

REPORT

“Outreach & Consultations with Major Renewable Energy Sources (RES) Project Developers and Private Investors: Insights and Recommendations on Facilitating Private Sector Investments in RES Projects in Ukraine”

INO GATE Technical Secretariat and Integrated Programme in support of the Baku Initiative and the Eastern Partnership energy objectives

Contract No 2011/278827

A project within the INO GATE Programme

Implemented by:

Ramboll Denmark A/S (lead partner)
EIR Global srl.
The British Standards Institution
LDK Consultants S.A.
MVV decon GmbH
ICF International
Statistics Denmark
Energy Institute Hrvoje Požar

Document title	“Outreach & consultations with major RES project developers and private investors: insights and recommendations on facilitating private sector investments in RES projects in Ukraine”
Document status	Final

	Name	Date
Prepared by	Gottfried Heneis Qendresa Rugova Iulia Usenko Emily Koulouvaris	30 April 2016
Checked by	Emily Koulouvaris Adrian Twomey	10 May 2016
Approved by	Peter Larsen	

This publication has been produced with the assistance of the European Union. The contents of this publication are the sole responsibility of the authors and can in no way be taken to reflect the views of the European Union.

Table of Contents

List of abbreviations	4
List of tables	5
1 EXECUTIVE SUMMARY	6
2 CONTEXT AND OBJECTIVES	8
2.1 Context	8
2.2 Objectives.....	8
3 APPROACH	10
3.1 Interviews with Ukrainian and International Project Developers and Investors	10
3.2 Questions to Project Developers and Investors	11
3.3 Stakeholder Consultation with Ukrainian and International Institutions between April 18 th to April 21 st	11
4 RESULTS OF THE INTERVIEWS	13
4.1 International Project Developers and Investors.....	13
4.1.1 Investors’ Track Record and Target Investments	13
4.1.2 Engagement in Ukraine - Typical Barriers to Investing in RES Projects	16
4.2 National Project Developers and Investors	20
4.2.1 Investors’ Track Record and Target Investments	20
4.2.2 Typical Barriers to Investing in RES Projects.....	22
5 RECOMMENDATIONS.....	23
5.1 Recommendations for the Ukrainian Government.....	23
5.2 Recommendations for International Donors to Support the Ukrainian Government	28
5.3 Key Institutional Actors for Reform.....	29
Appendix I – Questionnaire International Project Developers and Investors.....	31
Appendix II - National Project Developers and Investors.....	33

List of abbreviations

CCGT	Combined Cycle and Gas Turbine
CHP	Combined Heat and Power
COD	Commercial Operation Date
ECA	Export Credit Agency
EPC	Engineering Procurement and Construction
EUR	Euro (common currency of Eurozone)
EU	European Union
FIT	Feed in tariff
GW	Gigawatt
GIZ	Gesellschaft für Internationale Zusammen
IRR	Internal Rate of Return
MFI	Multilateral Financing Institutions
Minagro	Ministry of Agrarian Policy and Food
Minfin	Ministry of Finance
Minergo	Ministry of Energy and Coal Mining
Minregion	Ministry of Regional Development and Municipal Economies
MIGA	Multilateral Investment Guarantee Agency
MW	Megawatt
MWth	Megawatt thermal
NB	National Bank
NEURC	National Energy and Utilities Regulatory Commission
PPA	Power Purchasing Agreement
REN21	Renewable Energy Policy Network for the 21 st Century
RES	Renewable Energy Sources (used for renewable sector in general)
SAEE	State Agency on Energy Efficiency and Energy Saving
SHPP	Small Hydro Power Plant
UNECE	United Nations Economic Commission for Europe
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
USD	U.S. Dollars
WB	World Bank

List of tables

Table 1: List of International Investors	10
Table 2: List of National Investors	11
Table 3: Summary of Barriers to RES Investments in Ukraine as seen from the Private Investors’ Point of View and Recommendations to the Ukrainian Government	233
Table 4: Summary of Barriers to RES Investments in Ukraine as seen from the Private Investors’ Point of View and Recommendations to International Donors.....	29

1 EXECUTIVE SUMMARY

In order to ensure a stable energy supply and to increase national energy self-sufficiency, the Government of Ukraine has set the **goal of increasing the share of renewables** in the total energy consumption to at least **11%** (includes large hydro) by **2020**. In 2015, this share was at around 4.56% for renewables (including large hydro). This political key priority requires massive investments of approximately EUR 16 billion not only by the public but also the private sector.

