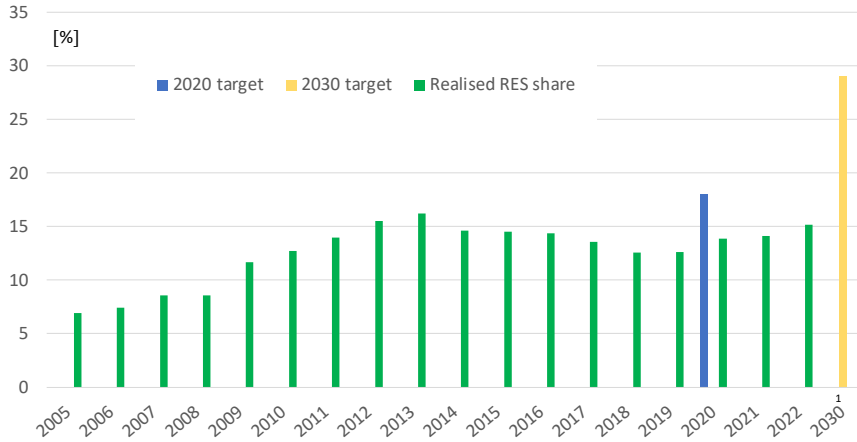


Hungary

Renewable energy status

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



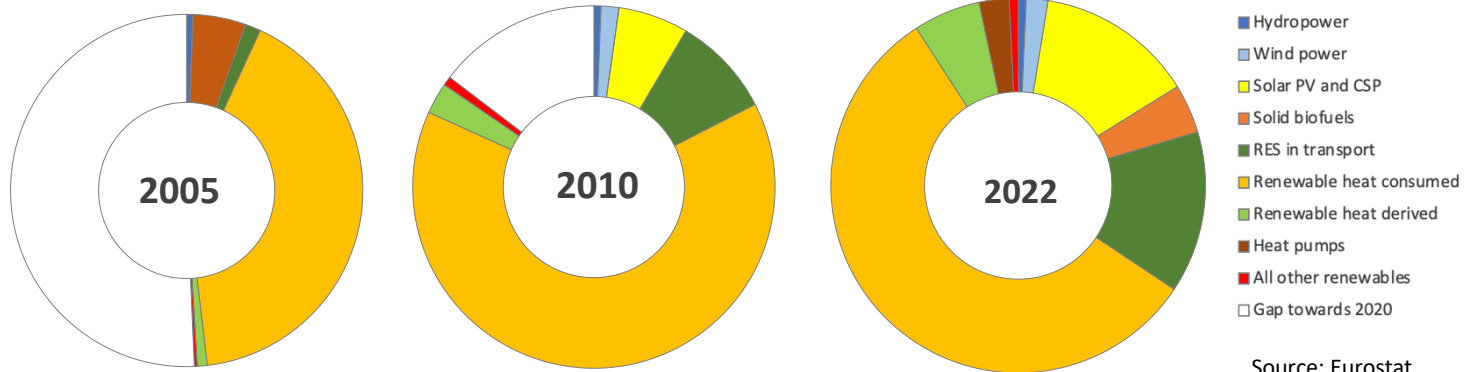
Source: Eurostat

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: 15.2% Avoided fossil fuels: 2.0 [Mtoe]
 Overall RES 2020 target: 13.0% Avoided fuel expenses: 2 417 [MEUR]
 Overall RES 2020 target: 29.0% RES Turnover: 3 100 [MEUR]
 Share RES-E in electricity: 15.3% RES Employment: 57 200 [jobs]
 Share RES-T in transport: 7.8% RES imports²: 447 [MEUR]
 Share RES-H/C in heating: 20.3% RES exports²: 670 [MEUR]



Source: Eurostat

	2005		2010		2022		
	Energy in ktoe		Energy in ktoe		Energy in ktoe	Employment in FTE	Turnover in MEUR
Hydropower	15.9		17.9		21	100	<10
Wind power	1.1		44.5		56	800	60
Solar PV, and CSP	0.0		0.1		407	19 600	1 110
Solid biomass	135.3		174.9		126	12 300	500
Ren. energy in transport ³	40.0		251.7		418	20 400	1 180
Renew. heat consumed	1 154.9		1 799.7		1 689		
Renew. heat derived	25.7		77.9		173		
Heat pumps	0.0		0.0		77	2 500	150
All other renewables	7.2		22.5		23	1 500	80

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, 2022 edition*

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



CURRENT RENEWABLE ENERGY POLICY

RES-E

Hungary plans to increase the share of energy production based on renewable energy sources within electricity consumption to at least 20 % by 2030 (11.9% in 2020). The increase of PV capacities is at the core of 'greening' the electricity sector, which will increase from just under 2 131 MW in 2021 to approximately 6 500 MW by 2030, and significantly exceed 10 000 MW by 2040. For Wind, the National Energy and Climate plan (NECP) projects wind power station capacities to approximate the current level (~330 MW) in 2030. In addition to maintaining existing hydroelectric power plants, the increase of small-scale hydroelectric power plant capacities is justified.

