Who is the French Solid Waste Partnership?

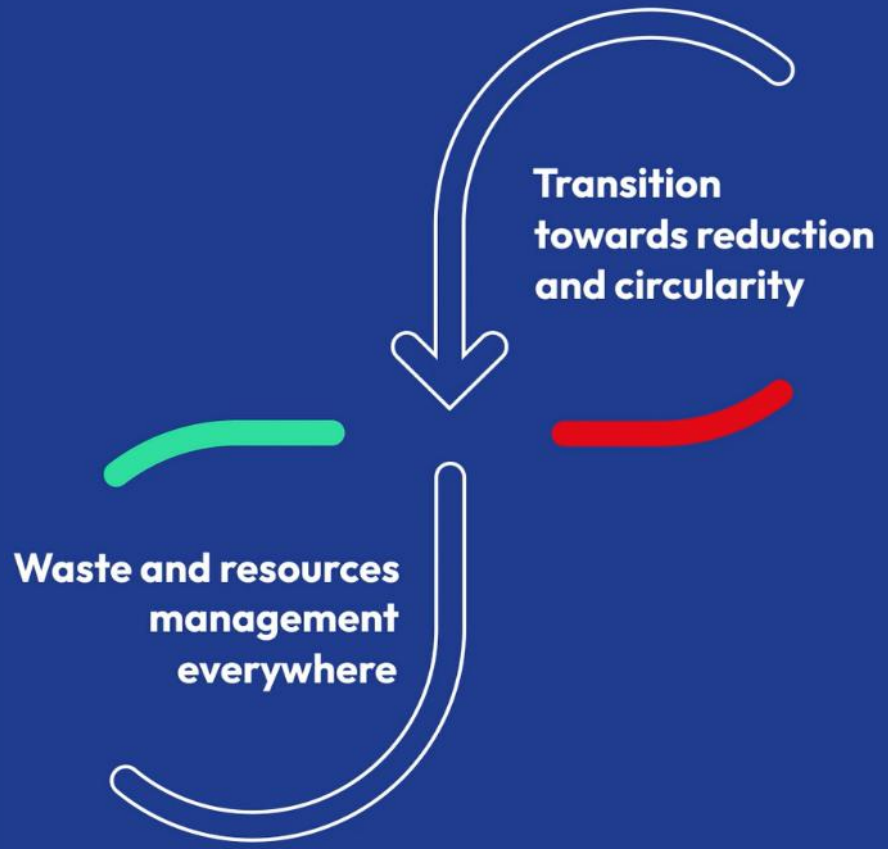
OUR MISSION



Coordinate and amplify

The voice of french waste stakeholders on the international stage

OUR VISION



MULTI-STAKEHOLDERS



The waste sector's climate impacts are under-estimated and under-exploited.

- **3 to 5% of total GHG** emissions come from the sector*
- A potential of **15 to 25% reduction** using a Lifecycle Approach*

* Lenkiewicz, L. et al. (2024). *Global Waste Management Outlook 2024: Beyond an age of waste. Turning rubbish into a resource*. UNEP and ISWA. Available at: doi.org/10.59117/20.500.11822/44939

The Business-as-Usual (BaU) scenario is unmanageable.

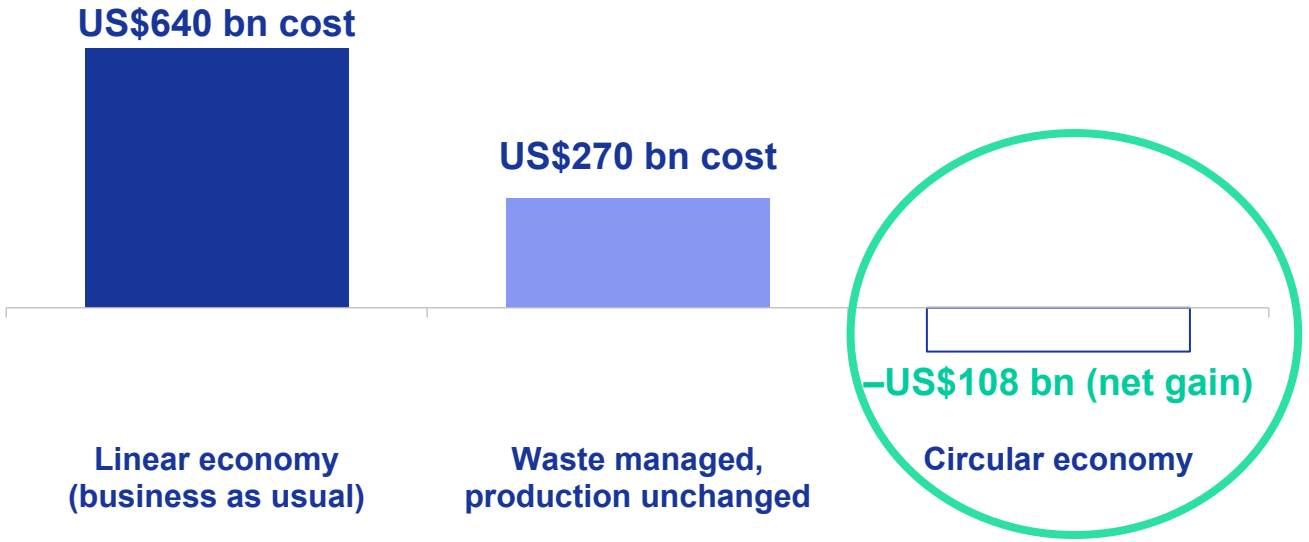
We need to act now!
Prioritising mitigation of methane from organic waste.

