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Biomass to Power

The World Market for Biomass Power Plants 2023/2024

Extract

14th edition, 2023

ecoprogram GmbH

Biomass to Power 2023/2024

The leading standard reference in the Biomass to Power industry. The 14th edition includes:

- An analysis of more than 4,500 biomass power plants and about 700 projects worldwide
- Global market development forecast 2023–2032, including new constructions, shutdowns and investment volumes based on more than 500 cost examples
- Country level analysis of market factors, support schemes and existing plants and projects for 50 of the world's most important biomass markets
- Investment and operational costs and revenues with an exemplary calculation
- Description and market shares of all important operators and technology providers

In addition to the market report, you will get free access to our infrastructure database waste & bio Data (Biomass to Power module) for 1 year.

The database contains information on all plants and projects, including capacity, status, start of operation, technology, fuel, manufacturer and operator, and more. This also includes our weekly updated Biomass to Power Project Tracker.

The study is available starting from 3,400.- €*. **Please find detailed price and product information at the end of this extract.**

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* plus 19% VAT for customers within Germany and EU customers without a VAT ID.

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Japan

Update: 12-2023

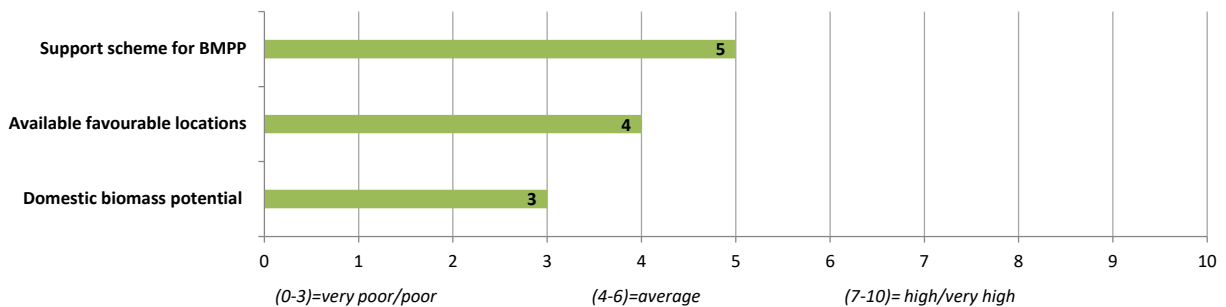
Key figures			
Inhabitants 2020 [UN est. in million]	126.86	Number of BMPPs	[...]
Goal: Biomass electricity generation (2030) [TWh]	47	Installed electrical capacity [MW _{el}]	[...]
Electricity from biomass 2021 [GWh]	26,893	Share of total electricity generation 2021 [%]	2.66
<i>Forecast 2023-2032</i>		<i>Forecast 2023-2032</i>	
Total invest market [mn EUR]	[...]	Capacity of new commissionings [MW _{el}]	[...]

Management summary

Despite unsuccessful capped tendering rounds for BMPPs >10 MW_{el}, Japan has high commissioning rates as well as a significant project pipeline. Japan is one of the most dynamic markets worldwide, despite the limited domestic usable biomass potential. [...]

Figure 1: Ratings for the biomass market in Japan

Country ranking



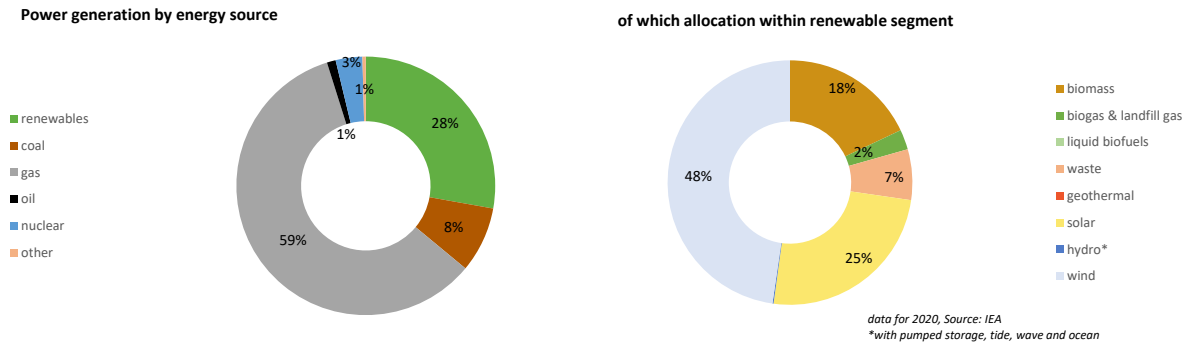
Background, market factors, legal framework

