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RENEWABLES NOW

LAUNCH: RENEWABLES 2024 GLOBAL STATUS REPORT

ENERGY DEMAND



REN21 Secretariat
secretariat@ren21.net



WE DRIVE THE SHIFT TO RENEWABLES – NOW!

We are the **only global policy network** of renewable energy actors from science, academia, NGOs, governments, and industry.

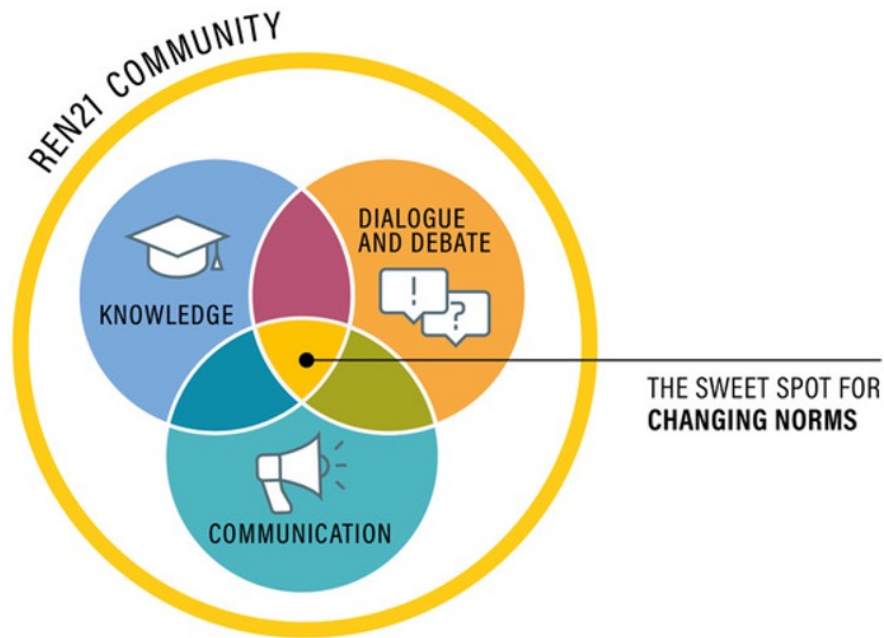
Our more than **4,000 community members** co-operate collecting information, changing norms and debating.



We build upon a **decentralised intelligence**, ensuring high responsiveness to an everchanging environment.

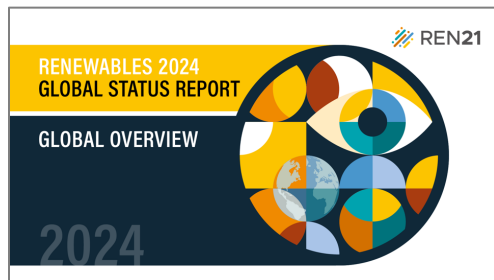
Our **annual publications** are likely the world's most comprehensive, crowdsourced reports on renewables.

OUR APPROACH TO DRIVE CHANGE



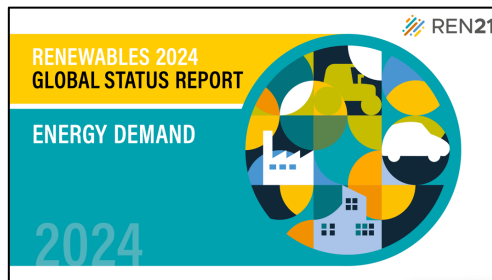
Position knowledge strategically, build on the REN21 community and their roles, **engage** with usual and unusual suspects to **change norms**.

THE RENEWABLES 2024 GLOBAL STATUS REPORT (GSR) COLLECTION



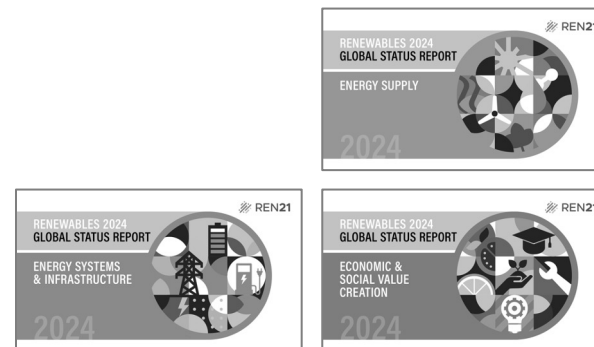
Global Overview

- Policy and Targets
- Investment and Finance
- Challenges and Opportunities



Energy Demand

- Buildings
- Industry
- Transport
- Agriculture



Upcoming Modules

- Renewables in Energy Supply (June)
- Energy Systems and Infrastructure for Renewables (July)
- Economic and Social Value Creation with Renewables (September)



RENEWABLES IN ENERGY DEMAND

WHAT HAPPENED IN 2023?



