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# Biomass to Power

## The World Market for Biomass Power Plants 2023/2024

Extract

14th edition, 2023

ecoprog 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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## Contents

## Japan

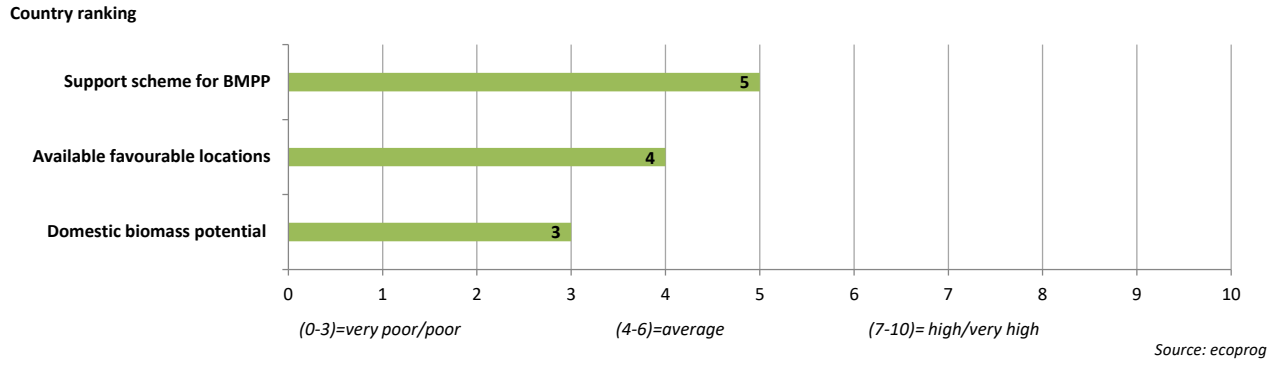
*Update: 12-2023*

| 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 |
| *Forecast 2023-2032*<br>Total invest market [mn EUR] | **[…]** | *Forecast 2023-2032*<br>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**




*Source: ecoprog*

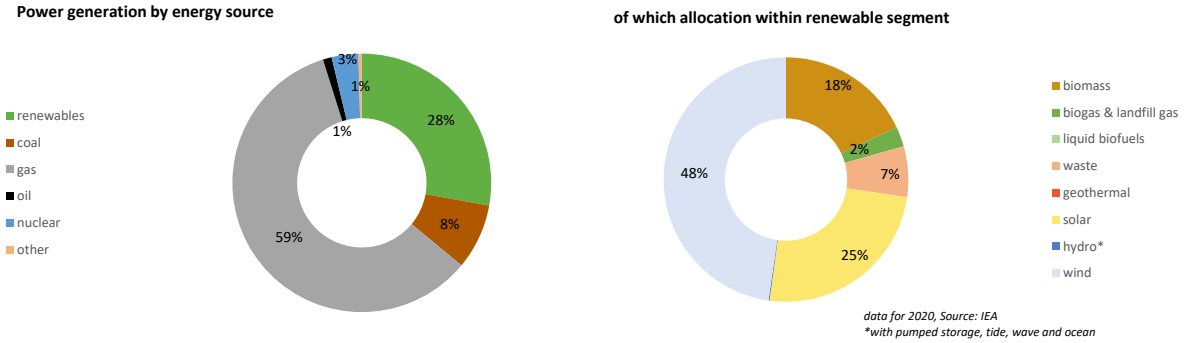
### Background, market factors, legal framework

*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*

**[…]**

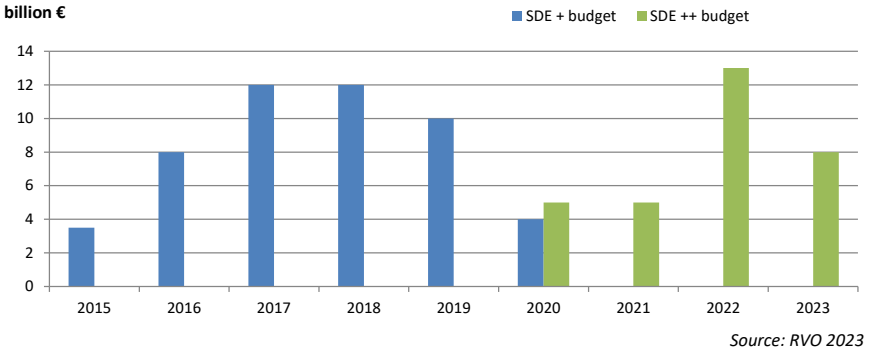
- In April 2022, the Dutch Government decided stop granting subsidies for low-temperature heat (100 °C) from woody biomass. In general, so-called low-value applications, i.e., power generation from biomass and low temperature heat, shall be phased out. Instead, biomass use shall be limited to high-value 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 $CO_2$ 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 $MW_{el}$ **[…]**

