations Environment Assembly 4) in Nairobi, Kenya in March 2019. The Outlook builds on the outcomes of the Global Waste Management Outlook, taking into account the specific challenges and priorities faced by small islands. It is relevant to all 58 SIDS as well as countries with inhabited islands. Geographically, its scope includes the main SIDS regions: the Caribbean, Pacific, Atlantic, Indian Ocean, Mediterranean, and South China Sea regions.

The Outlook analyzes the current state of waste management in SIDS, drawing attention to and identifying priority issues, providing recommendations and potential solutions to assist governments, businesses and industries, and civil society organizations in implementing sound waste management.



Municipal Solid Waste



Waste to Energy



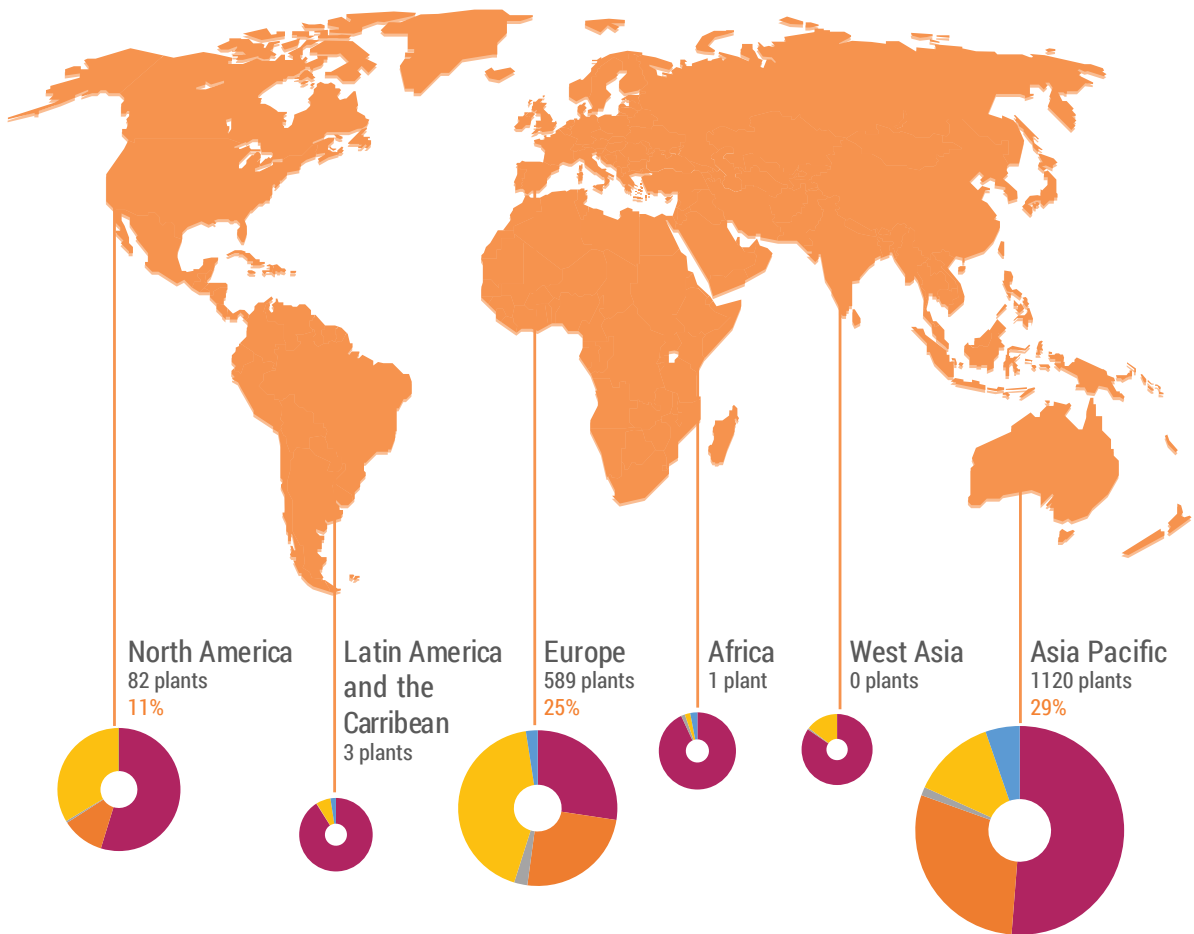
Switzerland sends no household waste to landfill. Indeed, landfilling of municipal solid waste was banned nationally in 2000. In 2016, roughly half of municipal solid waste was recycled, about double European average recycling rates, with the other half incinerated to produce energy. This ‘other half’ puts Switzerland—with 30 plants handling about 4 million tons of waste per year—on the list of the 11 countries with the most thermal waste-to-energy plants in the world.

Waste-to-energy technologies and markets in developed countries like Switzerland are robust and growing. The global waste-to-energy market was valued at US\$9.1 billion in 2016 and is expected to increase to over US\$25 billion by 2025. Developing countries, faced with enormous waste management challenges, often look to such examples and trends and wonder if installation of waste-to-energy plants may provide a potential panacea: an off-the-shelf solution available for purchase. It isn't. As with so many technological solutions to environmental challenges, local, social, economic and regulatory conditions are critically important. Without proper enabling

conditions including a realistic long-term financial model, an operational culture of waste separation, and routine plant maintenance, the technology won't deliver expected outcomes in an environmentally safe manner. There are also potential unintended consequences of technologies that should be considered. In Switzerland, for example, per capita waste generation has more than doubled over the past 50 years and is far above the European average. Installation of large waste-to-energy plants with long lifespans and requirements for continuous, high-quality feedstock can de-incentivize waste reduction strategies.

Waste-to-energy plant in Copenhagen, Denmark

“To avoid incinerating recyclable waste, municipalities considering waste-to-energy technology should prioritize the 3Rs (reduce, reuse, recycle).”