- **+50%** of waste volumes by 2050 (comp. to 2022)*
- **20%** of anthropogenic methane emissions come from the sector**

* Cook, E. et al. (2026). *What a Waste 3.0. Global Snapshot of Solid Waste Management towards Circularity until 2050*. World Bank Group. Available at: https://www.worldbank.org/en/publication/what-a-waste
** CCAC & UNEP (2021). *Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions.* United Nations Environment Programme, Nairobi. Available at: https://www.ccacoalition.org/sites/default/files/resources//2021_Global-Methane_Assessment_full_0.pdf.

CIRCULAR ECONOMY – THE MOST EFFICIENT LEVER

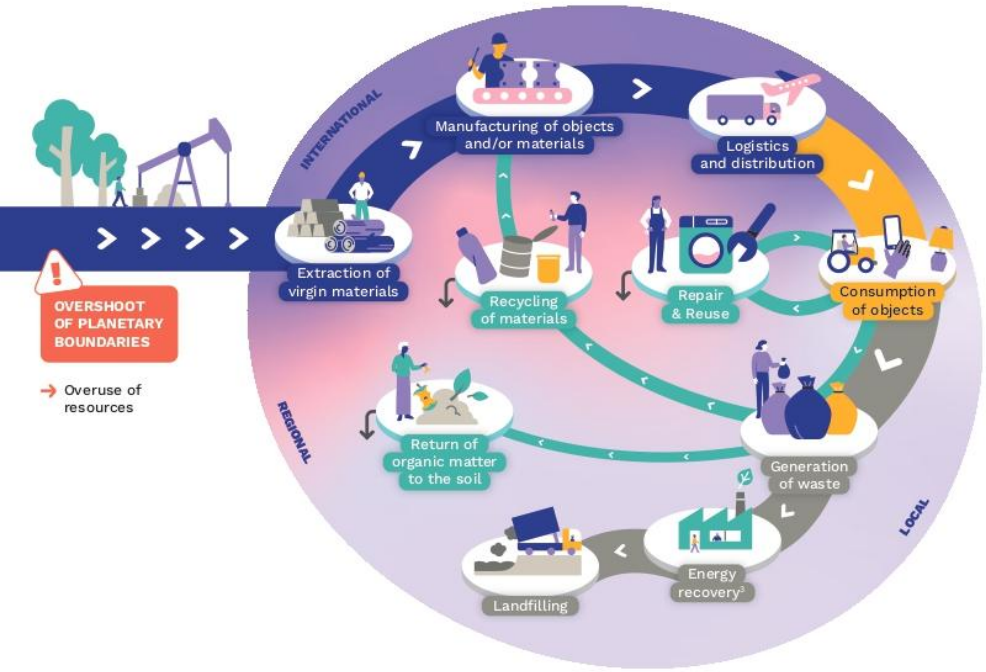
Tackles up to 20% of global emissions, and pays backs*



* Lenkiewicz, L. et al. (2024). *Global Waste Management Outlook 2024: Beyond an age of waste. Turning rubbish into a resource*. UNEP and ISWA. Available at: doi.org/10.59117/20.500.11822/44939
It requires changing our production, consumption and usage models.

