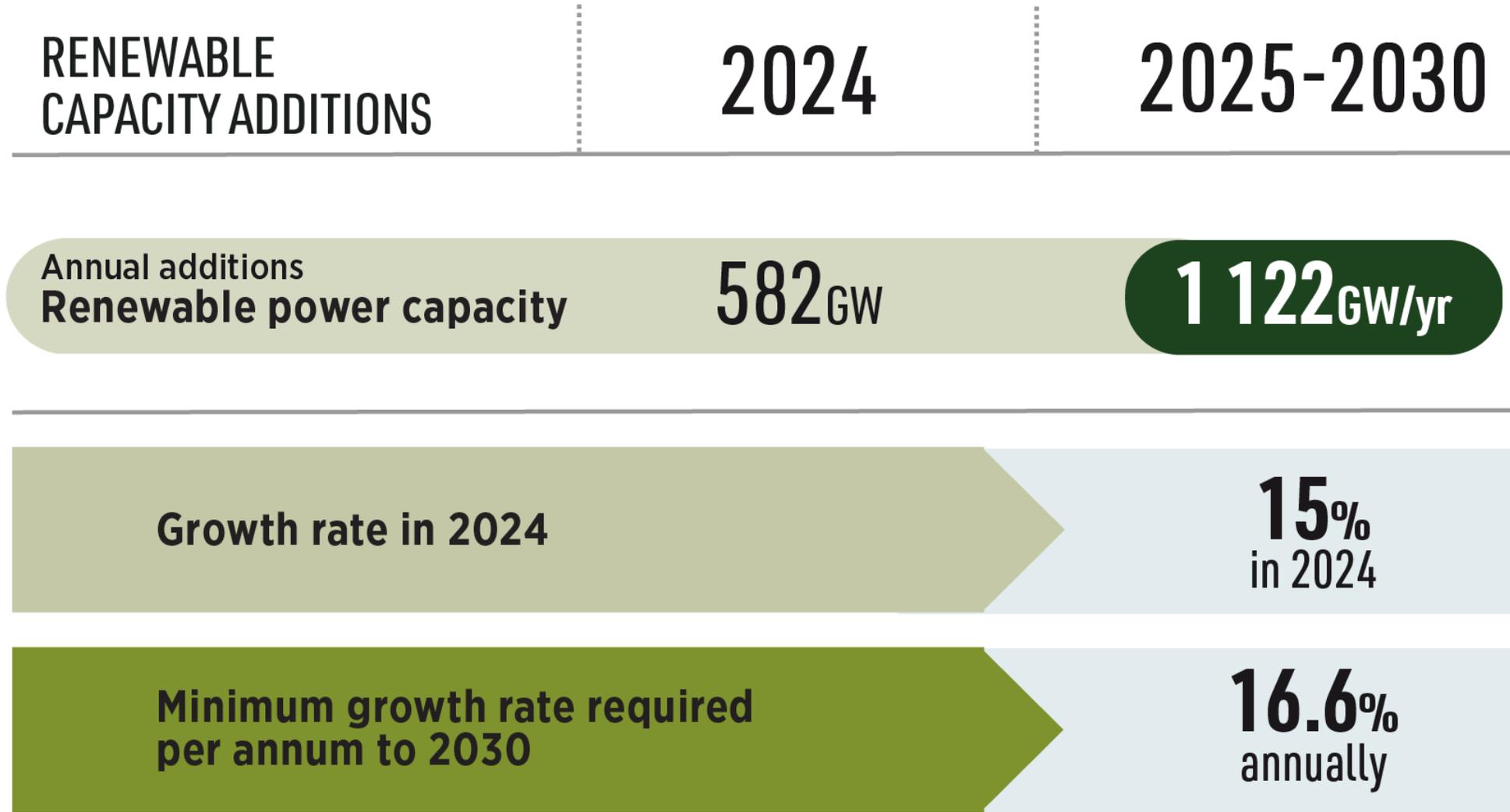
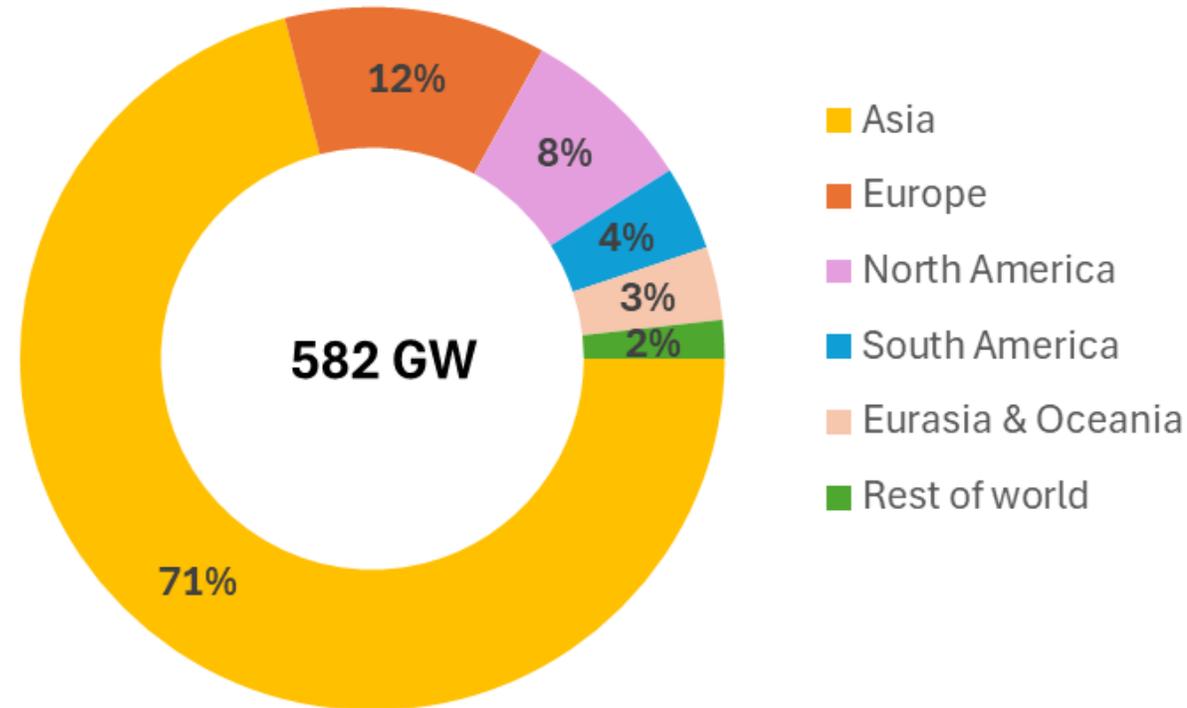