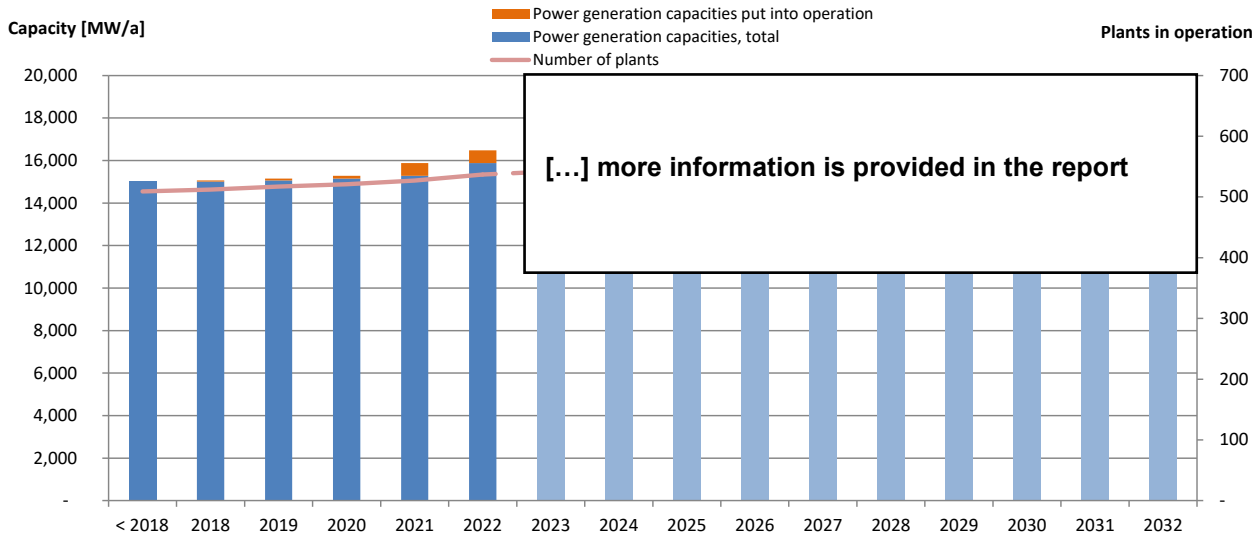
**[…]**

*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**

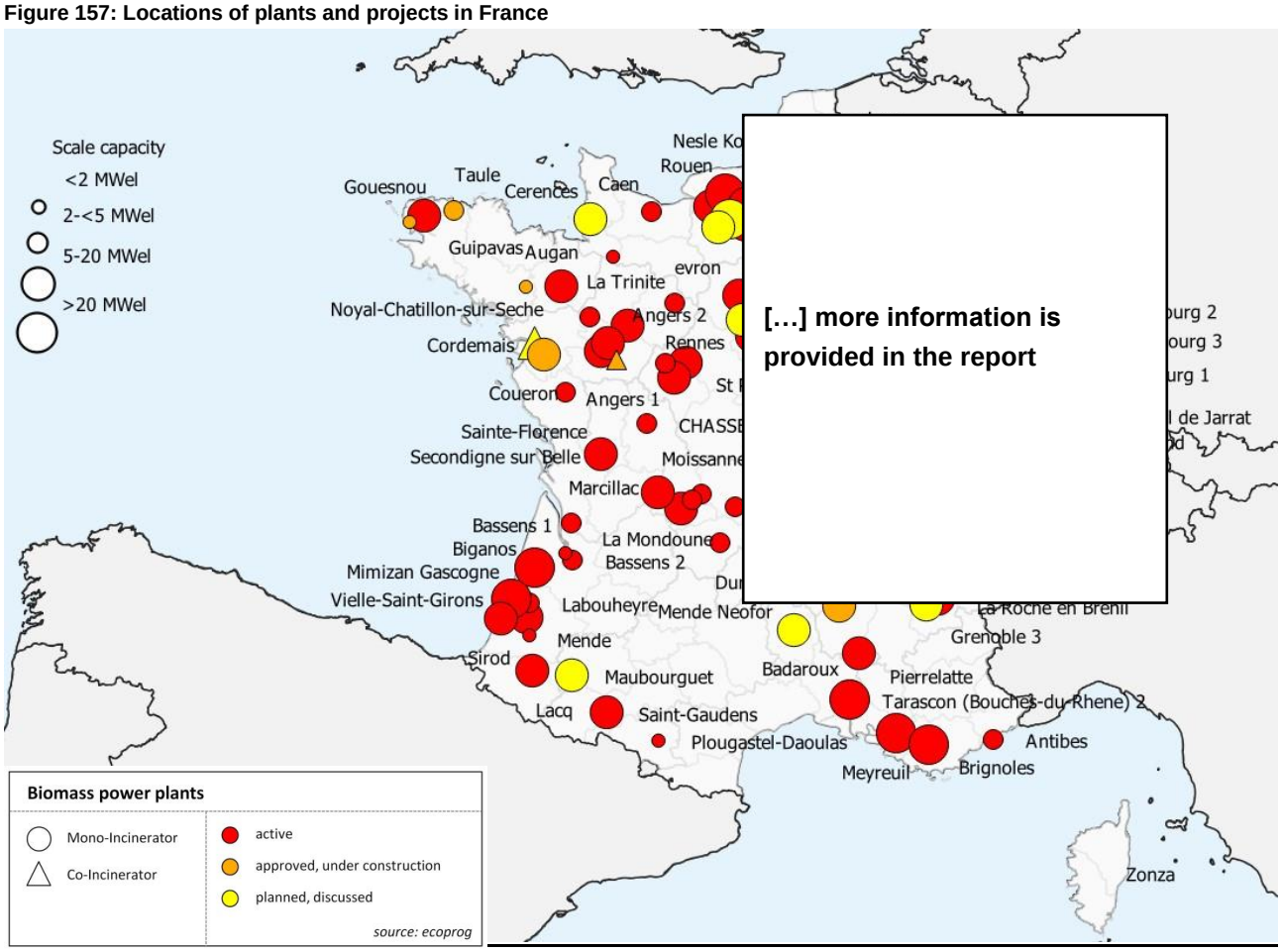



*Data estimated up to 2022, from 2023 on: forecast, source: ecoprog*