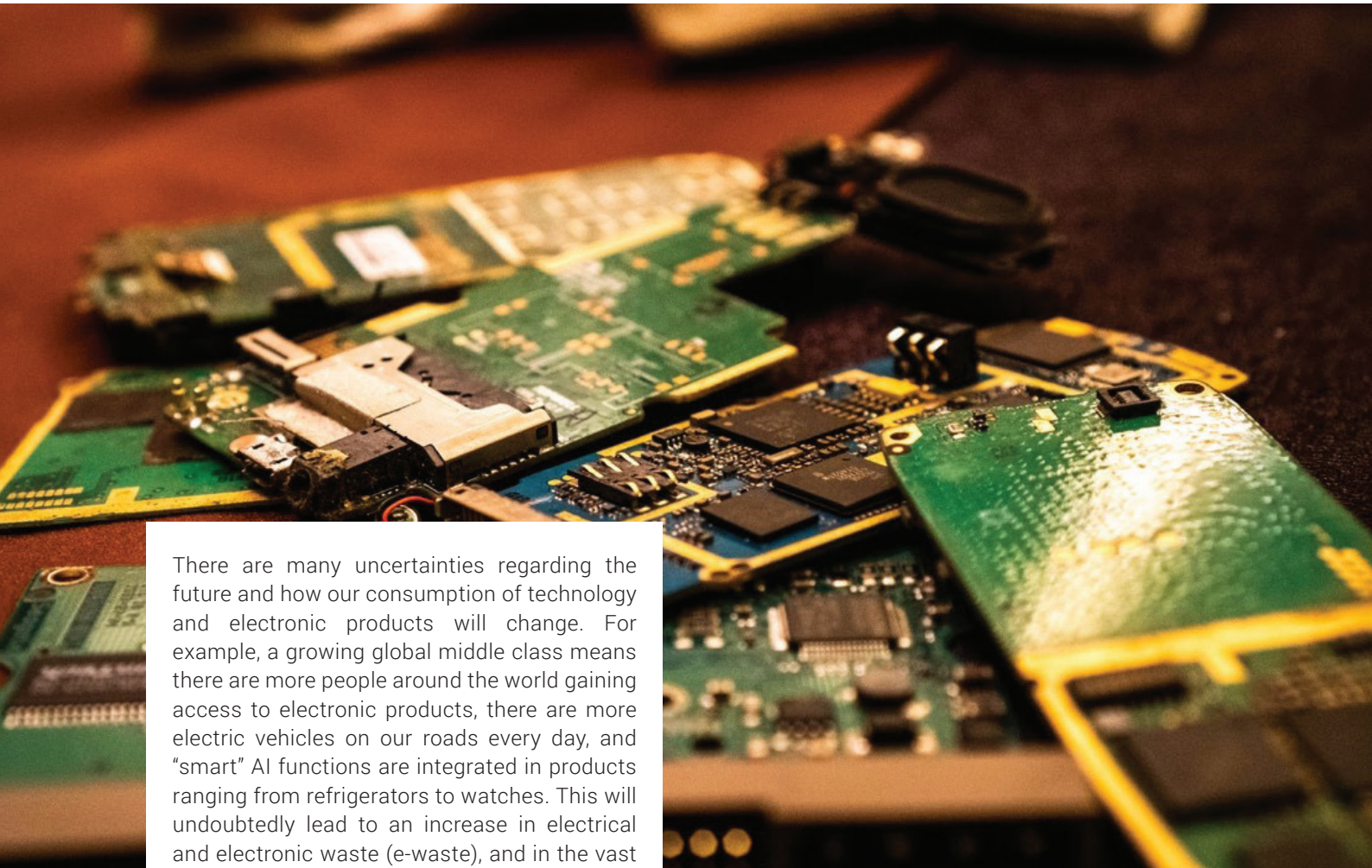
- Landfill and other disposal
- Incineration with energy recovery
- Incineration without energy recovery
- Other recovery (recycling and composting)
- Waste unaccounted for

The size of the pie charts represents the number of waste-to-energy plants by region

IETC’s report Waste to Energy: Considerations for Informed Decision-making provides a balanced view of waste-to-energy technology. In the context of global status and trends, with a wealth of real examples, the report illustrates both opportunities and challenges, and highlights key considerations for decision makers in developing countries. The report stresses that reduction, reuse and recycling (the 3Rs) should be prioritized and incorporated in waste management plans that include thermal recovery options.

The global
waste-to-energy market
 was valued at **US\$9.1 billion** in 2016, and is
 expected to **increase to over US\$25 billion**
 by 2025

Future E-waste Scenarios



There are many uncertainties regarding the future and how our consumption of technology and electronic products will change. For example, a growing global middle class means there are more people around the world gaining access to electronic products, there are more electric vehicles on our roads every day, and “smart” AI functions are integrated in products ranging from refrigerators to watches. This will undoubtedly lead to an increase in electrical and electronic waste (e-waste), and in the vast majority of countries, there is currently no system or infrastructure in place to deal with this growing problem.

Circuit boards from cellphones to be recycled for raw material

IETC's [Future E-waste Scenarios](#) report, developed together with the United Nations University, investigates future scenarios for e-waste to identify challenges and opportunities ahead.

The publication highlights that the diversity of materials used in electronic appliances results in significant environmental impacts at the production and extraction stages. Even though technologies to recycle these materials are available, regulations and incentives need to be implemented to leverage the collection rate of e-waste, which still lags at around 20%, and extend materials' lifecycle. The report outlines three possible scenarios, which are largely dependent on the degree to which businesses act in accordance with a new model of circular production:

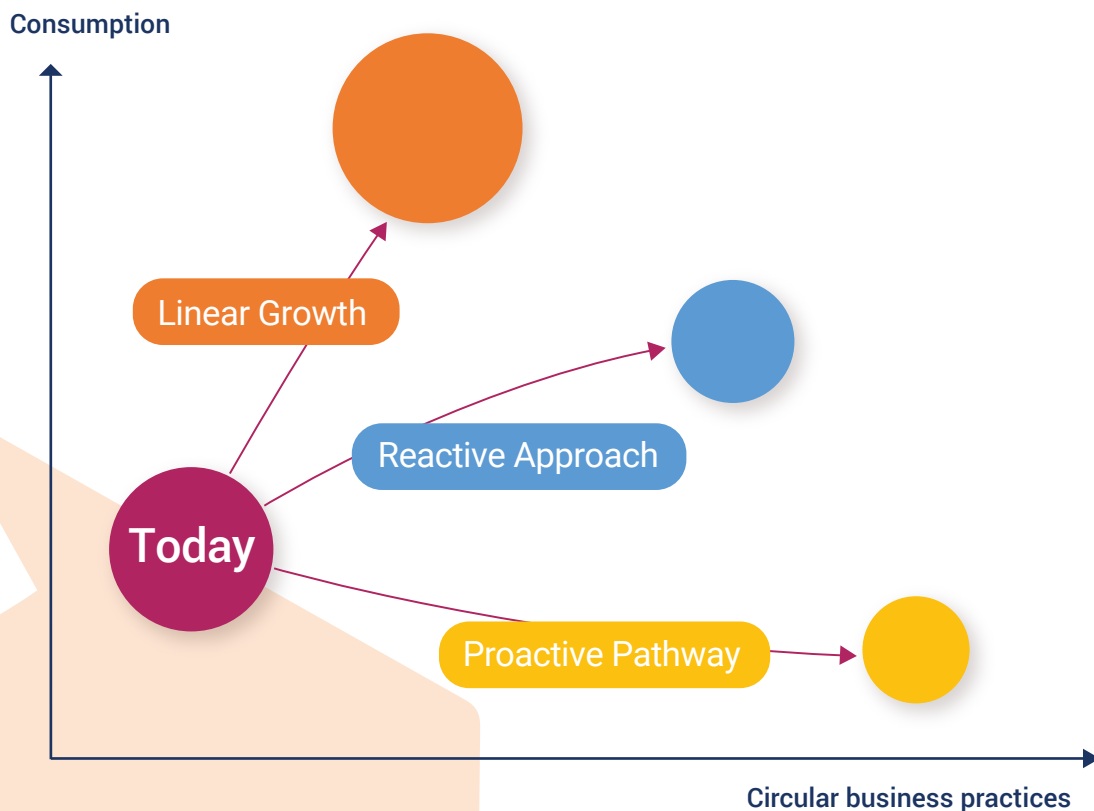
“By 2050
e-waste generation
will reach
111 million
tons per year,
more than double
today's generation.”

- ▶ the **business-as-usual 'linear growth,'** with no improvements in collection or recycling, results in increased consumption and a severe e-waste problem;
- ▶ the **'reactive approach,'** with stricter regulatory obligations and monitoring in developed countries, but with businesses reluctant to comply outsourcing their impacts to countries with weaker regulations; and
- ▶ the **'proactive path,'** with innovative businesses pushing towards a circular economy, prioritizing longevity and reuse of electronic products. This model would reduce environmental impacts, including through the reduction of e-waste generation.