EVOLUTION OF PRODUCTION, CONSUMPTION AND USAGE MODELS FOR A CIRCULAR ECONOMY

Schematic representation of the current situation

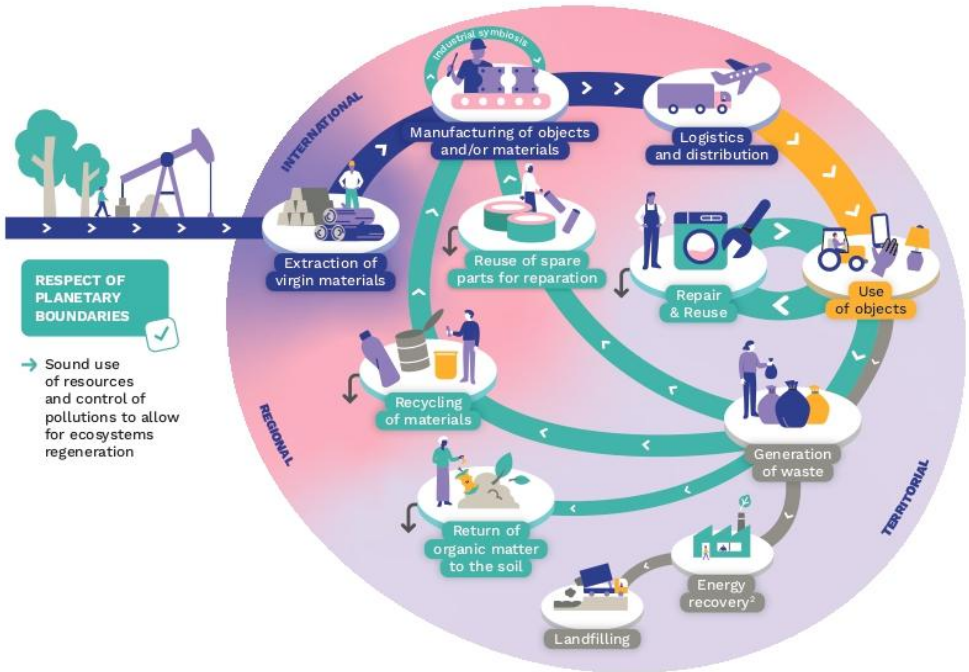


Production systems[1]: many products, not very durable or repairable, transported over long distances.

Consumption model[1]: the consumer purchases many goods and few services; the producer or seller does not retain ownership of the product.

Circular activities[1]: economy of reuse and repair, supported by the SSE[2] and mostly subsidised.

Schematic representation of the 2050 horizon



Modes of production[1]: fewer products, highly durable and repairable, better designed, transported less.

Consumption model[1]: functionality and sharing economy; the producer (or lessor) remains the owner of the product and/or responsible for its end of life.

Circular activities[1]: economic viability of reuse, repair, and other options.

LEGEND

FLOWS
- Linear supply chain
- Consumption
- Circular economy
- Waste, end-of-life
- Rejects

SCALES
- International
- Regional
- Local

[1] ISO 59004 presents and orders circular economy actions according to the life cycle (https://pfd-fswp.fr/presentation-de-l-economie-circulaire-par-iso-anglais), especially in the diagram on page 4 of the PDF 'EN Presentation'.
[2] Social and Solidarity Economy.
[3] Energy recovery when the context allows and if there is a market for the energy produced.

[1] ISO 59004 presents and orders circular economy actions according to the life cycle (https://pfd-fswp.fr/presentation-de-l-economie-circulaire-par-iso-anglais), especially in the diagram on page 4 of the PDF 'EN Presentation'.
[2] Energy recovery when the context allows and if there is a market for the energy produced.

Watch the 2-min movie

PREVENTION – THE FIRST LEVER

Starts with product design and usage:

refuse, rethink, reduce, reuse, repair

avoids emissions at every stage.

Over **55% of global GHG** emissions come **from the extraction and processing** of materials, fuels and food.*

* Bruyninckx, H. et al. (2024). *Global Resources Outlook 2024: Bend the trend. Pathways to a liveable planet as resource use spikes*. UNEP and IRP. Available at: https://wedocs.unep.org/bitstreams/d196c011-a90e-4fe3-b249-e3204a2ded4a/download

Preventing plastic pollution through education

“Plastics, Let’s Act!”: a MOOC from information to action



FRANCE - Paris

WASTE & POLLUTION

PREVENTION OF PLASTICS AWARENESS RAISING

Decoding the systemic plastics crisis to act more effectively:

- Science-based overview of the stakes (health, ecosystems, society).
- 4 hours to get an overview of the plastics’ crisis, state of scientific knowledge, key concepts, and practical steps to act and fund projects.
- Key target audience: decision-makers, IFIs and development banks.



