Energy from Waste in France in 2016

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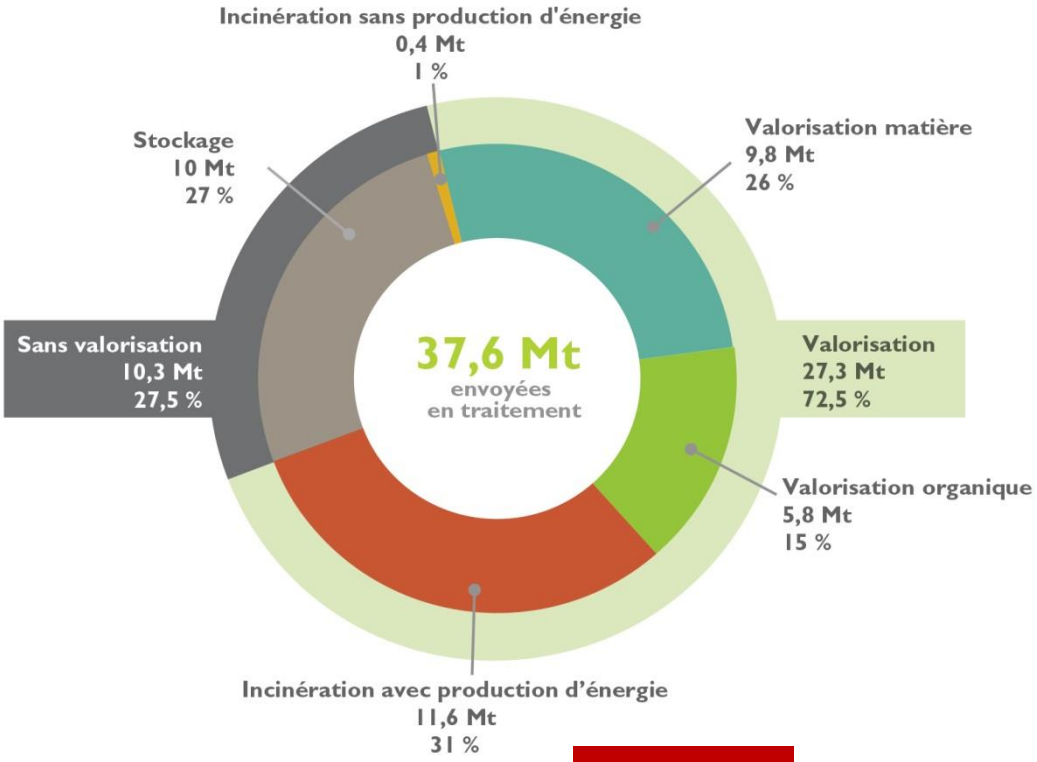
PRESENT SITUATION

