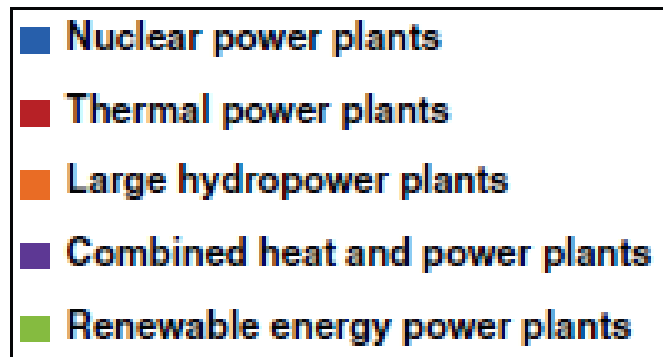
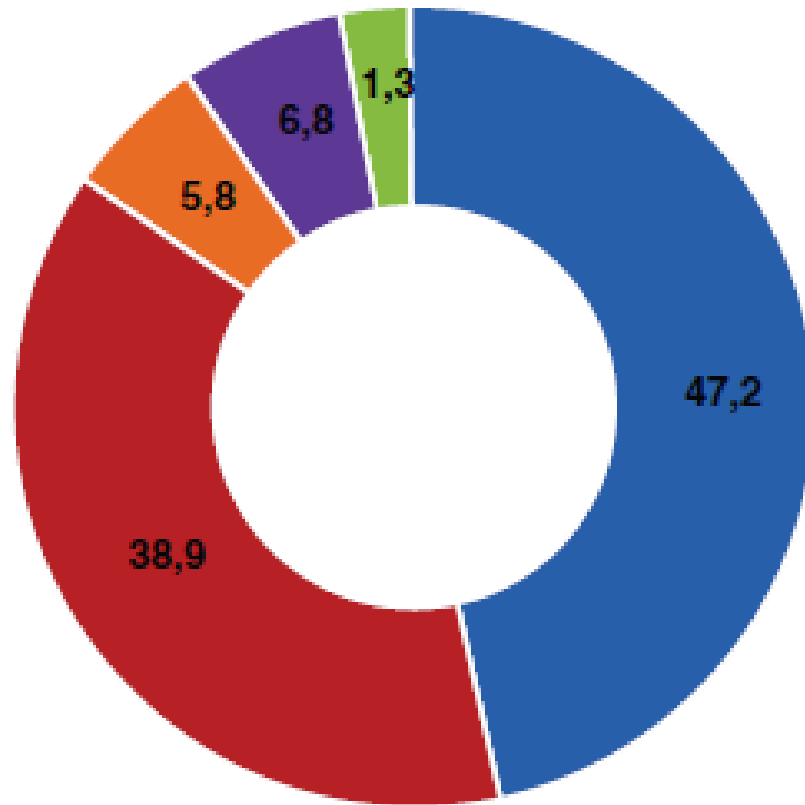