Renewable Finance and the Global Crisis: The Role of Bioenergy in the Energy Transition

Francesco La Camera
IRENA Director-General







- ❑ **Africa and Central America & the Caribbean** → Both regions see minimal additions.
- ❑ **Africa holds just 1.6% of the global total**, despite the continent's vast renewable energy potential (Solar, Wind, Bioenergy).
- ❑ **Emerging and developing regions** face more urgent growth needs but also **hold vast potential**
- ❑ **Coordinated regional action is essential to keep the global tripling target within reach.**

Renewable Power Capacity: Bioenergy in 2024 and Growth Towards 2030



RENEWABLE CAPACITY ADDITIONS	2024	Average annual additions 2025 - 2030
Annual additions (GW/yr):		
Renewable power capacity	581.9	1122
 Solar PV	452.1	716
 Wind energy	114.3	317
<i>Wind offshore</i>	8.6	55
<i>Wind onshore</i>	105.7	262
 Hydropower	9.3	31
 Bioenergy	5.1	26
 Geothermal	0.3	8
 CSP	0.717	19
 Marine energy	0.002	5

- ❑ Total installed capacity from **bioenergy** in 2024: 151 GW
- ❑ **Installed capacity from bioenergy must double by 2030** to nearly 310 GW to reach the tripling capacity goal.
- ❑ **Annual additions from bioenergy must increase fivefold** over the 2024 level until 2030 (26 GW/year).

Source: (IRENA, 2025a).

Notes: CSP = concentrated solar power; GW = gigawatt; PV = photovoltaic; yr = year; wind data includes onshore and offshore; hydropower data excludes pumped hydro.