The report concludes that although there are many uncertainties about how future technologies will evolve, the growing e-products sector holds many opportunities. Activities such as component reuse and leasing or servicing products can help create small businesses, especially in countries lacking primary resources or manufacturing.

User demand for sustainable products is also growing and companies with greater product longevity are gaining popularity. The publication also identifies the Extended Producer Responsibility (EPR)-based take-back system as a milestone for policymakers and argues that it should be coupled with stakeholder cooperation in the product lifecycle.

“The size and severity of the future e-waste problem will ultimately depend on our production and consumption models.”



Gender and Waste



Although waste management is often considered gender neutral, gender inequalities and norms are embedded in almost all aspects of waste management. IETC's new publication [*Gender and waste nexus: Experiences from Bhutan, Mongolia and Nepal*](#) (2019), co-authored by GRID-Arendal and officially released at the International Solid Waste Association (ISWA) World Congress 2019 in Bilbao, Spain, provides a detailed analysis of the gendered nature of the waste sector in the three countries.

The report reveals that a division of labor based on conventional gender roles and stereotypes dominates the waste management sector. Women tend to be mostly responsible for unpaid or volunteer household and community activities related to waste in line with their traditional roles and responsibilities, though their prominent roles in household and community waste management is largely unacknowledged. Women also tend to have majority representation in many informal roles such as waste pickers at dump sites. Yet, when informal or voluntary activities become formalized, men are often the beneficiaries, taking more lucrative and safer jobs as they become available.

A waste picker at a landfill in Thimphu, Bhutan

“Women can’t be truck drivers because it is dirty work. How would she cook for her family in the evening with dirty hands?”

— An official at a public waste collection company in Ulaanbaatar, Mongolia

“Thank you for opening my eyes to gender issues in waste management. Had it not been your report and the gender mainstreaming workshops, I would have thought that our existing waste management issues were gender neutral.”

– Ms. Tshering Yangzom, an environment officer in Thimphu municipality, Bhutan



An artist-entrepreneur making materials from recycled paper in Ulaanbaatar, Mongolia

Mainstreaming gender in the waste sector can be an opportunity to drive improvements to the overall system. Households, which currently have the least formal engagement in the waste sector's power and policy structures, have tremendous collective capacity to reduce the flow of waste into the system. Women, as well as men, can play a valuable role in further waste reduction, segregation, composting and recycling at the household level. Labor equality standards and safety protection – waste collection trucks outfitted with lifts, for example – would also benefit all waste laborers, both men and women, while eliminating one rationale for excluding women from waste collection jobs. The report provides policy considerations for decision makers to create a more gender-responsive waste management sector.

The report is one of the products of the Waste and Climate Change project funded by the International Climate Initiative and

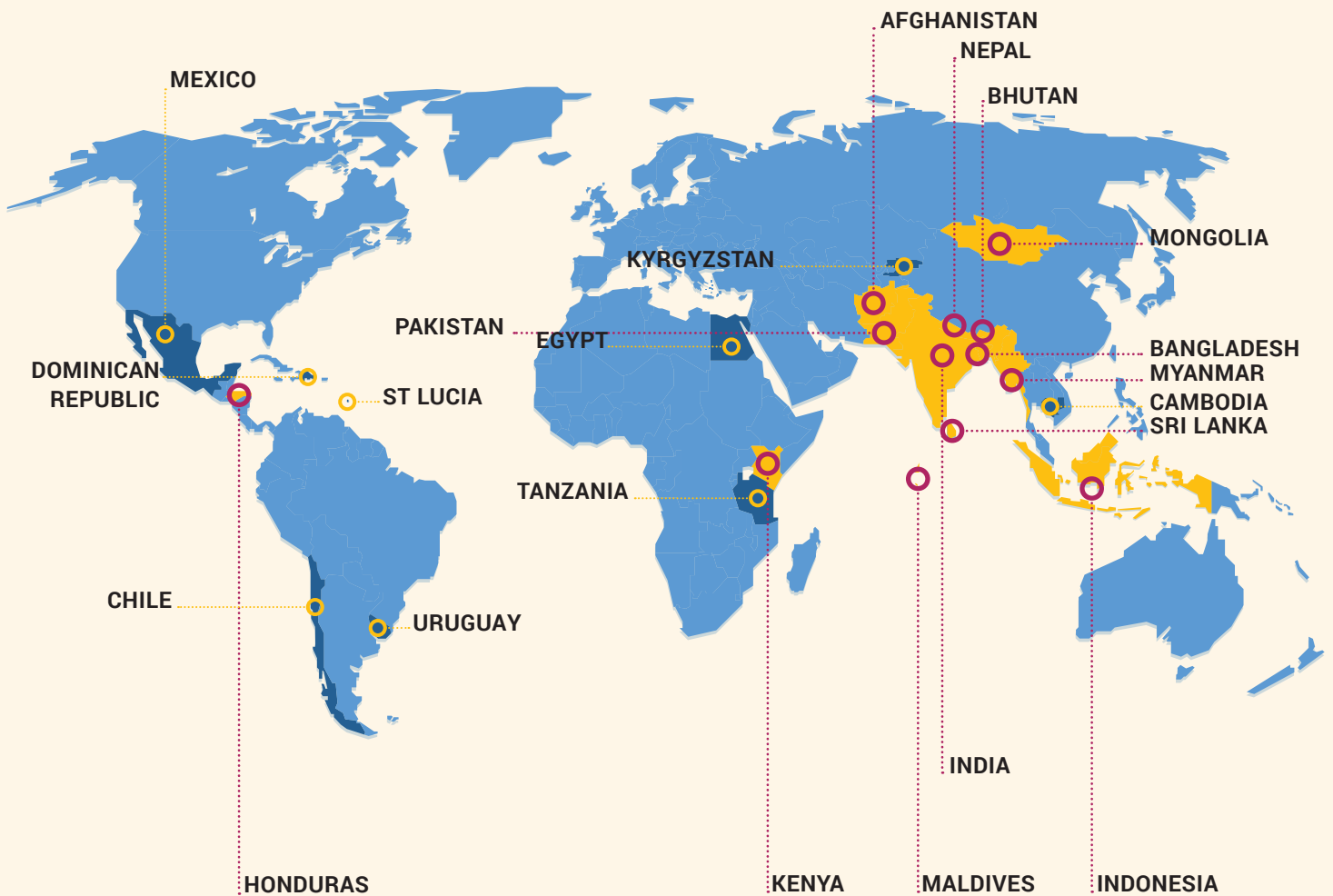


Gender mainstreaming and awareness workshop in Kathmandu, Nepal

implemented by IETC in partnership with local organizations in Mongolia, Bhutan and Nepal. As part of this project, gender mainstreaming and awareness workshops were conducted in Bhutan, Mongolia and Nepal in April 2019. Various knowledge products were also developed, including video and photo galleries from Bhutan, Mongolia and Nepal. Please visit [our website](#) for links to these materials.

In-country Support

Active in-country support projects in 2019



Activities in countries displayed in yellow are highlighted in this report

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Honduras



IETC, through UNEP Office for Latin America and the Caribbean, assisted in developing the national and municipal waste strategy of Honduras. The project was led by the Ministry of Environment with the technical assistance of the National Cleaner Production Center of Honduras. The project included the development of a national baseline on solid waste management, an action plan, the identification of pilot demonstration projects, as well as stakeholder engagement activities and public dissemination. A municipal strategy with an action plan was also developed for the municipality of Omoa.

