

Project Proposal
on the request for attraction of international financial assistance for
implementation of the “Road Map of Comprehensive Development of Wind
Industry and Machine Building of Ukraine”

This project proposal is based on the draft document “Road Map of Comprehensive Development of Wind Industry and Machine Building of Ukraine” (hereinafter referred to as the *Road Map*) developed in execution of the instructions of First Vice Prime Minister of Ukraine S. Kubiv of 29.07/2016 No. 26958/1/1-16 and according to recommendations of the Ministry of Economic Development and Trade of Ukraine (Letter to the Government of 08.09.2016 No. 3232-01/2882-01).

The *Road Map* is an integral annex to this project proposal and gives more detailed information by relevant references.

The Developers of the *Road Map* are foreign investors – experts, institutes of the National Academy of Sciences and other enterprises (Annex 1 of the *Road Map*).

1. Analysis of the problem the solution of which requires the attraction of international technical assistance.

The *Road Map* analyzes systematic problems of the power industry, including wind industry, machine building and general problems for investors:

- Problems of the power industry (Section 4 of the *Road Map*):
 - physical wear of equipment of thermal and nuclear power plants;
 - problems of access to energy resources;
 - environmental problems of electricity generation;
 - problems of access to investments.
- Problems of machine building (item 11.1 of the *Road Map*):
 - low level of productive labour;
 - low competitiveness;
 - shortage of capital investments and technologies in Ukrainian machine building;
 - low profitability;
 - problems of access to investments.
- General problems for investors (Section 6 of the *Road Map*):
 - failure of Ukraine to fulfill its international obligations, particularly on the implementation of EU Directives;
 - lack of guarantees for investors, particular due to non-fulfillment of adaptation of the domestic legislation to the legislation of the EU;
 - monopolization of the energy market;
 - imperfection of the strategy of development of renewable (low-carbon) energy developed in compliance with international regulatory documents.

The mentioned problems of the power industry require urgent replacement of generating capacities for energy security of the country. This replacement can be carried out only with the participation of international financial organizations (EBRD, World Bank, etc.) the priorities of financing of which are renewable energy (item 5.11.2 of the “Energy Sector Strategy” approved by the Board of Directors of the EBRD on 10.12.2013, hereinafter referred as the *EBRD Strategy*, and items 71, 74 of the “World Bank Group Climate Change Action Plan”).

Analysis of global trends (Sections 7 and 8 of the *Road Map*) shows that the wind energy is one of the most attractive industries in the world for investors. So, according to report “Global trends in renewable energy investments 2016. Bloomberg”, investments in the wind industry in 2015 amounted to 109.6 billion US dollars (p. 14). This amount should increase with consideration of the Paris Climate Agreement (Part 1 of Article 2) signed also by Ukraine on 22.04.2016 due to the requirement to direct financial flows for development of the low-carbon power industry. So, according experts’ opinion, the projects which are financed by the European Union, level of financing the developing countries by developed countries for prevention of climate change (Item 115 of the Decision of the Conference of the Parties “1/CP.21. Adoption of the Paris Agreement) will be \$100 billion per year (Source: The Paris Agreement has been adopted. What does this mean for countries-partners of the Clima East project? Dr. Marzena Chodor, a key expert of the Clima East project. December 2015. – p.9).

The potential of the domestic wind industry, according to data of international experts, averages 16 000 MW (Section 10 of the *Road Map*), which is the base for attraction of approximately 25.6 billion USW dollars in construction of wind power plants, including 11.4 billion US dollars in the production of components of up-to-date wind turbines at domestic machine-building enterprises (Section 12 of the *Road Map*).

Despite the readiness for financing the projects of construction of wind power plants by international financial organizations and high wind potential of Ukraine, investments in the wind industry and wind energy machine building of the country are absent. So, according to report of Derzhenergoefektyvnosti “On the state of alternative energy and efficiency of actions for promotion of its development”, in 2015 no capacity in the wind industry was commissioned in Ukraine. The reasons for the absence of such investments are, in particular, the abovementioned general problems for investors (Sections 6 and 14 of the *Road Map*).

The lack of investments in the wind industry is not only a constraining factor for the economic growth of the country, but also leads to the Ukraine’s violation of its international obligations in connection with the signed Association Agreement between Ukraine, on the one part, and the European Union, the European Atomic Energy Community and their Member States, on the other part. In particular, it is the

failure of Ukraine to meet the requirements of Directives of the European Parliament and of the Council 2009/28/EC of 23 April 2009 on the promotion of the use of energy from renewable energy sources.