Biogas potential in Ukraine –
prof. Vasyl V. Kostytsky, UABE

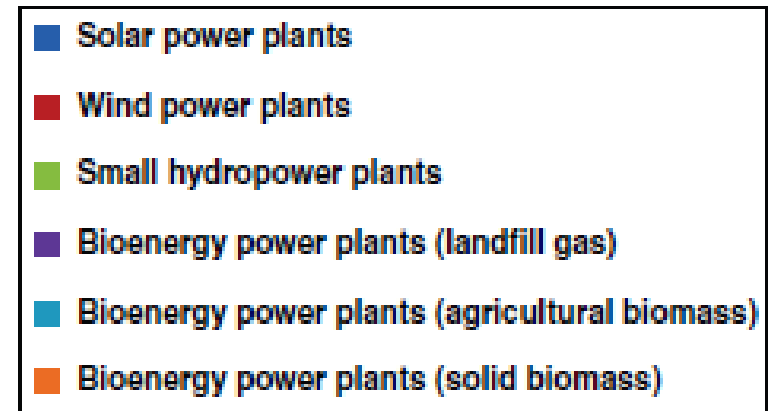
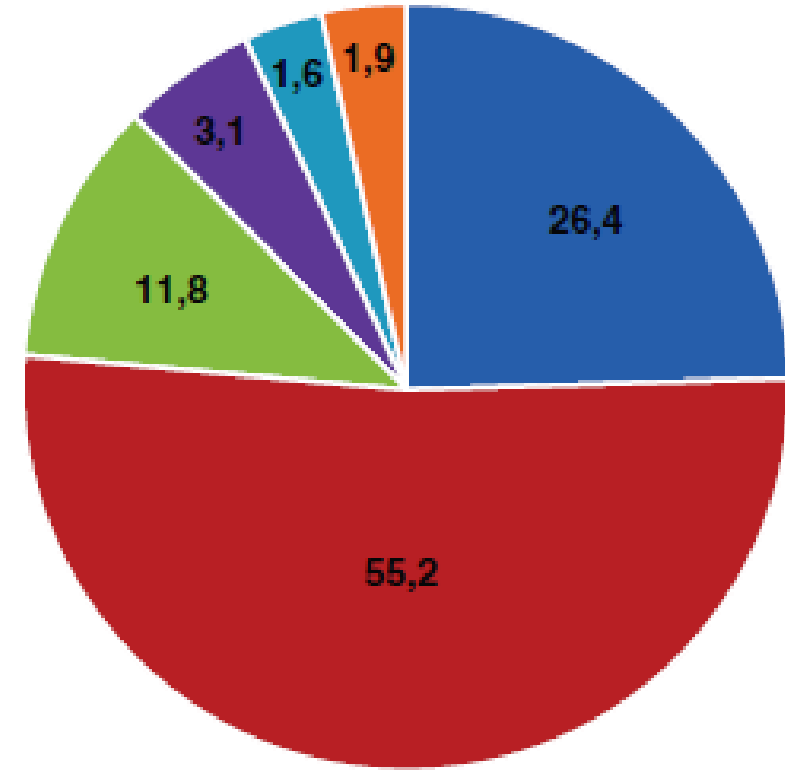
Background

- ❑ Ukraine is highly depending on the import of fossil-fuel energy reserves like oil, gas and coal – about 50% is imported.
- ❑ High energy intensity of Ukrainian economy, large consumption of natural gas.
- ❑ Ukraina is among the top-30 world countries with the highest CO₂ emissions.
- ❑ In transport there is a tradition of CNG use, the CNG infrastructure is well developed.
- ❑ Agricultural sector is a leading branch of the national economy.
- ❑ There is a large potential for biogas production from agrofood industry sector.