The **National Strategy of Honduras** was presented by the government in April 2019 to contribute to sustainable waste management in the country and to develop the national framework law on waste management. The

Waste pickers in Omoa, Honduras

strategy was preceded by the development of a political and legal framework and a comprehensive baseline including data on current waste generation and composition, along with an analysis of the processes of collection, transfer, reuse and final disposal. The National Strategy overviews the main challenges faced for waste management in the country and outlines recommendations and opportunities. The National Strategy was developed through a participatory process with numerous stakeholders who agreed on the main actions included in the action plan.

India



The Government of India pledged to ban all single-use plastics by 2022 and has already adopted relevant national policies and regulations. However, many states and local governments are facing challenges with their implementation, monitoring and enforcement.

Given this context, the IGES Centre Collaborating with UNEP on Environmental Technologies (IGES-CCET) and IETC, in partnership with ICLEI-South Asia, are providing technical support to the Greater Hyderabad Municipal Council to develop a **comprehensive strategy and action plan** to manage plastic waste in the city based on circular economy principles, while implementing pilot projects for capacity-building and lifestyle changes.

The **Holistic Strategy and Action Plan for Plastic Waste Management** has been submitted for public hearing. The pilot

Waste pickers in Varanasi, India

project focuses on reducing the use of single-use plastics through the introduction of viable alternatives, awareness and education programmes, and on improving the value chain of plastic recycling by introducing waste separation at source, collection and the establishment of material recovery in the area of Adarsh Nagar, one of the religious tourist areas of the city. This project aims to create additional income opportunities and livelihood options for urban and marginalized people and women in the area.

Indonesia



For Indonesia, a large source of marine plastic litter, the reduction of plastic waste is a priority. In support of a national initiative, **The National Plastic Waste Reduction Plan for Indonesia** was drafted by IGES-CCET with the support of IETC under the leadership of the Ministry of Environment and Forestry and with the involvement of key stakeholders.

Based on the country's Plan of Action on Marine Plastic Debris and the Presidential Decree on solid waste management (No. 97/2017), the National Plastic Waste Reduction Plan provides policy directions and specific targets to reduce plastic waste generation and increase plastic waste recycling based on circular economy principles. It is now in the final stage of getting required approvals from relevant agencies and stakeholders.

With support from IETC, IGES-CCET is also assisting four local governments in the Lake Toba region to develop **Local Solid Waste Management Plans**. As one of Indonesia's ten most important tourism destinations, proper waste management is urgently required to protect the natural environment and sustainable livelihood of people. These local plans have been officially adopted and pilot implementation is already underway.

Beach pollution at Kuta Beach, Bali, Indonesia

© Maxim Blinkov/Shutterstock.com

Sri Lanka



Marine litter washed up in Negombo, Sri Lanka

In line with Sri Lanka's latest National Waste Management Policy, IGES-CCET and IETC are supporting the Ministry of Mahaweli Development and Environment in developing **a plastic waste management action plan, guidelines for the rehabilitation of open dumpsites, and an institutional and legal framework** at the national level to facilitate the effective implementation of national policies at the local level. These materials will be accompanied by a training programme for building the capacities of policymakers and practitioners in local governments.

As part of this IETC funded project, IGES-CCET also works with the Negombo Municipal Council, one of the fast-growing cities in Western Province, to formulate a city waste management strategy. They have jointly developed a **Status Report** and the **Negombo City Waste Management Strategy and Action Plan**, which were submitted for approval to the technical committee of the city. In addition, a pilot project to set up a material recovery facility in the city was launched in cooperation with local stakeholders.

Bhutan, Mongolia, Nepal

Since 2017, IETC has been working on a waste and climate change project to reduce the impacts of the waste sector on climate change, through capacity strengthening and policy support at the national and local levels in Bhutan, Mongolia and Nepal. In each country, IETC completed a waste composition study, finalized **the baseline scenario for greenhouse gas (GHG) emissions and short-lived climate pollutants (SLCPs) from waste**, supported the development of the **National Waste Management Improvement Strategy and Action Plans**, and assisted in the identification of appropriate Environmentally Sound Technologies for mitigation of GHGs and SLCPs from the waste sector.

Bhutan

In June, Her Majesty the Queen launched the **Bhutan Waste Management Strategy (2019-2030)**, developed with the assistance of IETC. The strategy is available in English and Dzongkha.

Nepal

IETC's partner LEAD Nepal conducted an extensive baseline study in 21 municipalities to collect information on waste composition and management. This provided important information for the development of the **National Waste Management Strategy and Action Plan**, which sets an ambitious 'pathway towards zero waste' and is under finalization. The project also supports municipalities such as Birendranagar in developing local strategies and testing pilot technologies to improve waste management.

Mongolia

With the help of our local partner The Asia Foundation, the project contributed to the development of Mongolia's **2020 Biennial Update Report** to the United Nations Framework Convention on Climate Change by providing waste-related data. A thorough waste composition study was conducted in Ulaanbaatar to update the solid waste database and inform policy development. This Waste Composition Study is available in Mongolian and English and provides useful information on the complexity of the waste composition in the city of Ulaanbaatar. The Ministry of Environment endorsed UNEP's methodology for Sustainability Assessment of Technologies, which was translated into Mongolian.

A small waste recycling station in Bhimdatta, Kanchanpur district, Nepal



South Asia



Due to its rapid economic growth and urbanization, South Asia is predicted to be one of the highest waste generators in the world, with 661 million tons of waste expected to be generated annually by 2050.

In light of this forecast, IGES-CCET and IETC have been working with South Asia Co-operative Environment Programme (SACEP) and its member countries, as well as other international partners, to implement sustainable waste and resource management in the subregion and catalyse actions towards achieving the Sustainable Development Goals (SDGs).

The **Status Report of Municipal Solid Waste Management and the Roadmap for Sustainable Waste Management and Resource Circulation in South Asia (2019-2030)** were prepared based

on the consultations held at the three sub-regional workshops in Bangladesh, Nepal and Sri Lanka. The Roadmap discusses the status of sustainable waste management in the member countries, identifies priority areas, sets measurable targets, appropriate actions and policy interventions to undertake.

The Status Report and Roadmap were officially adopted at the 15th Meeting of the Governing Council of SACEP in November, attended by ministers and high-level delegates from the eight SACEP member countries.