MSW Treatment in France 2013

DISPOSAL

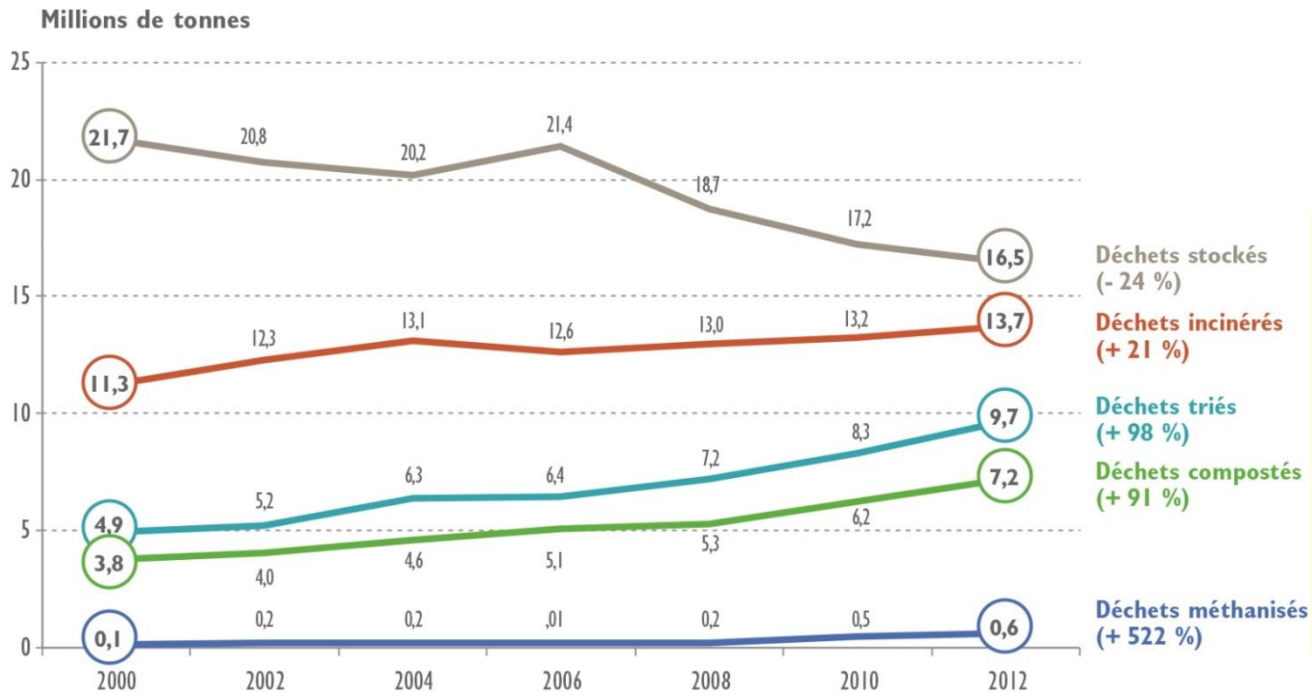


RECOVERY

Source : ADEME – Enquêtes collecte. Données 2013 provisoires

WtoE units

Waste treatment trends last 12 years, not included treatment refuse



Source : ADEME – Enquêtes ITOM

Landfill

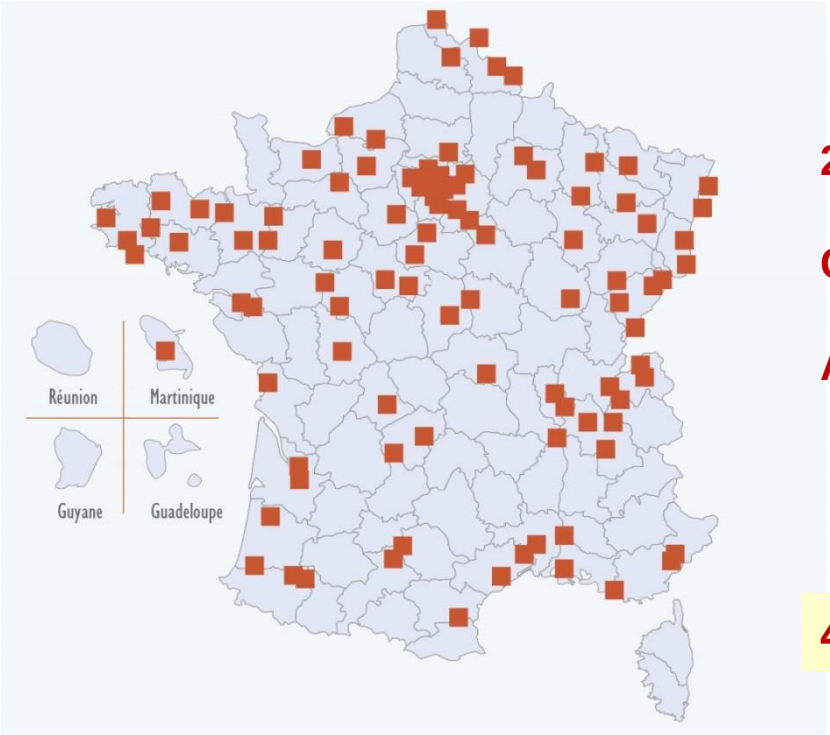
Energy recovery

Sorting

Composting

Aerobic digestion

Waste to Energy Plants in 2012



2 new plants in 2013 :