Fossil energy carriers

- **Current oil prices quickly rising to 95-100 USD/barrel** (35%-39% increase since 28.02.2026)
- **Limited regional supply**
- **Prices and supply security tied to geopolitics**
- **GHG emissions related to their combustion**

Renewable gases

- **Greater independence from geopolitics:** less price and supply volatility
- **More flexibility between supply and regional availability**
- **Feedstocks: available in all countries and regions** (waste and residues).
- **Circular economy:** benefits for the local communities

Advantages

Green replacement for natural gas in applications where full electrification is not feasible.

Support power grid stabilisation in periods of low production from VRES (*Dunkelflaute*) and keep power supply constant.

Easy storage and local availability vs other technologies (e.g. batteries).

Less supply chain constraints and geographical dependencies.

Technology is mature enough for commercial-level projects (anaerobic digestion + upgrading unit) → no pilot-phase technology anymore.

Biogas production: source of biogenic CO₂ for other applications.

Challenges

Finding the sweet spot of an adequate regulatory framework: avoid fraud and greenwashing, yet simple enough for all stakeholders.

Avoid double counting towards national and regional targets (e.g., biomethane certificates traded separated from the gas commodity).

Same level of support and attention from policy makers compared to other energy carriers

Public acceptance: gain major acceptance by the general public.

Renewable Energy Transition Outlook for the EU



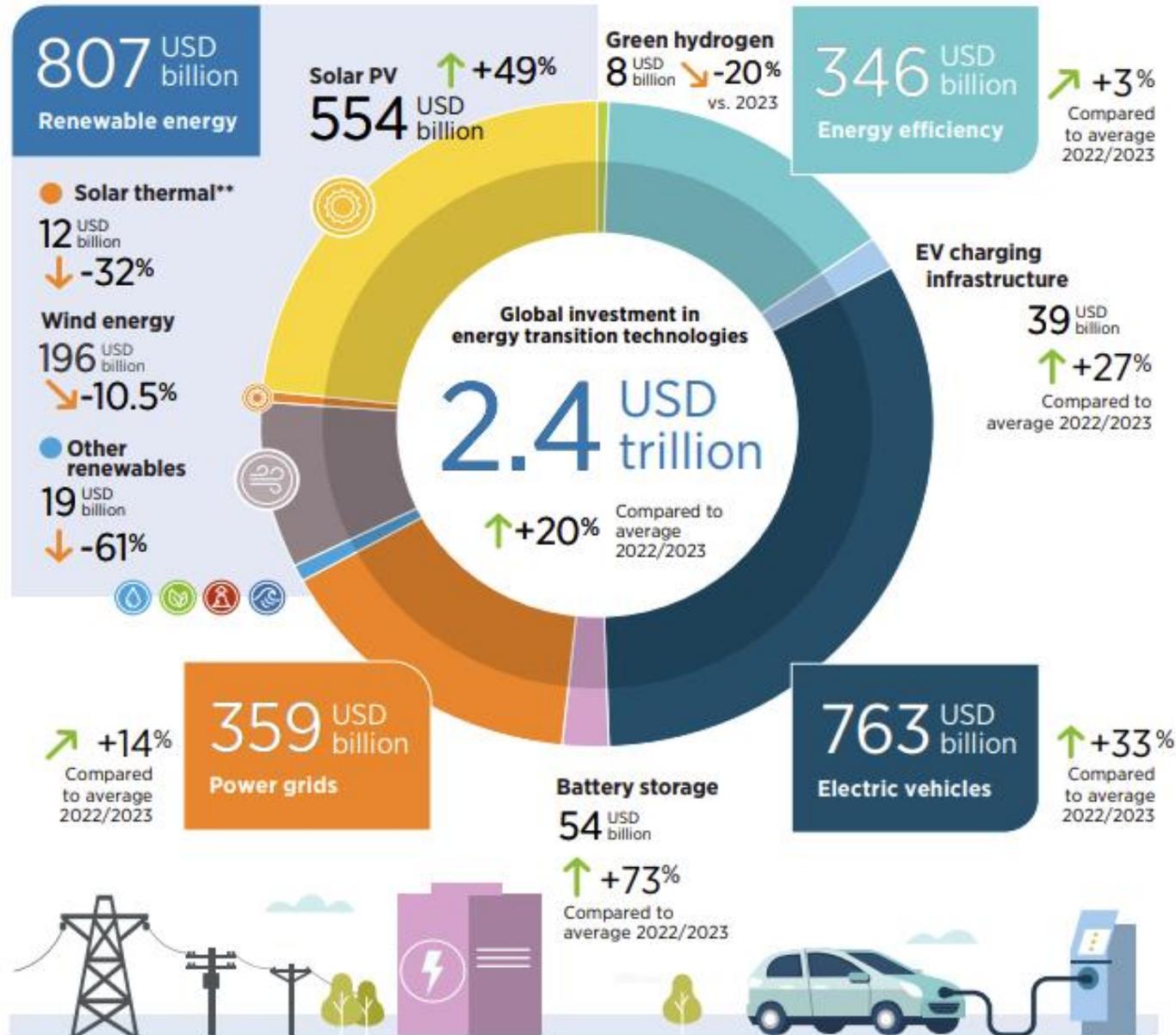
- Developed jointly by IRENA and the European Commission, in consultation with Member States.
- Examines pathways to achieve net-zero emissions by 2050, aligned with the 1.5°C target.
- Two decarbonisation scenarios: Planned Energy Scenario (PES) and Decarbonising Energy Scenario (DES).
- Analysis of three end-use sectors: industry, transport and buildings.