Post-crisis recovery measures supported strong growth, but momentum and policymaking are slowing

Continued appetite from end-use sectors – strong growth in corporate PPAs, rooftop PV, electric vehicles

Investment in renewables despite **high inflation and cost of capital, supply chain disruptions and geopolitical crises**



Renewables face an uphill battle while **fossil fuels continue to receive massive subsidies**



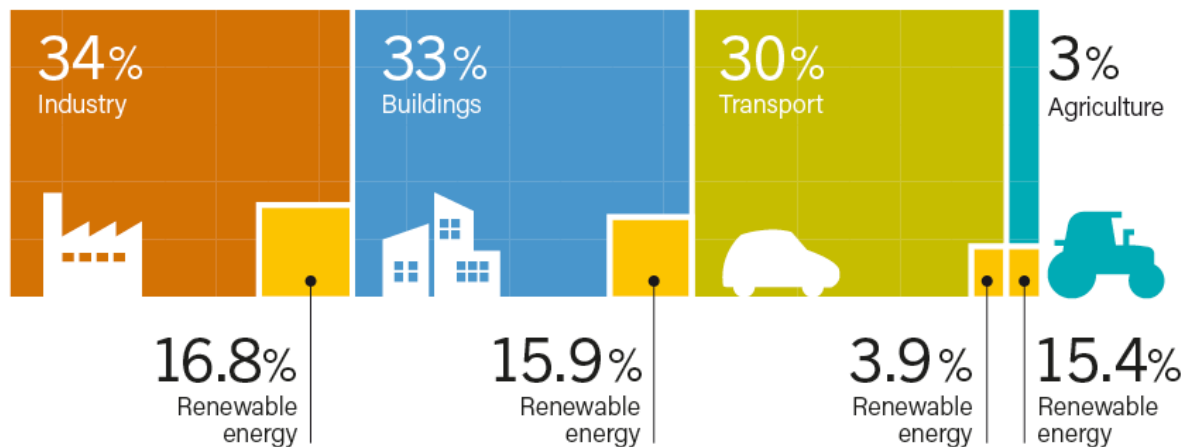


**ARE END-USERS ON TRACK FOR A RENEWABLES-BASED
FUTURE?**

THE ENERGY TRANSITION IS NOT HAPPENING FAST ENOUGH

RENEWABLES UPTAKE IS UNEVEN ACROSS SECTORS

 Renewable Share of Total Final Energy Consumption, by Sector, 2021



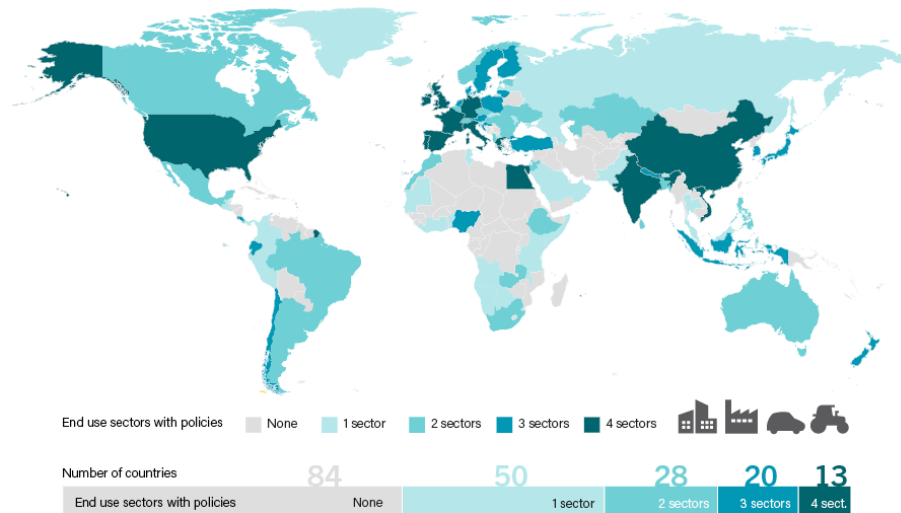
Note: Total final energy consumption in the above figure does not account to military activity and energy use not elsewhere specified.

Further action is needed to **speed the electrification of end-use sectors** and to transition to renewable heat and fuels.

POLICIES ARE EXPANDING GLOBALLY

BUT FEW COUNTRIES HAVE COHERENT MEASURES ACROSS DEMAND SECTORS

 Countries with Renewable Energy Policies for End-Use Sectors, as of 2023



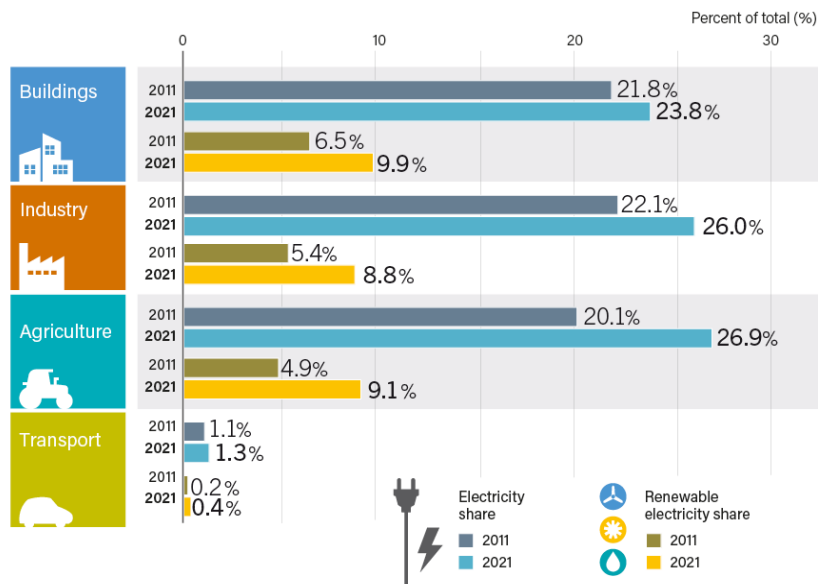
Only 13 countries have policies in place for all four demand sectors.

84 countries have no demand-side policies in place.

