



ENERGY COOPERATION BETWEEN THE EU, THE LITTORAL STATES OF THE BLACK & CASPIAN SEAS AND THEIR NEIGHBOURING COUNTRIES



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OVERVIEW

of project implementation stages of the construction of renewable energy facilities

Dear friends!

These guidelines for the implementation of renewable energy projects also cover the issues of energy efficiency and conservation.

Improving energy efficiency is relevant to many countries including developed countries. The idea of rational use is not only a cultural characteristic of the society but also an indicator of an efficient economy.

Issues of energy saving, renewable energy and alternative fuels are highly topical for the Ukrainian economy. In fact, improving energy efficiency in all sectors of industry and agriculture means strengthening the energy security of our nation in terms of dependence on imported energy, and therefore strengthening Ukraine's sovereignty.

Ukraine possesses great potential with some expert estimates suggesting that energy efficiency measures could see energy demand halved from current levels. At present, Ukraine imports around half its total energy demand and the potential for renewable energy for its own has opportunities that can enhance the energy security and competitiveness of the economy and bring significant environmental benefits.

This brochure outlines issues related to renewable energy, features best examples of implemented projects, addresses of responsible authorities, contacts of project developers and equipment suppliers, and covers the issues of greatest concern of the public.

The publishing of this brochure was supported by the INOGATE project. INOGATE is one of the longest running regional energy cooperation programmes funded by the European Union. INOGATE cooperates with 11 Partner countries to support a reduction in their dependence on fossil fuels and imports, improve the security of their energy supply and mitigate overall climate change.

We wish you success and energy in the implementation of projects and ideas, and hope that you will find this booklet useful!

Sincerely,

State Agency on Energy Efficiency
and Energy Saving of Ukraine,

INOGATE Programme

Dear investors & project developers!

These guidelines have been developed in the context of the long-standing Ukrainian-Austrian energy partnership which aims to strengthen the use of renewable energy sources and of planning and implementing measures to improve energy efficiency.

The Austrian Energy Agency manages the energy partnerships on behalf of the Federal Ministry of Agriculture, Forestry, Environment and Water Management, and the State Agency on Energy Efficiency and Saving of Ukraine acts as the main counterpart in Ukraine.

The Ukrainian-Austrian energy partnership is based on the following activities:

- Networking activities and bilateral working meetings of the partner institutions.
- Continuous exchange of experiences on the development of the legal frameworks and support schemes for renewable energy (RE) and energy efficiency (EE).
- Market observation.
- Know-how transfer in the areas of EE and RE with special emphasis on energy balances and the integration of renewable energy sources into the existing grid.

- Capacity building measures (including participation in conferences, workshops and study tours)
- Scientific studies on demand (feasibility studies and other studies related to issues and potentials of RE and EE)
- Support in the drafting of guidelines on successful RE project implementation

Each year, certain priorities for action are defined collectively and implemented consecutively. The present guidelines shall provide a brief overview of the regular process to implement projects generating electricity from renewable energy in Ukraine.

Sincerely,

Managing Director of the AEA

Peter Traupmann

Purpose of the Guidelines

The purpose of the «Guidelines on the implementation of projects in the field of renewable energy in Ukraine» is to introduce both Ukrainian and foreign investors to the procedure of launching RES electricity projects, the main provisions of the Ukrainian legislation in this area, and the procedure of obtaining of the necessary licences.

