WORLD BIOENERGY ASSOCIATION

11th Edition

Global Bioenergy Statistics Report 2024

Summary

WORLD ENERGY MIX

In 2022:

- ***Global Energy Supply:*** 622 EJ; fossil fuels dominate at 80%. **Bioenergy** accounts for **9%**
- ***Global Energy Consumption:*** 422 EJ; fossil fuels at 82%. **Bioenergy** accounts for **39 EJ**

RENEWABLE ENERGY STATUS

Electricity

In 2023, global renewable electricity generation was 8,931 TWh, led by hydropower (47%) and wind (26%). **Bioenergy, contributing 697 TWh**, **held a 8% share**.

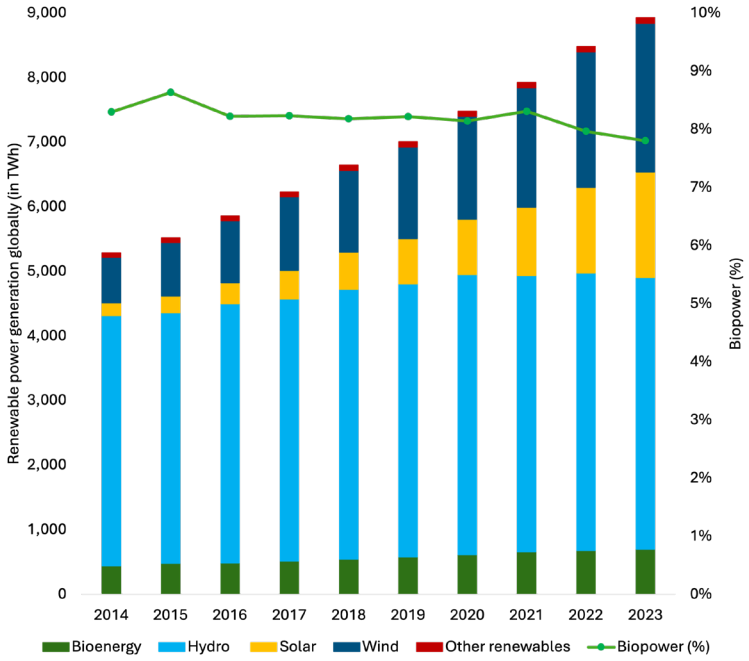

Figure 1. Renewable electricity generation and biopower share

Heat

In 2022, **1.33 EJ** of renewable heat was produced, with **biomass** contributing **96%**. **Europe** led, generating **80%** of global heat, with bioenergy making up **95%** of its total.

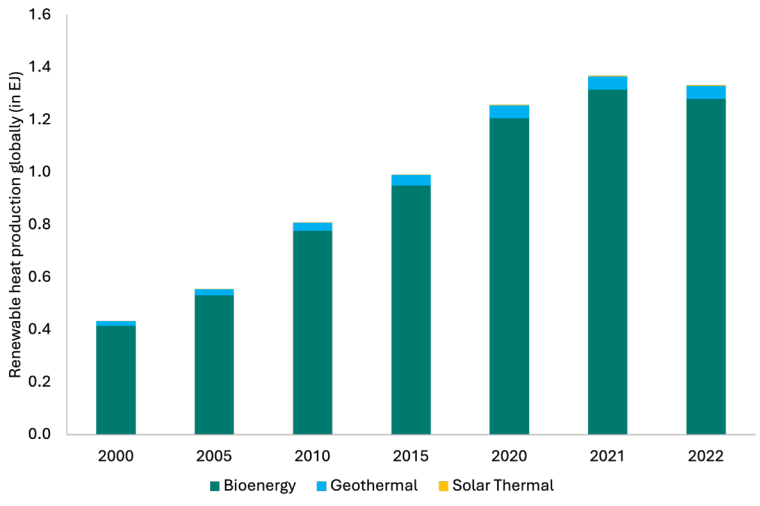

Figure 2. Renewable heat production

Transport

In 2022, road transport energy consumption was **90.6 EJ** (up **3.4%** from 2021). **Biofuels** were the largest renewable source, providing **3.94 EJ**. By 2023, **64 countries** had mandates to promote biofuel use.