Electricity generation

- Japan has few domestic energy sources and thus strongly depends on imports. This is also the reason why nuclear power had been one of the country’s most important energy resources until the nuclear disaster at the power plant in Fukushima in March 2011. In the last years, Japan started to gradually restart nuclear power. As of September 2023, 12 of the country’s 54 nuclear reactors are operating. By 2030, 20% of the country’s electricity need shall be met with nuclear power, compared to 30% before 2011.

[...]

Figure 2: Electricity generation in the Netherlands



Market factors

[...]

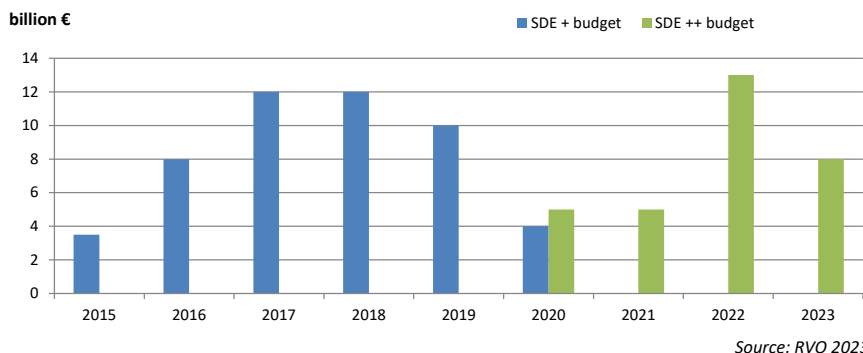
- In April 2022, the Dutch Government decided stop granting subsidies for low-temperature heat (100 °C) from woody biomass. In general, so-called low-value applications, i.e., power generation from biomass and low temperature heat, shall be phased out. Instead, biomass use shall be limited to high-value applications, applications without renewable alternative (including high-temperature heat) and applications that store carbon (e.g. building materials).
- Also, it was planned to limit the sourcing of biomass to the EU. However, this plan was abandoned due to possible non-compliance with World Trade Organization rules.
- This is also in light of the Dutch so-called nitrogen crisis. The Netherlands have the second highest nitrogen emissions per capita in the EU, which is mostly due to the too large number of livestock in the country. [...]

Support scheme

[...]

- In autumn 2020, the new tendering scheme SDE++ 2020 was applied for the first time. The subsidy calculation is now based on the saved CO₂ emissions rather than on the generated energy.

Figure 3: SDE budget in the Netherlands



[...]

Market development

Projects

- As of December 2023, we know of [...] projects in different planning phases with a total expected capacity of approximately [...] With the help of official data as well as our continuous market monitoring, we added 13 projects, [...]
- The largest individual project is the 400 MW_{el} [...]