Clermont Ferrand : 150 000 t/a

Arques Flamoval : 92 500 t/a

4.6 % of renewable energy

Source : ADEME – Enquête ITOM 2012

ISSEANE : a plant in Paris… underground

460 000 t/a

757 000 MWh heat
9 600 MWh e

R1 = 0.7

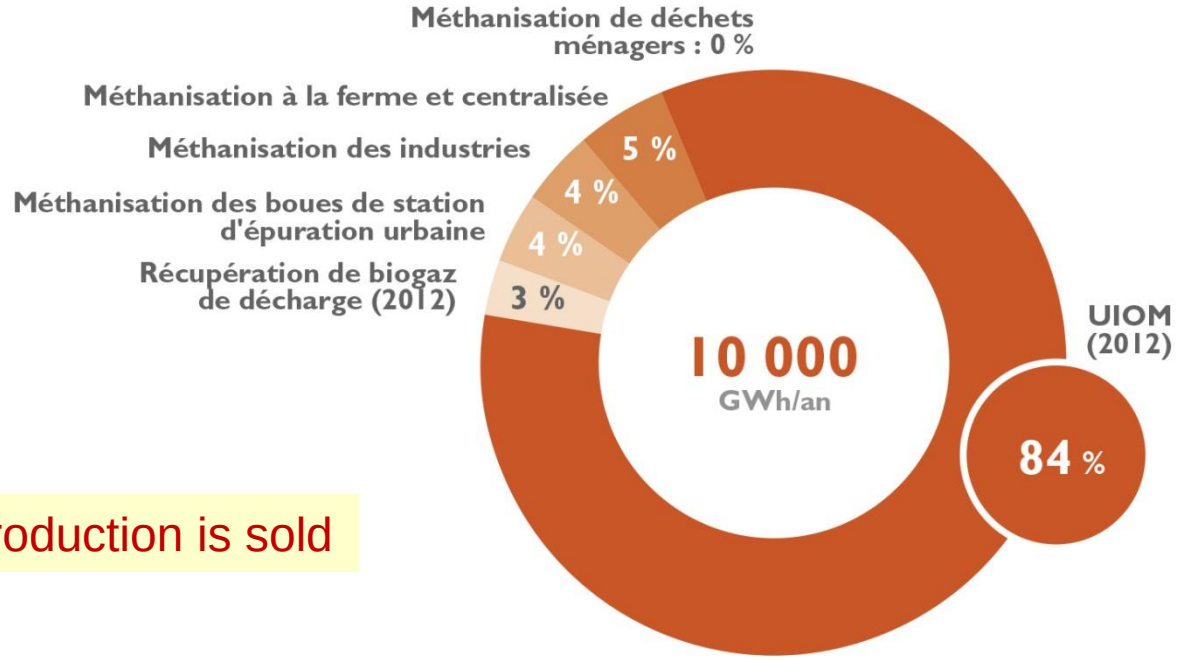
Thermal treatment at a glance in 2012

- 113 WtoE plants, 13.7 Mt/a
- 13 incineration plants without energy recovery, 0.39 Mt/a
- 38 units reach R1

- Average size 110 000 t/a for 260 000 inhabitants

- Investment cost M€/ hourly capacity 5.9
- Gate fee : €/t 75 – 110
- Incineration Taxe : €/t 14.43 going down to 3.11 (EMAS or ISO 14001, R1, NOX<80 mg/Nm3, alternative to road transport system)
- Landfill taxe : €/t 40.16 going down to 13.06
- Until end of 2015 Electricity price €/MWh 45 – 50 + efficiency bonus up to 30 € for 15 years

