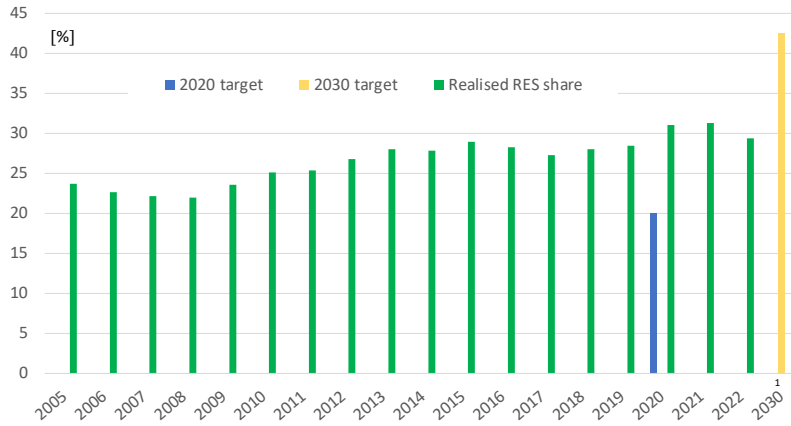


Croatia

Renewable energy status

Share of energy from renewable sources in total gross final energy consumption



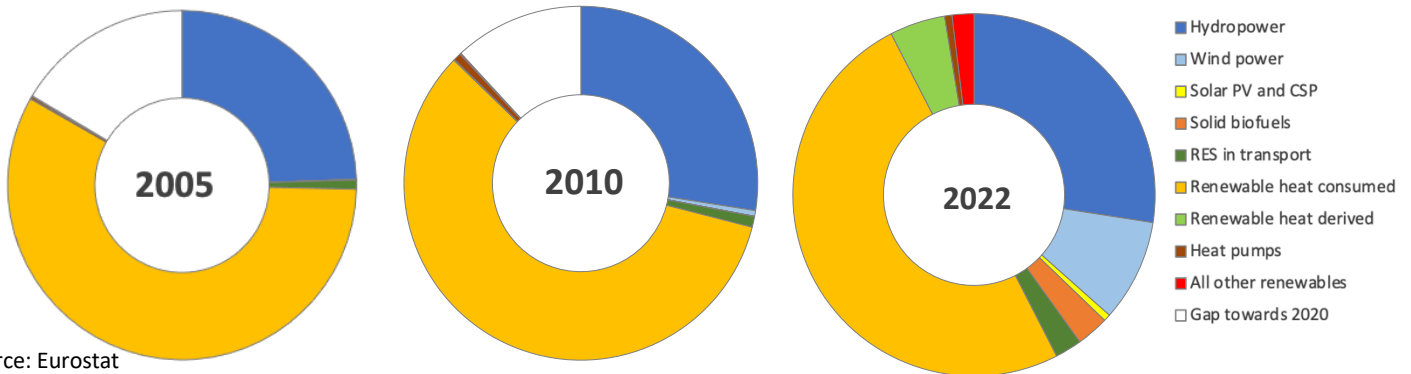
Source: Eurostat

Abbreviations used:

- RES: renewable energy sources
- RES-E: renewable electricity
- RES-H/C: renewable heating/cooling
- RES-T: renewable transport fuels

Data for 2022

Overall RES share:	29.4%	Avoided fossil fuels:	1 [Mtoe]
Overall RES 2020 target:	20%	Avoided fuel expenses:	474 [MEUR]
Overall RES 2030 target:	42,5%	RES Turnover:	700 [MEUR]
Share RES-E in electricity:	55.5%	RES Employment:	14 800 [jobs]
Share RES-T in transport:	2.4%	RES imports ² :	155 [MEUR]
Share RES-H/C in heating:	37.2%	RES exports ² :	52 [MEUR]



Source: Eurostat

	2005	2010	2022		
	n ktoe	Energy in ktoe	Energy in ktoe	Employment in FTE	Turnover in MEUR
Hydropower	526.2	591.3	586	700	50
Wind power	1.0	11.2	195	600	50
Solar PV, and CSP	0.0	0.0	13	1 100	70
Solid biomass	0.3	0.3	62	10 100	370
Ren. energy in transport ³	18.3	21.3	51	1 500	90
Renew. heat consumed	1245.4	1252.9	1 068		
Renew. heat derived	0.0	1.5	106		
Heat pumps	5.3	15.0	14	<100	<10
All other renewables	0.9	2.6	41	700	140

Source: Eurostat, EurObserv'ER

FTE = Full time equivalent, PV=Photovoltaics, CSP=Concentrated Solar Power. Biofuels in transport only covers compliant fuels (employment and turnover additionally cover the non-compliant biofuels). Derived heat includes heat produced in main activity producer plants and heat sold produced in auto-producer plants. Its counterpart is the final heat consumption in the final consumption sectors (such as households).

¹ From Integrated National Energy Climate Plan

² Referring to the International Trade chapter from the publication: EurObserv'ER - *The State of Renewable Energy in Europe, 2023 edition*

³ Employment and turnover are only referring to biofuels in transport.