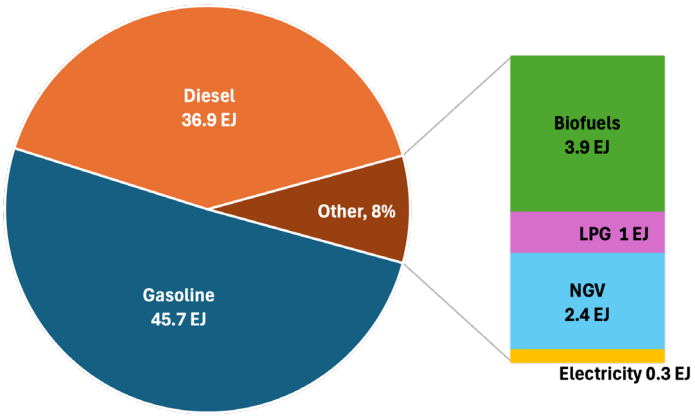

Figure 3. Global energy consumption in the road transport sector in 2022. Source: IFPEN

GLOBAL BIOMASS SUPPLY

In 2021, biomass supply reached 54 EJ globally: 85% from solid biomass, 7% from liquid biofuels, and around 2-3% from waste and biogas.

Wood Pellet Production

In 2022, global production hit **48 million tons**, with **Europe** (52%) led by **Germany**. The **Americas** contributed **32%**, dominated by the **U.S.**, the top global producer.

In **Asia, Vietnam is the 2nd largest producer** accounting for nearly 60% of the region's output.

For crops:

In 2023, around **660 million tons of primary crops** (7% of global production) - like wheat, corn, sugarcane, and vegetable oils **were used for biofuel production**.

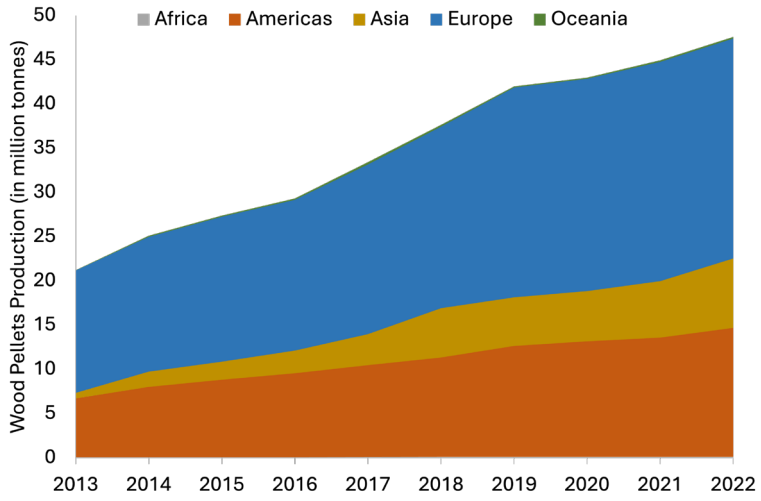

Figure 4. World pellet production by continent

BIOENERGY INSTALLED CAPACITY

Global biopower capacity rose 71% from 88 GW in 2014 to **150.3 GW in 2023**, but growth during 2022 - 2023 slowed to 3%, the lowest in a decade. **China leads at 31 GW,** followed by Brazil (18 GW) and both the U.S. and India (11 GW).

