



# **National Action Plan for Renewable Energy for the period until 2020**



# Drivers for renewable energy development in Ukraine

- high energy potential of renewable energy sources
- energy shortage (dependence on traditional energy imports, growth of their prices on the world market)
- environmental impact of energy production at thermal and nuclear power plants
- international obligations of Ukraine





# Main tools to stimulate renewable energy development

- **Granting tax incentives to enterprises**

Tax Code of Ukraine,

- Laws of Ukraine "On Energy Saving",  
"On alternative fuels",  
"On the Natural Gas (Methane) of Coal Deposits",  
"On the Unified Customs Tariff",  
"On Value Added Tax", etc.



- **Setting a special "green" tariff for electricity, produced from alternative sources (Law of Ukraine "On Electric Power Engineering").**

*"Green" tariff is a special tariff for purchases of electricity generated at the power plants, including the commissioned construction phases of power plants (startup facilities), with the use of alternative energy sources (except for blast furnace and coke gases, and in respect to hydropower – only that generated by micro-, mini- and small hydropower plants)*





# Measures already implemented by the Government



Title of the Governmental legal regulatory act	Key Idea	Stage of implementation
On certain measure to supply the population, enterprises, institutions and organizations with the natural gas until the end of the end of 2014/15 heating season	<b>Reduction of gas quotas for District Heating Enterprises, budget-financed sphere and population</b>	✓ Approved and published
On encouragement of replacement of the natural gas in the heat supply area (for the population and budget-financed institutions)	<b>Investment-conducive tariff</b>	✓ Approved and published
On approval of measures to implement the Directive of the European Parliament and Council 2009/28/EC	<b>European approaches to development of alternative types of fuels</b>	✓ Approved and published
On certain measures to encourage the population to implement energy-saving measures	<b>Compensation of the loan body for purchase of solid-fuel boilers</b>	✓ Approved and published



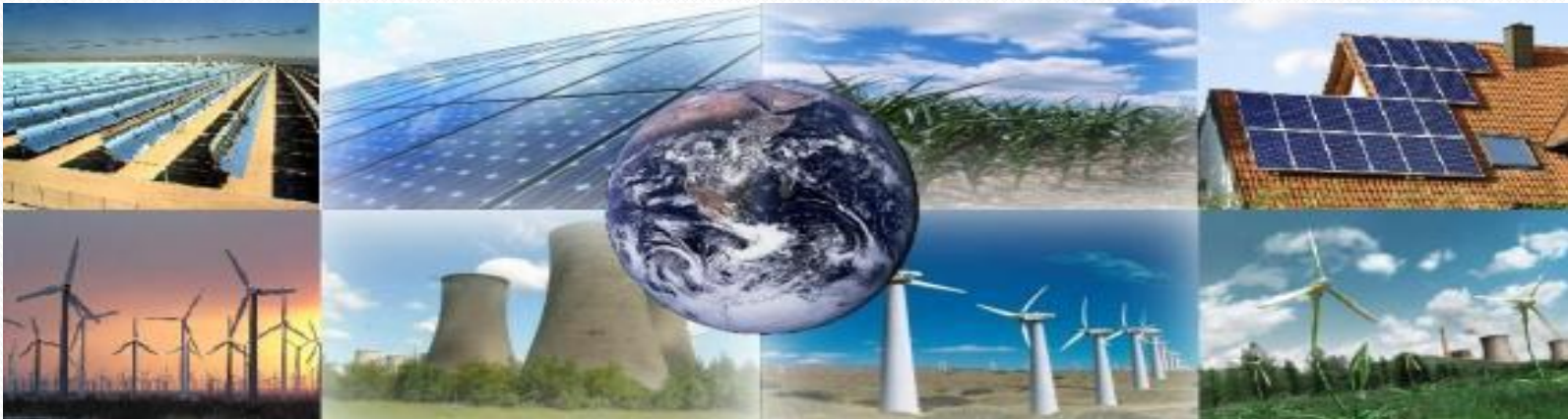
## Measures already implemented by the Government