	PLANNED ENERGY SCENARIO			DECARBONISING ENERGY SCENARIO			
	2021	2030	2040	2050	2030	2040	2050

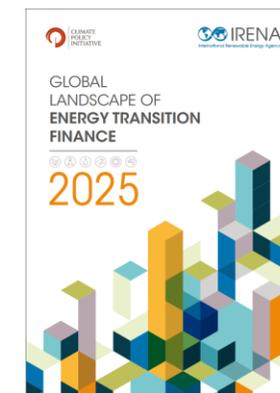
BIOGAS AND BIOMETHANE (PJ)	Primary biomass production (feedstock)		139	2961	3274	3367	2993	2903	2019
	Transformation losses (feedstock)		70	1527	1685	1732	1543	1520	1075
	Net imports		1	-	-	0	-	0	-
	Consumption	Power and heat	15	495	707	758	542	766	484
		International bunkers	-	18	134	291	18	123	256
		Domestic transport	-	24	12	4	16	9	4
		Industry	20	338	277	205	377	269	174
		Buildings	-	530	436	357	468	195	8
		Other consumption	35	28	23	20	27	20	17

Key findings and performance indicators for bioenergy

- ❑ Modern use of bio-energy: 6 EJ in 2021 vs 7.6 EJ (DES 2050)
- ❑ Bioenergy will be responsible for 12% of FEC in the EU by 20250 (9% in 2021)
- ❑ **Transport sector:** liquid biofuels play a relevant role (international marine and aviation bunkers).
- ❑ **Heating applications** in buildings and industry
- ❑ **Production of green gases** (e.g., biomethane)
- ❑ **Solid biomass fuels:** mainly for heat and power generation
- ❑ **Cumulative investment: EUR 289 billion** in the period 2025-2050 (ca. EUR 12 billion / year)