ELECTRICITY USE IN DEMAND SECTORS

A PROMISING OPPORTUNITY FOR RENEWABLES

 Electricity and Renewable Shares of Total Final Energy Consumption, by Sector, 2021

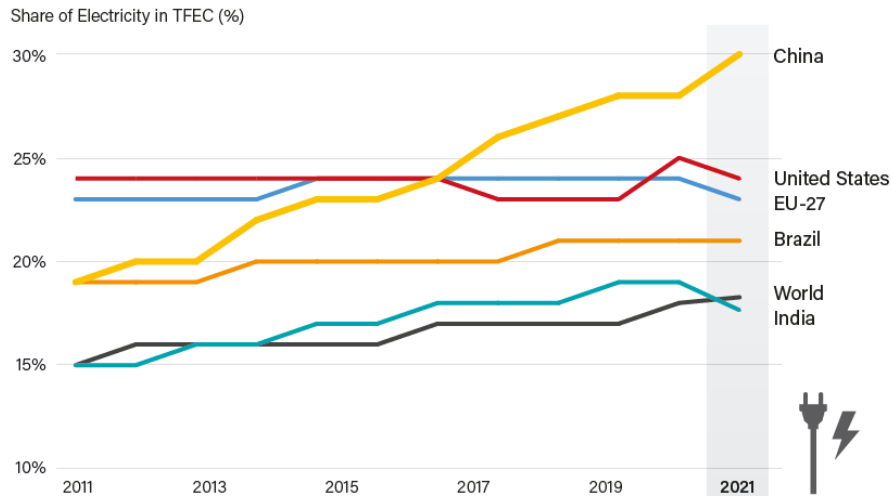


Sustained uptake of **renewable electricity** across sectors. Agriculture leading

BUT SECTORS ELECTRIFYING SLOWLY

WITH FASTER PROGRESS IN CHINA

 Share of Electricity in Total Final Energy Consumption by Major Country/Region, 2011-2021



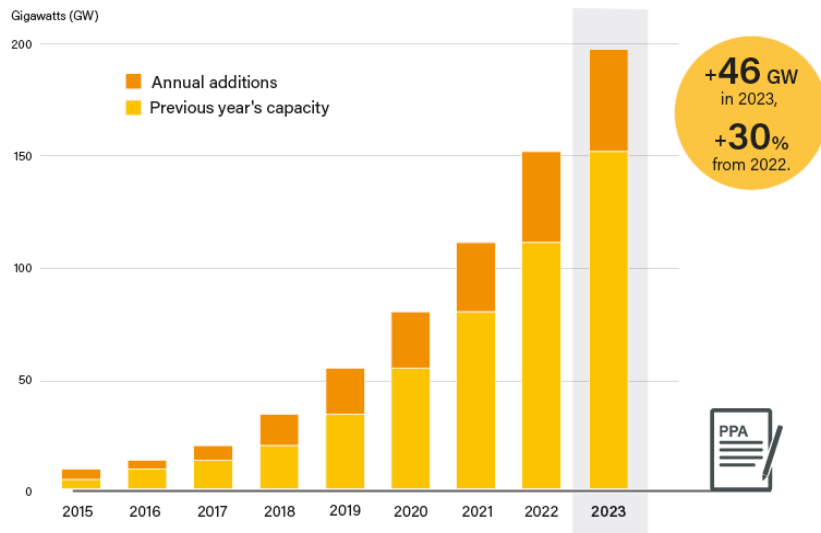
 REN21 RENEWABLES 2024 GLOBAL STATUS REPORT - ENERGY DEMAND

USA leading electrification in agriculture; China leading in all other end-use sectors.

CORPORATE POWER PURCHASE AGREEMENTS (PPAS)

CONTINUED APPETITE FOR RENEWABLES FROM THE DEMAND SIDE

 Corporate Renewable Energy Power Purchase Agreements, Global Capacity and Annual Additions, 2015-2023



Corporate PPAs are **expanding beyond the tech sector** and into retail and industry and transport.

PPAs accounted for **9% of additions** in 2023.