CURRENT RENEWABLE ENERGY POLICY

RES-E

The following measures and instruments are in place for renewable electricity generators:

- Since 1 January 2016 the designated main support scheme for renewable energy is a tender based floating feed-in premium scheme for privileged installations with a capacity as from 500 kW. The support scheme is funded by a surcharge on the consumer electricity price. RES-E plant operators, who have obtained the status of privileged producer and have won a public tender carried out by the Croatian Energy Market Operator (HROTE), will receive a floating feed-in premium during a 12-year period. The premium level will be determined by the (positive) difference between the contractual support reference price, which is annually adjusted in line with the Croatian consumer price index, subtracted by the reference electricity market price. The latter is determined ex post annually by HROTE. In principle, HROTE issues a call for tenders at least once a year, if quotas for the support of certain technologies of renewable energies are available. It took a long time to get secondary legislation adopted about requirements for becoming a privileged producer, technology quota, etc., needed to organize the first annual tender. Meanwhile the first 88 MW RES-E tender has been reportedly launched in August 2020, encompassing 50 MW of solar PV, 15 MW of biogas, 14 MW of biomass and 9 MW of hydropower. (PV Magazine, 2020). Solar projects ranging in scale from 50-500 kW are eligible to participate, with a maximum price of €0.063/kW for the solar power generated.

The price cap for the other renewables technologies is €0.10/kWh. The procurement round is part of a tender program announced by the Croatian government in May, 2020. The scheme aims to allocate 1,075 MW of solar capacity as part of an overall 2.26 GW of renewables projects, of which 1,075 MW solar PV and includes allocations for other energy sources such as hydropower, wind, biomass, biogas, and geothermal energy.

- Soft loans granted for the implementation of RES-E projects are part of the “environmental protection” loan scheme by the Croatian Bank for Reconstruction and Development (HBOR) in cooperation with commercial banks. In principle, all RES_E technologies are eligible. The costs are borne by state-funded HBOR.
- The Environmental Protection and Energy Efficiency Fund (FZOEU) offers grants and soft loans for the use of renewable energy sources. In principle, all RES_E technologies are eligible. The costs are covered by the state, voluntary national and international donations, and remaining sources of income.

In August 2023, the Government of Croatia has adopted the long-awaited decree on incentives for electricity generation from renewable sources and high-efficiency cogeneration, simplifying administrative procedures and paving the way for renewables growth. However, rules and prices for grid connection are yet to be determined. The decree sets out the terms for obtaining and using renewable energy incentives, both market premiums and feed-in tariffs, according to an announcement from the government. For example, it prescribes that the energy market

operator must organize public bidding at least once in three years to award market premiums and/or incentives with a guaranteed purchase price, within the available quotas. Also, the investor in a power plant who enters into a contract with the energy market operator on a market premium or power purchase at a guaranteed price must obtain the status of a privileged electricity producer for the facility within four years. The decree regulates the methodologies for calculating the maximum price of electricity, maximum guaranteed purchase prices, depending on the type, capacity and technology of facilities, as well as the methodology for calculating benchmark market prices of electricity. The government also adopted the decree on the criteria for public bidding for energy permits, and the terms and conditions for issuing an energy permit. Bills on amendments to the laws on renewable energy sources and the electricity market were also adopted at the government session.

RES H&C

There are currently no support schemes for renewable heating and cooling. However, the Energy Strategy adopted in 2009 obliges the Croatian State to encourage the future use of RES and to achieve a higher percentage of primary use of RES in the heating sector (cooling is not mentioned). For the promotion of renewable energy in heating and cooling, the main document is the Programme for usage of the potential for heating and cooling for period between 2016 and 2030 (Program korištenja potencijala za učinkovitost u grijanju i hlađenju za razdoblje 2016 – 2030.).

In addition, an energy poverty curb programme is implemented; Its aim is to raise the use of renewable energy sources in residential buildings in assisted areas and areas of special state concern for the period up to 2025. The program was adopted by the Government of the Republic of Croatia in December 2021. The goal of the Program is the energy renovation and installation of renewable energy sources in 387 residential buildings owned and managed by the Ministry of Physical Planning, Construction and State Assets. Funds for the implementation of the Program in the amount of around EUR 20 million (HRK 150 million) are provided from the NPOO, and other necessary funds are provided from the state budget. The program is fully implemented by the Ministry of Physical Planning, Construction and State Assets.

RES-T

In transport sector, Croatia is targeting a 21,6 % RES share by the end of 2028, knowing that the realized share was 2.4% in 2022.

The main promotion scheme here is the obligation to use biofuels in transport. The Act on Biofuels for Transport (OG 65/09, 145/10, 26/11, 144/12, 14/14, 94/18, 52/21) regulates the production, trade and storage of biofuels, the use of renewable energy sources in transport, the adoption of programs and plans to encourage the production and use of renewable energy sources in transport, the powers and responsibilities for determining and implementing policies to promote the production and use of renewable energy sources in transport, measures to encourage the production and use of renewable energy sources in transport, as well as to promote research and development of new, advanced biofuels that do not compete with crops for food and feed, and establish criteria for sustainability and saving greenhouse gas emissions for biofuels, liquid biofuels and biomass fuels.

