WORLD BIOENERGY ASSOCIATION

2025 | 12th Edition

GLOBAL BIOENERGY STATISTICS REPORT

Summary

WORLD ENERGY MIX

Total Energy Supply

Global supply hit a record 622 EJ in 2023, with fossil fuels at >80% and renewables at 92 EJ (15%), growing 3% year-on-year. Bioenergy reached its highest level at 56 EJ (9%), a 2% rise from 2022.

Total Energy Consumption

Final energy use reached 429 EJ in 2023, up 2%, with fossil fuels at >80% and biofuels and waste steady at 9%. Solid bioenergy led renewables with 16 EJ (3.5%).

RENEWABLE ENERGY STATUS

In 2024, renewable electricity generation reached 9 836TWh, a 10% increase from 2023. Hydropower was the largest source (45%), followed by wind (26%) and solar (22%). Bioenergy, contributing 698 TWh, held a 7.1% share.

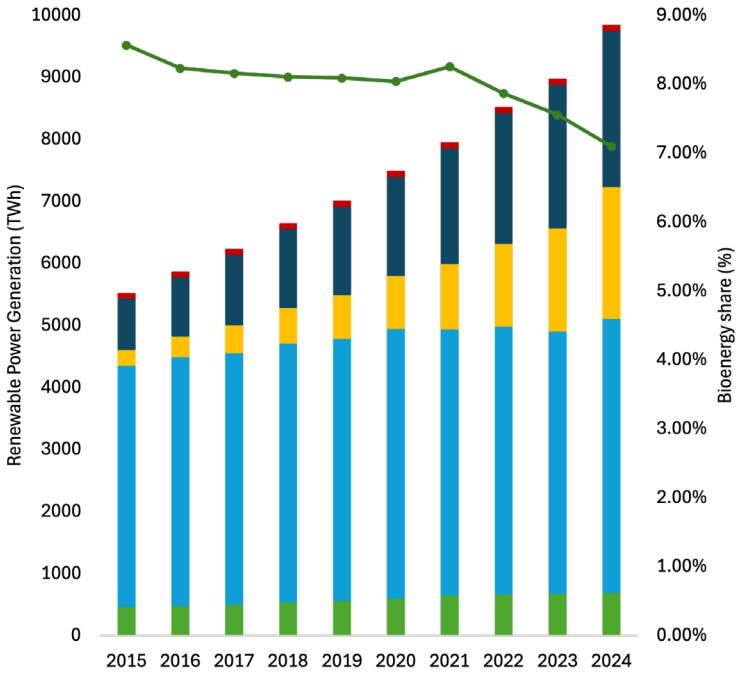

Figure 1. Renewable Electricity Generation Supply and Biopower Share

Heat

In 2023, 1.64 EJ of renewable heat was produced, with biomass contributing 73%. Europe led, generating more than 65% of global renewable heat.

Transport

In 2023, road transport energy consumption was 92 EJ, surpassing pre-pandemic levels for the first time. Biofuels were the largest renewable source, providing 4.7 EJ. By 2025, 37 countries had adopted and/or announced biofuel blending mandates.

GLOBAL BIOMASS SUPPLY

In 2023, biomass supply reached 56 EJ globally: 83% from solid biomass, 9% from liquid biofuels, and about 3% from biogas, with the last two reaching their highest levels in the past five years.

Wood Pellet Production

In the same year, global production hit 47 million tons, with Europe contributing slightly more than half. In the Americas, the U.S. is the top global producer, representing almost 70% of the region's output. In Asia, Vietnam is the 2nd largest producer, accounting for over 50% of the region's output, and a 33% increase on a year-to-year basis.

