Chemicals and Waste Management Beyond 2020 Series

COMMUNITY OF PRACTICE



NATURE BASED SOLUTIONS AND CLIMATE ACTION



SESSION 5: SOUND **MANAGEMENT** OF CHEMICALS **AND WASTE: TOWARDS ZERO** WASTE

Webinar organized by CoP Environment



TODAY'S SPEAKERS



Husamuddin Ahmadzai UNDP



Tony Clark Avfall Sverige



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Lei Kang Tianjin Academy of Ecoenvironmental Sciences, China



Mishelle Govender Forestry, Fisheries and the Environment, South Africa



Lotten Sjölander Swedish EPA



Jenny Sahlin Profu



Vanya Veras Municipal Waste Europe



Hilda van der Veen UNDP



Xiaofang Zhou UNDP

Sweden's concept and experience on reaching zero waste Global impact of waste management & innovative waste symbol system

June 3, 2021



Avfall Sverige or the Swedish the Waste Management Association is the...

...national association for the waste management and recycling sector.

Gathers all 290 municipalities and 140 companies.

Focus on municipal waste.





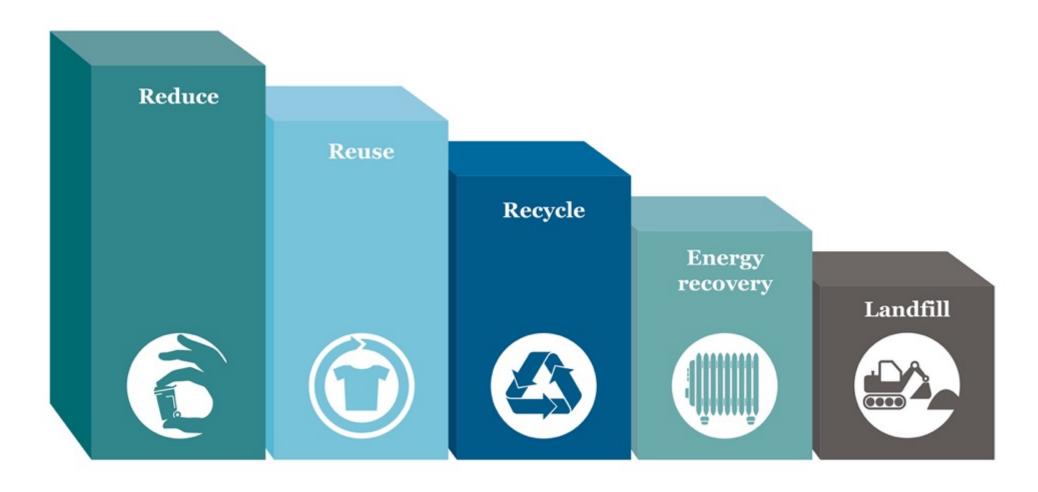
Avfall Sverige's Vision

"Zero waste"





The waste hierarcy







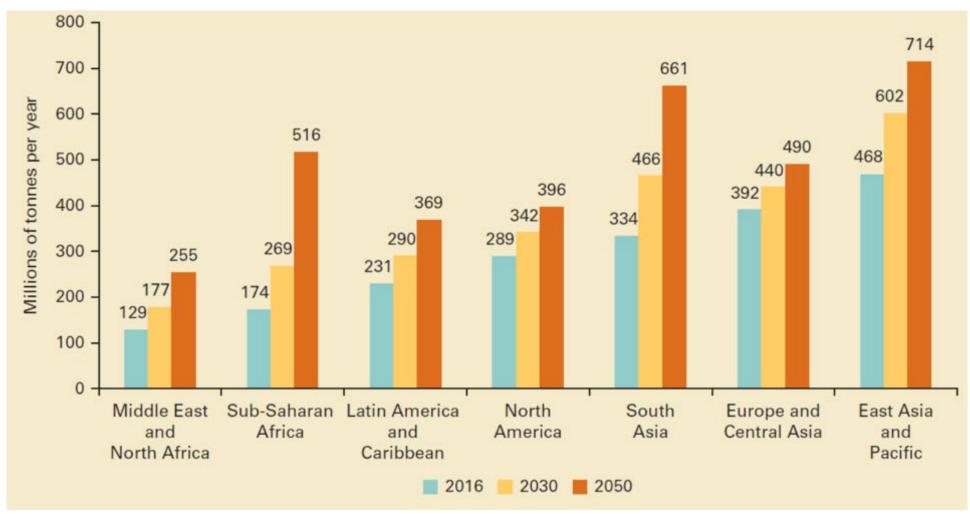
Waste management relevant for at least 11 SDG:s



Photo: Timot



Projected waste generation by region





Source: World bank

Hard facts about Waste Management and Climate Change

40 % of world's waste ends up on open, uncontrolled dumpsites.

38 % of 50 biggest dumpsites threaten marine and coastal areas.

64 million people are directly affected by the biggest dumsites.

10 % of GHG emissions from world's dumpsites by 2025 (BAU).

20 % of global antropogentic emissions comes from landfills and waste managment (UNEP, 6th May 2021).





Waste management in Sweden

1947 – most waste was put on dumpsites.