Title of the Governmental legal regulatory act	Key Idea	Stage of implementation
On establishment of state social standards in the sphere of housing and municipal services	<b>Gas consumption quota for privileged population groups decreased from 11 to 7 m<sup>3</sup> for heating, from 9.8 to 6 m<sup>3</sup> per burner</b>	 Approved and published
Certain matters of social and economic development of individual areas in 2014	<b>Financing of regions from the state budget for implementation of gas-replacement and boiler upgrade measures (UAH 500 million)</b>	 Approved and published
On encouragement of replacement of the natural gas in the production of heat energy for the budget-financed institutions and organizations	<b>Investment-conducive tariff setting for the transition of the budget –financed sphere to alternative fuels</b>	 Approved and published
Plan of short- and medium-term actions to reduce natural gas consumption, including by way or its replacement with energy inputs from renewable sources and alternative fuels for heat-supply enterprises, industrial consumers, budget-financed institutions and population until 2017	<b>Unification of all urgent legislative initiatives on replacement of natural gas</b>	 Approved and published



# National Action Plan for Renewable Energy for the period until 2020

- developed in accordance with the requirements of Directive №2009/28/EC on the promotion of the use of energy from renewable sources
- approved by Order of the Cabinet of Ministers of Ukraine of October 1, 2014, № 902-p



***The main goal of the NAP RE is to achieve the share of 11% of energy from RES in final energy consumption in the country by 2020***



## The national indicative targets for RES share in the final gross energy consumption in 2020

The share of energy from renewable sources in the final gross energy consumption in 2009 (baseline)	<b>3,8 %</b>
Indicative target for the share of energy from renewable sources in the final gross energy consumption in 2020.	<b>11,0 %</b>
Expected total adjusted energy consumption in 2020.	<b>78 080 thou. t o.e.</b>
Expected amount of energy from renewable sources corresponding to the indicative targets for 2020.	<b>8 590 thou. t o.e.</b>