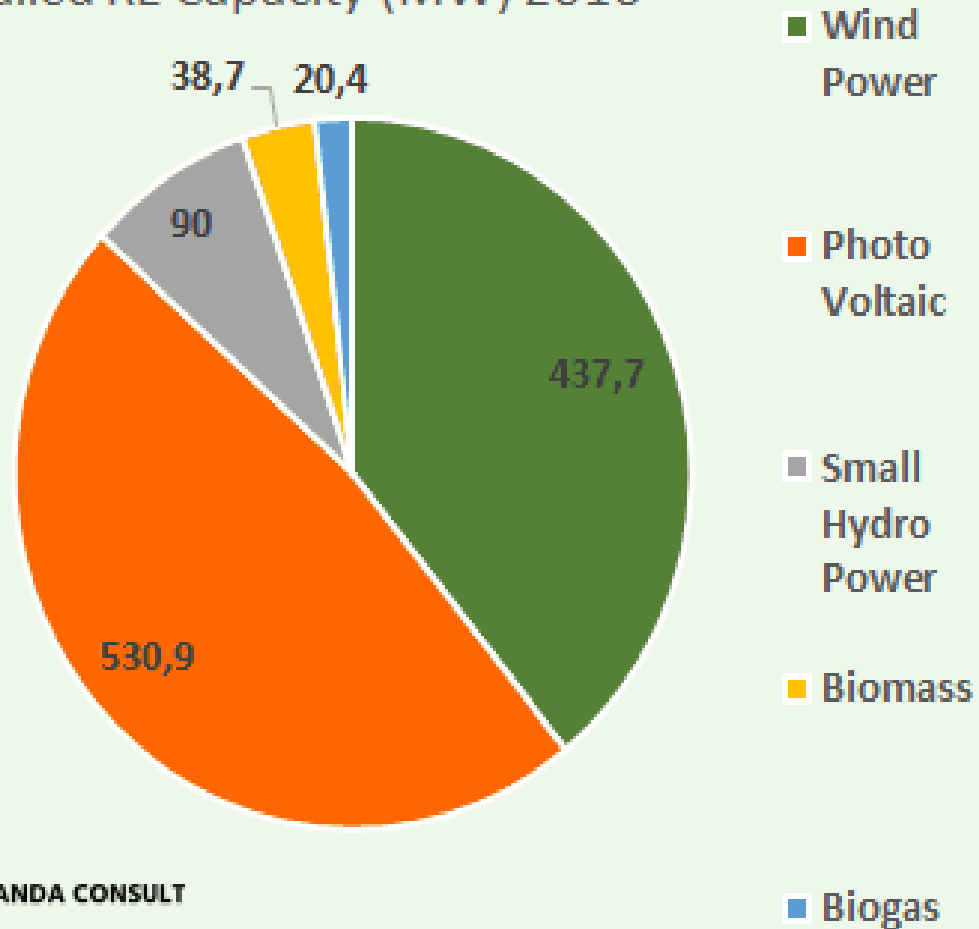
Energy mix, the end of 2016



RES use structure (%), the end of 2016



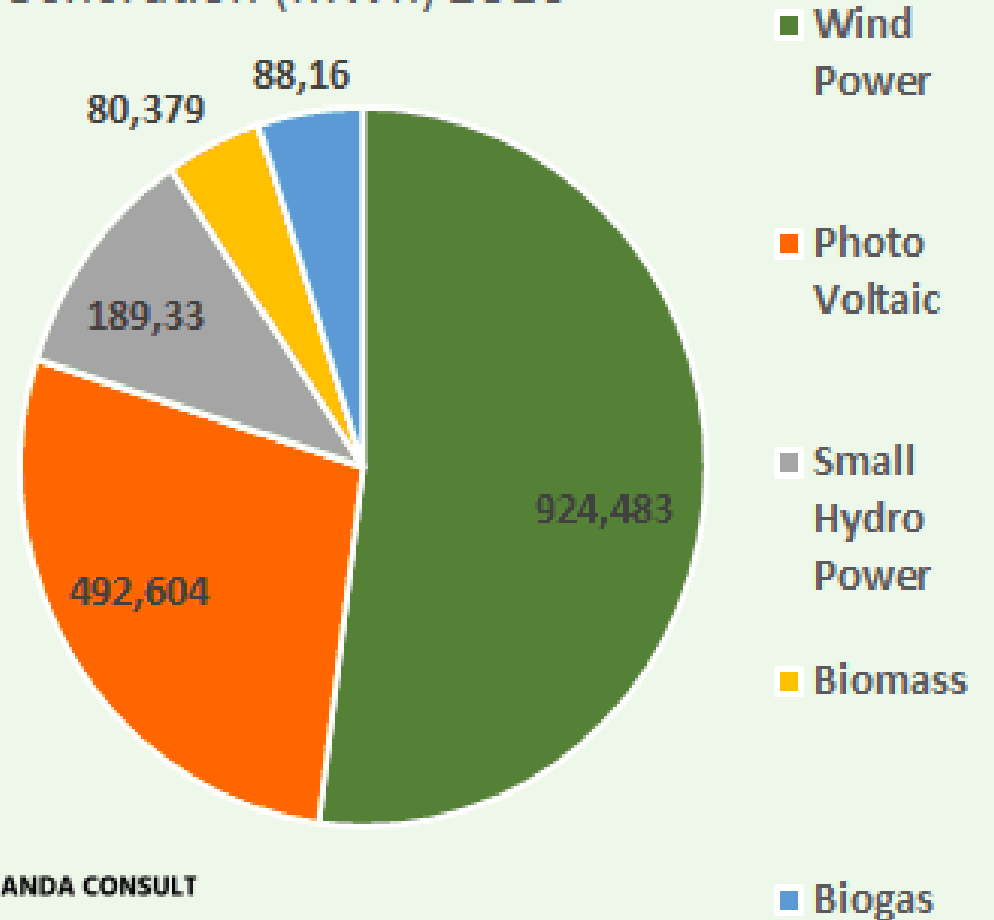
Installed RE Capacity (MW) 2016



SHANDA CONSULT

Source: Ukrainian Wind Energy Association

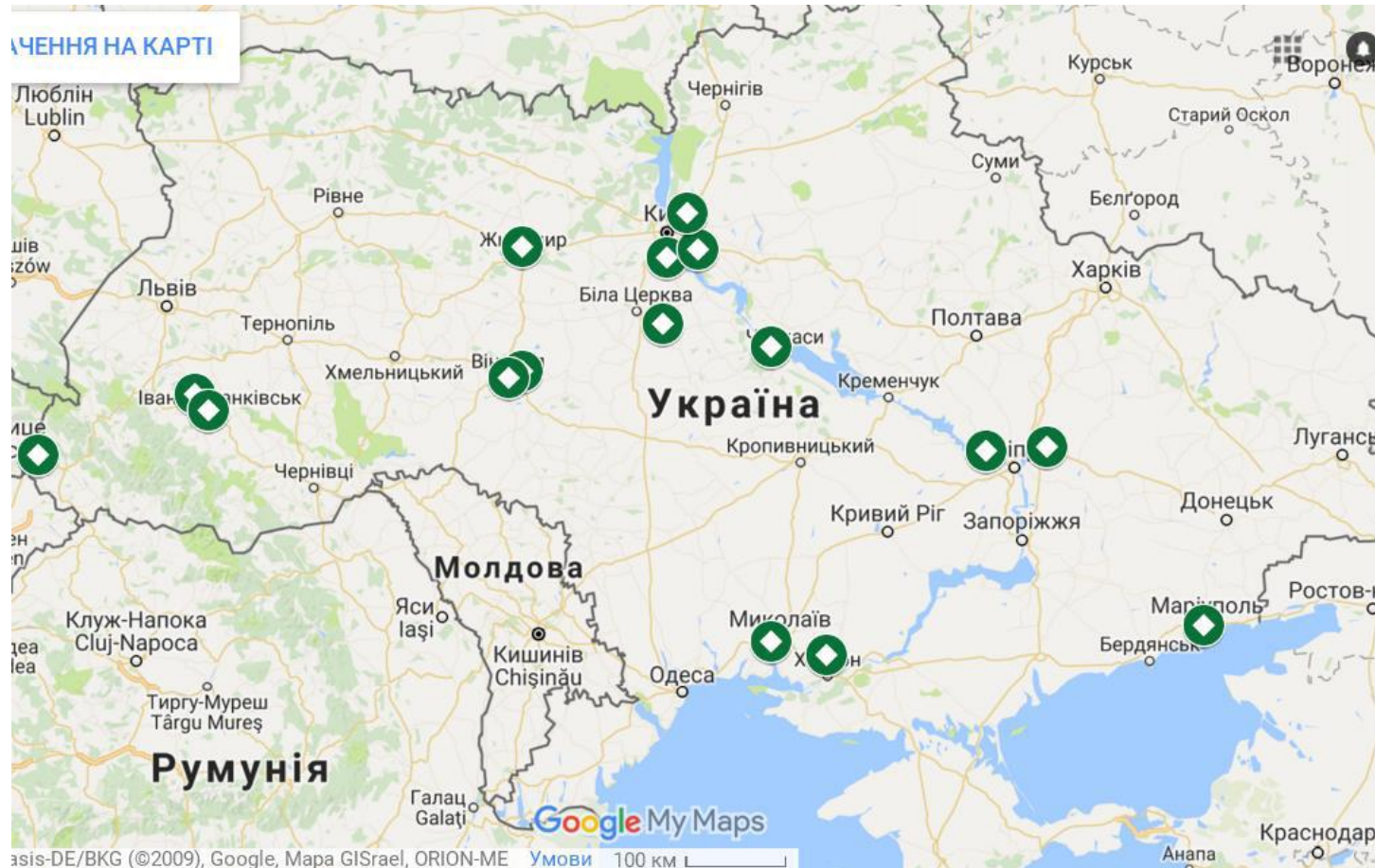
RE Generation (MWh) 2016



SHANDA CONSULT

Source: Ukrainian Wind Energy Association

Location of agricultural biogas plants



Source: H.Zhuk: Biogas technologies – Ukrainian perspective. 2018

Policy concerning RES/ biogas

- National Renewable Energy Action Plan with 11 % target for RES in 2020 (290 Mwe capacity from biogas), October 2014
- The National Renewable Energy Action Plan until 2020 and further measures until 2030 focus on diversifying the country's energy mix and strengthening local production of renewable energies, including the production of biogas.
- Law of Ukraine „On electric Power Industry” No.575/97-Ce,1997
<http://zakon3.rada.gov.ua> introduced attractive Feed-In Tariffs to attract local and foreign investors.
- Law of Ukraine „On renewable Energy Sources” No.555-15 from 11-06-2017