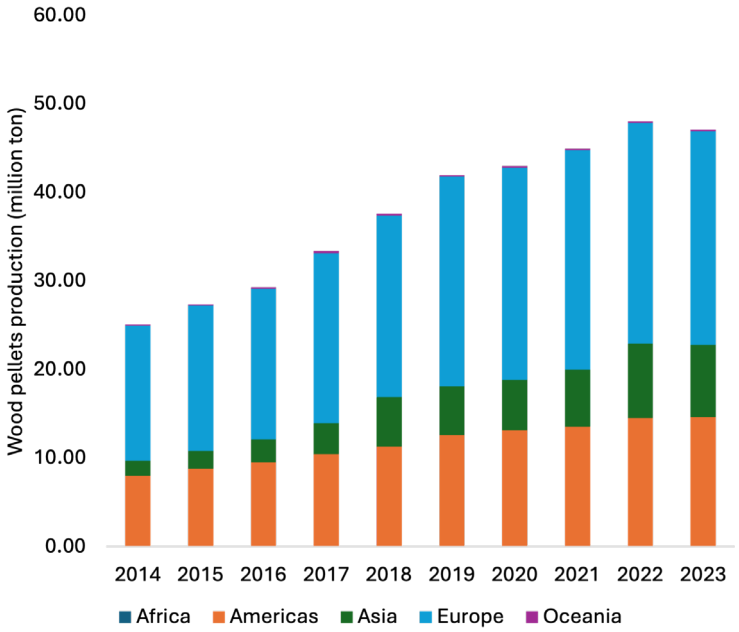

Figure 2. World Pellet Production by Continent

BIOENERGY INSTALLED CAPACITY

Global biopower capacity rose 58% from 95 GW in 2015 to 151 GW in 2024, but growth in the past two years has been slow. Asia remains the leading region, having nearly tripled its capacity over the last decade, with China, India, and Japan leading the way. In Europe, France increased by 60% its capacity in 2024.

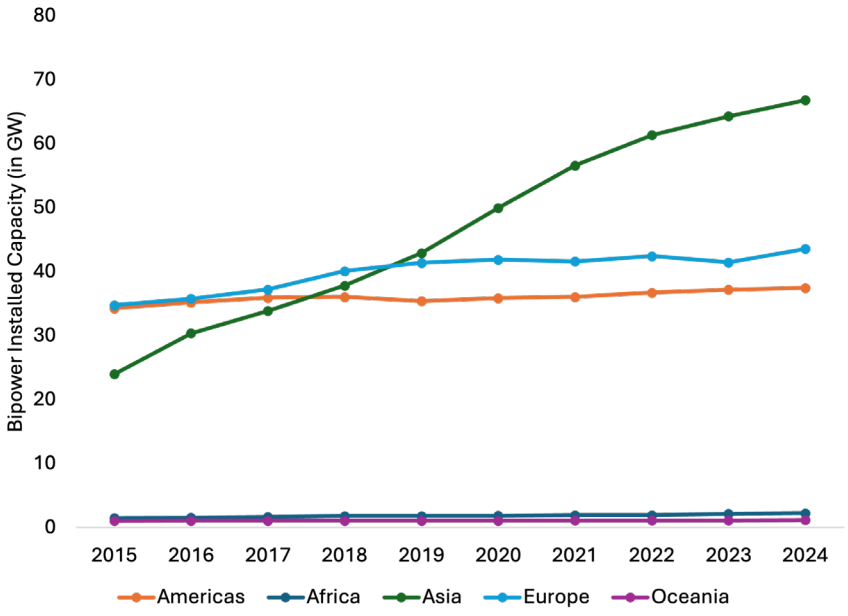

Figure 3. Biopower Installed Capacity by Region

BIOENERGY GENERATION

Bioelectricity

In 2024, China produced 30% of global biopower (209 TWh). Brazil generated a record 58 TWh, while the US produced 47 TWh. The top 3 countries for bioenergy in electricity: Luxembourg (30%), Uruguay (22%), and Estonia (22%).

Biofuels

Ethanol

In 2024, ethanol production reached 121 billion liters (>60% of liquid biofuels). The U.S. and Brazil produced 80%. India keeps being the third-largest producer with 6.5 billion liters, more than tripling its output since 2019.

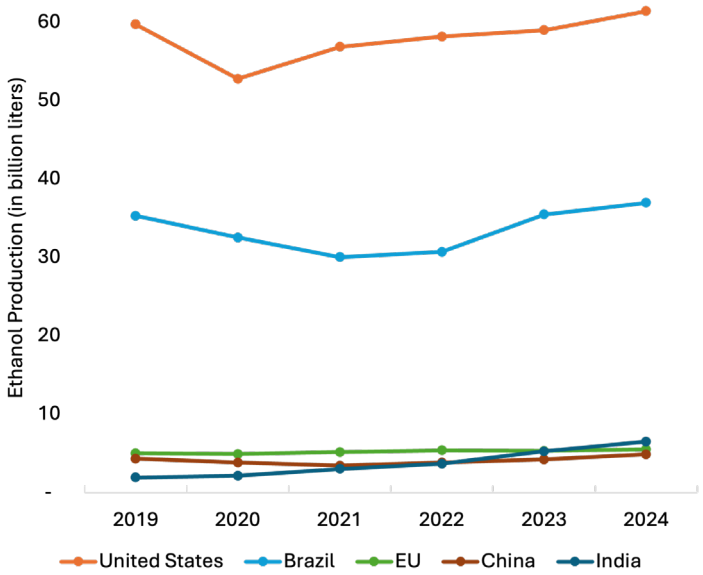

Figure 4. Ethanol Production of the 5 Largest Producers

Biodiesel

In 2024, global FAME biodiesel production neared 50 billion liters. Indonesia led with 13 billion liters (palm oil), followed by the EU at 11 billion liters (rapeseed, used cooking oil) and Brazil at 9 billion liters (soybeans).