# Targets of the National Action Plan in renewable energy sphere



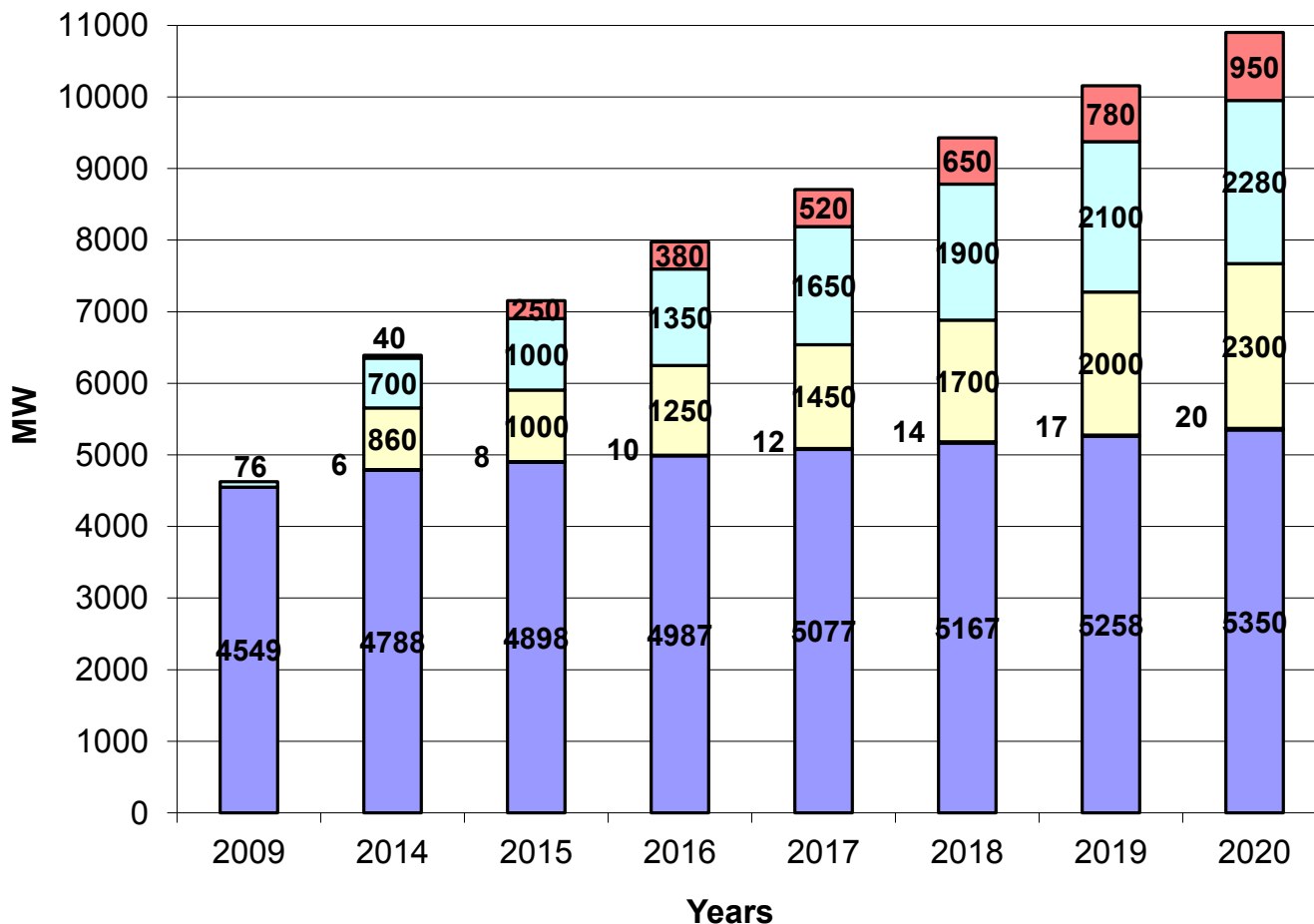
## Electric power engineering

Category of Electric Power Engineering Facility	2009		2016		2020	
	MBT	GW*h	MBT	GW*h	MBT	GW*h
Photoelectric power plants	0	0	1 250	1 310	2 300	2 420
Wind power plants	76	41	1 350	3 240	2 280	5 900
Hydroelectric power plants, including:	4 549	11 430	4 987	12 440	5 350	13 340
< 10 MW	49	30	107	240	150	340
> 10 MW	4 500	11 400	4 880	12 200	5 200	13 000
Bioenergy plants	0	0	380	1 680	950	4 220
Geothermal power plants	0	0	10	56	20	120
<b>Total:</b>	<b>4 625</b>	<b>11 471</b>	<b>7 977</b>	<b>18 726</b>	<b>10 900</b>	<b>26 000</b>



# Installed capacity of energy facilities producing electricity from renewable sources

(according to the National Action Plan for Renewable Energy for the period until 2020)