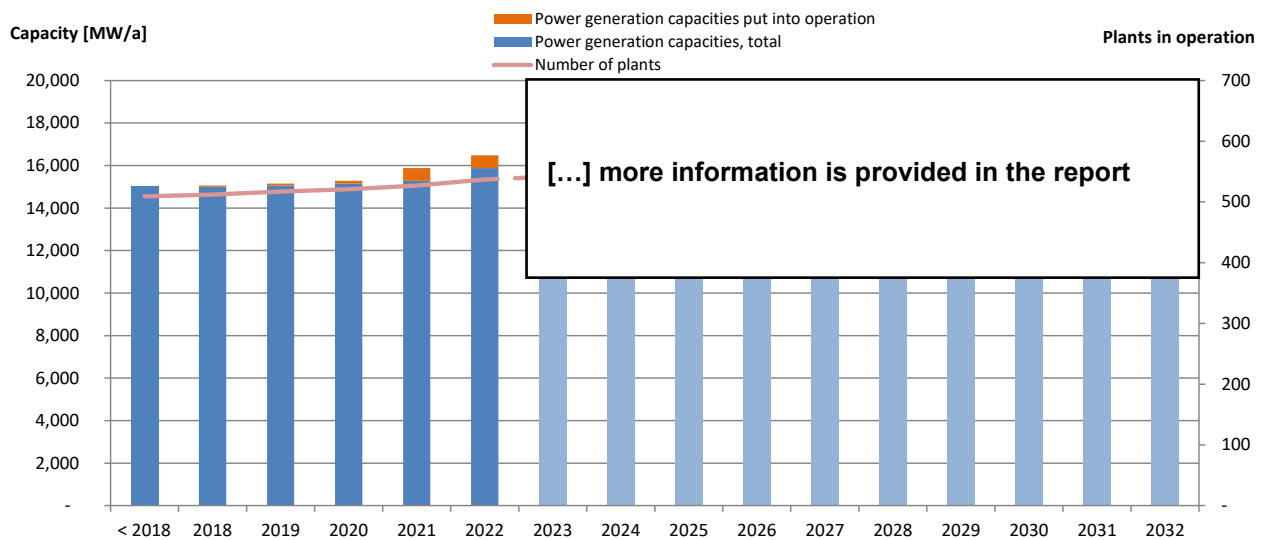
[...]

Forecast

- The Brazilian market for BMPPs is mainly dominated by the strong sugar and ethanol industry. In recent years, the market development was stimulated by the PPAs awarded by regulatory authority ANEEL.
- However, the level of the PPAs is comparatively low. The positive effect of the 20-year PPA awarded in the auctions is more the certainty of income in contrast to sell the energy on the free market.

[...]