1970's – 62% on dumpsites

GOTEBORGS RENHALLNINGSVERK

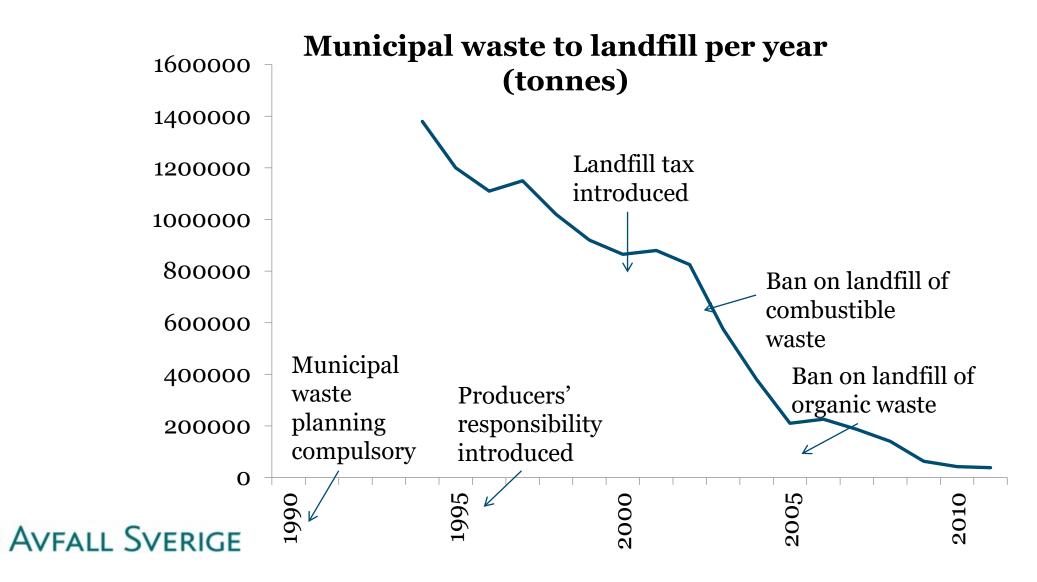
30% energy recovery

6% material recycling

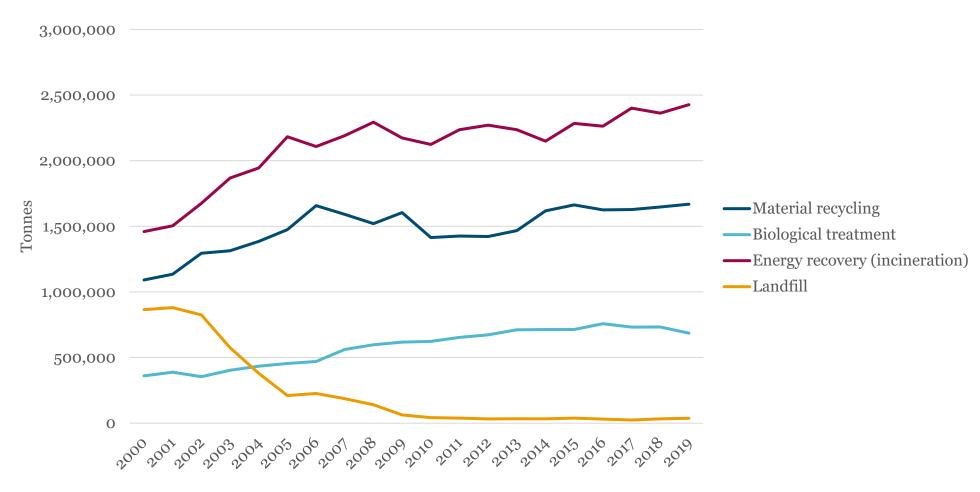
2% biological treatment



Important steps of development



The development in Sweden





Waste as a resource – circular economy

- 1.5 million tonnes of waste to material recycling
- Biogas from food waste corresponds to67 million litres of gasoline
- Bio-fertilizer from all food waste can
 replace 7 % of imported phosphorus
- 2.4 million tonnes of waste for energy recovery
 provides district heating to 1 100 000 households





A new waste sorting system makes a revolution and a contribution to the circular economy





Overview - symbols for fractions

The ten fraction categories in the labelling system for kerbside collection include 18 symbols, each of which consists of three elements: colour, symbol and fraction name.

GARDEN WASTE



FOOD WASTE



GLASS



CLEAR

GLASS PACKAGING



PAPER





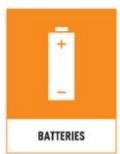
CARDBOARD





ELECTRONIC WASTE









Overview - symbols for fractions



CONSTRUCTION WASTE































Principles

- Easy to understand and navigate
- Voluntary and free
- National and local adaptions possible
- Built around a Lego-brick concept flexible, yet uniform
- Three units: color, symbol, fraction name
- Developed on a basis of inclusion of citizens, private suppliers, waste-technicians and workers on the recycle stations and recycling centers





























hvis dette kan gøres let. Fortsæt skylning. \
vedvarende øjenirritation: Søg lægehjælp. Han der
er brug for lægehjælp, medbring da behold
eller etiketten. Opbevares utilgængeligt for ban.