KEY TRENDS FROM THE ENERGY-CONSUMING SECTORS

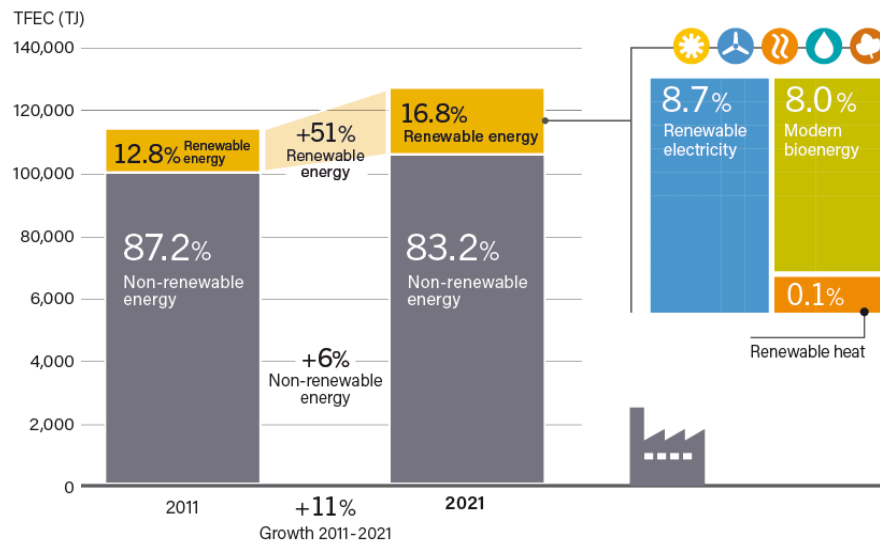


RENEWABLES IN INDUSTRY

RENEWABLE ENERGY IN INDUSTRY

THE END-USE SECTOR WITH HIGHEST ENERGY CONSUMPTION AND RENEWABLE ENERGY SHARE

 Renewable Energy Share in Final Energy Consumption in Industry, 2011 and 2021

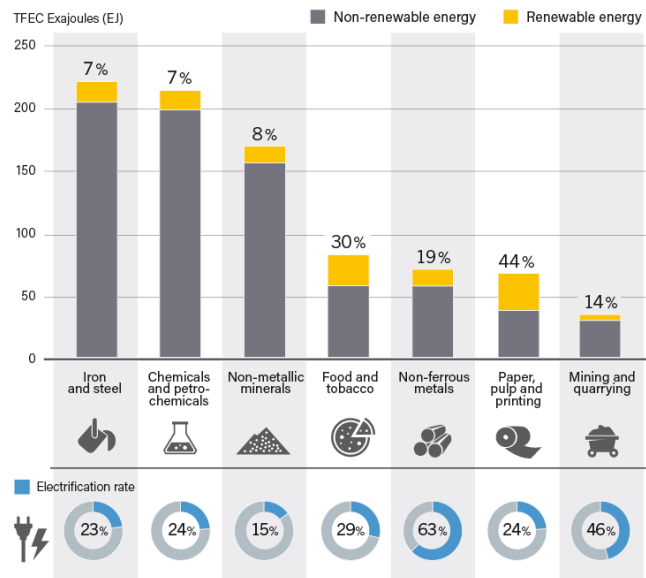


Direct energy use for heat represented 74% of total energy consumption in industry and processes over 750°C are still heavily reliant on fossil fuel.

RENEWABLE ENERGY USE IN INDUSTRY SUB-SECTORS

DIFFERENT PATHS TO INCREASING RENEWABLE ENERGY CONSUMPTION

Renewable Energy Share and Electrification Rate by Industry Sub-Sector, 2021

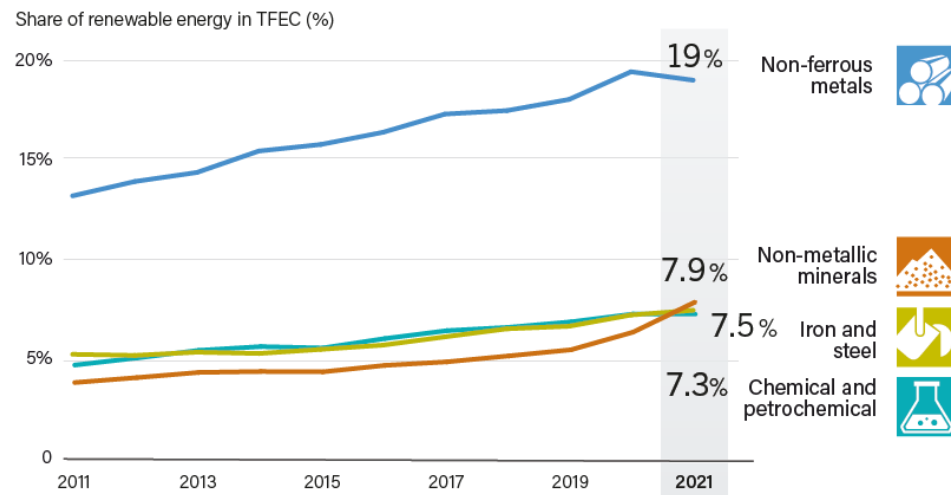


Electrification through industrial heat pumps and **bioenergy** use are the main drivers of renewable energy uptake in industrial sub-sectors.

HEAVY INDUSTRY REMAINS A CHALLENGE

RENEWABLES, ENERGY EFFICIENCY AND MATERIAL EFFICIENCY ARE KEY

 Share of Renewable Energy in TFEC by Heavy Industry Sub-Sector, 2011 to 2021



Manufacturing of iron and steel, non-ferrous metals, chemicals and non-metallic minerals accounts for **47% of industrial energy use** and **over 70% of industrial emissions**.

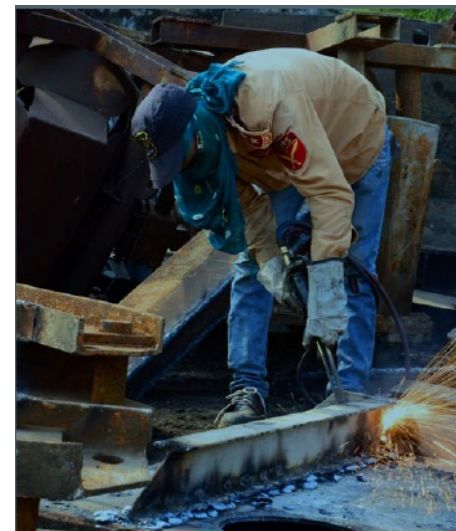
CHANGING MINDSETS

TOWARDS MULTIPLE TRANSITIONS IN INDUSTRY

Diverse industrial **processes** and temperature requirements call for **different** (renewable energy) **solutions**

Beyond renewable energy consumption, the transition will require huge improvements in **material and energy efficiency**

Policymakers must **acknowledge the diversity** in industrial sub-sectors and solutions, and **better integrate energy and industrial policies**