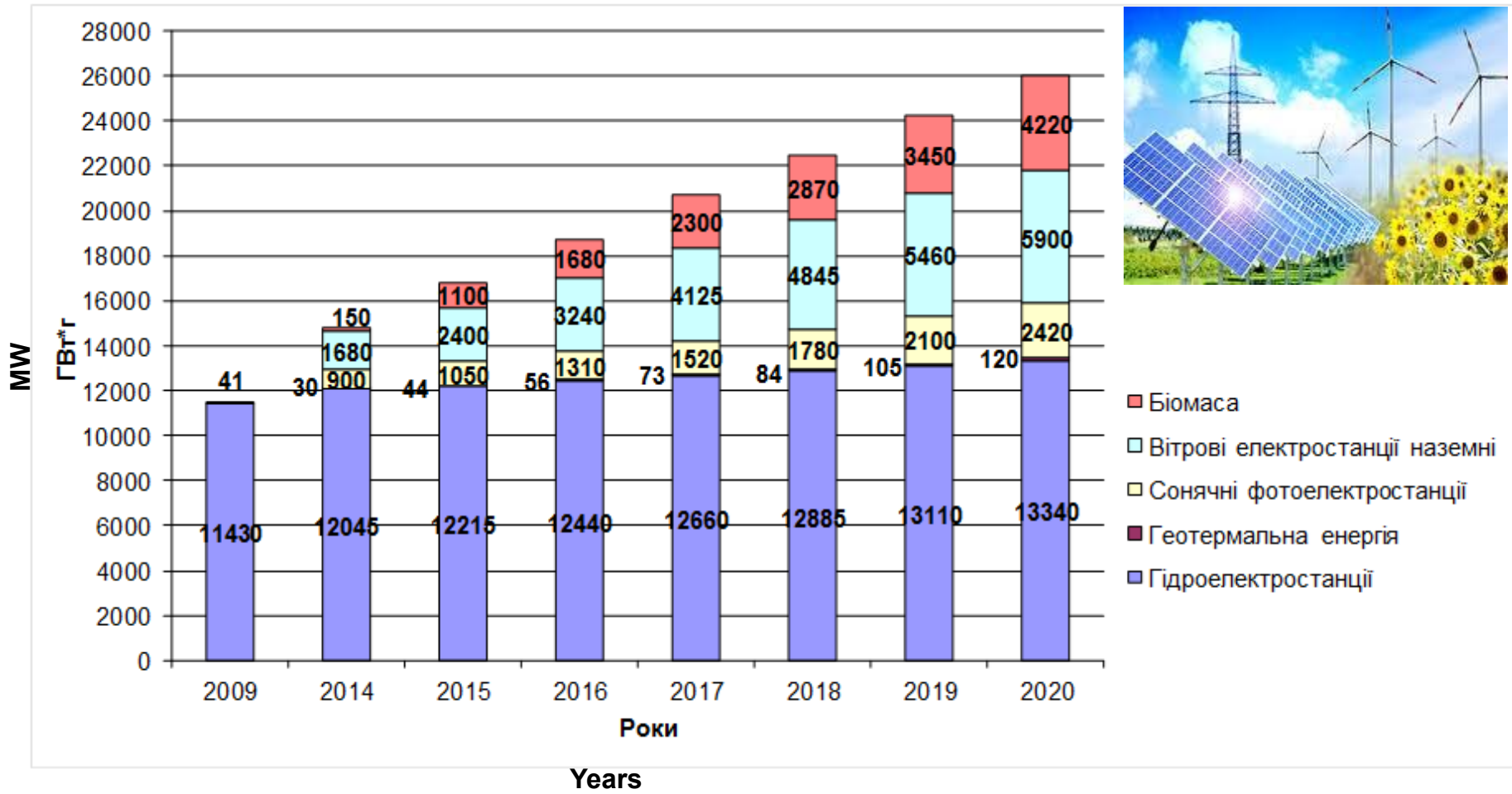


- Biomass
- Wind power plants, surface
- Solar photoelectric power plants
- Geothermal energy
- Hydroelectric power plants



# Electricity production from renewable sources

(according to the National Action Plan for Renewable Energy for the period until 2020)



- Біомаса
- Вітрові електростанції наземні
- Сонячні фотоелектростанції
- Геотермальна енергія
- Гідроелектростанції