Advarsal

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UFI: UKHO-30FS-200T-H813

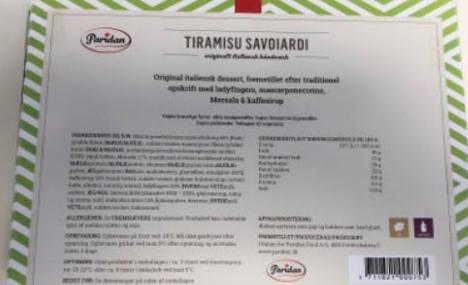




Sortering: Flaske med indhold sorteres som farligt affald. Tom flaske og låg, skylles let og sorteres adskilt som hård plast.









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dera bolin ations	231	Us	45
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Protein/Protein/Eweits/ Proteines	14	1/g	25
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of the latest and the			7.7.7.7

"Schools Inside SIE for an promoterful values / for an average stuft / for either durchschriftlichen Erwerbeiten / gans en abstic medic 6439 c/7504 lecs."

Denne posse indefinistion ca. 5 portioner:





No. GPh. på vi ap i miljert, og defor har er adviklet en metaltt i embelluge. Sarter posen som bled plant – det er et egtigt skridt på egen med greunvendelse af plantikombullaget







9 user manuals in 9 languages

With common symbols and colors we can make ourselves understood without words. Everywhere, always.







THANK YOU

Tony Clark, +46 72-245 22 20, tony.clark@avfallsverige.se avfallsverige.se

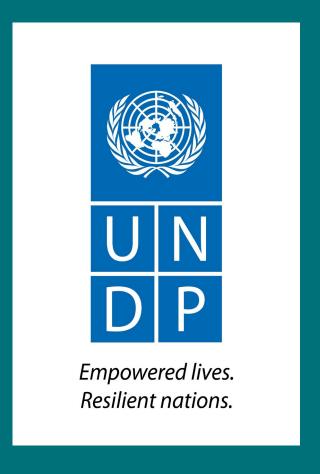
Zero waste strategy project

Partnership between Avfall Sverige and UNDP

Realized in three pilot cities in China, Costa Rica and Rwanda

Weine Wiqvist, Senior Advisor
June 2021





The Project –deliverables and content

- Brief Inception report and Workplan, by end of February
- Final report, by end of June

Main content

- Identify challenges and opportunities
- Analyze and review existing plans
- Propose an initial strategy towards zero waste
- Develop training material
- Describe future concrete projects
- Capacity building on a waste management association





Participants

Avfall Sverige

in cooperation with municipal organisations within waste management from five different regions;

Stockholm, Gothenburg, Vasteras, Gavle, Umea

UNDP and three pilot cities in China, Costa Rica and Rwanda





Some preliminary take aways

- Lack of reliable data
- Under financed and under staffed
- Large political and public interest but not prioritized
- Lack of understanding concerning climate impact
- Insufficient institutional frame
- Lack of market for recycled waste
- Need for inter-municipal cooperation
- Lock in effect in longterm contracts or PPP





THANK YOU

Weine Wiqvist
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Introduction of "Zero Waste City" Construction in China-Singapore Tianjin Eco-City

Tianjin Academy of Eco-Environmental Sciences 2021.06.03

Contents



2. The Index System Of "Zero Waste City"



1. Basic Situation

China-Singapore Tianjin Eco-City is located in the Binhai New Area of Tianjin, which is a flagship project of the cooperation between the governments of China and Singapore.

The Eco-City is 150 square kilometers, and has a permanent population of over 100,000. The average daily output of household waste is about 52 tons, mainly divided into three categories: kitchen waste, paper and plastic.





2. The Index System Of "Zero Waste City"

The Eco-City "Zero Waste City" construction indicator system consists of first-level, second-level and third-level indicators, including **5 first-level indicators**, **8 second-level indicators**, and **23 third-level indicators** (including 3 optional indicators).

Table 1 "Zero Waste City" index system

Number↔	First-level· indicators€	Second-level∙indicators₽	Third-level·indicators₽	Current value.	2020 target value₽
1€	Source reduction of	Source reduction in the construction industry ¹³	Percentage of green buildings in new buildings	100%₽	100%↔
2€	solid waste	Source reduction in life area∉	Daily production of domestic waste per capita★↓	0.80kg/person/day₽	0.80kg/person/day₄⊃
3₽	sond waste⊬		Coverage rate of domestic waste classification collection and transportation system ²	60%√³	100%₽
4₽		Source reduction in the	Domestic garbage recycling rate★4 ³	6%₽	35%₄⋾
5€	Solid-waste-	construction industry₽	Utilization of kitchen waste resources€	48%4⁻	90%₄⋾
643	resource utilization ↔	Resource utilization of construction waste?	Comprehensive utilization rate of construction waste★+3	5%47	40%€
H7€	First discount of	Safe disposal of hazardous wasted	Coverage rate of medical waste collection and disposal system \bigstar^{\wp}	100%√⁻	100%₄⋾
8 4 ³	Final disposal of solid waste∉		Coverage rate of social source hazardous waste collection and disposal systeme	٠.	100%↔