Figure 4: Market forecast Brazil

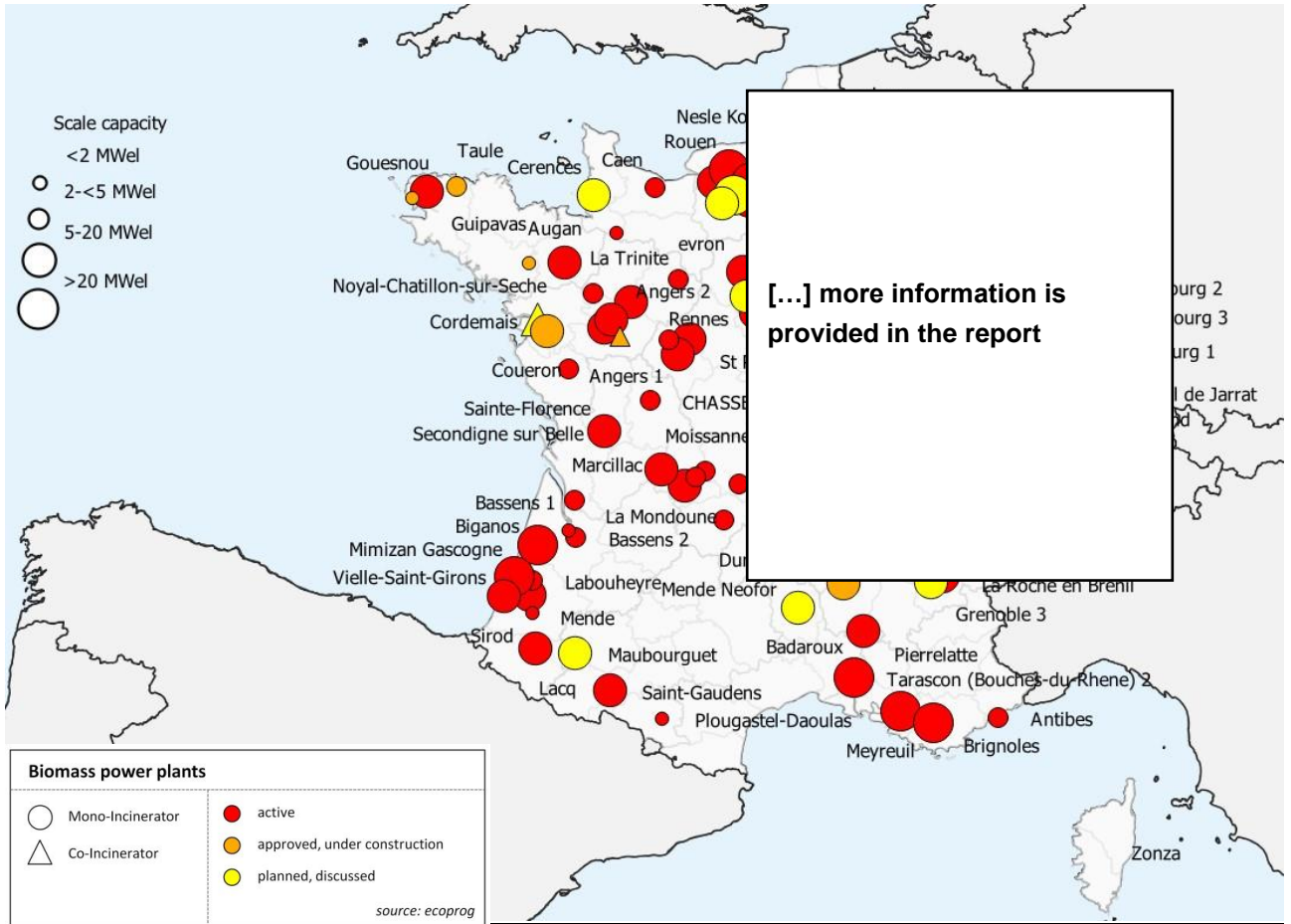


Data estimated up to 2022, from 2023 on: forecast, source: ecoprog

Competition

- As most Brazilian biomass power plants are operated by ethanol producers, the largest among them are also the most important operators in the electricity generation from solid biomass segment, such as [...]
- Additionally, Brazilian sugar and ethanol producer Copersucar announced plans to enter the bioenergy market in August 2023, with plans to produce both electricity from biomass combustion as well as biomethane. [...]

Figure 157: Locations of plants and projects in France



[...]

Figure 158: Project outlook France

Country	Plant	Type	Plant unit	Cap. (MWel)	Start	Status
France	Golbey	mono-incinerator	3	25	2024	under construction
France	Angers 1	co-incinerator	1	n/a	n/a	under construction
France	Paris La Défense	mono-incinerator	2	n/a	2023	under construction
France	Villers-sous-Montrond	co-incinerator	1	6.5	2023	under construction
France	Yvelines	mono-incinerator	1	1	n/a	under construction
France	Gye-Sur-Seine	mono-incinerator	2	1.4	n/a	approved

[...] more information is provided in the report

Active Plants

You can find further information on all plants, such as specifications on technical equipment, manufacturer, or fuel for 12 months at <https://ecoprolog.com/plants/overview?type=biomas>. This database is updated every week. Please use your login credentials to access the database.