THE RENEWABLE ENERGY SPHERE IN UKRAINE

1

Overview of the RES sphere and its potential in Ukraine

Information on installed capacity and electricity production by renewable energy facilities that operate under the «green» tariff (as of the 1st January 2014)

№	RE type	Total quantity of RE facilities	Installed capacity, MW		Electricity produced in 2013, million kWh
			as of 01/01/14	commissioned in 2013	
1	Wind energy	17	334,083	139,873	636,473
2	Solar energy	83	748,42	376,857	562,81
3	Small hydropower	90	75,312	1,282	285,986
4	Biomass	5	17,2	11,0	32,446
5	Biogas	4	6,538	6,538	5,012
Total		199	1181,553	535,55	1522,727

As for January 1st, 2014 the installed capacity of renewable energy facilities that operate under the «green» tariff in Ukraine amounted to 1181.6 MW. In 2013 this tariff was acquired by the commissioned facilities with a total power of 535.6 MW (which

is 2.3 times more than the capacity commissioned in 2012), including:

- wind energy facilities – 139.9 MW;
- solar energy facilities – 376.9 MW;
- small hydropower facilities – 1.3 MW;
- bioenergy facilities producing electricity from biomass – 11.0 MW;
- bioenergy facilities producing electricity from biogas – 6.5 MW.

The mentioned facilities generated 1.52 billion KWh of electricity in 2013.

The largest renewable energy facilities commissioned in 2013 include:

1) the Botiyevska wind power station with installed capacity of 199.9 MW in Zaporizhzhia region, Primorsky district, village Prymorsky Posad (2012–2014);

2) solar power station with installed capacity of 110 MW in the Autonomous Republic of Crimea, Kirovskii district, village Vladyslavivka (2013);

3) solar park «Perovo» with installed capacity of 105.5 MW in the Autonomous Republic of Crimea, Simferopolsky district (2011);

4) solar park «Ohotnikovo» with installed capacity of 82.6 MW in the Autonomous Republic of Crimea, Saksy district (2011);

5) wind park «Novoazovskyy» with installed capacity of 57.5 MW in Donetsk region, Novoazovskyy district, village Bezimenne (2011–2012);

6) thermal power station that produces electricity from biomass with installed capacity of 6.0 MW in Kyiv region, Ivankivskyy district, Ivankiv (2013).

Technically feasible potential of energy production from renewable energy sources and alternative fuels

No	Areas of RES uptake	Annual technically feasible energy potential (Mtoe)
1	Wind energy	28,0
2	Solar energy including:	6,0
2.1	- electricity	2,0
2.2	- heat	4,0
3	Small hydropower	3,0
4	Bioenergy including:	31,0
4.1	- electricity	10,3
4.2	- heat	20,7
5	Geothermal heat energy	12,0
6	Ambient energy (heat pumps)	18,0
Total volume of replacement of traditional fuel and energy resources		98,0

2

Development and forecasts

A comparative analysis of the installed capacities of energy facilities, that produced electricity from renewable sources during 2010–2013 shows that the installed capacity of electric power facilities operating under the «green» tariff has increased by

1035.7 MW or 8.1 times in comparison with 2010. This includes the increase of capacity of wind power facilities by 257.5 MW, solar energy facilities – by 745.9 MW, small hydropower facilities – by 12.8 MW, and energy facilities producing electricity from biomass – by 13 MW. In 2013 those renewable energy facilities generated 1.52 billion kWh of electricity, which is 12.4 % higher than during the previous three years together.

Information on installed capacity and electricity production by renewable energy facilities that operate under the «green» tariff, in 2010 – 2013

RE	Installed capacity, MW				Electricity produced, million kWh			
	2010	2011	2012	2013	2010	2011	2012	2013
Wind energy	76,575	146,415	193,835	334,083	49,171	89,037	257,501	636,473
Solar energy	2,535	188,224	371,562	748,42	0,508	30,052	333,590	562,81
Small hydropower	62,526	70,816	73,453	75,312	192,515	203,410	171,943	285,986
Biomass	4,200	4,200	6,200	17,2	0,002	9,603	17,662	32,446
Biogas	–	–	–	6,538	–	–	–	5,012
Total	145,836	409,655	645,050	1181,553	242,196	332,102	780,696	1522,727

3

National targets and strategy (until 2020 etc.)

Ukraine became a Contracting Part of the Energy Community as of February 1st, 2011. The SAEE was nominated to be responsible for participating in the Energy Community Renewable Energy Task Force and during 2011–2012 participated in the meetings of the Task Force and the meetings on issues related to determining the actual and possible share of energy produced from renewable sources in the energy balance of the country.