# Targets of the National Action Plan for Renewable Energy



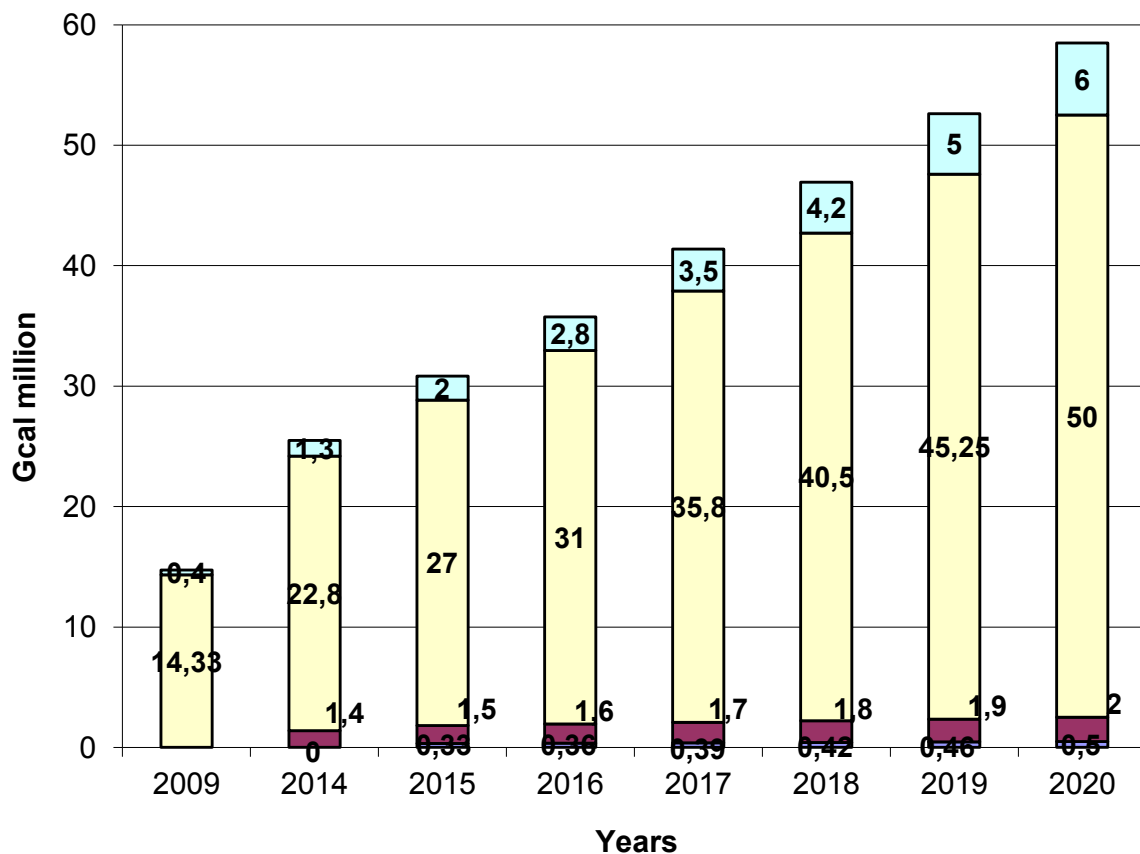
## Heating and cooling

Direction of renewable energy engineering	2009		2016		2020	
	thou. t o.e.	thou. Gcal	thou. t o.e.	thou. Gcal	thou. t o.e.	thou. Gcal
Geothermal	0	0	36	360	50	500
Solar	0	0	160	1 600	200	2 000
Bioenergy	1 433	14 330	3 100	31 000	5 000	50 000
Heat pumps	40	400	280	2 800	600	6 000
<b>TOTAL:</b>	<b>1 473</b>	<b>14 730</b>	<b>3 576</b>	<b>35 760</b>	<b>5 850</b>	<b>58 500</b>



# Volume of thermal energy production from renewable sources in heating and cooling systems

(according to the National Action Plan for Renewable Energy until 2020)



- Renewable energy from heat pumps
- Biomass
- Solar
- Geothermal (except low-temperature geothermal heat for use in heat pumps)