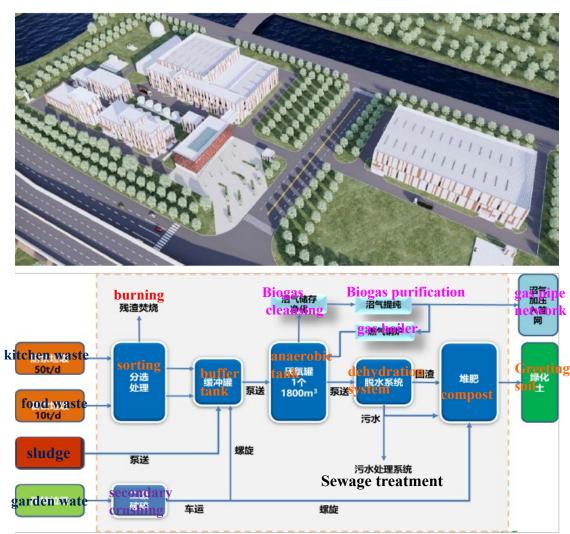
2. The Index System Of "Zero Waste City"

9₽			Formulation of local regulations or policy documents for the construction of "Zero Waste city"★		ب		Complete formulation
10₽	Guarantee ability↔	System construction.	"Zero	Initially est	tablished« [□]	Basically established	
11₽			"Zero Waste city" construction results are included in the performance evaluation ★◆		_4J		Basically completed€
12€		Technical system construction€	Demonstration of domestic waste reduction and resource utilization technology★₽		-4	,	Three₽
13₽		Supervision system construction ↔	Solid waste supervision capacity building€		دي		Build an eco-city solid- waste monitoring platforme
14€			Qualified rate of random inspection of standardized management of hazardous wasted		-42		100%+3
15€			Number of criminal cases of solid waste environmental pollution discovered, disposed of, and detected ★		042		0∻
16₽			Number of environmental pollution incidents related to solid waste $(\text{in the region}) e^{j}$		04 ³		042
17₽			Completion rate of letters and visits, complaints and reports involving solid waste.		1009	%√2	100%√
18₽		People's sense of gain↔	Popularity rate of publicity, education and training in the construction of "Zero Waste city"		تهـ		80‰
19₽	People's sense of gain+2		The degree of participation of the government, enterprises, institutions, and the public in the construction of "Zero Waste city" φ		-47		better+ ³
20↩			The public's satisfaction with the effectiveness of the construction of a "Zero Waste city"★₽		-42		satisfaction [⊕]
21₽	Source reduction of	Source reduction in the construction	on industry (2) The proportion of prefabricated buildings used in new		v·buildings↔ -↔		100%↔
22∢⁻	solid waste≓	Source of life reduction	47	Number of companies practicing green lifesty	tyle₽ -₽		Fifty4 ³
23₽	Guarantee ability«3	Supervision system constru	ction↩	Coverage rate of solid waste smart supervision and m	anagement⊍	_4J	80%47

3. Measures For The Construction Of "Zero Waste City"



Garbage Pneumatic Conveying System



Renewable Energy Recycling Project

3. Measures For The Construction Of "Zero Waste City"



Intelligent waste classification delivery point

Garbage sorting integral system





Thanks























Improved Household Hazardous Waste Management, lessons learned from South Africa

Ms. Mishelle Govender





BACKGROUND

- The Republic of South Africa (RSA) has a Binational Cooperation with the Kingdom of Sweden since 2015.
- Areas of cooperation includes the following broad categories: climate change; air quality management; chemicals management; waste management; oceans governance and ecosystem - based marine spatial planning.





BACKGROUND

 The Department of Forestry, Fisheries and the Environment (DFFE) in partnership with the Swedish Environment Protection Agency (SEPA) have in September 2016 identified Buffalo City Metropolitan Municipality (BCMM) to develop and pilot a collection system for household hazardous waste (HHW).





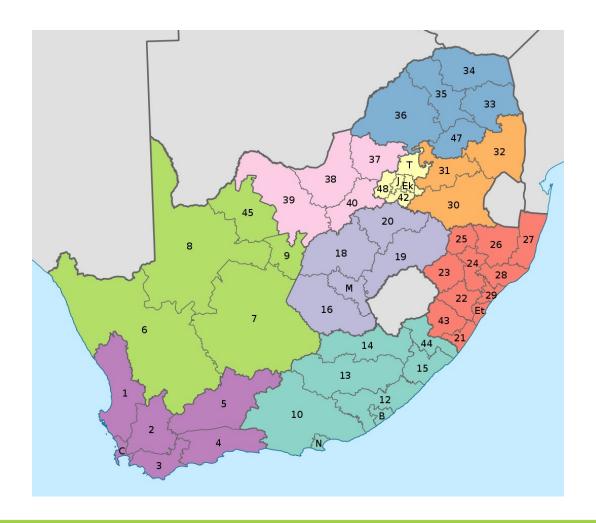
BCMM Pilot Project

- BCMM was selected for the HHW Pilot Project to form part of the overall DFFE project along with five (5) other municipalities to pilot diversion of certain waste streams from landfill disposal.
- The pilot project on HHW will assist the BCMM to manage solid municipal waste in an environmentally sound manner. The HHW Pilot Project aims to:
 - test a suitable collection methodology for the separation at source of hazardous components from the general waste components generated at household level and to facilitate environmentally sound management thereof;
 - to divert hazardous waste from disposal at municipal landfills not designed to accommodate such waste streams; and
 - to increase awareness among the piloted households as well as the general public on what is hazardous waste, why it should not be mixed with general waste and how it should be handled.
- These objectives are in line with the objectives of the presidential programme which was launched in BCMM in 2019 on Good Green Deeds (GGD).