Promotion of Environmentally Sound Practices

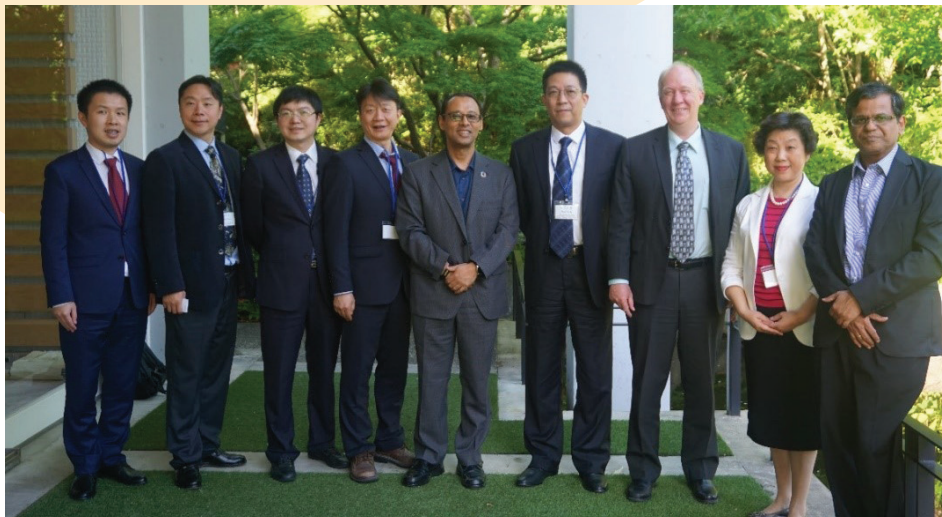
Private Sector Dialogue

IETC's 2018 annual report included a thematic article on gender. This year, IETC chose to focus on the private sector. As an intergovernmental organization, UNEP's core business is with and for its Member States. Governments decide UNEP's Programme of Work and provide almost all the funding with which it is implemented. This said, UNEP's Member States have clearly recognized that the environmental challenges UNEP is seeking solutions to cannot be solved by governments alone, and have therefore directed UNEP to work with, and impact, the private sector. This direction is manifested, in part, by one of the three agreed key indicators of the outcomes for IETC's work: *"The number of private companies/industries that have used UNEP analysis or guidance in implementing policies and good practices for waste prevention and sound waste management."*

"No matter what governments do to counter the rise in temperatures from preindustrial levels, most of the investment needed to stabilize the world's climate must come from the private sector."

**– International Finance Corporation,
Worldbank Group**

Participants in the Global Dialogue with the Private Sector on Technology Solutions for Holistic Waste Management in Osaka, Japan



“Private sector engagement needs to go beyond the ‘low-hanging fruit’ and target a range of environmental issues and countries.”

– OECD

In this context, IETC convened [“A Global Dialogue with the Private Sector: Technology Solutions for Holistic Waste Management”](#) at our headquarters in Osaka, Japan in May. The dialogue promoted business opportunities in addressing global environmental challenges, with a focus on waste management. The dialogue focused on four thematic areas: plastics and marine litter, electronic and hazardous waste, waste to energy plants and holistic waste management. Private sector participants included Sunpower (used tyres), Ajinomoto (health and beauty products), Kaneka (compostable, organic plastic film replacement), Daikin (air conditioning), JFE (waste to energy), Hitachi Zosen (waste to energy), Takuma (waste to energy), SUS Environment (waste to energy), Amita (biogas), Showa Denko (chemicals), Green Technology Bank (finance), Seven & i Holdings (retailing, 7-Eleven stores).

During the dialogue, IETC launched its report “Waste to Energy: Considerations for Informed Decision Making” (2019) and signed pledges outlining specific future cooperation with Kaneka, Sunpower and Green Technology Bank. As of 2019, one private sector outcome in the UNEP Programme of Work has been achieved and reported to Member States, based on a company now using IETC’s Compendium of technologies for the recovery of materials/energy from end-of-life tyres (2016) in its business operations. Talks are continuing regarding modalities for cooperation with many of the other companies that attended.

“The United Nations has to involve business and the private sector... We simply cannot afford to shut these firms out of the process, and it’s also important for them to see the huge opportunities to be had from a shift to a more sustainable business model.”

– Erik Solheim, past Executive Director of UNEP



Read more about the dialogue here!

Contributions related to Multilateral Environment Agreements

Minamata Convention

Mercury Monitoring, Myanmar

As part of the mercury waste project funded by Japan, IETC, in collaboration with the Ministry of the Environment of Japan, conducted mercury emission monitoring at an open dumping site in Yangon, Myanmar, in January 2019. IETC has conducted mercury emission monitoring on multiple occasions, based on decision MC-1/14 adopted by the Conference of the Parties to the Minamata Convention on Mercury at its first session in 2017. The mercury monitoring measured mercury emissions using portable instruments, as well as mercury releases to leachate and solid waste samples. Furthermore, the mercury monitoring mission contributed to build capacity in mercury monitoring among national experts and officials.

IETC, in collaboration with the Ministry of the Environment of Japan, intends to conduct further monitoring missions in 2020. It already conducted missions in Indonesia and Kenya. A final report is scheduled for release at the Conference of the Parties to the Minamata Convention on Mercury at its fourth session in Indonesia in 2021.

Meeting of the Group of Technical Experts on thresholds for mercury concentration in waste

Based on decision MC-2/2 adopted by the Conference of the Parties to the Minamata Convention at its second session in 2018, IETC, the Secretariat of the Minamata Convention on Mercury and the Ministry of the Environment of Japan co-organized a face-to-face meeting of the Group of Technical Experts on thresholds for mercury concentration in waste. During the three-day meeting held in May 2019, 25 experts nominated by bureau representatives in each region, had thorough discussions on the list of waste consisting of, containing and contaminated with mercury or mercury compounds, and the establishment of thresholds for waste containing mercury or mercury compounds. The group produced a report and submitted it to the Secretariat of the Minamata Convention for consideration at the Conference of the Parties to the Minamata Convention on Mercury during its third session in November 2019.



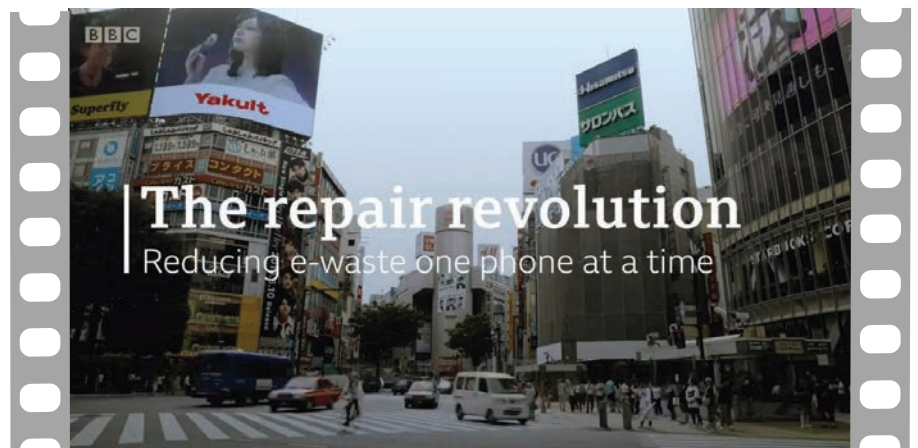
Measuring mercury contamination at a dump site in Yangon, Myanmar

Outreach

Global Visibility

Interview - BBC REEL video series "Sustainable Future"

In August, Shunichi Honda, programme officer at IETC, delivered a comprehensive overview of e-waste and its management via BBC REEL Video "The café for broken things," focusing on reducing e-waste such as phones and computers by simply repairing them. It made an impassioned appeal to people to take action before items become waste, by becoming aware of the products' lifecycle.



BBC video "The café for broken things"

Interview - Green Industry Platform "Five Ways to Reduce Single-use Plastics"

IETC works actively to provide private and public stakeholders with solutions and steps to take to reduce the use and production of single-use plastics. In an article published on the Green Industry Platform in December, Claudia Giacovelli, programme officer at IETC, draws from the conclusions of IETC's popular report "Single-Use Plastics: A Roadmap for Sustainability" to highlight five priority actions that can help curb the use of single-use plastics.