## Targets of the National Action Plan in the sphere of renewable energy



### Transport

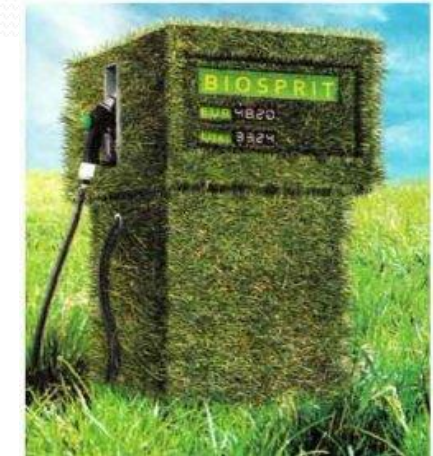
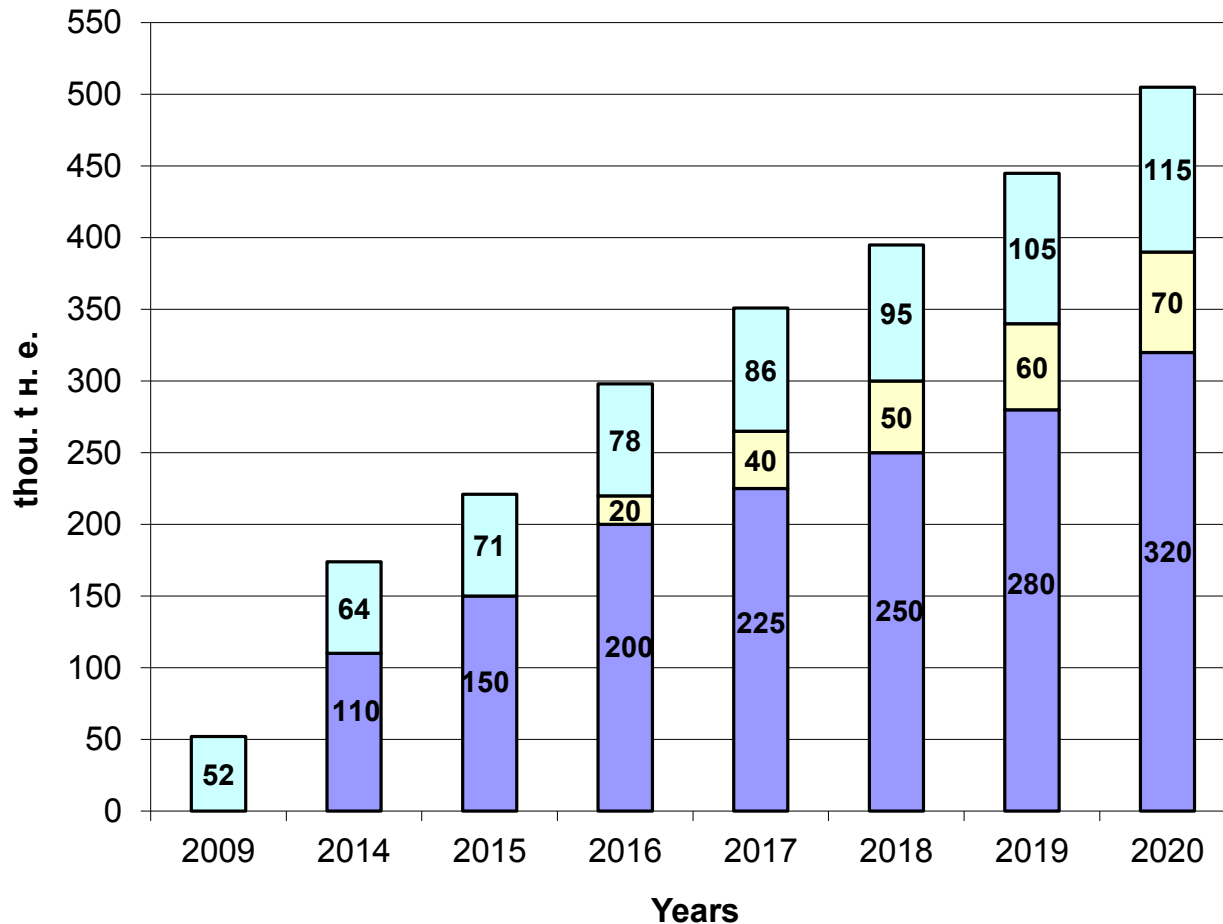


Energy inputs from renewable sources	2009		2016		2020	
	thou. t o.e.	GW*h, thou. t	thou. t o.e.	GW*h, thou. t	thou. t o.e.	GW*h, thou. t
Electricity from renewable sources	52	606	78	909	115	1 340
Bioethanol	0	0	200	313	320	500
Biodiesel	0	0	20	23	70	80
<b>TOTAL:</b>	<b>52</b>		<b>298</b>		<b>505</b>	