Table 1: Brief description of key policy instruments aimed at promoting RES in Croatia

<i>Instrument</i>	<i>Description</i>
Feed-in tariffs Act on renewable energy sources and high-efficiency cogeneration (OG 138/21) Act on the Electricity Market (Official Gazette 111/21)	The primary mechanism responsible for the previous development of RES was incentive prices (feed-in tariffs); The Law on RES and high-efficiency cogeneration introduced a premium incentive system.
Promoting the use of renewable energy sources and energy efficiency through the Croatian Bank for Reconstruction and Development (CBRD) Act on renewable energy sources and high-efficiency cogeneration (OG 138/21) Act on Energy Efficiency (OG 127/14, 116/18, 25/20 and 41/21)	The goal of the lending program for environmental protection, energy efficiency and RES projects is to realise investment projects aimed at environmental protection, improving energy efficiency, and encouraging the use of RES. Loans are intended for investments in land, construction facilities, equipment, and devices. The end users of the loan can be local and regional self-government units, communal companies, trading companies, artisans, and other legal entities.
Increased use of renewable energy sources and energy efficiency in the industrial sector Act on renewable energy sources and high-efficiency cogeneration (OG 138/21) Act on Energy Efficiency (OG 127/14, 116/18, 25/20 and 41/21)	Use of available funds from the ESIF and from auctions of emission units in the EU ETS for the benefit of RES and energy efficiency in the industrial sector.
Promoting the use of renewable energy sources and energy efficiency through the funds of the Environmental Protection and Energy Efficiency Fund	Funds for financing are provided from the Fund's reliable income from environmental polluter fees, which include fees for carbon dioxide emissions, fees for burdening the environment with waste, fees for environmental users and special environmental fees for motor vehicles. RES projects for which the Fund for Environmental Protection and Energy Efficiency allocates funds include solar, wind, biomass, and energy from small hydroelectric plants and geothermal energy.

For further information:

National Energy and Climate Plans (NECPs), <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/governance-energy-union/national-energy-climate-plans>

Balkan Green Energy News Europe.

<https://balkangreenenergynews.com/croatia-adopts-regulations-to-facilitate-renewables-growth>

STIP Compass

<https://stip.oecd.org/stip/interactive-dashboards/policy-initiatives/2023%2Fdata%2FpolicyInitiatives%2F99996943>

European Investment Bank

<https://www.eib.org/en/stories/energy-croatia-greener-supply-zagreb>

What is meant by ...?

Auctions for granting renewable energy support	An auction is a process of granting production or investment support to renewable energy projects based on the lowest bids by eligible project developers.
Feed-in tariff (FiT)	A support scheme which provides for a technology-specific remuneration per unit of renewable energy payable to eligible renewable energy producers. A proper, periodic review of FiT rates is often undertaken with the aim to prevent both too high FiTs so as to minimise regulatory rents, i.e. supra-normal returns and too low FiTs to preclude below-target market uptake because of FiT levels that are perceived by market participants to be less attractive. In addition, feed-in tariffs often include "tariff degression", a mechanism according to which the price (or tariff) ratchets down over time.
Feed-in premium (FiP)	A scheme which provides for a support level per unit of renewable energy to eligible renewable energy producers, typically for a period of 10-20 years, at a pre-set fixed or floating rate. The premium is typically adjusted periodically to exactly offset change in the average energy wholesale market price, based on a pre-specified benchmark market price. A floating FiP may move freely or may only be allowed to move within a pre-set interval.
Grants	Grants are non-repayable funds disbursed by one party (grant makers), often a government department, corporation, foundation or trust, to a recipient, often (but not always) a non-profit entity, educational institution, business or an individual. (Source: Wikipedia.org)
Green public procurement	In Green public procurement contracting authorities take environmental issues into account when tendering for goods or services. The goal is to reduce the impact of the procurement on human health and the environment. (Source: Wikipedia.org)
Renewable quota scheme (RQS)	A RQS mandates certain market actors (typically retail suppliers or large energy end-users) to respect a pre-set minimum share or amount of their total energy procurements from renewable sources of energy. Typically a tradable green certificate (TGC) scheme is operated to enable the obligated parties to prove their compliance with the prevailing renewable quota target by means of TGCs.
Sliding feed-in-tariff	A FiT scheme which pre-sets technology-specific declining feed-in tariffs for certain prospective vintages in line with the technology-specific learning curve, as projected by the National Regulatory Agency (NRA). Often a degression rate is used indicating the %/annum decrease in the rate level.
Soft loans	Loans at concessional (below market-based) terms, for example at sub-market-conform interest rates, made available in several Member States to stimulate certain renewable energy technologies.
Tax credits	These are amounts a tax paying entity is allowed to deduct when declaring payable taxes, for example company tax or income tax, to the tax authorities, for example the producer tax credits (PTCs) used in the United States to stimulate among others wind energy deployment.



Disclaimer

This document was prepared by the EurObserv'ER consortium, which groups together Observ'ER (FR), TNO (NL), RENAC (DE), VITO (BE) and Fraunhofer ISI (DE). This document has been prepared for the European Commission however it reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.