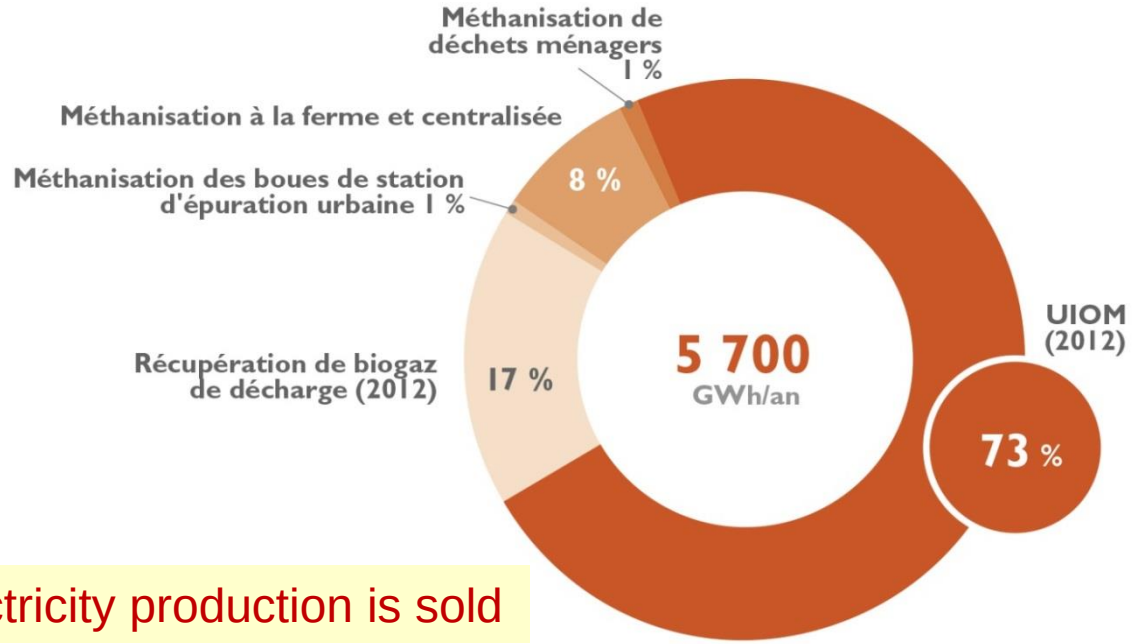
Heat production in 2014



89% of heat production is sold

Source : ADEME – Enquête ITOM pour les UIOM et les ISDND. Études ponctuelles sur les STEP, sources administratives pour la méthanisation à la ferme et étude ponctuelle pour la méthanisation industrielle

Electricity production in 2014



78% of electricity production is sold

Source : ADEME – Enquête ITOM pour les UIOM et les ISDND. Études ponctuelles sur les STEP, sources administratives pour la méthanisation à la ferme et étude ponctuelle pour la méthanisation industrielle

Energy production of WtoE plant in 2012

Mode de valorisation	Énergie produite par tonne incinérée (kWh/tonne)
Électrique	436
Thermique	1 231
Cogénération	999
Ensemble (moyenne en kWh/tonne)	894

Source : ADEME – Enquête ITOM 2012

Number of units & waste treated for electricity, heat, combine heat & power

Mode de valorisation		Nombre de structures	Quantités entrantes en milliers de tonnes
Électrique		31	3 187
Thermique		23	1 314
Cogénération	Électrique	59	9 712
	Thermique		
Ensemble		113	14 213

Source : ADEME – Enquête ITOM 2012

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FUTUR TRENDS

Energy transition Law for a green economy
17 August 2015

- For a new energy model more stable and more sustainable to fight climate changes

- Global objectives
  - *Reduce Green gas emission up to 40% 2030/1990*
  - *Reduce energy consumption up to 50% 2050/2030*
  - *Reduce fossil fuel use up to 30% 2030/2010*
  - *Increase renewable energy to 23% in 2020*

- 8 subjects with specific objectives :
  - *Energy management, Renewable Energies, nuclear safety, electricity, transport, construction, agriculture,* ***Circular economy & Waste***