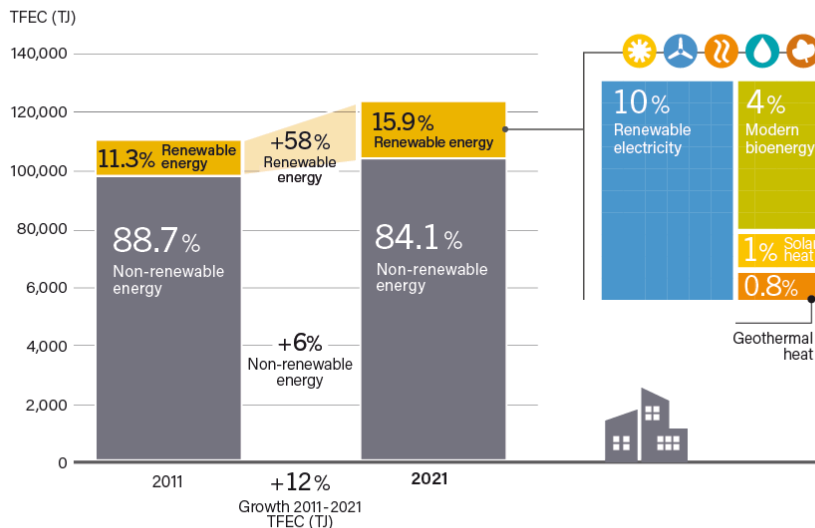


RENEWABLES IN BUILDINGS

RENEWABLE ENERGY IN BUILDINGS

HEAT PUMP ROLLOUT DRIVES ELECTRICITY USE

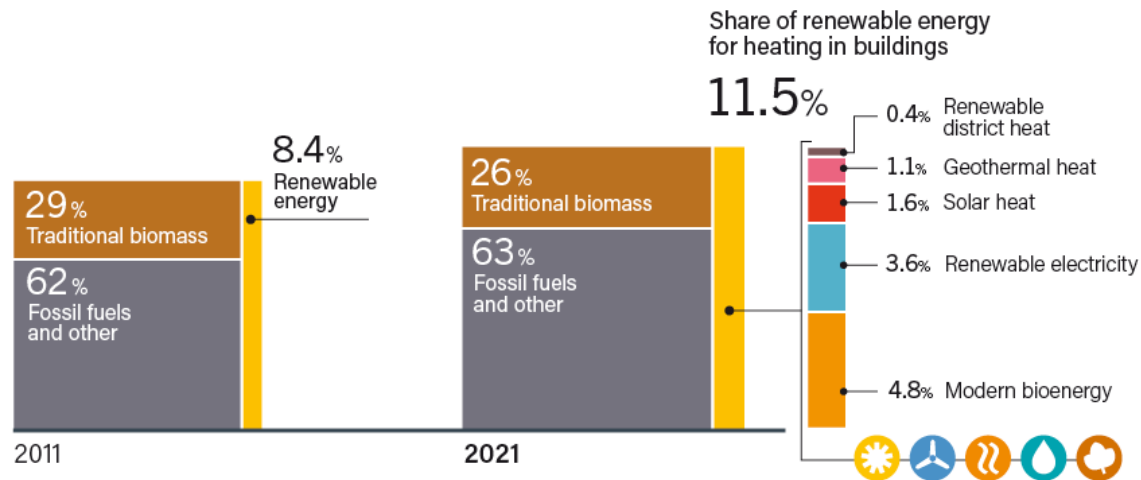
 Renewable Share of Total Final Energy Consumption in Buildings, 2011 and 2021



Renewable electricity
in buildings has
increased from **6% in**
2011 to 10% in 2021.

ENERGY USED FOR HEATING IN BUILDINGS

 Energy Consumption for Heating in Buildings, by Source, 2011 and 2021

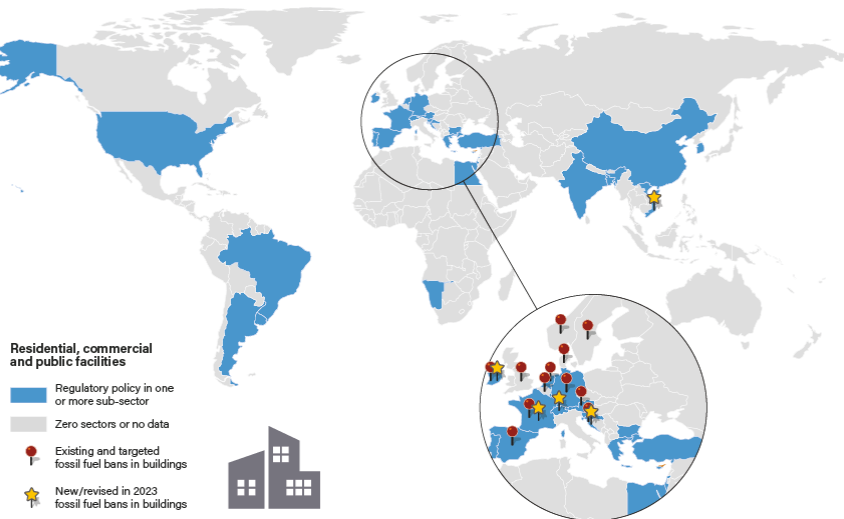


Heat pumps, electric boilers and other heating systems are driving the shift towards renewable electricity in heating buildings.