BENEFIT

- Multilingual access to information and education.
- Improved understanding of the stakes of plastics reduction for informed decision-making.

CO-BENEFIT

- Free access to information.
- Improved production, consumption and management of plastics.

- Accueil | Les Moocs du Campus AFD

The reuse of shared packaging in shops

Turning packaging into reusable resources for a circular economy

WASTE & CIRCULAR ECONOMY

REUSE

Since 2025, the French Producer Responsibilty Organisation (PRO) Citeo has been trialling the introduction of reusable, shared packaging on shop shelves:

- **362** participating **shops** across **4 pilot regions.**
- **16 million consumers** involved.
- **Shared pool of standardised packaging.**
- **Shared and interoperable logistics loop** : collection → consolidation → washing → return to manufacturers.

FRANCE - NORTH-WEST REGION



BENEFIT

- Reduction in packaging waste.
- Reducing CO_2 emissions.
- Reducing material consumption.

CO-BENEFIT

- Testing viable circular economic models (deposit schemes, logistics, washing).
- Engaging stakeholders: retailers, manufacturers, consumers.
- Establishing a national re-use sector.

- Reuse: Four French regions launch the ReUse scheme

Pole R, a Local Circular Economy



France – Grenoble

A 16 000 m² site dedicated to reuse, repair, and waste reduction

8,000 m² managed as a Hub for Circularity, with shared spaces, equipment, human resources, and material resources.

WASTE & CIRCULAR ECONOMY

FROM WASTE TO RESOURCES

Three buildings:

- Anti-waste zone dedicated to food deposits.
- *Fabricanova* : a cooperative hosting platforms for sorting, reuse, repair, and upcycling.
- An incubator for new circular economy activities (textiles, sports and leisure items, wood).



BENEFIT

- Target of a 20% annual reduction in the volume of waste produced in the region.
- 20% reuse and repair rate (7,500 tons).
- 40 000 packaging items avoided.

CO-BENEFIT

- Territorial cooperation between local authorities, the social and solidarity economy, industry, research, environmental associations, etc.
- A thriving local economy.
- Accessibility for residents: drop-offs and purchases of reclaimed materials.

- https://www.grenoblealpesmetropole.fr/327-le-soutien-a-l-economie-circulaire.htm

BeMed+

For a Mediterannean Sea without plastics!



Mediterranean Countries

WASTE & POLLUTION

PLASTICS

Structure a network of players, build their capacities and test replicable projects.

- Strengthen financial and technical capabilities.
- Share micro-solutions at the basin scale.
- Develop integrated, multi-actor projects to combat plastic pollution in Albania and Tunisia.
- Guarantee the transferability of results by setting up global, regional and local governance.



BENEFIT

- Tackling the 229 000 tonnes/y of plastic waste entering the Mediterannean.
- Integrated approach on life cycle, pollution and waste management.

CO-BENEFIT

- Capacity development.
- Impulsing new projects through regional emulation.

FONDS FRANÇAIS POUR L'ENVIRONNEMENT MONDIAL

PRINCE ALBERT II OF MONACO FOUNDATION

Fondation Didier et Martine Primat

Aether Fund of the Foundation for Future Generations

Fondation Audemars-Watkins

France-IUCN Partnership Nature & Development

IUCN

République Française

AFD Agence Française de Développement

BEYOND PLASTIC MED

Partenariat français des déchets PFD

FSWP French solid waste partnership

- https://www.ffem.fr/fr/projets/mer-mediterranee-sans-plastique-bemed

RECYCLING – TURNING WASTE INTO A RESOURCE

Turning waste into secondary raw materials
Avoiding extraction and processing emissions

1 ton of recycled steel avoids 0,9 ton of raw material extraction**

Using recycled steel **reduces** emissions by **~75%*.**

* Broadhent, C. (2016). Steel's recyclability: demonstrating the benefits of recycling steel to achieve a circular economy. *The International Journal of Lifecycle Assessement.* Vol. 21, pp. 1658-1665. Available at: https://link.springer.com/article/10.1007/s11367-016-1081-1

** Lenkiewicz, L. et al. (2024). *Global Waste Management Outlook 2024: Beyond an age of waste. Turning rubbish into a resource*. UNEP and ISWA. Available at: doi.org/10.59117/20.500.11822/44939

Recycled PET Production

France Plastiques Recyclage



FRANCE - Limay

WASTE &
CLIMATE CHANGE

WASTE TO
RESOURCES

Production of recycled plastic (rPET) as a substitute for primary PET:

- 45,000 t/year of PET bottles from selective collection processed.
- 41,000 t/year rPET produced.