Visibility in Japan



IETC is also active within its host country, creating partnerships with Japanese companies and stakeholders in 2019 to promote sustainable practices and the SDGs.

Hankyu SDG train

Sustainable Development Goals in Osaka City: Hankyu Line and River Clean-up

IETC set up a campaign to raise public awareness on the SDGs in cooperation with Hankyu Hanshin Holdings, Inc. (a railway company in the Kansai region of Japan), the city of Osaka, the Global Environment Centre Foundation, and artist Ms. Yuuna Okanishi. This campaign involved Hankyu Hanshin Holdings, Inc. re-designing a train to call greater attention

to the SDGs. A poster was also designed using Ms. Yuuna Okanishi's calligraphy to emphasize SDG 14: Life Below Water. This SDG was chosen for the "Plastics Smart" campaign being implemented by the Ministry of the Environment of Japan and the cleanup of a local river by staff at IETC, involving local stakeholders. The posters are as of January 2020 hanging inside Hankyu line trains.

UNIQLO Sustainability Magazine *The Power of Clothing*

IETC further enhanced its cooperation with the private sector to build awareness on current global environmental problems, with a focus on waste management. IETC started a collaboration with retailer Fast Retailing Co., Ltd, through its UNIQLO brand which carried out its pledged to move to eco-friendly paper and reusable bags in September 2019. One outcome of this collaboration is the article "What We Can Do Now!" published in September in the magazine *The Power of Clothing*. The article states that awareness on actions that can be taken to eliminate single-use plastics is of great importance, and it highlights good practices to be undertaken by global private companies. Fast Retailing Co., Ltd, promotes the reuse and recycling of waste generated through its business activities and across the supply chain with a target of reducing the amount of single-use plastics handed to customers by 85%, or around 7,800 tons annually, by the end of 2020.

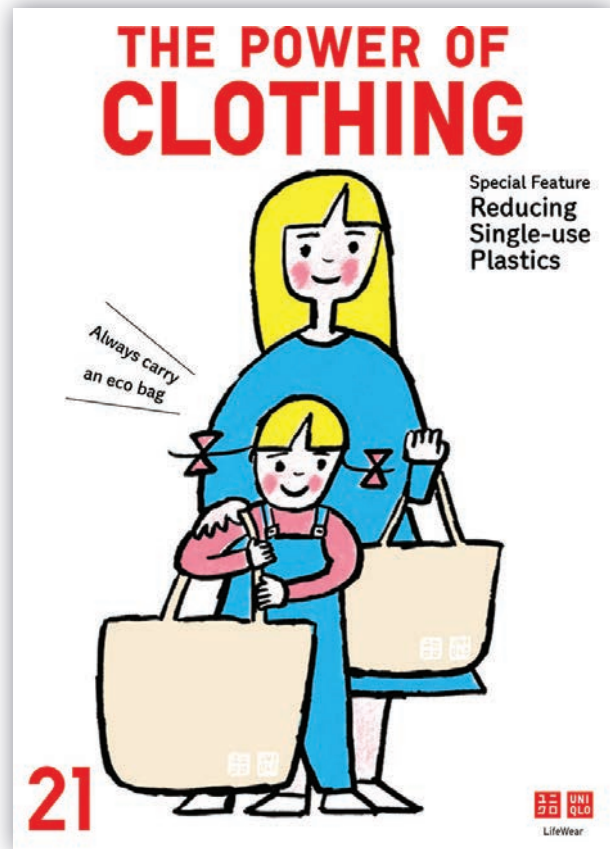
Hello Kitty and UNEP #HelloGlobalGoals

The UN and Sanrio Co., Ltd. started a collaboration to promote the SDGs through the video series #HelloGlobalGoals on Hello Kitty's YouTube channel. During the briefing given to the press in Japan, Keith Alverson, Director of IETC, declared:

"As the world comes together to work towards a healthier planet through the Sustainable Development Goals, innovation and creativity will be at the heart of our communication to change policy and behaviour for the better. We are excited to be working with Hello Kitty – a brand whose popularity spans continents, age groups and languages – to bring greater creativity, accessibility and playfulness into our messages."

In collaboration with Hello Kitty, the UN Environment Programme is energized to share positive and inspirational actions and stories of Governments, the private sector and global citizens playing their part to build a healthier, more sustainable world for all."

– Keith Alverson



Yuuna Okanishi's Art Project "Return to True Blue"

Through her art and calligraphy, Ms. Yuuna Okanishi sends a strong message to the world on the global state of the environment and on environmental protection. Her latest art project, "Return to True Blue, MANTRA," shows her emotions and sensibility towards marine plastic waste issues. IETC and artists such as Ms. Yuuna Okanishi work hand-in-hand to tackle various environmental issues through science and the arts. She held exhibitions in cooperation with IETC in Tokyo in March and at the Todai-ji temple complex in Nara in November.





High school students performing the "Zero Plastic Waste" song at Tsurumi-ryokuchi park in Osaka, Japan

Osaka Light Music Live & Cleaning Project

More than 900 high school students in Osaka got together at Tsurumi-ryokuchi park to enjoy music and clean the area. The event was organized by Osaka's Tsurumi Ward in collaboration with the Osaka City Government and IETC. Students from Osaka City's 23 high schools involved in the event were welcomed with remarks from Tsurumi Ward Director General Nobuyuki Nagasawa and IETC Director Keith Alverson. The introduction was followed by live performances and dancing. One of the music groups composed and performed an original song "Plastic Gomi Zero" ("Zero Plastic Waste") to support the Osaka Declaration toward Zero Plastic Waste announced in January 2019. After the performance, all students took part in cleaning the park, with special attention given to removing plastic litter and waste.



Watch the performance here

IETC also regularly raises awareness with lectures at educational institutions in Japan for elementary through high school to university level.

IETC Outreach



Our twitter showcases tweets in both **English and Japanese**

We made over **235,000** impressions



This is our office E-waste for 2019, donated for the benefit of the 2020 Tokyo Olympic and Paralympic Games



Watch our **“Gender and Waste”** video series on Youtube

In 2019 IETC started using Instagram for outreach. Our most popular posts showcase ridiculous wrappings of different products



Our website was consulted **61,000 times** and our publications were downloaded almost **700,000 times**



Conferences and Events - Highlights



United Nations Environmental Assembly fourth session (UNEA-4)

UNEA-4 welcomed participants representing 173 member states, partner organizations and nongovernmental civil society groups. IETC supported member state deliberations leading to the adoption of a resolution on Environmentally Sound Management of Waste (UNEP/EA.4/RES.7), which will guide much of our work in the coming years. During the conference, IETC launched our 2019 report Small Island Developing States Waste Management Outlook at two side events and a press conference. IETC took full advantage of the presence of member states delegations to hold productive bilateral discussions on possible future engagement with several donor and recipient countries, including Kenya, Germany and the Netherlands.