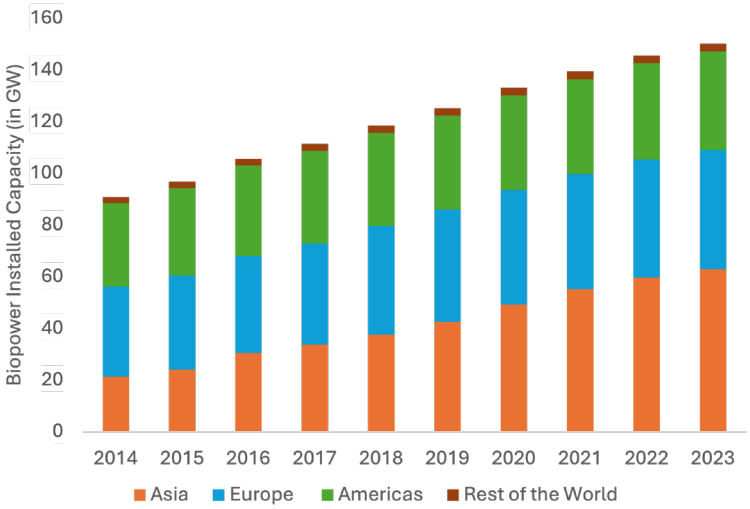

Figure 5. Biopower installed capacity by region

BIOENERGY GENERATION

Bioelectricity

In 2023, **China** produced **25%** of global biopower (204 TWh). **Brazil** generated a record **54 TWh** from 637 projects, while **Japan** produced **49 TWh**. Top 3 countries for **bioenergy in electricity: Denmark (20%), Finland (14%), UK (12%)**.

BIOFUELS

Ethanol

In 2023, **ethanol** production reached **116 billion liters** (70% of liquid biofuels). The **U.S.** and **Brazil** produced **80%**. **India** became the third-largest producer with **6.4 billion liters**, tripling its output since 2018.

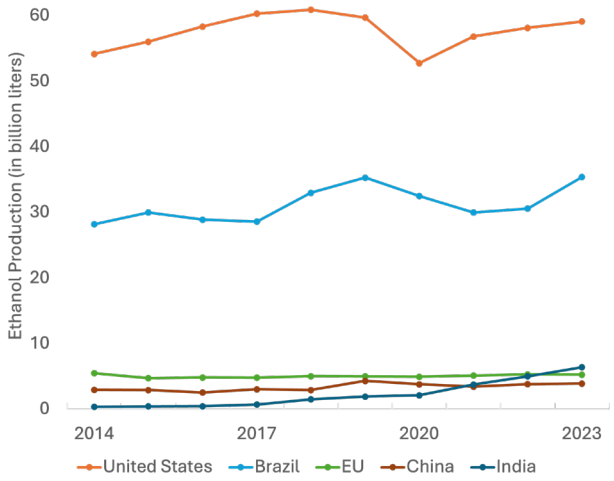

Figure 6. Ethanol production of the 5 largest producers

Biodiesel

In 2023, global **FAME biodiesel** production neared **50 billion liters**. **Indonesia** led with **14 billion liters** (palm oil), followed by the **EU** at **13 billion liters** (rapeseed, used cooking oil) and **Brazil** at **8 billion liters** (soybeans).

Renewable Diesel

In 2023, the **U.S**. led HVO production with **11 billion liters**, nearly doubling from 2022. The **EU** produced **4 billion liters**, while **China** increased output to **1.4 billion liters**.