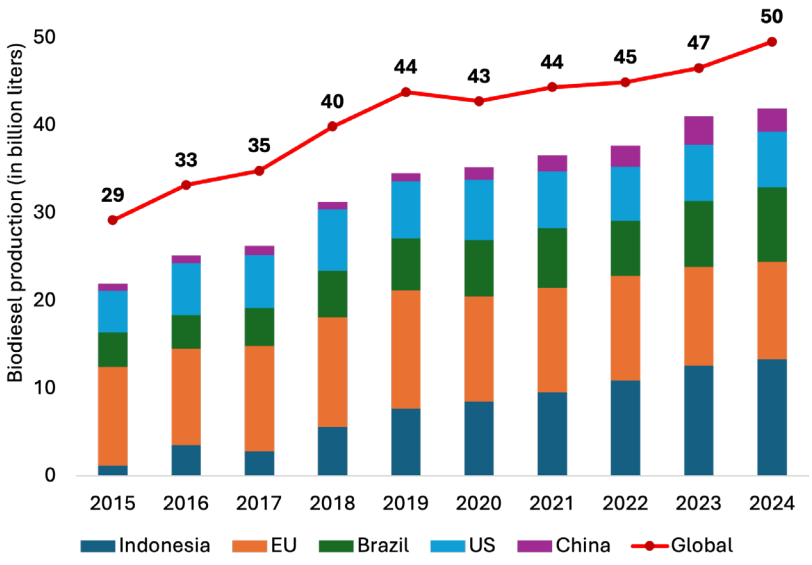

Figure 5. Top 5 Largest Biodielse Producers and Global Biodiesel Production

Renewable Diesel

In 2024, global production reached a record 20 billion liters. The United States was the largest producer, accounting for 13 billion liters, a 20% increase compared to 2023. In Europe, the Netherlands led production, while Neste remained the world's largest individual producer, with 3.8 billion liters in 2024.

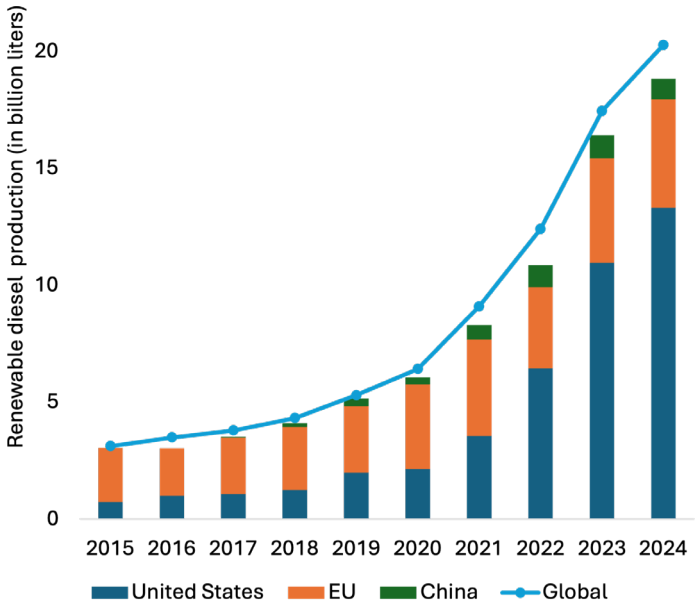

Figure 6. Renewable Diesel Production in the US, the EU, and China

Biogas

In 2023, global generation capacity of biogas and biomethane increased by 4%, and production reached 1.76EJ. Europe represented almost half of the global output, and the United States experienced a 4% annual growth by 2023.

Sustainable Aviation Fuel (SAF)*

Global SAF production reached 1.3 billion liters in 2024, doubling its output from 2023. However, SAF only accounts for 0.3% of global jet fuel use.

United States

SAF capacity rose 15% from early 2024 to 2025, driven by new projects from Phillips 66, Diamond Green Diesel, New Rise Renewables, and Par Pacific. Despite growth, SAF still meets <2% of US jet fuel demand, with feedstock imports remaining a key challenge.

China

China's SAF market is expanding fast, supported by a 1% blend national pilot program and over 40 projects in development. Capacity is expected to reach 3.0–3.8 billion liters by 2025, mainly from HEFA-based plants, though feedstock limits pose challenges

European Union

The ReFuelEU blending mandate began in 2025, lifting demand sharply. Current capacity is 0.76 billion liters (2024), with only 30% of projects operational or under construction, leading to risks of shortfalls and import dependence.

**Selected geographies*

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