Attraction of investments in the wind industry of the country will also allow the attraction of investments in domestic machine-building enterprises for production of wind turbine components. The incentive for such production is a 10% surcharge to “green” tariff under Article 17-3 of the Law of Ukraine “On the Power Sector”. Donors also consider “*the power sector as a platform for establishing the partnership relations with the industry (EBRD Strategy, p. 4)*”. However, taking into consideration the present-day state of machine-building enterprises (Item 11.1 of the *Road Map*) and lack of experience in mastering the license technology of production of up-to-date wind turbines, it is necessary to provide technical assistance to such enterprises for solution of these problems (Section 15 of the *Road Map*).

In order to tackle the above problems which prevent the attraction of investments, including for the reformation of the power sector of the country and commencement of the relevant legislative initiatives, it is necessary to develop the strategy – road map (Section 13 of the *Road Map*). It should be developed with the participation of foreign specialists with due account of the requirements of international regulatory documents for development of road maps, including the documents of international financial organizations, in particular the *EBRD Strategy* which stipulates the provision of technical assistance at the expense of donor funds for the development of road maps for the power sector with the purpose of implementing reforms and structural changes (Item 2.2).

Exactly for development, implementation and monitoring of the “Road Map of Comprehensive Development of Wind Industry and Machine Building of Ukraine” the international assistance should be attracted.

2. Objective and tasks of the project

The main objective of the *Road Map* is the comprehensive solution of problems of attraction of investments and technologies in the wind industry and machine building.

The tasks of this project (Item 15.1 of the *Road Map*) are as follows:

- Ensuring of the implementation of the provisions of clause 17-3 of the Law of Ukraine “On the Power Sector” regarding the simultaneous promotion of WPP construction and production at domestic plants of modern wind turbine components based on the use of “green” tariff financial incentives. This also includes the implementation through development and adoption of regulatory legal acts and system for financing the preparation of production of wind turbine components with the use of the available possibilities for joint

implementation of investment projects in the wind industry and machine building.

- Adaptation of the *Road Map* to the level of European standards for the projects in the low-carbon power industry. The final version of the *Road Map* supported by international financial organizations should be the basis for attraction of large-scale investments both in the wind industry and machine building of Ukraine.
- Development of a package of regulatory legal acts on the basis of European standards for the removal of legal obstacles to the priority development of the low-carbon power industry, having provided an equal access to this market for all investors.
- Reforming of the existing system of power industry management with the view of incorporation of the low-carbon sun-industry into it on the basis of European technologies and relevant experience, including the regulation of large wind generation capacity (Section 9 of the *Road Map*), development of electric networks for needs of the low-carbon power industry.
- Development and introduction of the integrated system of organizing the production of up-to-date wind turbine components based on the application of technologies and licenses of the leading world companies and technical re-equipment, on this basis, of the domestic industrial enterprises with up-to-date equipment.
- Development of radically new approaches to the process of organizing the production at machine-building enterprises on the basis of European and world experience, taking into consideration the existing critical condition of these enterprises, which is the result not only of the existing crisis in the economy of the State, but also losses of sales markets and considerable decrease in the number of qualified personnel.
- Elaboration of general approaches for arranging the investment process for machine building taking into consideration that the *Road Map* is the first intersectoral and interregional project in this sphere in Ukraine. This project is one of the first in this sphere for the time being and its successful implementation can greatly promote the implementation of programs of the Government for attraction of large-scale investments in the economy and country's recovery from the recession.
- Development of special approaches when organizing and holding relevant tenders for production of wind turbine components and providing recommendations on the creation of profit centers in the composition of the existing structures of management of enterprises.
- Adaptation of "Energy Strategy of Ukraine for the period until 2035" to the requirements of the *Road Map*.
- Creation for investors of the volumes considerable and attractive WPP construction market in Ukraine of not less than 16 000 MW substantiated in *the Road Map* and sales market for machine-building enterprises.
- Provision of guarantees to investors through the adoption of the relevant regulatory legal acts.

3. List of activities to be carried out due to international technical assistance

Due to international technical assistance it isn't planned to carry out the following activities (Item 15.2 of the *Road Map*):

- Development, implementation and monitoring of the Road Map of comprehensive development of wind industry and machine building of Ukraine.
- Development of regulatory legal acts for provision of guarantees to investors, adaptation to the EU legislation, ensuring of development of renewable energy, in particular the wind industry.
- Development of proposals on reforming of the power industry of Ukraine, including the reforming of the governmental authorities – for ensuring of development of renewable energy, in particular the wind industry.
- Development of regulatory documents for designing, construction and operation of WPPs with due consideration of their harmonization with the EU standards.
- Inspection of machine-building enterprises as potential participants in the cooperation for production of wind turbine components and preparation of proposals for them on the structure and composition of equipment for modernization, as well as the volumes of financing the preparation of production.
- Translation and adaptation of the license documentation for production of wind turbine components.
- Holding of tenders for production of wind turbine components.
- Training of production personnel.