For RES electric capacities, plants with a capacity >1 MW and generally all wind power plants are obliged to participate in a tendering procedure in order to receive a green premium.

For PV, support policies were quite efficient so far as the country passed from less than 700 MW in 2016 to more than 2 130 MW in end of 2021. NECP proposes a specific target for the development of prosumers as well as a comprehensive set of enabling measures. However, it does not provide a lot of details on the precise support schemes for prosumers, and in particular for residential prosumers for whom the net-metering scheme will have to be phased out in 2024 to spur prosumers behaviours. Regarding the grid development, while utility-scale PV developers face increasing difficulties to find grid connection agreements, the plan does not contain any measure related to grid investment, in particular distribution grid, and grid modernisation through the deployment of smart grid technologies.

RES H&C

The use renewable sources in the heating and cooling sector are supported by investment subsidies supervised by the Environmental and Energy Efficiency Operational Program (EEEOP) the Territorial Operational and Development Program (TOP), as well as by loans subsidized by the innovation operational program for economic development (EDIOP), largely co-financed by the EU via ESI with counter-financing by the State of Hungary. Subsidies/subsidized loans are granted on the basis of competitive bidding.

Hungary targets major potential for the efficient uses of biomass in both individual heating equipment and in district heating, and options for using ambient heat through heat pumps. Moreover, only 10-15 % of Hungary's geothermal potential is currently exploited, even though the use of geothermal energy can offer a competitive alternative to other energy resources with the introduction of appropriate incentives. Considering Hungary's geological characteristics, we plan to exploit the geothermal energy potential in both district heat generation and in the agro-industry (e.g. heating of greenhouses). The integration of the recovery of biodegradable municipal waste in useful heat generation is also a viable option.

RES-T

Pursuant to the Renewable Energy Directive, fuel distributors are required to ensure that renewable energy accounts for at least 14 % of total energy consumption in the transport sector by 2030. To meet this target Hungary will increase the share of first generation biofuels produced from food crops and fodder plants to roughly 7 %, and the share of second generation (or advanced) biofuels produced from waste and biogas to 3.5 % in the final energy

consumption of transport.²² The remaining share required to meet the 14 % target will be provided through the significant increase of electricity in transport.

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

<i>Instrument</i>	<i>Description</i>
Feed-in tariff	For installations between 50 kW-500 kW which are not subject to tendering procedures. The transmission system operator (TSO) MAVIR Ltd. is legally obliged to purchase electricity from renewable sources, to sell it at the electricity stock market and pay a guaranteed price to plant operators.
Green premium without tendering	Is granted for renewable electricity producing plants between 0.5 MW-1 MW. Those plants are not subject to tendering procedures. The tariff is set out by a Government Decree which is determined through a market reference price and an 'administrative premium'.
Green premium with tendering	Plants with a capacity higher than 1 MW and wind power plants applying for a green premium are subject to obligatory tendering procedures.
Net metering	Household-sized power plants with a capacity of maximum 50 kVA may benefit from net metering. The electricity surplus injected to the grid is remunerated by the electricity supplier with the electricity retail price.
Subsidy programmes promoting renewable heat	Currently provided by subsidy programmes under the Environmental and Energy Efficiency Operative Programme (EEEOP) and other operative programmes financed through European Union funds in conjunction with funds provided by the Hungarian government.
Soft loans	Are granted within the Economic Development Innovation Operative Programme (EDIOP) to support the use of renewable energy sources for generating power and heat.
Biofuels quota scheme	Obliges fuel retailers to ensure that biofuels and hydrogen make up a certain percentage of their annual fuel sales.

For further information:

CEER, 2021. Status Review of Renewable Support Schemes in Europe for 2018 and 2019.

<https://www.ceer.eu/documents/104400/-/-/ffe624d4-8fbb-ff3b-7b4b-1f637f42070a>

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<https://2010->

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Solar power Europe, EU Market outlook 2021-2025

https://api.solarpowereurope.org/uploads/EU_Market_Outlook_for_Solar_Power_2021_2025_Solar_Power_Europe_d485a0bd2c.pdf

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IEA, Solar heat worldwide 2022

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RES Legal database

<http://www.res-legal.eu/search-by-country/hungary/>

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.



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