On October, 18, 2012, the Ministerial Council of the Energy Community approved the decision on the implementation of Directive 2009/28/EC «On the promotion of the use of energy from renewable sources amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC». The aforesaid decision determines the target for Ukraine: to reach the share of energy produced from renewable sources in the structure of the final energy consumption in 2020 at the level of 11 %.

In order to implement the abovementioned decision the SAEE has developed the Action Plan on implementation of the Directive of the European Parliament and Council 2009/28/EC and the National Renewable Energy Action Plan (NREAP) through 2020.

Implementation of provisions of the mentioned National Action Plan to the full extent, apart from fulfilling the international obligations of Ukraine in the area of renewable energy, will allow:

- to increase the level of the energy independence of Ukraine;
- to optimise the structure of the fuel and energy balance of Ukraine, in particular, to decrease the use of energy resources of traditional origin to the extent of 35 million tonnes of oil equivalent through 2020;
- to increase the level of competitiveness of the national economy.

OVERVIEW OF PROJECT IMPLEMENTATION STAGES OF THE CONSTRUCTION OF RENEWABLE ENERGY FACILITIES

- 1 Investment plan
- 2 Registration
- 3 Obtaining the land rights
- 4 Technical possibilities of grid connection
- 5 Project documentation design
- 6 Project documentation expertise
- 7 Preparation for construction and construction
- 8 Facility acceptance into operation
- 9 Grid connection.
Energy production licensing
- 10 Wholesale electricity market (WEM) registration.
«Green» tariff obtainment

Note:

- All documents and annexes should be provided in national language (Ukrainian)
- Ukrainian legislation is available only in Ukrainian (www.rada.gov.ua)
- The information contained in these guidelines is intended for general information and must not be regarded as comprehensive description of issues, and cannot be used for commercial decisions making. The mentioned steps need to be specified for each concrete project.

1

Investment plan

Content:

Investment plan development (Business plan)

Recommended content:

- Purpose & objectives of the project
- Type of construction (new/reconstruction/modernisation)
- Technical description of the project
- Preliminary price of the construction
- Minimum plot area required
- Installed capacity
- Electricity production per year
- Payback period of the project
- Construction period
- Social and economic benefits from the construction of the object, including:
 - Ecological impact (prevention of harmful emissions, dust, carbon dioxide, etc.) into the atmosphere)
 - Decrease of fossil fuel consumption in electricity production
 - Job creation
 - Modernisation of the electricity grid (reduction of losses)
- Etc.

Relevant regulations:

During the preparation of the investment plan it is necessary to become acquainted with:

- Legislation on incentivising electricity production from RES:
 - Law of Ukraine «On electricity»
 - Tax code of Ukraine
- Publicly available data:
 - Town planning cadastre (town planning cadastre of Kyiv: <http://mkk.kga.gov.ua>)
 - State land cadastre (publicly available cadastre map: <http://map.land.gov.ua/kadastrova-karta>)
 - Atlas of renewable energy and alternative energy potential of Ukraine (for example, the one developed by the Institute of Renewable Energy of the National Academy of Sciences of Ukraine which can be found here: <http://ive.org.ua>)
- Electricity grid map

2

Registration

Content:

- To register a business entity it is necessary to apply to the state registrar at the location of the entity (local state administration)
- The list of necessary documents and the registration procedure are set out in the Law of Ukraine «On State Registration of legal entities and physical entities – entrepreneurs»

Relevant regulations:

- The Law of Ukraine «On State Registration of legal entities and physical entities – entrepreneurs»

3

Obtaining the land rights

Content:

- The investor/project developer needs to apply to the local authority (local bodies of executive power) for the provision of the desired land rights (ownership, lease etc.)
- Public consultations (public discussions) concerning the construction of the planned facilities

Relevant regulations:

- Land Code of Ukraine
- Law of Ukraine «On Electricity»
- Law of Ukraine «On energy lands and legal status of special zones of energy facilities»
- Law of Ukraine «On regulation of town-planning activities»

4

Technical possibilities of grid connection

Content:

- Simultaneously with solving the issue of land provision, the possibility of grid connection needs to be arranged with the electricity transmission organisation
- After obtaining the land use rights, the «technical specifications for grid connection» have to be obtained from the electricity transmission organisation

Relevant regulations:

- Law of Ukraine «On Electricity»
- Decree of the Cabinet of Ministers of Ukraine №126 dated 19/02/2009 «On peculiarities of connection to the grid of electricity facilities that produce electricity from alternative sources»
- Decree of the National Electricity Regulatory Commission (NERC) №32 dated 17/01/2013 «On approval of the rules on electricity facilities connection to the grid»

5

Project documentation design

Content:

- The project developer/investor needs to apply to a licensed organisation for developing the project design of the facility construction
- The development of baseline data for the project design includes:
 - 1) town planning conditions and restrictions (town planning and architectural agencies)
 - 2) «technical specifications» (complex of conditions and requirements to engineering support regarding the construction of the facility, particularly: water, heat, gas and electricity supply, drainage, dispatching, fire and technogenic safety etc. (the procedure for the provision of technical specifications is set by a corresponding central body of executive power)
- Design assignment development is prepared and approved by the client in consultation with the design engineer. During the project documentation design, it is appropriate to decide on the share of «local component» (Law of Ukraine «On electricity») in order to be able to apply for the «green tariff»

Relevant regulations:

- Law of Ukraine «On regulation of town-planning activity»
- Order of the Ministry of regional development №45 dated 16.05.11 «On approval of the Rules of connection to the grid of electricity facilities»
- Decree of National Energy Regulation Commission (NERC) №32 dated 17/01/2013 «On approval of the Rules of connection to the grid of electricity facilities»
- State Building Standard A 2.2-3-2012 «Content of projects documentation for construction»
- State Building Standards, State Standards of Ukraine and other legislative documents
- List of organisations, that have received a licence for business activity in construction can be found at the website of the State Architecture and Building Inspection: <http://dabi.uss.gov.ua>



Project documentation expertise

Content:

- Project developer/investor shall address a relevant expert organisation to carry out expertise of the construction project (projects subject to a mandatory expertise are listed in the Law of Ukraine «On regulation of town-planning activity»)
- The expert organisation shall provide the client with an expert report which specifies the quality of the design decisions regarding:
 - Strength, reliability, durability of construction objects, their operating security and engineering support
 - Sanitary and epidemiological safety of population
 - Occupational safety
 - Ecology
 - Fire safety
 - Technogenic safety
 - Energy saving
 - Budget component of project documentation
 - Etc.
- The tentative time period for carrying out expertise is 15–90 days

Relevant regulations:

- Law of Ukraine «On regulation of town-planning activity»
- Decree of the Cabinet of Ministers of Ukraine №557 dated 27/04/2011 «On the procedure of attributing construction objects to the IV and V categories of difficulty»
- Decree of the Cabinet of Ministers of Ukraine №560 dated 11/05/2011 «On approval of the construction projects on building and their expertise»
- List of expert organisations that can conduct an expertise of construction projects can be found on the website of the Ministry for Regional Development, Building and Housing of Ukraine: <http://min-region.gov.ua>



Preparation for construction and construction

Content:

- The project developer/investor applies to the licensed organisation with the aim to build an object/facility
- The State Architecture and Building Inspection or its territorial bodies have to be notified about the start of pre-construction activities
- The regional state administration or local government authority and state bodies for fire and technogenic safety have to be notified about the start of pre-construction activities
- A declaration on the commencement of pre-construction activities has to be registered or a construction permit has to be obtained from the State Architecture and Building Inspection or its territorial bodies
- The regional state administration or local government authority and state bodies for fire and technogenic safety have to be notified about the start of construction activities
- The construction is carried out