4. Brief information on potential recipient

It is planned to involve five recipients for participation in the project (Items 15.2.3 and 15.2.4 of the *Road Map*):

- **Office for implementation of the Road Map.**
This recipient is created as a legal entity during the project implementation.
The main task of the office is to ensure the cooperation of the *Contractor for the project* of the Road Map (non-resident) with other participants in the project - governmental authorities, including the project beneficiary, Ukrainian experts, including recipients, machine-building enterprises and other participants in the project.
- **A.M. Pidhorny Institute for Mechanical Engineering Problems of the National Academy of Sciences of Ukraine** (Kharkiv, EDRPOU code 03534570).

Web-site: www.ipmach.kharkov.ua

Main research areas of activity:

- optimization of processes in power machinery and improvement of their design;
- energy saving technologies and non-conventional power engineering facilities;
- predicting the reliability, dynamic strength and life of power equipment;
- simulation and computer technologies in power machine building.

- **State enterprise Intersectoral Scientific and Technological Center (MNTC) of Windenergy of Renewable Energy Institute of the National Academy of Sciences of Ukraine (Kyiv, EDRPOU code 30973289).**

Web-site: www.ive.org.ua

Main areas of activity are scientific, technical and organizational support of construction and operation of WPPs in Ukraine, specifically:

- development of strategic documents for development of renewable energy in Ukraine;
- preparation of feasibility studies of legislative and regulatory acts for renewable energy;
- determination of territories promising for construction of WPPs;
- goal-oriented selection of WTG models for WPPs;
- long-term forecasting of electricity production by WTG at the WPP site;
- optimization of indicators of electricity production by WPPs on conditions of the site;
- forecast and optimization of indicators of cost-effectiveness of WPP investment projects

- **SE “Production Association “Southern Machine-Building Plant named after O.M. Makarov” (Dnipro, EDRPOU code 14308368).**

Web-site: www.yuzhmash.com

Areas of activity: production of space launch vehicles, spacecraft, liquid rocket engines, landing-gear engines, foundry, forging, tool-making facilities, urban transport, tractor production, production-and-technical products, production of wind turbines.

In 1994-2008 the enterprise headed the cooperation of more than 30 domestic plants for production of licensed wind turbines with a capacity of 110 kW and 600 kW. In this period the enterprise produced the blades, towers and carried out assembly of nacelles.

- **Enterprise (Non-resident) on a competitive basis.**

This recipient is created as a legal entity during the project implementation.

The main task of this recipient in the implementation of the Road Map is to organize the attraction of technologies and licenses of the leading world companies for organizing the production of wind turbine components at domestic enterprises.

5. Expected value of the project and period of its implementation

Particularity of this project is the necessity for determination of its value by the conference of donors as stipulated in the *EBRD Strategy*. Approximate indicators of this project, proceeding from the implementation of the similar project on the creation of the Wholesale Electricity Market of Ukraine under the contract with the World Bank, can be as follows (Item 15.3 of the *Road Map*):

- total expected value of the project:: 25 million US dollars;
- period of project implementation: 5 years.

6. Expected results from the project implementation and impact of the project on the development of the relevant industry or region

Expected results:

- Attraction of private investments in the amount of approximately 25.6 billion US dollars in construction of wind power plants and production of up-to-date wind turbine components.
- Replacement of worn generating capacities which exhaust its life span by modern low-carbon technologies.
- Fulfillment of the requirement of the Paris Climate Agreement for holding the increase in the global average temperature.
- Attraction of technologies of the leading producers of wind energy equipment in domestic machine-building enterprises.
- Equipping domestic machine-building enterprises with up-to-date equipment.
- Reforming the power industry:
 - Ensuring of competition of investors on the renewable energy market.
 - Implementation of state policy for ensuring of renewable energy development in accordance with the requirements of the domestic legislation and EU legislation, which is binding upon Ukraine.
- Adaptation of the domestic legislation in the sphere of the power industry, construction and machine building to the EU legislation.
- Harmonization of domestic regulatory documents with regulatory documents of the EU.

- Ensuring of guarantees for investors, in particular through the removal of legal and administrative obstacles.
- Fulfillment by Ukraine of its international obligations on support and development of renewable energy.

Attachment: “Road Map of comprehensive development of wind industry and machine building of Ukraine”.

Acting Chairman



Yu.M. Radchenko