Already in years 2015-2016, it is necessary to build two bioethanol production plants, with the capacity of 100 thousand tons each



# Use of alternative fuels and electricity from renewable sources in transport sector (according to the National Action Plan for Renewable Energy for the period until 2020)



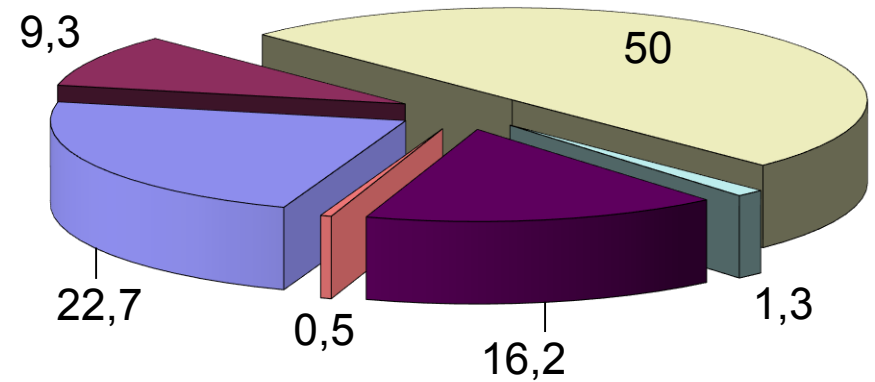
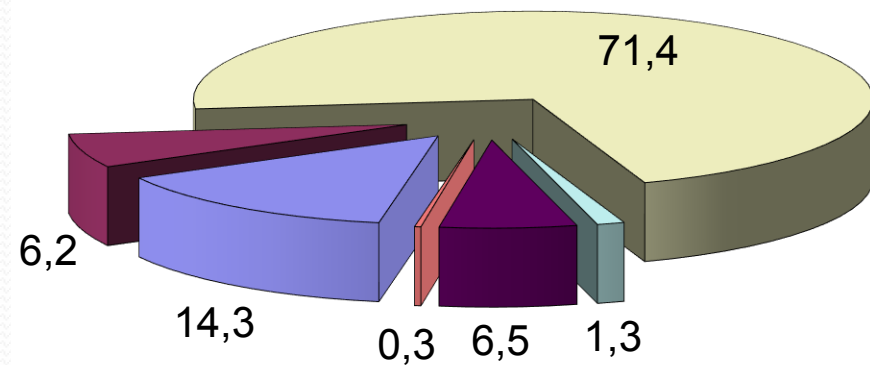
- Electricity from renewable sources
- Biodiesel
- Bioethanol/ ethyl tertiary butyl ether produced from bioethanol