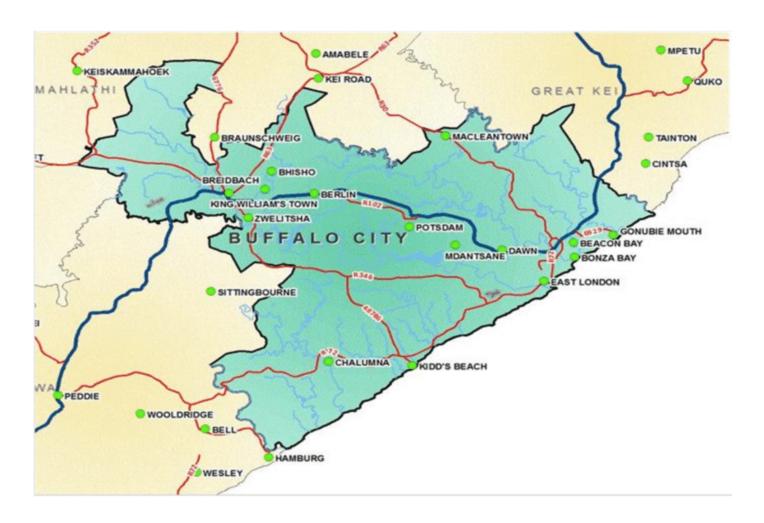


BCMM Location



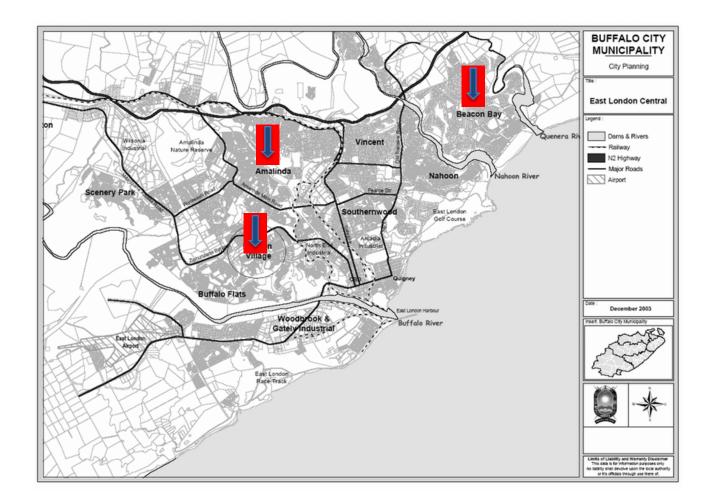


BCMM





BCMM





BCMM Pilot Project

- The coastal region of BCMM has been designated as a pilot site with about 3500 households in three different areas (i.e. Duncan Village, Amalinda and Beacon Bay)
- The criteria to identify the three pilot areas is based on the income levels in these areas viz: low, medium and high income households.
- This is meant to establish trends and variations that exist with regard to different types of wastes that are generated in these areas. The project is planned to be piloted for a period of 12 months where-after if the methodology is found to be successful, efficient and effective, it will be rolled out throughout the municipal jurisdiction of BCMM.



What has been achieved?

- project proposal finalised;
- project implementation plan finalised;
- waste characterisation training offered by SEPA to BCMM and DEFF officials; and
- actual waste characterisation study conducted by the team.



What has been achieved?

Lessons form characterization study:

- households in more affluent areas generate in excess of two times more waste per year compared to households in lower and middleincome sampled areas.
- Small quantities of hazardous WEEE was found in all sampled areas.
- Typical hazardous fractions include chemicals, batteries, lamps, pharmaceuticals and pesticides.
- Most common WEEE found in general waste were electrical water kettles.
- Absorbent hygiene products is the biggest waste fraction after food waste. The dominant product found in absorbent hygiene fraction were disposable childrens diapers.
- Packaging waste made of paper, plastic, metal and glass constitutes 30% of the waste composition found in all study areas.





What has been achieved?

- Stakeholder engagement process where local businesses involved in waste management were engaged and requested to be involved in the project
- Value chain developed to determine and clearly indicate the fate of each and every collected waste stream
- Education programme offered to all project participants
- Communication plan developed outlining how communication matters relating to the project are supposed to be handled
- Project Management Team and Project Steering Committee
 Meetings held throughout the year for continuous planning
- PDP Training completed for drivers who will be responsible for waste collection





Plans

- The implementation phase was anticipated to commence on 07 May 2020, but due to COVID-19 pandemic control measures, the commencement of the project is postponed.
- The pilot is intended to run for a period of 12-months from the kickoff date where-after if the implementation methodology is found to be successful, efficient and effective, it will be rolled throughout the municipal jurisdiction of BCMM.
- The project's implementation outcome will be used to develop municipal guidelines on source separation of HHW and its environmentally sound management thereof, if successful.
- The guidelines could provide a blueprint document for the replication of the methodology throughout municipalities across the country.



