



SSRH - Renewable Heating

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Energy in Horticulture
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Progress towards targets

2020 TARGETS

Overall Renewable Energy

10.6%

16.0%

Renewable Transport

7.4%

10.0%

Renewable Heat

6.9%

12.0%

Renewable Electricity

30.1%

40.0%

Renewable heat energy by source, 2005 to 2017

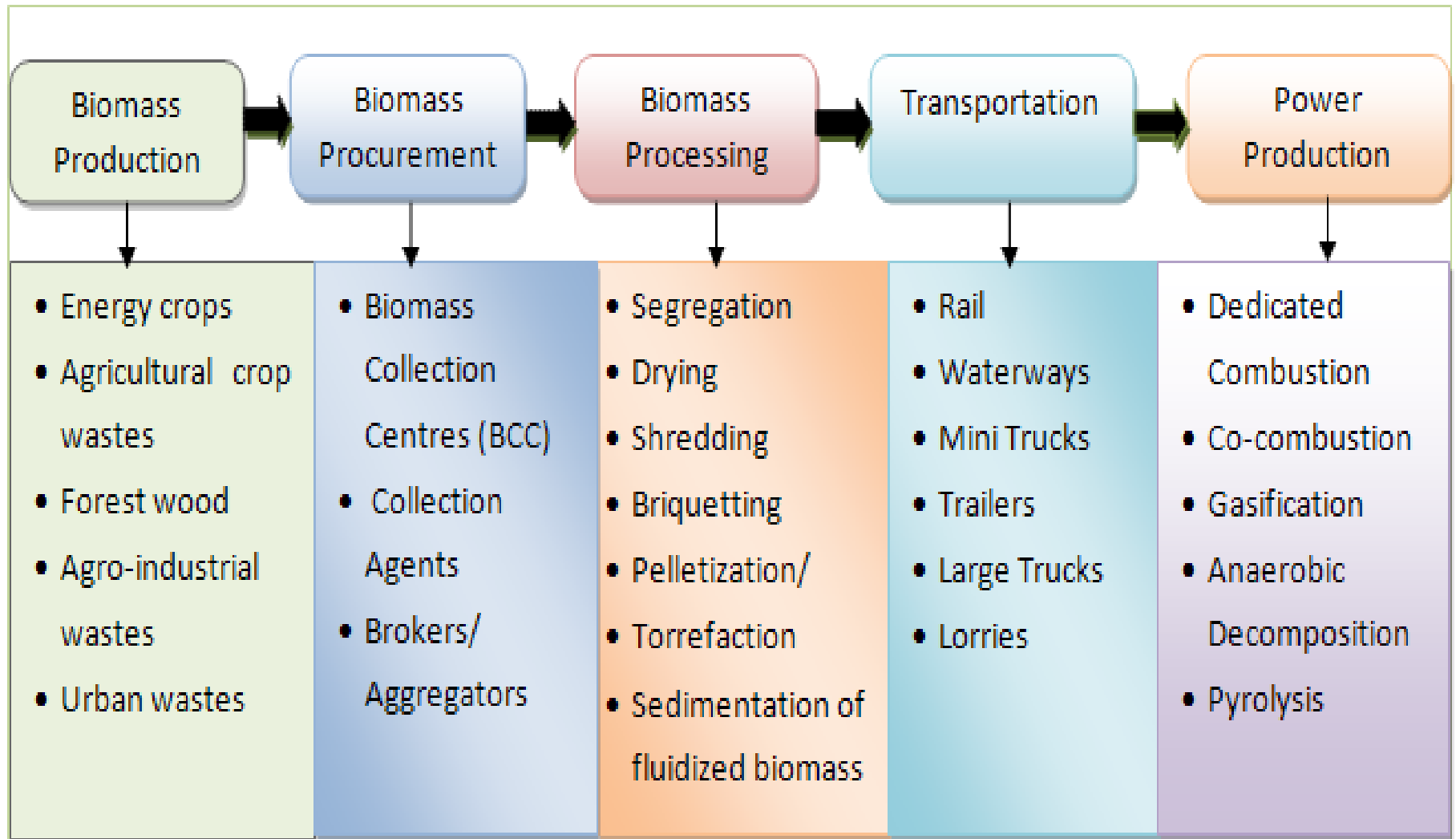
	Quantity (ktoe)			Shares (%)		
	2005	2010	2017	2005	2010	2017
Biomass	176	187	247	94%	86%	79%
Biogas	7	8	10	4%	4%	3%
Solar thermal	0	7	14	0%	3%	5%
Ambient	4	16	41	2%	7%	13%
Total renewable heat	187	218	312	100%	100%	100%
RES-H (%)	3.4%	4.3%	6.9%	-	-	-

Ireland was 27th out of the EU-28 for renewable heat in 2016 – 6.8%

Potential opportunities in Renewable Energy

- Biomass - heating, electricity, transport
- Hydro - electricity
- Solar - heating, electricity
- Geothermal – heating
- Wave/tidal - electricity
- Fuel cells / Hydrogen – electricity, heating, transport
- Wind - electricity

Pre-processing of Biomass



What is the SSRH?

- Govt. scheme
- Financial support to renewable heat generators
- 15 year period
- Administered by SEAI
- Technologies – Solid Biomass Boilers & Heat Pumps
- Non-domestic sector

Heat Pump Technologies

- ASHP – 300 – 400% efficient
- GSHP – Generally more efficient than
ASHP

Points to Consider With Alternative Heating

- Alternative heating can reduce running costs by 75%
- Heating with hot water via an indirect system can increase animal performance
- Capital costs can be relatively high
- Some systems may produce heat when you don't need it
- Some systems have longer warm up times than others.
- Some systems require considerable maintenance and topping up with fuels.
- Under-floor heating will be slow to respond to sudden changes in ventilation.