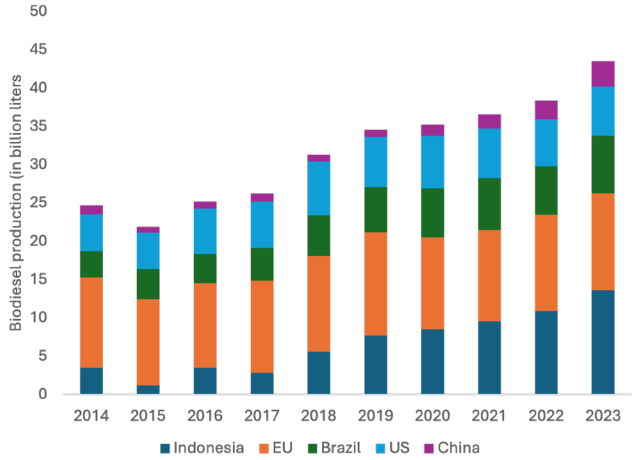

Figure 7. Top 5 largest biodiesel producers

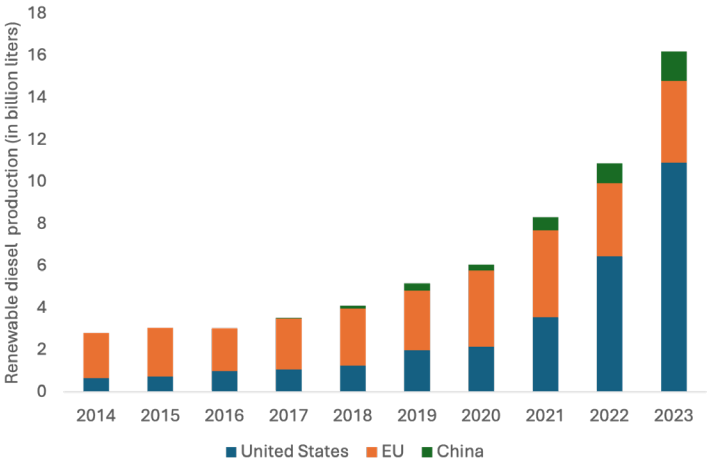

Figure 8. Renewable diesel production in the US, the EU and China

Sustainable Aviation Fuel (SAF)*:

United States

SAF production capacity may increase from **2,000 b/d to 30,000 b/d** by late 2024. The aim is **100% SAF for aviation by 2050**.

Japan:

Targeting **10% SAF blend** and 5% GHG **reduction by 2030**. New regulations (2030-2034) require a **50% emissions cut** from fossil fuels.

European Union:

ReFuelEU aims for **2% SAF by 2026** and **70% by 2050**. The UK targets **10% SAF by 2030**, exceeding the EU's **6%**.

Bioenergy with Carbon Capture and Storage (BECCS)*:

- ***BECCS Stockholm Project (Sweden):*** Aim to capture **7 Mt CO_2** over 10 years (starting **2025**)
- ***Drax Power Station (UK):*** Aim to capture **8 Mt CO2/year** by 2030.
- ***Blue Flint Ethanol (United States):*** Already captures **125 000 tCO2/year**.

**Selected geographies and projects.*

BIOENERGY JOBS

- In 2023, **bioenergy supported 3.9 million jobs**; liquid biofuels had 2.8 million (72%).
- **Brazil** led in liquid biofuel employment with **994,350** jobs (35% of global bioenergy jobs).

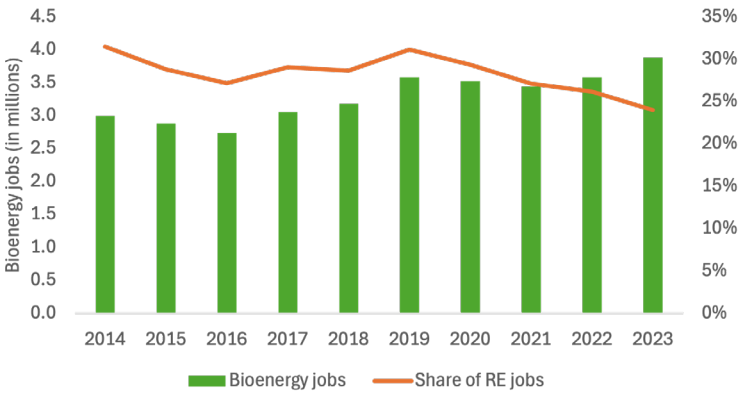

Figure 9. Overview of global bioenergy-related jobs and its share within Renewable Energy jobs

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- **Speaking opportunities** at various WBA events including webinars
- **Promotion** of products and services through various communication channels
- Join as official WBA delegates to **international** energy and climate **conferences**
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Contact us:
Kammakargatan 22, SE, 111 40 Stockholm, Sweden
Tel. + 46 (0)8 441 70 84 / info@worldbioenergy.org