What's next?

- National HHW Strategy development project to be done with cooperation from SEPA:
 - As part of separating waste at source aimed at safe disposal of domestic hazardous wastes that includes a communication and awareness strategy and extended producer responsibility as core components.
- In preparation for this SEPA conducted socioeconomic and policy analysis workshop with 3 spheres of government
- DFFE and SEPA in the process of developing TORs for projects moving forward





THANK YOU!

Q&A





Chemicals and Waste management beyond 2020

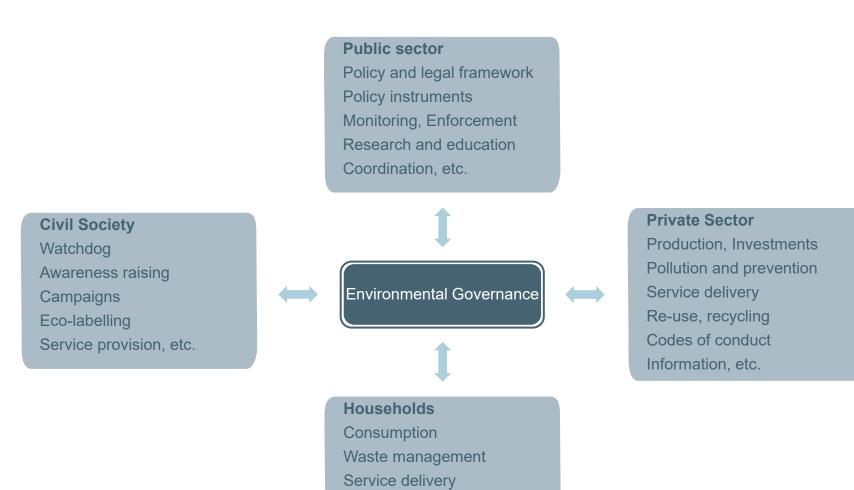
Lotten Sjölander; Programme coordinator Swedish EPA; International Unit lotten.sjolander@naturvardsverket.se







Swedish EPA International cooperation



NR management Monitoring, etc.

Swedish Environmental Protection Agency International cooperation

• Bilateral (14), Global (16), Multilateral organisations. (5)



Multilateral Cooperation

- Arctic Council
- The Barents Council Environmental Group
- UN:s Economic Commission for Europe (UNECE)
- Nordic Council for Ministers
- Organisation for Economic Cooperation and Development (OECD)

Bilateral Cooperation on Environment

HaV, KemI, NV, SMHI, SEI – different agencies

Brasil – waste, resource efficiency

India – education for environmental official

China – policy development, climate

Russia – environmental legislation, industry

South Africa —hazardous waste, national strategy

US – climate, mobility

 Arctic and Barents – regional cooperation on environment and climate

Bilateral cooperation (SIDA)

- Albania
- Bosnia Herzegovina
- Kosovo
- Northern Macedonia
- Palestine
- Serbia
- Tanzania
- Hungary (EU-financed)
- Air quality and monitoring
- Biodiversity
- Waste management

Global cooperation (SIDA)

- Global Programme Environmental Governance Programme (EGP)
 - Sustainable management of natural resources within the mining sector, UNDP mfl
 - Colombia, Kenya, Mongolia, Zambia, Ecuador, Argentina, Peru, Liberia, Namibia, Kirgizistan
 - Environmental management system within UN, EMG/SUN/UNEP
- Programme for strengthened institutions for a sustainable climate
- The National Board of Housing, Building and Planning, Swedish Energy Agency, SCB, SLU, SMHI
 - Capacity building for a sustainable climate and urbaization
 - Etiopia, Kenya, Moçambique, Rwanda, Uganda, Zimbabwe

Bilateral cooperation with South Africa

- Started the year 2015 with an agreement (Letter of Intent); BNC
- Focus on Waste Management for Swedish EPA
- Household Hazardous Waste with Departement of Forest, Fisheries and Environment DFFE
- Pilot project in Buffalo City Metropolitan Municipality BCMM about collection of household hazardous waste
- National strategy for household hazardous waste for South Africa

Thank you!





SWEDISH ENVIRONMENTAL PROTECTION AGENCY



Waste management and climate implications

Jenny Sahlin (PhD), Profu UNDP 2021-06-03



• Landfilling and open dump burning are dangerous for people, the environment and the climate

 Improvement of waste management is an important measure to reduce climate change

• Recycling, biogas extraction and energy recovery from waste complement each other as important climate measures



Landfilling and open dump burning are dangerous for people, the environment and the climate



Open dump, Bolivia



Sanitary landfill in Addis Abeba, 2014, AFD Agence Française de developpement



5 percent of total global GHG emissions come from open dumps and landfills – 10 % by 2025 (BAU)

- 20 % of global antropogentic emissions comes from landfills and waste management (UNEP, 2021)
- Emissions are primarily driven by disposal in open dumps and landfills without landfill gas collection systems
- 1.6 billion tonnes of carbon dioxide-equivalent emissions estimated for 2016.
 2.6 billion tonnes anticipated by 2050 (World Bank, 2018)



