How will SSRH be regulated?

- SEAI will administer the scheme
- SEAI will produce documentation that sets out requirements for a project.
- SEAI will make payments to acceptable applicants and ensure compliance

Key Questions?

- What if I've already installed a biomass boiler?
- Will payments be cut? Inflation adjusted?
- When does it start?
- Is a BER or energy efficiency documentation required?
- How long will a project take to get approval?

Plan Projects Carefully

- Ascertain what type of fuel suits you best.
- Solid fuel (manual handling), pellets or chip (automated)
- Fuel supply, storage and delivery
- Eligibility of boiler, installer and final use of heat
- Boiler sizing
- Biomass must be the primary fuel source
- Installers will be very busy – unforeseen setbacks
- Look at track record of supplier, manufacturer and installer

Eligible Use of Heat

- Inefficient drying practices in order to maximise payments.
- Grain drying
- Wood-fuel drying – not eligible
- Swimming Pools – (Municipal or Commercial)

Rules should not stifle innovation – open to change

SSRH is designed to off-set use of fossil fuels

Process of drying is major consumer of fossil fuels in our maritime climate.

Fuel Requirement

- Rule of Thumb – Biomass boilers require about 1t of dried woodchip a year (30% moisture) for every kilowatt installed.
- Logistics is key – transport is expensive
- Woodchip has a range of moisture contents
- Quality Assurance

Fuel Storage Requirements

Boiler Output	80 kW	350 kW	1,000 kW	2,000 kW
Fuel input	25 kg/hr (100 kW)	100 kg/hr (400 kW)	300 kg/hr (1,200 kW)	600 kg/hr (2,400 kW)
1 m ³ / 150 kg storage	6 hrs	1.5 hrs	Too small	Too small
4 m ³ / 600 kg storage	24 hrs	Too small	Too small	Too small
16 m ³ / 2,400 kg	4 days	24 hrs	8 hrs	Too small
48 m ³ / 7200 kg	12 days	3 days	24 hrs	12 hours
55 m ³ / 8250 kg	14 days	3.4 days	28 hrs	14 hours
500 m ³ / 75,000 kg	Too big	31 days	10 days	5 days

Sustainable Support for Renewable Heat (SSRH)

- The Irish Government expects the SSRH to make a significant contribution towards their 2020 ambition of having 12 per cent of heating coming from renewable sources.

Phase one of the SSRH:

- Phase 1: the introduction of the SSRH for non-domestic installations in the industrial, business and public sectors.

SSRH proposed tariff levels (Cent for each kWh of heat produced)

Tier	Lower Limit (MWh/yr)	Upper Limit (MWh yr)	Biomass Heating Systems Tariff (c/kWh yr)	Anaerobic Digestion (c/kWh yr)
1	0	300	5.66	2.95
2	300	1,000	3.02	2.95
3	1,000	2,400	0.5	0.5
4	2,400	10,000	0.5	0.0
5	10,000	50,000	0.37	0.0
6	50,000	N/A	0.0	0.0

Market Opportunities

- Does not contain banded sweet spots like UK – 199kW or 999kW
- Leisure centres, hotels, hospitals, nursing homes where 1,000 MWh of heat are covered by the two first tariffs.
- Running installations of around 300kW to 400kW at 3000 full load hours – securing €38,000

Comparing fuel costs

- 1,000 litres of oil contains 36.68 GJ of energy or 10,190 kWh of energy.

Oil at €0.76 litre = €760 / 10,190 kWh = **7.4 cent per kWh**

- Wood chip at €120 per tonne @ 30% moisture content
3,400 kWh per tonne = **3.5 cent per kWh**



SSRH Example

- Leisure Centre
- 400 kW boiler – cost €130,000
- Run 1,700,000 kWh/yr (50% load)
- Oil Displaced = 160,500 litres
- Oil Cost pa = €105,930 (0.66 c/litre)
- Wood Chip cost pa = €58,000
- Saving pa = €47,930
- Payback without grant or SSRH = 2.7 years

$$\begin{aligned} \text{SSRH extra income} &= 300 \text{ MWh} \times \text{€}56.6 = \text{€}16,980 + \\ & 700 \text{ MWh} \times \text{€}30.20 = \text{€}21,140 + \quad = \text{€}40,120 \\ & 400 \text{ MWh} \times \text{€}5 = \text{€}2,000 \end{aligned}$$

Heat Saving from wood chip + SSRH = €88,050 or payback 1.5 years

CO2 emission factors 2017 data

Energy Source	CO2 emission kg/kWh
Grid electricity	0.437
Natural Gas combustion - Heating	0.205
Coal - combustion	0.340
Kerosene	0.257

Take Home Message

ENERGY EFFICIENCY IS PARAMOUNT

GET TO KNOW THE FUEL YOU'RE GOING TO USE

- Understand the fuel you're going to use, it's pros and cons, key design considerations, availability - and stick to it.

DESIGN YOUR FUEL STORAGE AND RECEPTION AROUND YOUR FUEL CHOICE

- Think about lifecycle costs, practicalities of fuel delivery and storage.

USE PROVEN TECHNOLOGIES

- Don't try to reinvent the wheel.

SSRH

- Presents a range of new business and financial opportunities for the commercial and agricultural sectors.

Thanks
for your attention