PAPREC

BENEFIT

- rPET produced generates 70% les CO_2 tan primary PET.
- 50kTon CO_2 eq avoided by 2022 by using rPET in place of primary PET.

CO-BENEFIT

- Increases the sustainability of the bottled water industry.

- France Plastiques Recyclage : dernière ligne droite pour les travaux d'extrusion - Paprec

Partenariat français des déchets PFD
FSWP French solid waste partnership

Closing the loop of lead battery recycling

WASTE & CIRCULAR ECONOMY

RECYCLING CO_2 EMISSIONS REDUCTION

How to improve lead battery recycling while relocating industry in France



France – Caen

Vertical integration of the lead battery recycling in implementing innovative treatment process, foundry and refinery steps

- Inclusion of an innovative desulfurization stage to reduce the amount of residual waste, improve material recovery and reduce the quantity of energy required
- Simplified logistics thanks to complete onsite processing and production of valuable metals



Choose France™
Édition France
17.11.2025, Paris

DERICHEBOURG
environnement

BENEFIT

- **75 kt/year** of lead batteries recycled
- **40 kt/year** of lead metals produced
- Improved material recovery :
  - **+400 t/year of Lead**
  - **280 t/year of Antimony** (classified as CRM)

CO-BENEFIT

- **80 new jobs**
- Halved waste generation during the smelting stage : **- 7600 t/year**
- Reduced GHG emissions across the lead value chain: **- 15 kteqCO2/year**
- Reduced transports
- French reindustrialisation

- Derichebourg Environnement : collecte et recyclage des déchets

Partenariat français des déchets
PFD
FSWP
French solid waste partnership

A Waste to Resources Industrial System



France – Tarn

A systemic approach to reduce landfilling, recycle materials, and produce energy

WASTE & CLIMATE CHANGE

WASTE TO RESOURCES

A municipal solid waste plant to valorize 80% of waste into new raw materials, solid fuels and biomethane:

Materials Balance : for 100,000 t/y of waste.

- Biomethane = 62 GWh/y.
- New raw materials = 6,000 t/y.
- Fertilising products = 12,000 t/y.
- Refuse Derived Fuel (RDF) = 150 GWh/y.



urbaser

Tarn TRIFYL

BENEFIT

- 23% reduction of CO2eq emissions compared to baseline.

CO-BENEFIT

- Increased income allows to stabilise waste treatmeant cost.
- Landfill diversion.
- Scalable and adaptable to various waste streams & energy needs.

- Vers un nouveau mode de gestion des déchets | Trifyl

Partenariat français des déchets PFD FSWP French solid waste partnership

SAFE DISPOSAL of mixed waste: A KEY SAFEGUARD

Protects health and the environment from the waste that could not be prevented, reused or recycled.

- About **40%** of the world's waste is **mismanaged**.*
- **2,7 billion people lack access to waste collection**.*

* Lenkiewicz, L. et al. (2024). *Global Waste Management Outlook 2024: Beyond an age of waste. Turning rubbish into a resource*. UNEP and ISWA. Available at: doi.org/10.59117/20.500.11822/44939

Integrated Solid Waste Management (SWM)

WASTE & TERRITORIAL GOVERNANCE

SOLID WASTE MANAGEMENT / INSTITUTIONAL STRANGTHENING / PRIVATE SECTOR ENGAGEMENT

25M€ EU project to strengthen SWM in Luanda, Angola



ANGOLA - Luanda

4 main areas of action to strengthen SWM and enable circular economy:

- Stronger political, and regulatory role of the National Waste Agency.
- More efficient waste collection (with FIAP).
- Private investment and infrastructure development (with the IFC).
- Informal waste workers' integration, formalization and protection (with Camões).



EXPERTISE FRANCE
GROUPE AFD

- Improved waste management, including better collection.
- Enhanced local and national capacities.
- Coordination between national/local and public/private stakeholders.
- Private investment in infrastructure.
- New recycling and resource recovery value chains.
- Creation of decent and green jobs, with focus on women and youth.
- Improved public awareness and multi-stakeholder dialogue.