IETC International Advisory Board Meeting

IETC hosted the 11th meeting of its International Advisory Board at our office in Osaka. The board provides IETC Director with advice on the strategic direction and work of the centre and includes in its members policymakers and technical experts. The board chair, Yuriko Koike,

Flipflop, a Dhow made entirely from plastic waste found along Africa's coast was showcased at UNEA-4

Governor of Tokyo, was unfortunately unable to participate and the board therefore elected Mr. Antonis Mavropoulos, president of ISWA, as Acting Chair for the duration of the meeting. The board discussed the 2020-2021 work programme for IETC, including development of the Global Waste Management Outlook II. Prof. Noelle E. Selin (Massachusetts Institute of Technology) provided a remote presentation on an integrated approach to waste and biogeochemical cycling with a focus on mercury and Prof. Wu Jiang (Tongji University) presented an overview of the management of domestic and hazardous waste in Shanghai, China.

Read more about
UNEA-4 here





UNEP Symposium on Plastic Waste Problems - Reducing Ocean Plastic Waste

UNEP Symposium on Plastic Waste Problems was held as part of IETC's Global Dialogue with the Private Sector on Technology Solutions for Holistic Waste Management in collaboration with the Ministry of Foreign Affairs and Ministry of the Environment of Japan, Osaka City and the Global Environment Centre Foundation. The symposium was attended by over 250 participants.

The symposium opened with Ms. Yuuna Okanishi, calligrapher and artist, providing a live performance entitled "Towards a Sustainable Planet – Return to True Blue," highlighting a common aspiration of the symposium. The performance was followed by opening remarks by Mr. Seigo Tanaka, Vice Mayor of Osaka, and a keynote speech by Mr. Yasuo Takahashi, Vice Minister for Global Environmental Affairs, Ministry of the Environment, Japan.

The event featured presentations and panel discussions, including "Challenges and Solutions on Plastic Waste Management (Part 1)" and "Time to Act Reducing Ocean Plastic (Part 2)." At the end of the symposium, a message from UNEP Symposium to the upcoming G20 Osaka Summit and G20 Ministerial Meeting was submitted to the Government of Japan, and Mr. Hideo Suzuki gave closing remarks on behalf of the G20 Presidency of the G20 Osaka Summit.

Tokyo International Conference on African Development (TICAD 7)

Japan welcomed more than 10,000 participants from 53 African countries, including 42 heads of state and 52 development partner countries, as well as representatives of international and regional organizations, civil society and the private sector to the TICAD 7 conference in Yokohama. UNEP's delegation to the conference was led by Regional Office Director Juliette Biao. IETC was pleased to partner with the Regional Office and the African Union Secretariat in a side event entitled "Plastic Pollution Problems and Solutions for Development in Africa." IETC Director Keith Alverson opened the side event with a presentation based on three recently published IETC reports relevant to this topic: Africa Waste Management Outlook (2018), Single Use Plastics: A Roadmap for Sustainability (2018), and Waste to Energy: Considerations for Informed Decision Making (2019).

In line with the conference theme on private sector engagement in development challenges, IETC also welcomed a presentation at the side event from our private sector partner Kaneka Corporation, on their compostable biofilm product and efforts to introduce it in Kenya as a replacement for banned plastic bags.



UN Secretary-General Antonio Guterres and Prime Minister of Japan Shinzo Abe at the TICAD7 conference



ISWA 2019 World Congress

The eighth ISWA World Congress held at the Euskalduna Conference Centre and Concert Hall in Bilbao, Spain, featured a scientific programme focused on sustainable waste management, circular economy and resource efficiency.

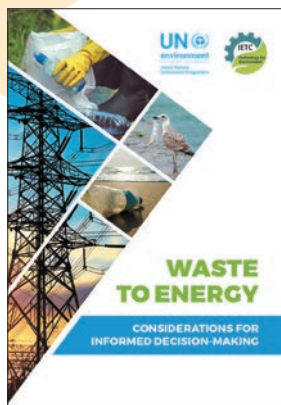
During the session "Women of Waste," IETC participated in a discussion about empowerment of women in recycling and the circular economy. On this occasion, the "Gender and waste nexus" report, which provides a detailed analysis of the gendered nature of the waste sector in Bhutan, Mongolia and Nepal, was launched.

Publications

All our publications are available at:
<https://www.unenvironment.org/ietc/resources>



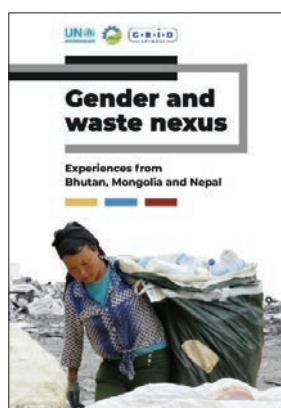
Small Island Developing States
Waste Management Outlook (2019)
Full Report [English](#)
Summary for Decision-Makers [English](#), [French](#),
[Spanish](#)



Waste to Energy:
Considerations for Informed decision-making (2019)
Full Report [English](#)
Summary for Decision-Makers [English](#)



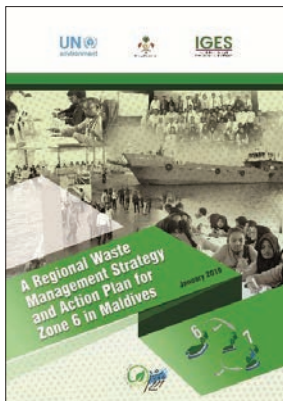
Future E-Waste Scenarios (2019)
Full Report [English](#)



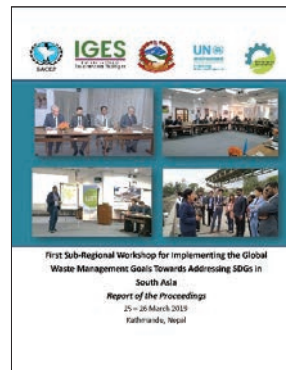
Gender and waste nexus: Experiences from
Bhutan, Mongolia and Nepal (2019)
Full Report [English](#)
Policy Brief [English](#)

You can now also consult our
[Africa Waste Management Outlook](#) in French

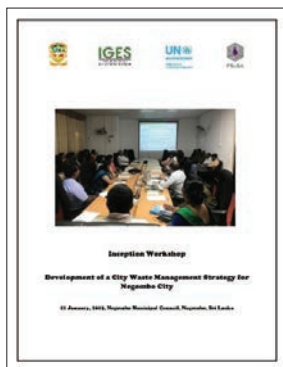




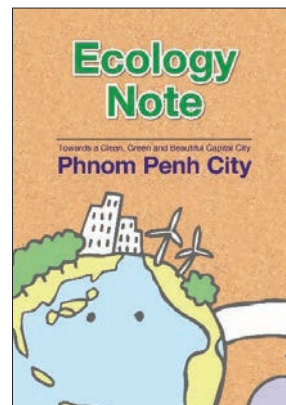
Regional Waste Management Strategy and Action Plan for Zone 6 in Maldives (2019)
Full Report [English](#), [Divehi](#)



First Sub-Regional Workshop for Implementing the Global Waste Management Goals Towards Addressing SDGs in South Asia - Report of the Proceedings (2019)
Full Report [English](#)



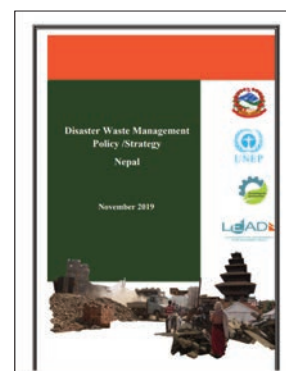
Development of a City Waste Management Strategy for Negombo City (2019)
Full Report [English](#)



Ecology Note - Towards a Clean, Green and beautiful Capital City (2019)
Full Report [English](#)



Ulaanbaatar Household Waste Composition Study Report (2019)
Full Report [English](#), [Mongolian](#)



Disaster Waste Management Policy/Strategy Nepal (2019)
Full Report [English](#), [Nepali](#)

Thank you to our staff!