Relevant regulations:

- Law of Ukraine «On regulation of urban construction activities»
- Decree of the Cabinet of Ministers of Ukraine №557 dated 27/04/2011 «On the procedure of attributing construction objects to the IV and V categories of difficulty»
- Decree of the Cabinet of Ministers of Ukraine №466 dated 13/04/2011 «On certain issues concerning implementation of preparatory and construction works»
- List of organisations, that have received a licence for business activity in construction can be found on the web-site of the State Architecture and Building Inspection: <http://dabi.uss.gov.ua>



Facility acceptance into operation

Content:

- After construction, pre-commissioning activities of equipment and systems shall be carried out
- Commissioning works
- Formal commissioning at the facility
- Commissioned facility has to be registered with the governmental statistical authority
- The project developer/investor has to inform the state bodies for fire and technogenic safety about the commissioning of the facility
- Contracts for the supply of the required resources for the operation of the facility – water, gas, heat, electricity (engineering networks) – need to be concluded with the relevant enterprises, institutions and organisations

Relevant regulations:

- Law of Ukraine «On regulation of urban construction activities»
- The Cabinet of Ministers of Ukraine Decree №461 dated 13/04/11 «Issues on acceptance into service of the completed constructed facilities»



Grid connection. Energy production licensing

Content:

- The issues concerning connection of the facility to the grid have to be coordinated with the transmission/distribution system operator (SE «NPC «Ukrenergo» and/or regional power distribution company)
- Conclusion of grid connection contract
- Conclusion of contract for electricity supply
- The project developer/investor applies to NERC for a license for electricity generation activities

Relevant regulations:

- Decree of the National Electricity Regulatory Commission (NERC) №32 dated 17/01/2013 «On approval of the rules on electricity facilities connection to the grid»
- The Decree of the Cabinet of Ministers of Ukraine №753 dated 29/04/99 «On the procedure for issuing licenses for the implementation of activities related to the production, transmission and supply of electricity, combined heat and power production, production of thermal power plants and thermal energy on co-generation plants and facilities using non-conventional or renewable energy sources by the National Electricity Regulatory Commission»
- The Decree of the National Electricity Regulatory Commission of Ukraine №1305 dated 06/10/99 «On approval of regulations on the procedure of issuing licenses for certain types of entrepreneurial activities by the National Electricity Regulatory Commission»

10

Wholesale electricity market (WEM) registration. «Green» tariff obtainment

Content:

- Signing of agreement among the members of the Wholesale Electricity Market of Ukraine
- Signing of agreement with the state enterprise «Energoynok» for purchase and sale of electricity
- Signing of agreement on parallel activity and the regulations for operational and technological relations with SE NPC «Ukrenergo»
- Addressing to an expert organisation to calculate an actual level of specific share of local component (i. e. share of raw materials, goods, fixed assets, works and services of Ukrainian origin)
- Submission of an application for the «green» tariff to NERC

Relevant regulations:

- Law of Ukraine «On Electricity»
- Order of the Ministry of Fuel and Energy of Ukraine № 303 dated 02/06/08 «On approval of Rules of relations between the State Enterprise «National Power Company «Ukrenergo» and entities (facilities) of electricity in the conditions of parallel operation within the United Energy System of Ukraine»
- Agreement between the members of the wholesale electricity market of Ukraine
- The Decree of NERC № 744 dated 15/06/12 «On approval of the procedure of determination of the specific share of raw materials, goods, fixed assets, works and services of Ukrainian origin on the cost of construction of electric facilities generating electricity from alternative energy sources»
- List of expert organisations that can conduct an expertise of construction projects can be found on the website of the Ministry for Regional Development, Building and Housing of Ukraine: <http://minregion.gov.ua>
- The Decree of NERC № 1421 dated 02/11/12 «On approval of the procedure of setting up, revising and cancelling feed-in tariffs for economic entities»