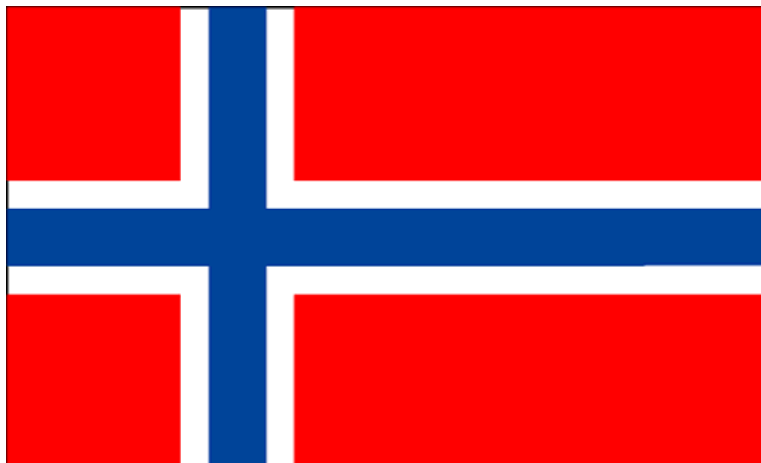


CEWEP Country Report 2016

Norway



“Municipal Waste” (MW) means waste from households as well as commercial, industrial and institutional waste, which because of its nature and composition is similar to waste from households (excluding hazardous waste).

“Solid Recovered Fuels” (SRF):- solid fuel prepared from non-hazardous waste to be utilised for energy recovery in incineration or co-incineration plants, and meeting the classification and specification requirements laid down in CEN/TS W100343003.

“Refuse Derived Fuels” (RDF): broader than definition of SRF. In the Country Report only RDF expression is used and it comprises SRF as well.

A. Amount of Waste

In your <u>country</u>	Year _____	In million tonnes
Total amount of Municipal Waste (MW): MW production / inhabitant / year: 496 kg/inhabitant	2013	3,01
Total amount of household waste	2013	2,26
Total amount of commercial/industrial/institutional waste similar to household waste	2013	0,76

Total amount of industrial/commercial waste	2013	8,19
Total amount of waste	2013	11,20

(2014 data is not published by Statistics Norway before June)

B. Treatment of Waste

In your <u>country</u> (concerning MW)	%	Year _____	In million tonnes
Recycling (including composting)	40/ 43	2013/ 2014	1,0/ 0,91
Incineration	58/ 54	2013/ 2014	1,48/ 1,14
Landfilling	2/ 3	2013/ 2014	0,052/ 0,061

Total Amount of thermally treated waste in million tonnes	Country	Organisation/ company
In WtE plants/dedicated RDF plants	1,619/ 1,584	1,619/ 1,584
In Cement kilns	N.A	0

Number of	Country	Organisation/ company
WtE plants	16	16
Dedicated RDF plants	1	1
R1 plants	14	14

Capacity development in your <u>country</u>	Years			
	2017 – 2020		2021 – 2025	
	Additional Capacity, ktonnes	Additional number of plants	Additional Capacity, ktonnes	Additional number of plants
Planned Waste-to-Energy plants:	245	1	-42	-1
Planned RDF plants:	0	0	0	0

All (if it is not possible to specify separately)	245	1	-42	-1
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C. Energy production in Waste-to-Energy and dedicated RDF plants

1. Total Electricity and Heat production in Waste-to-Energy and dedicated RDF plants

Reference year: 2014 (if data from 2015 are available, please add them and specify the year)

Total Electricity and Heat production	Waste-to-Energy plants and dedicated RDF plants	
	Country (2014 / 2015)	Organisation/company (2014 / 2015)
Reference amount of thermally treated waste in million tonnes:	1,584 / 1,526	1,584 / 1,526
Number of plants:	17	17
Electricity produced in million MWh/ year	0,38 / 0,43	0,38 / 0,43
Electricity exported in million MWh/ year	0,37 / 0,38	0,37 / 0,38
Heat* produced in million MWh/ year	3,62 / 3,79	3,62 / 3,79
Heat* exported in million MWh/ year	2,77 / 2,9	2,77 / 2,9

* incl. heating, cooling and steam

2. Recognition of energy produced in Waste-to-Energy and RDF plants as renewable

How much %? (Please indicate if it refers to energy production or waste input): 50 (2013) energy