## 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://ecoprog.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 |
| | | | | |
| | | | | |
| | | | | |

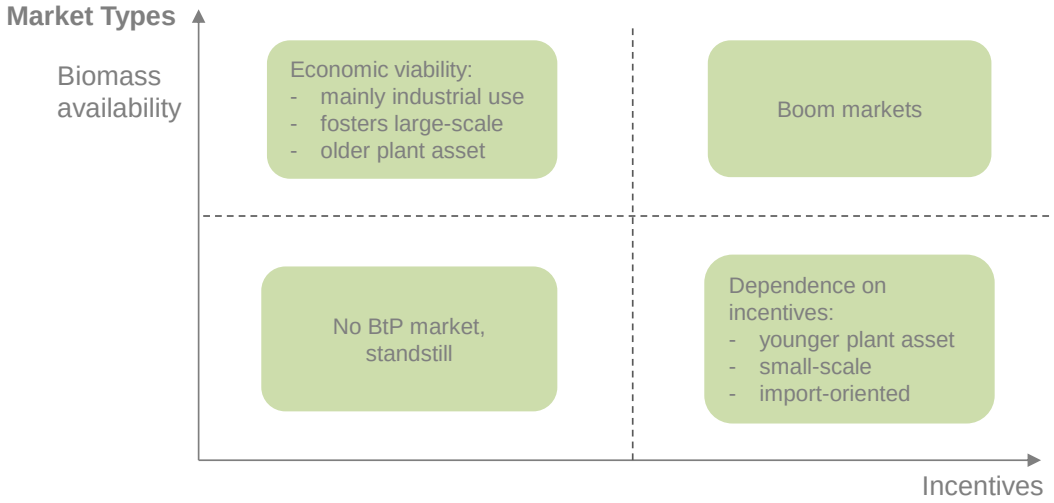
**[…] more information is provided in the report**