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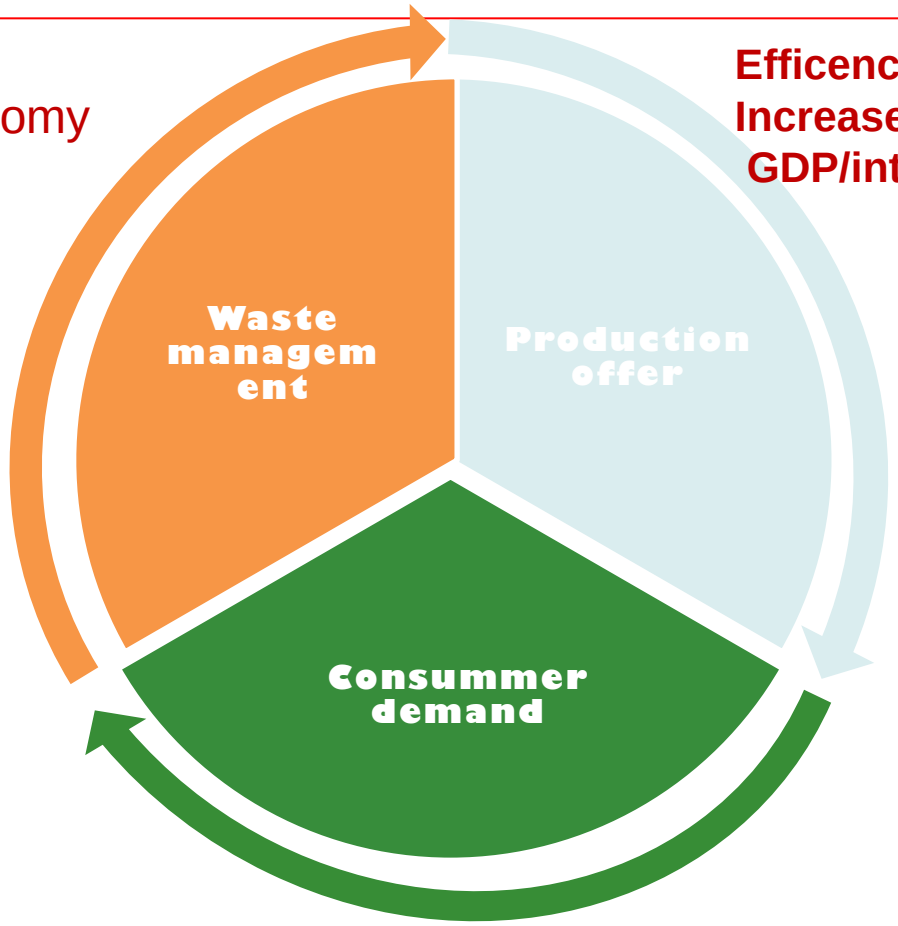
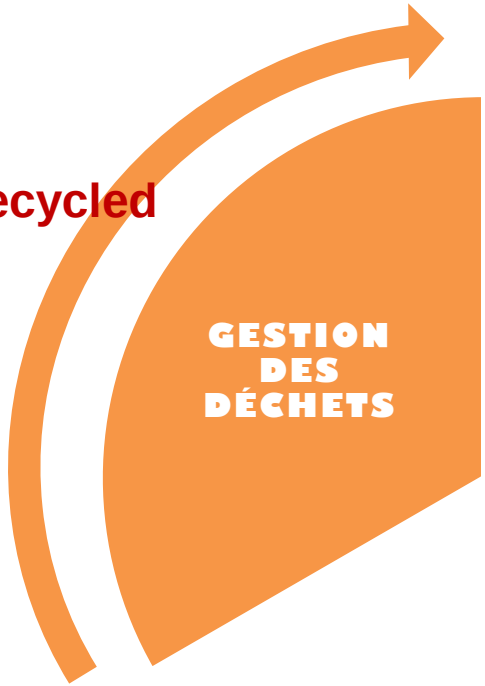
Toward circular economy

Efficence use of resources :
Increase up to 30 % the ratio GDP/internal consumption



Food waste reduction in collective gatering
Reduce of 30% paper consumption by State & public bodies
Introduce 50% of recycled matter in road construction …

- ✓ **Reduce up to 10 % of MSW 2020/2010**
- ✓ **Recycling of 65% of non hazardous non inert waste in 2025**
- ➢ **Reduce up to 50% the landfilling of waste 2025/2010**
- ➢ **Increase the categorie of waste with selective collection : all plastiques**
- ✓ **Biowaste collection at source mandatory**
- ➢ **Thermal recovery for waste that can't be recycled**



Impact of this law on EfW

Increase RDF production

- Todays :
  - *production : 600 000 t/a*
  - *Recovery : 350 000 t/a in cement kiln, 10 000 specific unit*
  - *Shipment : 240 000 t/a*

- 2025
  - *Production : 2.5 Mt/a*
  - *Cement kiln : 1 Mt/a*
  - *Specific unit : 1.5 Mt/a, 10 units /a, 100 MW/a*

- New regulation on RDF boiler, 2971
- ADEME tender to build new units : 30 to 40 M€/a to make unit sustainable compared to waste treatment cost and energy cost

EfW units

- No more new capacity
- Priority to operate at full capacity
- Improve efficiency of the plants

  - ✓ *Better management of the waste input*
  - ✓ *Better control of the combustion*
  - ✓ *Reduce overall consumption energy & matter*
  - ✓ *Improve heat recovery : Organic Rankin Cycle*
  - ✓ *Seek for new energy user : green houses*

  - ➢ *ADEME funding, 30% of the Investment, up to 3.3 M€*