Contribution of WtE to the production of renewable energy in your country (%) 1,26 (2013)

In your country	Electricity	Heat
Market price per kWh in €cent/kWh	3,3	1,2-2,4
Subsidy or market based instruments (Please specify e.g. green certificates, feed in tariffs)	GC (2,5€) OR investment subsidies is optional. Dual taxsystem; High or low energytax on el-consume for energy production. WtE plants owned by industry or DH/Energy companies pays low tax, 0,05 €. Full tax 1 €cent for the rest	
Price incl. subsidy or market based instruments in €cent/kWh	3,3-5,8	N.A

D. Residues

Reference year: 2014 (if data from 2015 are available, please add them and specify the year)

Slag/bottom ash	Country 2014/2015	Organisation/company 2014/2015

Annual amount in million tonnes:	0,353/0,324	0,353/0,324
Method of utilisation or disposal (%): (road construction, cement production, construction block fabrication, landfill)	Landfilled In separate cells	Landfilled In separate cells
Recovery of metals: <ul style="list-style-type: none"> • Annual amount (%): • Ferrous (F) material extracted (gross weight, %): • Non Ferrous (NF) material extracted (gross weight, %): • Typical composition of the NF fraction (% Al, other NF, inert): 	Metals recovered from total ash: 6,25%	6,25%

FGC (Flue Gas Cleaning) residues, (incl. filter dust and boiler ash)	Country	Organisation/company
Annual amount in million tonnes:	0,053/0,058	0,053/0,058
Method of treatment or disposal (e.g. stabilisation, salt mine, hazardous landfill site):	Haz.landfill sites	Haz.landfill sites

E. Export and Import of MUNICIPAL and SIMILAR WASTE

Into/from your country, reference year: 2014 (if data from 2015 are available, please add them and specify)

	MSW (2014/2015)	RDF (2014/2015)
Export	0,164/ 0,161	0
Import	0	0,059/0,104

F. Responsibilities Public - Private

Type of waste:	Responsibility for <u>treatment</u>: Public/Private	Responsibility for <u>collection and transport</u>: Public/Private	Municipalities' responsibility for <u>monitoring</u>: Yes/No
from private households	public	public	yes
commercial waste similar to household waste	private	private	Yes, if applied in local handling/ regulation
industrial/commercial waste	private	private	No
hazardous waste	public/ private	public/ private	No

G. Refuse Derived Fuels (RDF)

In your country, reference year: _____

1. **Amount of RDF/year**
 - a. **Current Production: __ N.A_(0) __**

- b. Potential: N.A
2. Experience (market development etc.): N.A
3. Capacity for mechanical-biological treatment/ year
 Currently: 0
 Planned: 0

H. Prices and taxes

1. Waste-to-Energy prices for Municipal Waste (MW)

Reference year: 2015

Average Net fee in €/tonne	VAT (Value Added Tax) rate %
47-68 €/t	25

	Tax in €/tonne MW	Tax for export in €/tonne MW	Tax for import in €/tonne MW	Rules to avoid double taxation if MS of destination and of dispatch have taxes	Comments
Incineration	0	0	0		
Co-Incineration	0	0	0		

Waste-to-Energy total price in €/tonne MW N.A

2. Landfill taxes and bans

Reference year: 2015

Average Net fee for landfilling in €/tonne	VAT (Value Added Tax) rate %	Landfill tax in €/tonne (If landfill tax is planned please indicate when and the amount planned)	Total price for landfilling €/tonne MW	Landfill ban (If landfill ban is planned please indicate when and for what type of waste)
37-105	25	0	37-105	2009 (bio-degradeable)

I. Investment

1. The average investment cost per tonne of annual capacity (for a new plant, considering 15-20 years operation): 1530 €/t*y (example CHP, 72 kt/y)
2. Investment cost regarding flue gas cleaning system (% of total investment): 6%
3. The average investment cost per MW heat and electricity installed respectively: 3,9 mill €/MW heat, 17,7 mill €/MWel

J. Employment

The amount of employment created by the Waste-to-Energy industry

Jobs (full time equivalent) per WtE plant including operation process, administration and outsourced personnel hired on regular basis i.e. during maintenance (reference to total capacity): 450

You can also provide this information in another unit, e.g. jobs per 100,000 t/a capacity