Recycling saves GHG emissions when compared to the manufacture of a new product



















Energy recovery from sorting residues

- Modern facilities follow international emission standards and Best available technology (BAT)
- Environmental Permission is applied for in advance and is a condition for financing
- High energy recovery: electricity, steam or hot water for heating

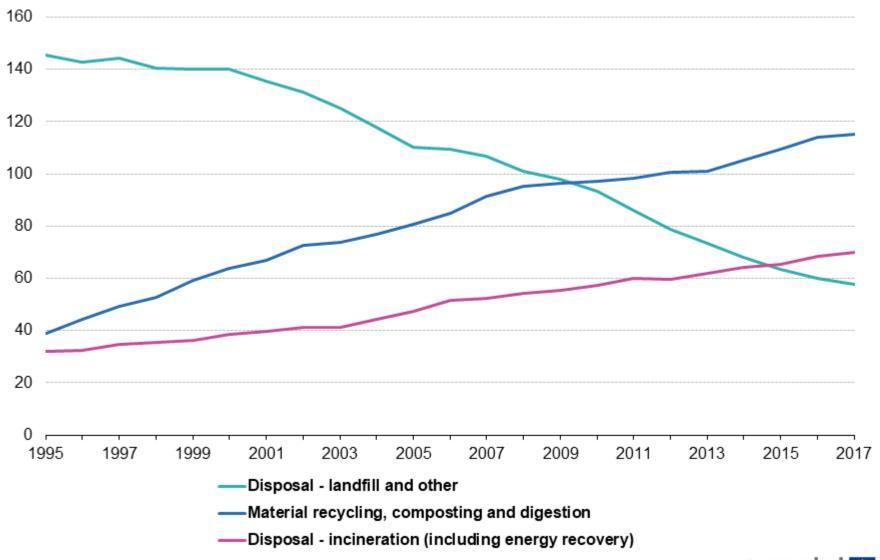




Municipal waste treatment, EU-28, 1995-2017

profu

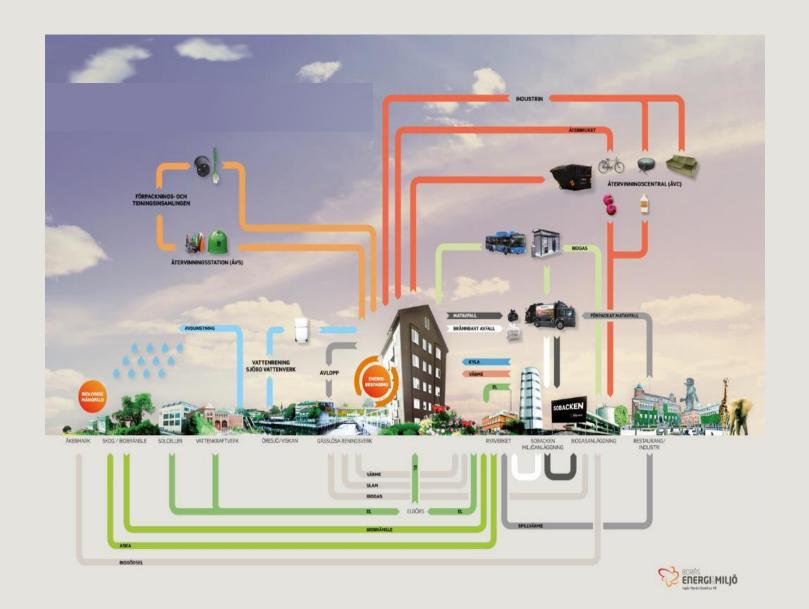
(million tonnes)



Source: Eurostat (online data code: env_wasmun)











Thank you

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EU WASTE POLICY UPDATE

UNDP3 June 2021

Vanya Veras Secretary General



CONTENT

- 1. Revision of the Packaging & Packaging Waste Directive
- 2. Single Use Plastics Directive and cost of Litter Clean Up
- 3. European Green Deal: Separate Collection, Coordination
- 4. Circular Economy Action Plan (CEAP)
- 5. Sustainable Product Policy
- **6.** Strategy on Textiles
- 7. Biodiversity and Soil Thematic Strategies
- 8. Batteries & Waste Batteries Regulation
- 9. Zero Pollution Action Plan
- **10.** Sustainable Finance



THE PACKAGING & PACKAGING WASTE DIRECTIVE

- Revision is underway focus on essential requirements
- EC discussions with industry include Watermarking to improve sorting
- Discussions with MWE and Nordic Countries on harmonization of labelling for separate collection (on products and bins)
- Legislative proposal expected end 2022

HARMONISATION OF SEPARATE COLLECTION

- The EC's research centre has been tasked with conducting a study on the aspects of separate collection that can be harmonised to improve efficiency and effectiveness
- Launched in May 2021
- Completion expected by June 2023 to coincide with the requirement to revise the Waste Framework Directive



- Legislative initiative set out by the CEAP 2.0.
- Purpose:
 - 1) working on the design phase to promote sustainable product on the EU market and
 - 2) empowering consumers and public buyers.

It includes:

1. A revision of the Ecodesign Directive to widen its scope beyond energy-related products. It will include: electronics, ICT (Information and Communication Technology), textiles, furniture, high impact intermediary products such as steel, cement and chemicals. Other types of products may be included.