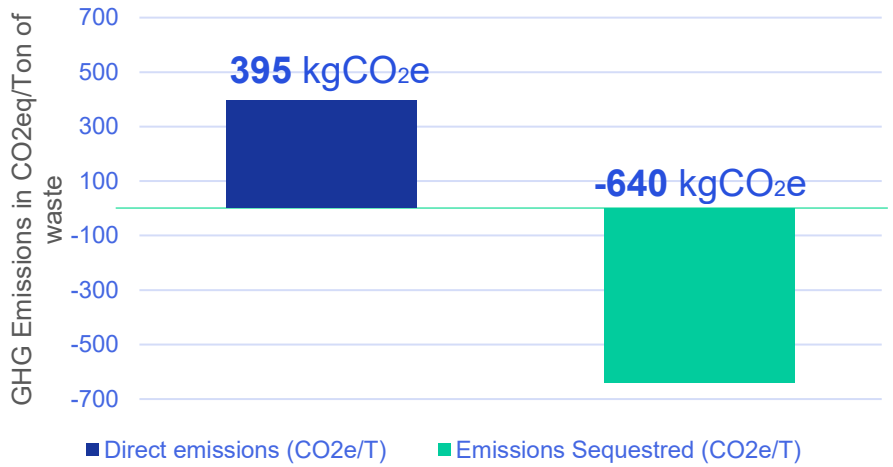
- https://www.expertisefrance.fr/fr/projets/ameliorer-gestion-dechets-solides-luanda

ENERGY RECOVERY from mixed waste,
WHEN PRECONDITIONS ARE MET

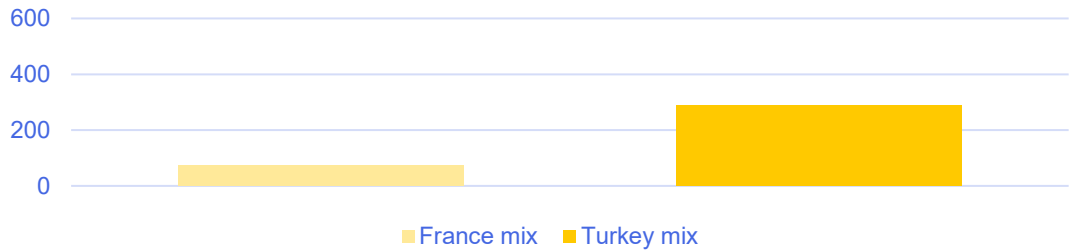
State of the art Waste to Energy with CCUS**

1 ton of mixed waste in ESM compliant WTE

GHG Emissions*



Avoided Emissions*

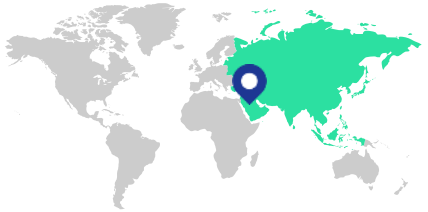


* Expert calculation by FSWP, assuming 42% of CO2 emitted is fossil (French average data). Avoided emissions calculated in reference to the French and Turkish electricity mix. Calculation can be made available on request.

** Carbon Capture, Utilization and Storage

Partenariat français des déchets PFD FSWP French solid waste partnership

Istanbul Waste-to-Energy Plant



TÜRKIYE- Istanbul

Istanbul Metropolitan Municipality - İSTAÇ A.Ş

WASTE & CLIMATE CHANGE

WASTE TO ENERGY

Treatment capacity of 1.1 M/t waste per year:

- Europe's largest waste to energy facility.
- Electricity production by an 85 MW turbine = meets the needs of 1.4 million inhabitants.
- Objective of carbon neutrality by 2053.



BENEFIT

- 1,4 $MtCO_2eq/y$ of caron emissions are reduced (through reduced landfilling and transportation).
- Green electricity production.

CO-BENEFIT

- Improve the environment for inhabitants.
- Improved energy autonomy.

- Décarbonation: Veolia devient l'opérateur du 1er site de production d'énergies à partir de déchets de Turquie

Energy Recovery at Toulouse



FRANCE – Toulouse

Integrated planning across waste, energy and water sectors

WASTE & TERRITORIAL GOVERNANCE

WASTE TO ENERGY

Tomato production for a competitive price thanks to an innovative concept:

- Econotre, operated by SUEZ, uses the heat released by incineration of the waste to produce electricity.
- Low-termperature energy is also recovered to supply heat to greenhouses.
- The necessary proximity was made possible through integrated land planning.