# Structure of electricity production from RES in 2015 and 2020, %

2015

2020



■ Wind power plants

■ Solar power plants

□ Large TPPs

□ Micro-, mini and small HPPs

■ Bioelectric power plants

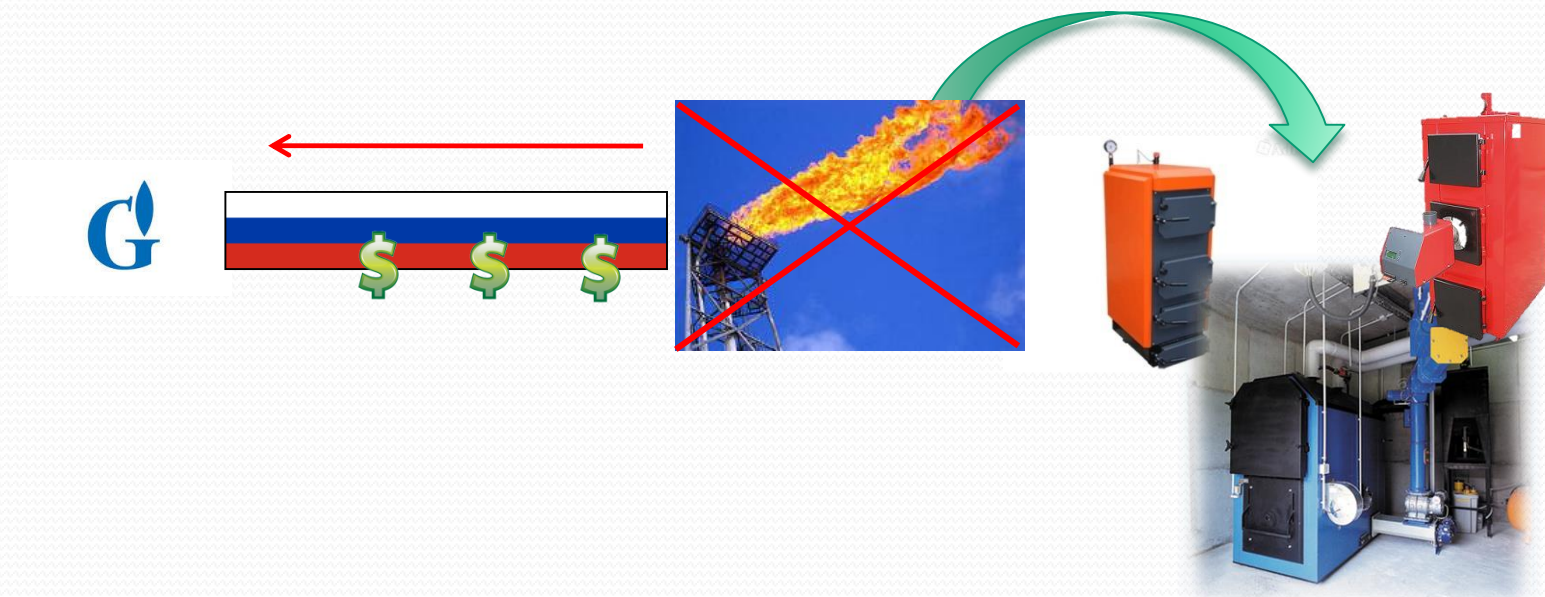
■ Geothermal power plants



## In the heating and cooling sector, implementation of the NAP RE in full is to ensure:

- Replacement of traditional FER in 2015 by **3,1 mn t o.e.**
- Replacement of traditional FER in 2020 by **5,85 mn t o.e.**

In 2020, energy from RES in the heating and cooling sector will make it possible to replace 6.3 bn m<sup>3</sup> of natural gas







## Implementation of the NAP RE in full will enable achievement of the following objectives by 2020:

- by 2020, decrease use of traditional FER by 8,6 mn t o.e. (9.2 bn m<sup>3</sup> of natural gas);
- Improve the environmental situation;
- create favorable conditions for investment in energy carriers production from renewable energy sources;
- improve energy carriers production from renewable energy sources to meet the EU requirements;
- Improve competitiveness of Ukraine's economy.





## Estimated investment required to implement the NAP RE



Sector of use of renewable energy sources	Estimated investment	
	UAH mn*	EUR mn **
Electric power engineering	156 733	9 499
Heating and cooling	126 868	7 689
Transport	10 941	663
<b>Total</b>	<b>294 542</b>	<b>17 851</b>

\* – Specific capital investment volume is taken from a report of the International Renewable Energy Agency

\*\* – At the official exchange rate of the National Bank of Ukraine (as of October 31, 2014, EUR 1 = UAH 16.5).



# In order to reach the objectives of the National Action Plan for Renewable Energy for the period until 2020, the following is necessary:

1. Providing technical assistance for the harmonization of national legislation with EU legislation



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2. Attracting foreign and domestic investments as well as advanced newest technologies



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3. Replenishing the Fund to finance renewable energy projects at the expense of financial institutions moneys, cash grants and revolving mechanism from the state budget





# **State Agency for Energy Efficiency and Energy Saving of Ukraine**

**([www.sae.gov.ua](http://www.sae.gov.ua))**

**THANK YOU FOR ATTENTION!**