- On 21 March 2017, the parliament of Ukraine, adopted the Draft Law 4334 on stimulation of heat energy production from RES. The law aims to replace imported gas with alternative fuels produced in Ukraine from RES. The law has been signed by the President on 11 April 2017.

Feed-in Tariffs

FEED-IN TARIFFS (EUR / kWh)				
Renewable Energy Source	Unit Capacity	01.01.2015 - 31.12.2019	01.01.2020 - 31.12.2024	01.01.2025 - 31.12.2029
WIND	WTG 2000 kW and higher	0,1018	0,0905	0,0792
PV	Ground PV system	0,1599 - 0,1502	0,1352	0,1201
	Roof and Façade PV systems	0,1723 - 0,1637	0,1475	0,1309
BIOMASS & BIOGAS	Biomass /biogas power plants	0,1239	0,1115	0,0991
SMALL HYDRO	Micro HPP up to 200 kW	0,1745	0,1572	0,1395
	Small HPP, 200 kW - 1 MW	0,1395 - 0,1045	0,1255 - 0,0942	0,1115 - 0,0835
	- 10 MW			
GEOTHERMAL	Geothermal WPP	0,1502	0,1352	0,1201

Renewable energy producers who use at least 30 % locally produced equipment when establishing the RE plant, will be paid a premium of 5 %, based on the above figures. In case of at least 50 % locally produced equipment, the premium will be 10 %. These premiums are granted for biogas plants commissioned not later than 31.12.2024. The feed-in tariff is fixed in EUR, the UAH equivalent is re-calculated every three months. Feed-in tariffs are paid on the energy sold, not on the energy produced.

Source: <https://shandaconsult.com/biogas-market-ukraine>

The indicative goals for biomass in gross energy consumption in 2020 accepted by Government

	2014	2015	2016	2017	2018	2019	2020
HEAT PRODUCTION from biomass, THOUS OF TOE*	2,280	2,700	3,100	3,580	4,050	4,525	5,000
Electricity production from biomass, thous of toe	40	250	380	520	650	780	950
Including: - Solid biomass - biogas	28 12	175 75	260 120	360 160	455 195	540 240	660 290

Source: Y. Yevdokimov et al.: Biogas as an alternative Energy source for Ukrainian companies: EU experience. Innovative marketing, Vol.14, 2018

Future development

- ☐ Processing of wastes and by-products from agrofood industry (poultry litter, pulp from sugar beets etc.)
- ☐ **Production of biomethane for domestic market and eksport to EU**

Challenges

- ☐ difficult economic situation
- ☐ high investment costs
- ☐ animal production is dispersed in a lot of small farms

Energy co-operatives may be a driver for further development of biogas sector.