BENEFIT

- Alternative for cooling are explored to address climate change.

CO-BENEFIT

- 2,200 tons of oil equivalent saved.
- 6,000 tons of CO_2 avoided/y.
- Food production.

- Econotre | Ecopôle de traitement et de valorisation des déchets | Bessières

Ecocombust II

Black pellets from wood waste as a substitute for coal



FRANCE – Cordemais

WASTE &
CLIMAYE CHANGE

WASTE TO
ENERGY

Wood waste conversion into black pellets to fuel the Cordemais coal-fired power plant:

- Transformation of wood waste by steam cracking to produce 160,000 t of black pellets/year as an alternative fuel to coal.
- The plant uses 250,000 t/year of B-wood and 40,000 t/year of Solid Recovered Fuels.



BENEFIT

- 6millions tons of CO2eq avoided over 20 years compared to fossil fuel.
- Fossil fuel substitution by renewable energy.

CO-BENEFIT

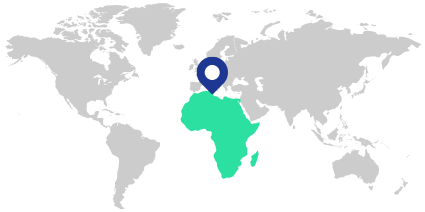
- Energy autonomy.
- Existing coal-fired power plant infrastructured can be leveraged to produce green energy.

PAPREC

Partenariat français des déchets PFD
FSWP French solid waste partnership

Plast'ile

Innovative technical solution for plastic waste on an island



TUNISIA- Kerkennah Archipelago

Waste collection and management

WASTE & POLLUTION

PLASTICS

- State-of-the art collection operation.
- Waste management plans adapted to each geographic contexts.
- **Converting plastics that are too contaminated for recycling, into fuel** (by pyrolysis) for use by the fishermen.
- Set up of an Island Committee for governance.



BENEFIT

- Tackling the 600 tons/y of waste thrown in the sea.
- Local governance of waste management.

CO-BENEFIT

- Curbing plastics consumption.
- Sustainable fishing.
- Strengthened capacities.

FONDS FRANÇAIS POUR L'ENVIRONNEMENT MONDIAL

SMILO SUSTAINABLE ISLANDS

Municipalité Kerkennah

Conservatoire du littoral

earth wake

Partenariat français des déchets PFD FSWP French solid waste partnership

- Innovating for the sustainable management of plastic waste on the Kerkennah Islands in Tunisia | FFEM - Fonds Français pour l'Environnement Mondial

Recovering CO_2 through oxycombustion - CCU



FRANCE

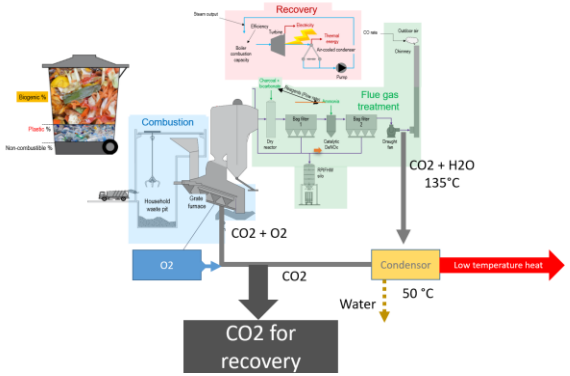
A promising technology for CO_2 from the combustion of household waste, biomass and sewage sludge

WASTE & CLIMATE CHANGE

ENERGY RECOVERY / R&D PROGRAMME

Combustion using O_2 in place of air.

- Combustion using O_2 mixed with recycled flue gas (after condensation) reduces the costs of purifying CO_2 for recovery (no nitrogen).
- Innovative retrofit to oxycombustion without shutting down the existing plant.
- Innovative TERRAO turbulent condenser for continuous recovery of CO_2.



BENEFIT

- Amine-free CCUS process.
- Favourable energy balance (despite the use of pure O_2).

CO-BENEFIT

- Recovery of low-temperature heat from the condenser in district heating networks (via heat pumps).
- Retrofittable on existing boilers: waste, biomass and sludge incinerators.