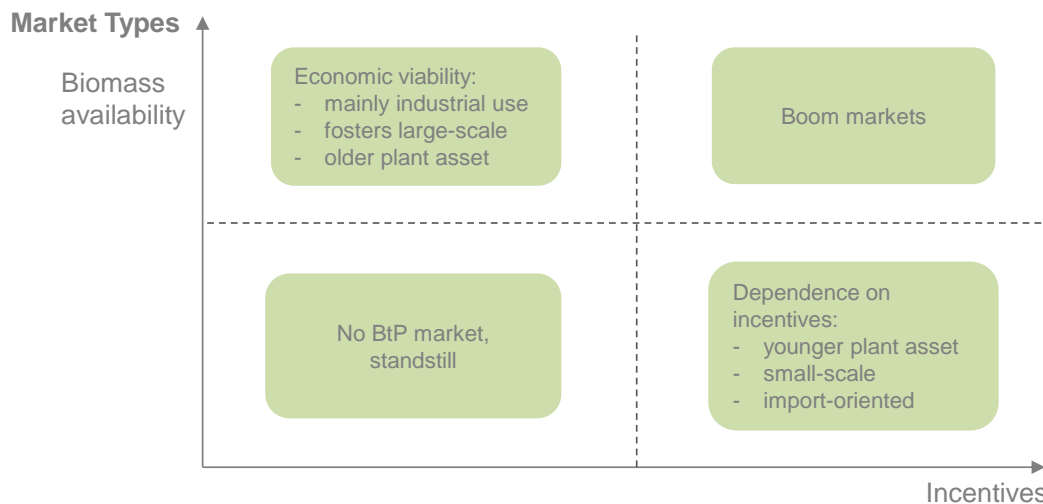
Name	Operator	Capacity (MWel)	Type	Start
Abercrombie Point	Nothern Pulp Nova Scotia	n.a.	mono-incinerator	2011
Ajax 1	Energy+2000 Ltd.	0.7	mono-incinerator	2012
Ajax 2	n.a.	25	mono-incinerator	2015
Armstrong 1	Tolko Industries Ltd.	20	mono-incinerator	2000
Atholville	AV Cell	17	co-incinerator	1985
[...] more information is provided in the report				

9 Framework/market factors

9.1 Economic viability and biomass potential

In general, the two most important factors for the economic viability of a biomass to power project are the biomass fuel availability and the subsidies available in the country. With these two factors, a rough categorization of market types can be done. Examples for all these market types can be found in the country analysis of this report.

Figure 5: Biomass to Power market types



Source: ecoprogram

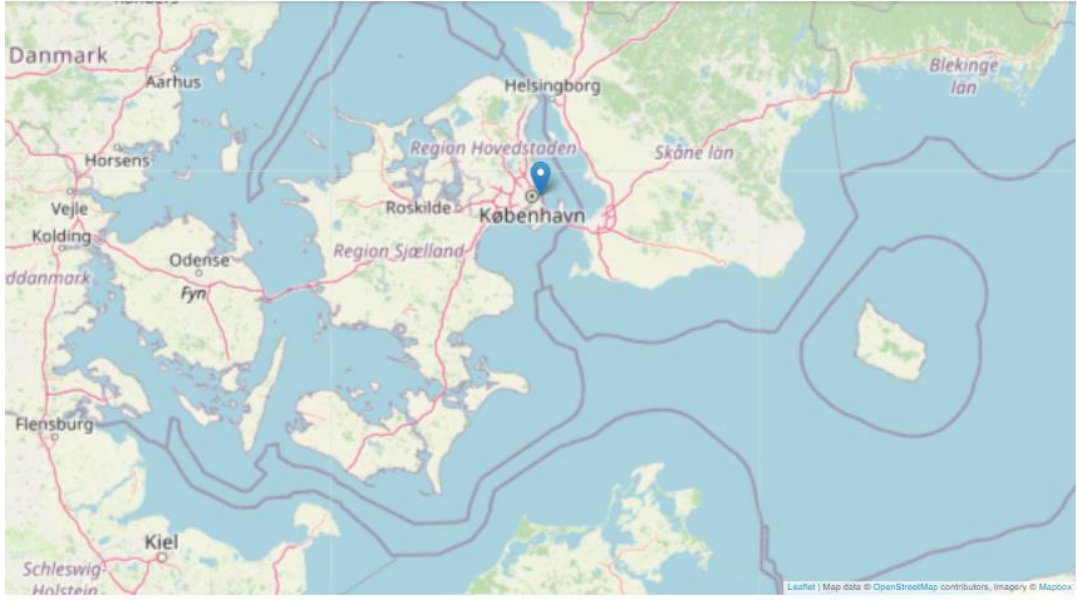
Compared to fossil energy sources, biomass fuels are inferior in terms of calorific value. Without considering the adverse climate effects, it is more profitable to incinerate coal or natural gas. Due to their low calorific values, transporting biomass fuels is usually not economically viable and local availability is important.