REGULATORY POLICIES FOR RENEWABLES IN BUILDINGS

ENERGY EFFICIENCY POLICIES IN THE SECTOR COMPLEMENT RENEWABLE ENERGY POLICIES

 Regulatory Policies in Buildings, by Building Type, as of End-2022



By the end of 2023, at least **30 countries** had **regulatory policies** for the use of renewables in buildings

RENEWABLES IN BUILDINGS

CHALLENGES AND ADVANCES

Policies for renewables in buildings

- Globally, weakening of measures in face of political and economic pressures
- Subsidy schemes to promote renewable heating systems
- Türkiye introduced regulations targeting a minimum 5% renewable energy share for all new buildings above 2,000 square metres

Net-zero and building codes

Increase in number of both residential and non-residential building codes compared to 2022, 80% of which are mandatory

Solar heating

Denmark installed 325 solar district heating systems that generate 1.8 GWth of thermal energy



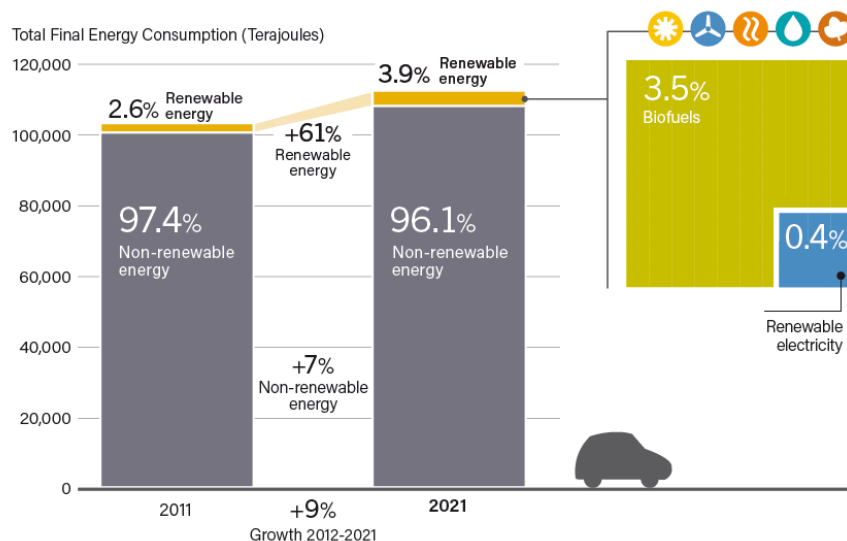


RENEWABLES IN TRANSPORT

RENEWABLE ENERGY IN TRANSPORT

LOWEST SHARE AMONG END-USE SECTORS

 Renewable Share of Total Final Energy Consumption in Transport, 2011 and 2021



Renewables accounted for **3.9%** of total transport related energy consumption in 2021, primarily **biofuels**.

RENEWABLES PROGRESS IN TRANSPORT

LAGGING DESPITE MASSIVE EV GROWTH

EVS CONTINUE TO SURGE

Investment grew by 36% in 2023, hitting \$634 billion (outpacing renewables, which drew \$623 billion)

BIOFUEL SLOWLY RECOVERING

Global investment in biofuels dropped to lowest level since 2016

Most countries that had suspended biofuel mandates in 2022 re-introduced them in 2023

POLICY PROGRESS

The EU's New Renewable Energy Directive (Oct. 2023) mandates a 14.5% reduction in greenhouse gas intensity or a 29% renewable share in transport energy consumption by 2030

6 countries announced new national EV targets; Ireland set a 100% net-zero target for new vehicles sold starting 2030; Ethiopia announces ban of non-EV imports starting 2024

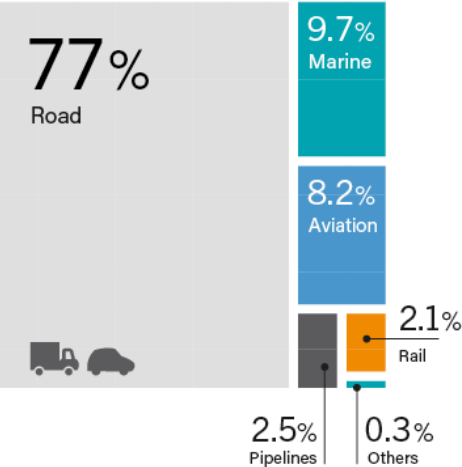
Transport energy use and emissions keep increasing due to a rising demand for transportation, mainly in **freight transport and economic growth.**

RENEWABLE ENERGY DEMAND

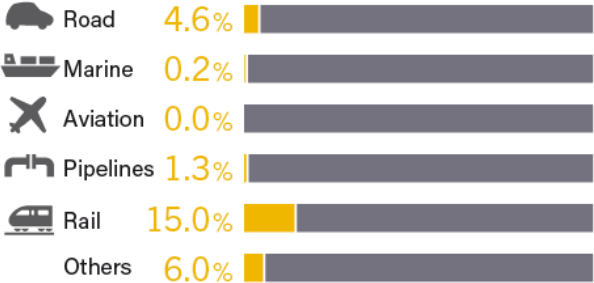
VARIES ACROSS TRANSPORT SUB-SECTORS

 Shares of Total Final Energy Consumption (TFEC) and Renewable Energy in Transport, by Sub-Sector, 2021

