

Biogas project in Ukraine

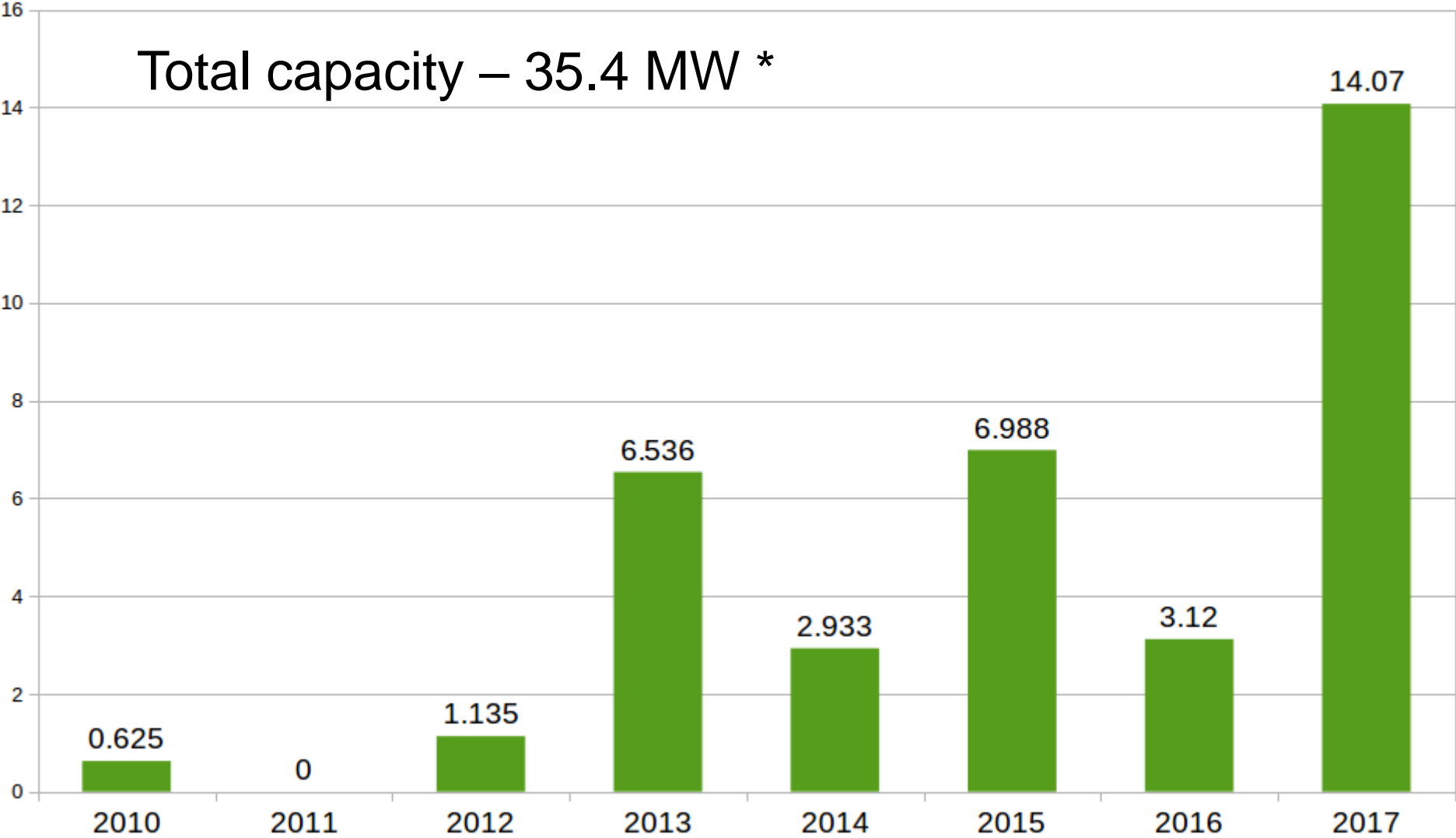
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13/12/2017

Beirut, Lebanon

UNDA Project Closing Workshop:
“Renewable Energy UNDA project conclusions and way forward”

Biogas Projects in Ukraine



* For 2017 only projects with the approved green tariffs as of 01/11/2017 are included

Biogas potential in Ukraine

Biogas production could potentially substitute from 8 to 18 bcm of natural gas in Ukraine

290 MW of biogas power capacities according to the National Renewable Energy Action Plan for the period till 2020

1697 MW of biogas power capacities according to IRENA's estimation of cost-competitive potential

New projects are being already developed in agricultural, waste water treatment and waste management sectors

4.8 MW Biogas Project - Vimeksim

Data	1 stage	Total
Corn and grass silo consumption, tonnes per day	65	195
Biogas production, m ³ per day	13179	52716
Gross electricity capacity, kW	1192	4768
Net electricity capacity, kW	1126.5	4506
Net heat energy capacity, kW	896.5	3586
Annual electricity supply to the grid, MWh	8881	35525
Annual heat energy supply, Gkal	6077	24 310
Annual GHG emission reduction, tonnes	12 000	48 000

Financial Data

CAPEX, million EUR	4.5
IRR	24.8%
Discounted payback period, years	7
NPV	3 151
Levelized cost of electricity, EUR / MWh	96

Key Risks for Biogas Projects

Technology: lower volumes of biogas production and electricity generation, decreased capacity utilization factor

Biomass supply: sufficient quantities and quality, schedule

Currency fluctuations: green tariff is fixed to UAH/EUR exchange rate, other revenues sources are not

Demand: electricity off-take is guaranteed by law, heat energy and fertilizers consumers are to be secured

Implementation delays: detailed operational plan to be developed and followed, contractual arrangements

Favorable Environment for Biogas Projects in Ukraine

High green tariff rate – EUR 123.86 per MWh

Key revenue source is secured from currency exchange risk

PPA agreement till 2030

Large potential for biogas production: agricultural biomass, waste water treatment, animal waste management, landfill gas

National and regional priorities in energy sector development include promotion of renewable energy projects