Several preconditions have to be met for electricity generation from biomass to be economically viable without financial incentives from third parties:

- The existence of larger biomass amounts, without valuable options for an economic use competing at the location where the biomass emerges.
- A high energy demand at this location, ideally both for heat and electricity. This energy need becomes even more important as a location factor if other energy sources can only be tapped at high costs at peripheral sites.

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Plant

Name	Amagerværket
Country	Denmark
Type	Biomass to Energy
Province/Region	Hovedstaden
Status	active
Investments	EUR 150 million (new unit)
Start of operation	2010
Heat use category	district heating CHP
Input, capacity [t/a]	n/a
Input real	n/a
Input real (year of data)	n/a
Power generation capacity [MW]	219.00
Heat production capacity [MW]	251.00
Gross heat production [MW]	n/a
Mono-/Co-Incineration	mono-incinerator

Remarks: The Amagerværket went operational in 1971 as coal power plant with 4 units. One unit (unit 2) is operating on wood pellets. Another unit (unit 3) became operational in April 2020, after several delays of the start of operation and runs on wood chips.
As of August 2020, Danish utility Hofer A/S is tendering the procurement of an outdoor woodchip storage for its AMV4 biomass CHP unit.

Unit 1

Status	shut down
Start of operation	1972
End of operation	n/a
Unit fuel	straw pellets, oil
Fuel category	agricultural biomass
Technology	n/a
Mono-/Co-Incineration	co-incinerator

Category

- 1 Waste-to-Energy
- 2 MBT plants
- 3 Sorting Plants
 - 3.1 Dry Recyclables
 - 3.2 Packaging
 - 3.3 Plastics
 - 3.4 Metal
 - 3.5 Paper
 - 3.6 Glass
 - 3.7 Bulky Waste
 - 3.8 Batteries
 - 3.9 E-Scrap
 - 3.10 Construction & Demolition
 - 3.11 Other Sorting Plants
- 4 Recycling plants
 - 4.1 Plastics, material
 - 4.2 Plastics, chemical
 - 4.3 Paper
 - 4.4 Other Recycling Plants
- 5 Biomass-to-Power**
- 6 Anaerobic digestion
- 7 Hazardous waste

Search

Search

Country

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Downloads

- [BtP Project Tracker](#)
- [BtP, List Of Active Plants](#)

In addition to the report, you will get 12-month access to waste & bio Data (BtP module).

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This also includes the weekly updated BtP Project Tracker.

Please find a [trial version of waste & bio Data](#) on our website.

Price and product information

You can order the market report [here](#).

Pricing model: One-time purchase

- Single-user version: 4,400.- €*
- Company version: 8,800.- €*
- Corporate version: Price on request

Product information:

Single-user copy: personal copy (personalised and password-protected PDF file, sent via email)

Company version: company-wide copy (legal entity), PDF file, sent via email

Corporate version: for different, legally connected companies (e.g. sister companies, subsidiaries abroad). Price depends on number of companies and employees.

Includes 12-month free access to waste & bio Data (Biomass to Power module) and BtP Project Tracker.

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- Company version: 6,800.- €* per year
- Corporate version: Price on request

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- b. w&b Monitor (sent weekly) plus access to the online archive with more than 47,000 news items
- c. access to waste & bio Data (Biomass to Power module) including BtP Project Tracker

The minimum subscription period is 2 years. The subscription will be renewed for another year if it is not cancelled at least 4 weeks before the expiration date.

Options (both pricing models):

Additionally, you can order all detailed information on plants and projects in MS Excel (only available in combination with a company or corporate version): 4,400.- €*

Additionally, you can order a printed copy of the study: 150.- €*

* plus 19% VAT for customers within Germany and EU customers without a VAT ID.