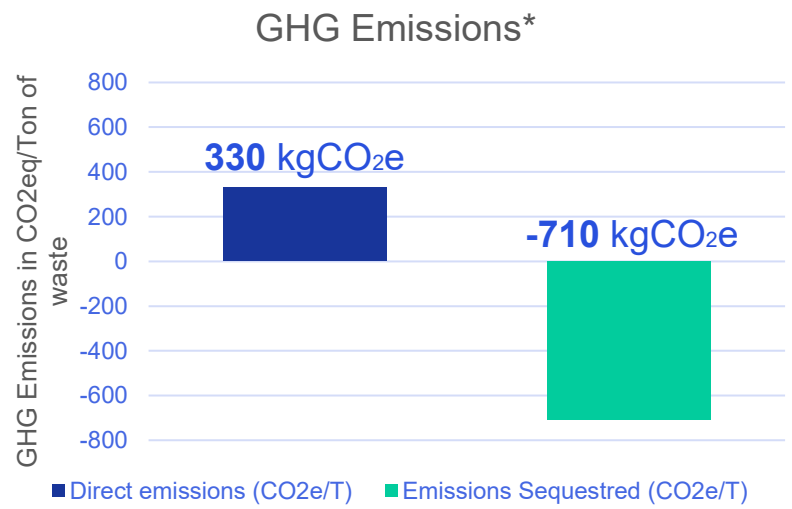
- www.cabinet-merlin.fr

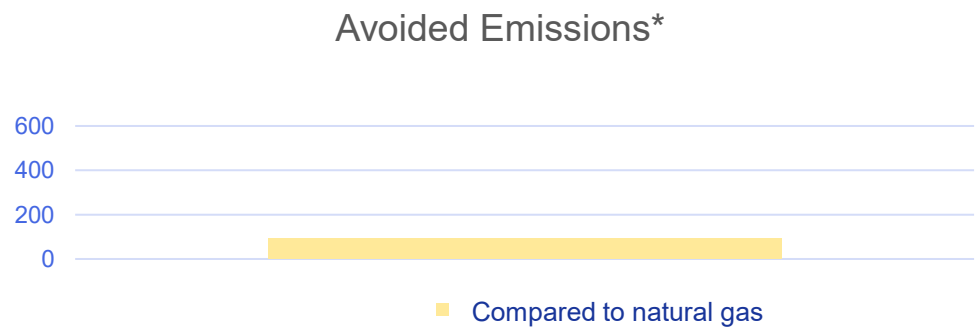
Partenariat français des déchets PFD FSWP French solid waste partnership

LANDFILLING of mixed waste,
THE UNIVERSAL FIRST STEP

State-of-the art landfills with gas capture

1 ton of mixed waste in ESM compliant landfills, assuming **75% gas capture**





* Expert calculation by FSWP, assuming a French waste mix (French average data). Avoided emissions calculated in reference to the IPCC2006 natural gas emission factor. Calculation can be made available on request.

Green Landfill to Energy



INTERNATIONAL MODEL

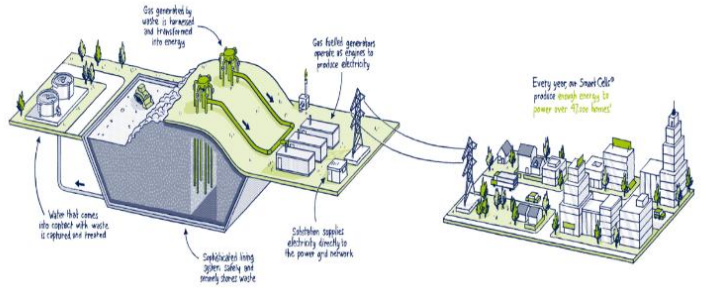
Integrated infrastructure to replace dumpsites

WASTE & CLIMATE CHANGE

WASTE TO ENERGY / METHANE REDUCTION

An innovative financing model for waste treatment in developing economies:

- Produce biomethane, produce electricity
- Improve waste management from open dumpsites to environmentally controlled landfills
- The case of Meknes, Morocco:
  - 200 kt/y of waste safely managed
  - 70% reduction in emissions by 2033
  - 5,500 MWh/y production capacity



BENEFIT

- Methane capture.
- Production of renewable energy.

CO-BENEFIT

- Local value enhancement.
- Rediced pollution through leachate treatment.
- Improved energy autonomy.

- A waste recovery centre in Meknès combines the fight against global warming with social innovation - SUEZ Group

Let’s work together to mobilise and take action towards a circular economy that increases wellbeing, protects health and the environment, reduces fossil dependencies and strengthens economic resilience.



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PAPREC

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Know-how page

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