Share of TFEC by transport sub-sector



Share of renewable energy by transport sub-sector



Road transport dominates 77% energy consumption

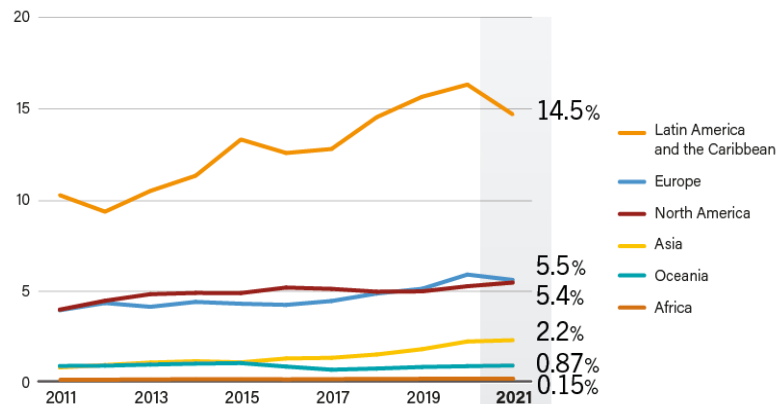
Rail has highest share of renewables 15%.

RENEWABLE ENERGY DEMAND IN TRANSPORT

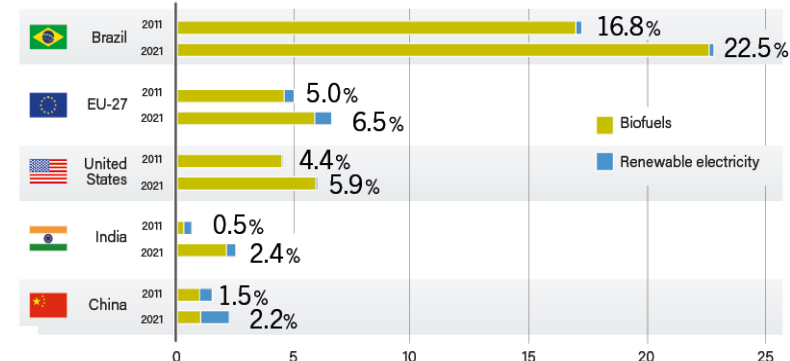
VARIES ACROSS REGIONS

 Renewable Share of Total Final Energy Consumption in Transport, by Region and in the Top Five Energy-Consuming Economies, 2011-2021

Renewable share (in %)



Renewable share (in %)



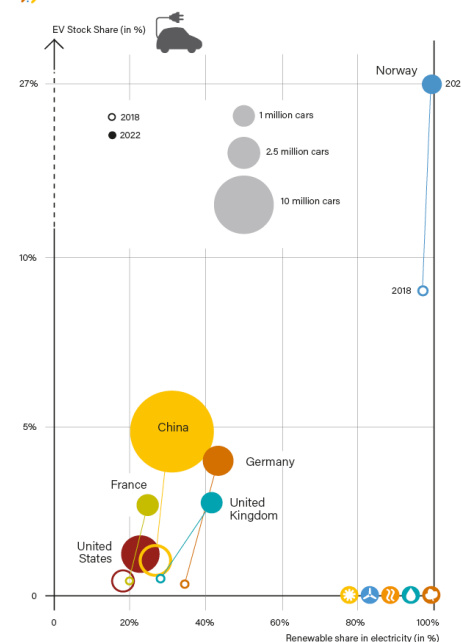
RENEWABLE ELECTRICITY AND ELECTRIC VEHICLE DEPLOYMENT

NEED FOR STRONGER INTEGRATION

The two countries with the largest electric car fleets, **China and the United States**, have **made greater progress in electrifying transport than in decarbonising the electricity supply.**

As of 2022, **six countries had 86% of the global electric car fleet**: Norway, China, Germany, the United Kingdom, France and the United States.

Renewable Share in Electricity Production, and Electric Car Stocks and Shares, Selected Countries, 2018 and 2022



RENEWABLES IN TRANSPORT: A LONG WAY TO GO

ELECTRIFICATION AND DISTRIBUTED RENEWABLES AN OPPORTUNITY FOR INCREASED INTEGRATION

Decarbonising transport offers multiple benefits for **energy security, air quality, health, safety and access to mobility**

Electrification offers economic opportunities for **local manufacturing** and **supply chains**

Investment in renewable fuels production capacity requires clear and **stable policy support** through government incentives for biofuels such as blending mandates

Decentralised solar PV is identified as a key solution for various transport activities (railways electrification in India, solar charging stations in South Africa)

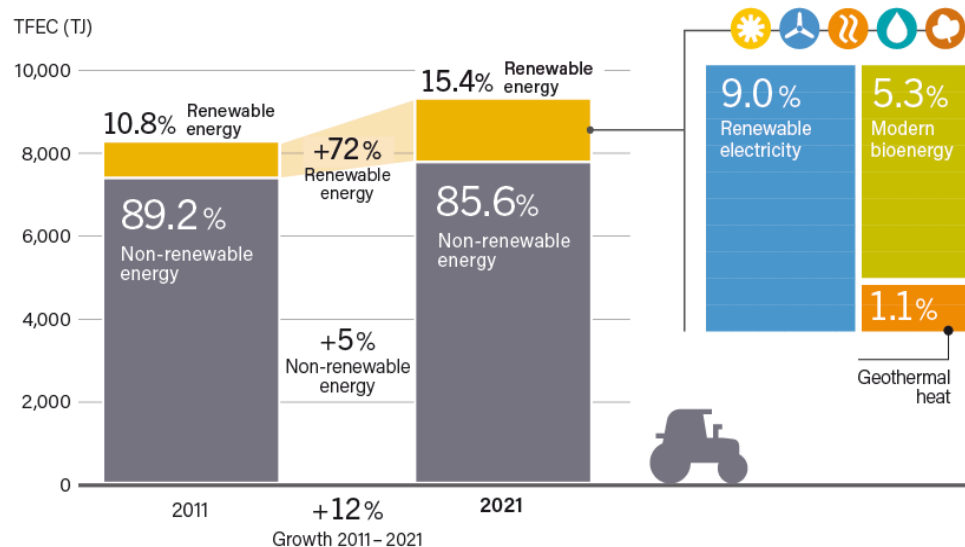




RENEWABLES IN AGRICULTURE

RENEWABLE ENERGY IN AGRICULTURE

 Renewable Energy Share of Total Final Energy Consumption (TFEC) in Agriculture, 2011-2021



Sector has the fastest **electrification** growth: almost **+7%** in the last 10 years.