- 2. <u>Complementary legislative proposals to establish</u> <u>sustainability principles</u> to regulate these aspects:
- Increasing durability, reusability, upgradability & reparability
- Increasing their energy and resource efficiency
- Addressing the presence of hazardous chemicals
- Increasing recycled content, while ensuring performance & safety
- Enabling remanufacturing and high-quality recycling



- Reducing carbon and environmental footprints;
- Restricting single-use and planned obsolescence
- Ban on the destruction of unsold durable goods
- Incentives to business models such as product-as-aservice, collaborative/sharing economy, on-demand production, etc.
- Addressing product passports, tagging and watermarks
- Rewarding products based on their sustainability performance



- 3. <u>Empowering consumers & public buyers</u>:
 - Revision of the EU consumer law for consumers to get information on products (lifespan, repair services, spare parts & repair manuals)
 - Further consumer protection against green washing and premature obsolescence
 - Establishing a new 'right to repair'
 - ➤ Possible changes in Directive 2019/771 in terms of guarantees
 - Minimum mandatory green public procurement (GPP) criteria and targets in sectoral legislation are expected
- Commission adoption expected by Q4/2021
- Open public consultation on a questionnaire → deadline 9 June



EU STRATEGY ON TEXTILES

- Upcoming publication of Commission's study 'Research into circular economy perspectives in the management of textile products and textile waste in the EU'
- Ongoing Commission's study on the Technical, Regulatory, Economic and Environmental Effectiveness of Textile Fibres Recycling
- Extended Producer Responsibility Guidance (not only about textiles)
 is expected by Q4/2021
- **Public consultation** (questionnaire) on the EU Strategy for Textiles open until 12 August
- Upcoming workshops organised by the Commission in May and June
- Adoption expected by August/September 2021



BATTERIES & WASTE BATTERIES REGULATION

- Proposal for a Regulation (from Directive) December 2020
- Adoption process in European Parliament and Council
- Key points:
 - ➤ Collection rate targets of portable batteries: 65% by 2025 and 70% by 2030.
 - > Ban on landfilling and incineration of batteries
 - Mandatory recycling of batteries
 - **▶** Mandatory recycled content in new batteries
 - Restrictions on the use of hazardous substances in batteries



BIODIVERSITY AND SOIL THEMATIC STRATEGIES

- Green Deal recognises the indispensable role of soil and biodiversity to the success of achieving carbon neutrality for Europe (and globally) by 2050
- The Soil Strategy focuses on soil biodiversity, practices which increase organic content of soils, reversing desertification and the transformation of farming to adopt natural and regenerative farming practices in order to preserve the soil, reverse desertification, capture and store carbon and mitigate flooding
- The Biodiversity Strategy focuses on re-building biodiverse ecosystems, rewilding part of EU farmlands natural farming practices which support an increase in pollinator populations and a reverse of the current extinction trend

Relevance of Soil and Biodiversity to Waste Management:

- Food Waste
- Garden waste (leaves and branches)
 - Anaerobic Digestion and Composting
- Landfill and Methane reduction
- Reverse desertification
- Reforestation
- Food and Water Security



EU ACTION PLAN ON ZERO POLLUTION

- EU Action Plan Towards a Zero Pollution Ambition for air, water and soil announced in May. Part of the European Green Deal
- It addresses pollution prevention and remediation, products, to embed zero pollution ambition into all policies and to strengthen the link between environmental protection and human wellbeing



EU ACTION PLAN ON ZERO POLLUTION

- Regarding waste, the action plan includes:
 - By 2030: Reduction by 50% of plastic litter at sea. Reduction by 50% of residual municipal waste
 - Integration of the zero pollution ambition into policies concerning recovery and reuse of construction waste
 - By 2025 the Commission will finalise a review of the majority of EU waste laws to adapt them to the current EU goals on circular economy, waste prevention, high quality recycling and minimum residual waste



1ST SUSTAINABLE FINANCE PACKAGE

- On 21 April the European Commission published a **new Sustainable Finance package** ('Taxonomy Regulation').
 - This package of measures aims at channelling investments towards the commitments laid down in the European Green Deal.
 - It includes a set of new and amended Delegated and Implementing Acts:
 - 1. EU Taxonomy Climate Delegated Act
 - 2. The new Corporate Sustainability Reporting Directive, will ensure companies provide consistent sustainability information.
 - 3. 6 amending Delegated Acts, which will ensure that financial firms (advisers, asset managers, insurers) include sustainability in their procedures and their investment advice to clients



EU TAXONOMY CLIMATE DELEGATED ACT

- As part of the EU's efforts to reach the objectives of the Green Deal, in particular, aims to achieve climate neutrality in the EU by 2050
- Formal adoption end May. Application from 1 January 2022
- Taxonomy will be adapted to future technological developments
- It classifies activities into two different annexes:
 - ► Annex 1: activities that contribute to climate change mitigation
 - ► Annex 2: activities that contribute to climate change adaptation
- Next steps: Scrutiny by the EP and the Council



THANK YOU FOR YOUR ATTENTION

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Q&A

SHARE YOUR QUESTIONS AND COMMENTS WITH OUR PANELISTS



THANK YOU

For being part of this Chemicals and Waste Management Series