Changes at IETC

In 2019, three professional staff members left IETC for new challenges. IETC would like to thank them for their contributions and wish them every success in their new endeavours.

Mr. Mahesh Pradhan

Senior Programme Officer (at IETC 2016-2019)

Mahesh was responsible for the development of a decentralized knowledge platform on ESTs, with a focus on waste management, as well as curriculum design on holistic approaches to waste management. In August 2019 he assumed the post of Senior Programme Officer of the UNEP Ecosystem Division.



Ms. Yoshie Fujiyama

Junior Programme Officer/Associate Expert (at IETC 2018-2019)

Yoshie's work included climate change, gender issues and waste management in West Asia and Small Island Developing States. She also provided IETC with support and follow-up to UNEA4 and was in charge of producing the IETC Annual Report for 2018. From January 2020 she assumed the post of Associate Expert at UNIDO in Vienna, Austria.



Mr. Iyngararasan Mylvakanam

Senior Programme Officer (at IETC 2017-2019)

Iyngararasan focused on providing advisory and technical services on holistic waste management, prevention of air pollution, and programme development and management based on results-based management strategy. In September 2019 he assumed the post of Programme Management Officer, Chemicals, Waste and Air Quality at the UNEP West Asia Office.



Our Interns: What are they doing now?

IETC continues its support and encouragement of young professionals beginning their careers in environmental management and development. IETC would like to thank all its interns for their contributions in 2019.

Man Mei Chim

August 2018 to January 2019

"Over the course of the internship, I developed my capacity in project management and had the opportunity to work in a multi-cultural environment. The experience also equipped me with professional knowledge on waste management and waste to energy, which helped prepare me for my job in the Environmental Protection Department of the Government of Hong Kong. I am currently working as the Assistant Environmental Protection Officer, which enforces environmental laws in Hong Kong and handles the prosecution of cases of environmental non-compliance."



Rob Kuipers

January 2019 to July 2019

"Working at IETC has been a great and rewarding experience. I had the opportunity to work on different projects with excellent guidance, such as the waste-to-energy report and the global dialogue on holistic waste management in Osaka. I learned a lot about waste management and development and have gained valuable experience to advance my career. I am sure that IETC is one of the best places to intern for anyone who is interested in waste and environmental management. After my internship, I continued with my graduate research project at Kyoto University and collaborated with CARE Nepal to conduct research on community-based climate change adaptation."



Hikaru Shirai

October 2019 onward

"My internship at IETC has been an incredible learning experience. I have acquired significant acumen in waste and resource management, as well as outreach coordinating skills. The staff and my fellow interns are all genuinely compassionate and dedicated to serving others with passion. I have been so fortunate to be surrounded by people who inspire me to actively take a stand on environmental issues. I am certain IETC is one of the best places for those who would like to achieve self-improvement in the field of waste management."



2019 Interns

Ms. Man Mei CHIM, Hong Kong, China
Mr. Robin ARGUEYROLLES, France
Ms. Hikaru SHIRAI, Japan

Mr. Rob KUIPERS, The Netherlands
Mr. Lok Hin (Nelson) FUNG, Hong Kong, China
Ms. Raphaëlle DELMAS, France

Greening the Blue at IETC



IETC's bicycle lot

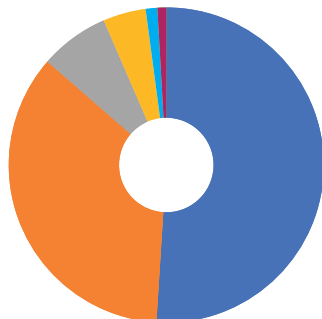
IETC is making great strides in reducing its environmental footprint by greening its activities in term of energy and water consumption, travel, and waste generation. This year, IETC staff proved to be mindful of their environmental impact **outside the office**, as demonstrated by the fact that **two-thirds of the staff commute by bicycle** while the rest travel by public transportation.

Air travel emissions per person on staff have remained 2.8 tCO₂ lower than the overall average for UNEP. At the office level, the lower air travel emissions avoided are equivalent to a 33 ton decrease of CO₂ emissions into the atmosphere.

As for our ongoing efforts to reduce and better manage waste, in 2018 IETC not only **lowered waste generation per staff member by 5kg** but also **increased our recycling rate from 37% to 46%**. By doing so, IETC once again positioned itself as a leading centre for waste management within UNEP, where the recycling rate is lower and the average waste generated per staff member was over 1.8 times that of IETC.



Waste collected for recycling in IETC in 2018



- Paper 51%
- Plastic 35%
- Cardboard 7%
- Metal 4%
- Glass 1%
- Wood 1%

GREENING THE BLUE.

	IETC		UNEP
	FY 2017	FY 2018	FY 2018
Electricity (kWh)	36,330	40,015	-
Water (m ³)	178	162	5,501
Waste (kg)	346	281	51,534
Waste recycled (%)	37	46	27
Waste per person on staff (kg)	29	23	42
Air travel emissions per person on staff (tons CO ₂)	3.6	3.8	6.6

Finances

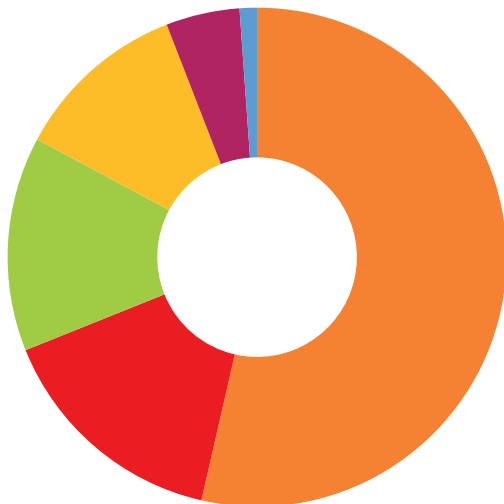
Financial Report as of 31 December 2019

Balance from 2018	1,762
Income	
Government of Japan	2,243
Ministry of Foreign Affairs	193
Ministry of the Environment	800
Ministry of the Environment - Earmarked	1,250
United Nations Environment Programme	642
International Climate Initiative - Government of Germany	582
Swedish International Development Cooperation Agency	472
Minamata Secretariat	200
European Commission	47
Total income in 2019	4,187
Expenditures	
Personnel	1,596
Project and Activities	949
Operating cost	39
Total expenditures in 2019	2,584
Balance	3,365



IETC benefits from numerous in-kind contributions, including our office space in the city of Osaka.

2019 Income (%)



- Government of Japan 54%
- United Nations Environment Programme 15%
- International Climate Initiative - Government of Germany 14%
- Swedish International Development Cooperation Agency 11%
- Minamata Secretariat 5%
- European Commission 1%

2019 Expenditures (%)



- Personnel 62%
- Project and Activities 37%
- Operating cost 1%



In Japan, the prolific flowering of cherry trees in the spring, and the gentle rain of blossoms into streams and the environment, provides a beloved symbol of the beautiful and ephemeral nature of life. The proliferation of plastic in these same streams on the other hand, is neither beautiful, nor ephemeral. Plastic is forever.

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