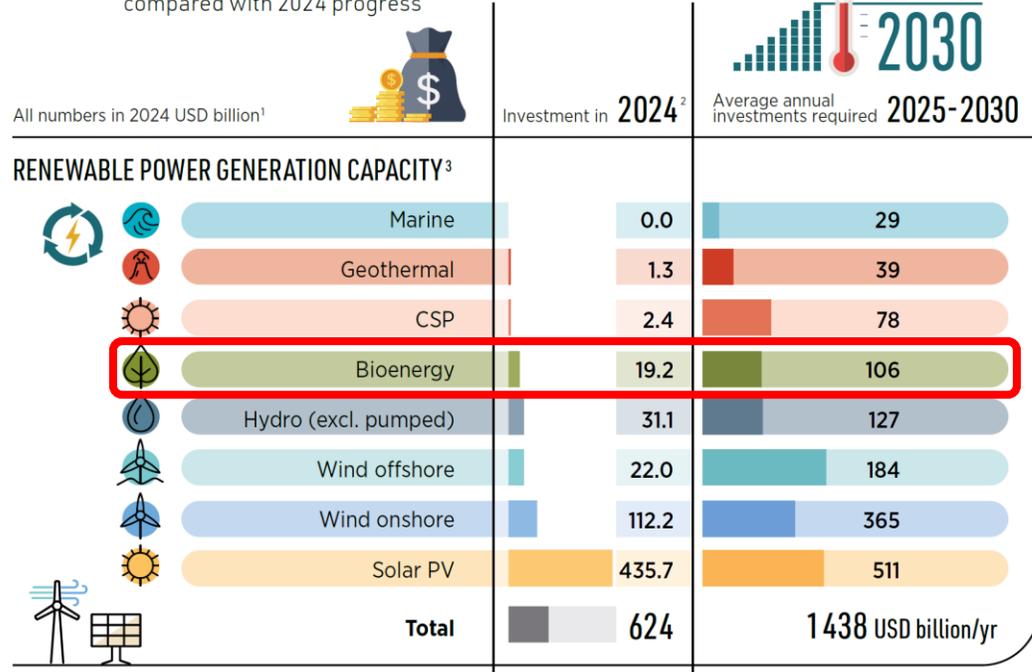
- In **2024**, global investments in the energy transition reached a record-high of **USD 2.4 trillion** (more than double compared to 2019)
- Annual investments **more than doubled** between 2019-2024



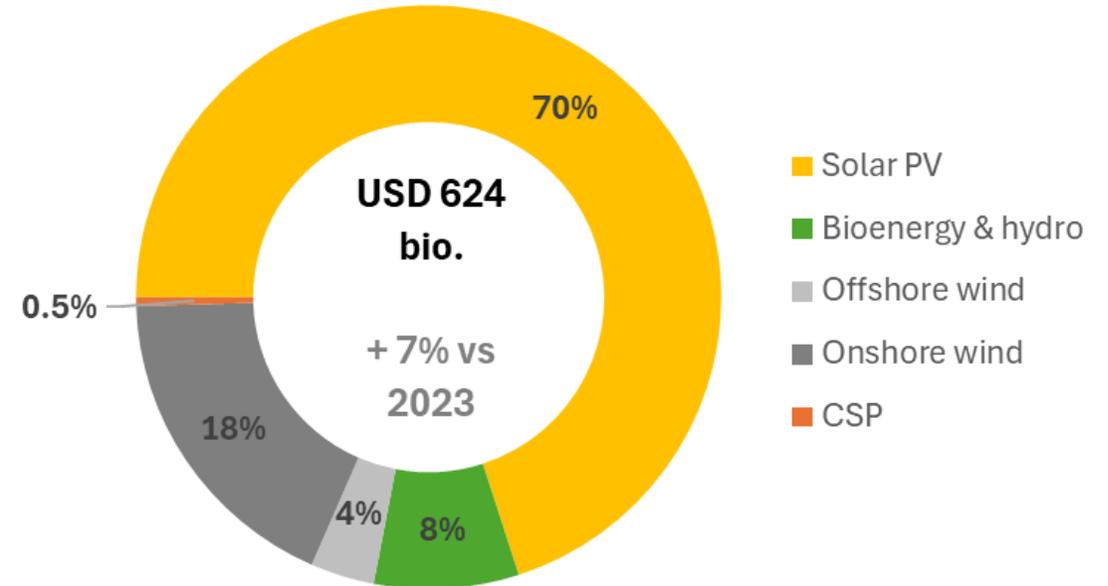
Investment Landscape for Bioenergy and Renewable Power Generation



Investments required to triple renewable power capacity and double energy efficiency by 2030 compared with 2024 progress



Investments RE power capacity: 2024



- ❑ Investments in hydropower and bioenergy increased by 45% relative to 2023.
- ❑ Investments in renewable power capacity from bioenergy represented 3% of the total in 2024.
- ❑ Annual investments in bioenergy must increase fivefold over the 2024 level until 2030.
- ❑ Total investment required between 2025-2030: USD 29-30 trillion.
- ❑ The scale of investments and the pace of progress is however still not enough.



International Renewable Energy Agency



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谢谢

Thank you

Grazie

Merci

Спасибо

Gracias