RENEWABLES IN AGRICULTURE

MOMENTUM CONSTRAINED BY FRAGMENTED POLICIES AND AFFORDABILITY ISSUES

Agriculture, forestry, fisheries & aquaculture accounted for a small share **of total final energy consumption**.

SECTOR'S OPPORTUNITIES

A wide range of renewable energy technologies can be used in diverse agricultural activities

Agriculture sector is also an energy supplier

HOWEVER

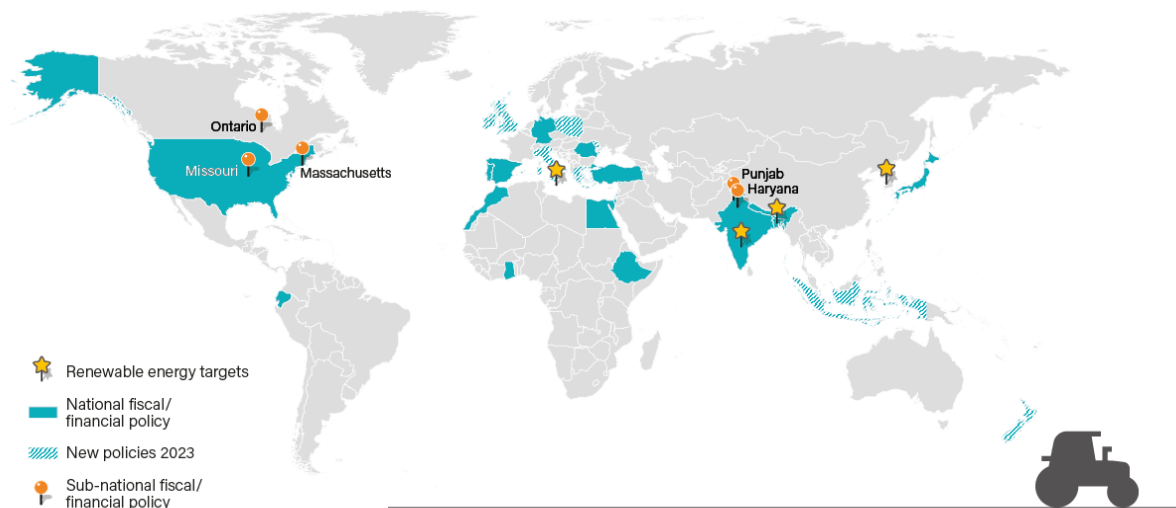
Fragmented policies focused mostly on biogas and solar water pumps, and agrivoltaics

- National agricultural policy documents seldom mention renewable energy

Increased income:
up to **40%** by preventing food losses, using renewables cooling solutions.

INTEGRATED POLICIES ARE NEEDED

 National and Sub-National Renewable Energy Policies for Agriculture, 2023



Note: The number includes countries and subnational jurisdiction with financial and regulatory incentives. Italy and Romania have both type of policies and are counted only once.

Only 4 countries
Bangladesh, India,
Republic of Korea,
Malta **have renewable**
energy targets in the
agriculture sector.
The **EU also introduced**
a region-wide target

RENEWABLES IN AGRICULTURE, UNLOCKING BENEFITS

Renewables **benefit** farmers and fishermen by:

- increasing income by preventing food losses, saving fuel costs, selling energy
- improving energy access and reliability, increasing mechanisation
- providing environmental and health benefits

Affordability issues, **investment barriers**

Especially for small and medium-sized agri-food enterprises

Technological advancements, growing availability of **grants, subsidies** and **public-private partnerships** can help overcome affordability barriers and stimulate investment

There is a **need for integrated, cross-sectoral policies**





BUILDING MOMENTUM

BUILDING MOMENTUM

DEMAND SECTORS NEED TAILORED ATTENTION AND STRATEGIC PLANNING

Governments need to develop **sectoral targets, policies and roadmaps** for buildings, industry, transport and agriculture

There is **no time for mixed messages**:

- **phasing out fossil fuel subsidies** for level playing field
- support renewables beyond crisis-response policies

Electrification: A precondition to unlocking higher share of renewables in all energy-consuming sectors

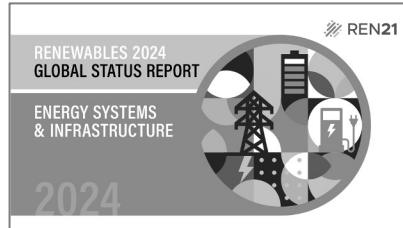
Connect the dots between **energy, industrial, trade and climate policy**

Build **energy supply and energy systems** to accommodate **renewable energy** in all end-use sectors



THANK YOU!

STAY TUNED FOR THE **UPCOMING MODULES**



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