# 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**

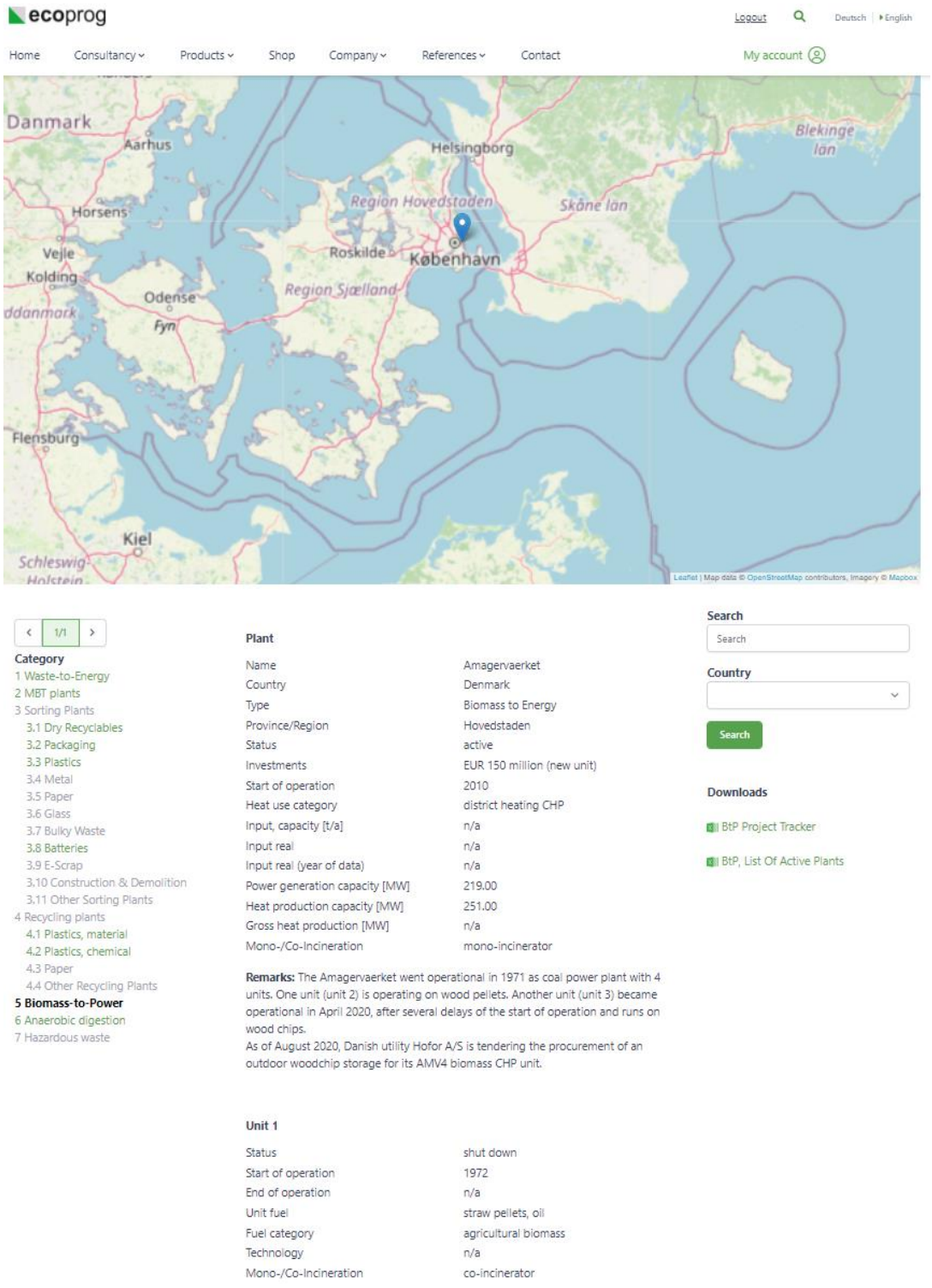



*Source: ecoprog*

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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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.

Subscribers of ecoprog's waste & bio Infrastructure Monitor (Info | Order) will receive a discount of 600.- € (1,200.- € in case of a company version).

## Pricing model: BtP Package (subscription)

- Single-user version: 3,400.- €* per year
- Company version: 6,800.- €* per year
- Corporate version: Price on request

**The BtP Package includes:**

a. market study „Biomass to Power", updated annually
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.