This report investigates and prioritizes the **conditions for private sector project developers and investors to invest in renewable energy projects in Ukraine**. INOGATE experts have actively interviewed twenty (20) project developers, of which fifteen (15) international and five (5) national, for their opinions on what is holding back investment in the renewable energy sector and more importantly, what has to be done to stimulate the large-scale investments needed to meet this target. Their input was processed and the resulting recommendations were presented and discussed during extensive stakeholder consultations in Kiev in the week from April 18th to April 21st 2016.

The most important **recommendations to the Ukrainian Government** can be categorized as follows:

Recommendations on issues related to **project bankability** include:

- Improve counterparty risk
- Modify timing of power purchase agreement (PPA) signing and permission of green tariff. Allow counterparties to enter into conditional, time-limited PPAs before commissioning of the RES installation
- Align PPA template with international standards (e.g. address change in law risks, international arbitration etc.)
- Extend the duration of guaranteed power offtake till 1st January 2030
- Find a compromise with involvement of the Energy Community on balancing costs

Recommendations on issues related to **project development** involve:

- Ensure easy and transparent access to the national power grid
- Reduce administrative steps of the permitting process
- Support capacity building and mapping of RES in the region

Recommendations on **overarching issues** include:

- Develop renewable energy sector specific roadmaps for power generation, heating (including Combined Heat and Power Plants - CHPs) and biofuels for transport
- Stimulate a diversification of fuel sources for the Ukrainian heat market in line with international practices
- Engage in consultations with relevant parties to address the currency restrictions in Ukraine

The most important **recommendations to international donors** are:

- Undertake a comprehensive assessment of Ukraine's renewable energy potential and introduce a project development facility using lessons learnt from EBRD's ESELF Facility¹ and
- Improve conditions for project financing in Ukraine (including financing programme of renewable energy projects)

¹ EBRD, Ukraine Sustainable Energy Lending Facility, Case Study,
<http://www.ebrd.com/downloads/sector/sei/usef.pdf>

2 CONTEXT AND OBJECTIVES

2.1 Context

Ukraine's **primary energy supply is dominated by natural gas** (approximately 40%), which makes the country highly dependent on Russian gas imports. A key priority of the Government of Ukraine is the substitution of natural gas through renewable energy sources and energy efficiency measures.

The Ukrainian Government has adopted the National Renewable Energy Action Plan (NREAP) until **2020** with the **goal of increasing the share of renewables** in the total energy consumption to at least **11%** (includes large hydro). In 2015, this share was at around 4.56% for renewables (including large hydro).

It is estimated that this target **will require EUR 16 billion in renewable energy investments**.

- EUR 8.9 billion approximately for power generation,
- EUR 6.6 billion approximately for heating and cooling and
- EUR 0.50 billion approximately for transport.

Ukraine **has been facing a drastic decrease in renewable energy investment** since 2014. The country went from being the largest recipient of renewable investment in the region, to almost non-existent investment flows in 2015, based on the 2015 regional REN21/ UNECE report.²

It is fundamental to understand that a significant share of renewable energy investments will have to be sourced mainly from national as well as international **private sector investors** who need to be convinced that Ukraine is an attractive country to invest in.

2.2 Objectives

The assignment has a dual overall **goal**:

- **first, to increase private renewable energy investment** into Ukraine through the identification and mitigation of barriers slowing down investment; and
- **second, to support the uptake of resulting key recommendations** of the study by policy makers in Ukraine in promoting greater private sector involvement, along with more tailored and effective support from donors and international financial institutions

The assignment will investigate and prioritize the **conditions for private sector project developers and investors to invest in renewable energy projects in Ukraine**, with a view to identifying the potential for donor funding as a way to leveraging greater private sector participation in project funding. The project team will therefore

1. assess the **interest and needs of renewable energy sources (RES) project developers** and investors – both national and international – for investing in RES projects in Ukraine,
2. provide a set of insights and prioritized **recommendations** for increasing private sector investment in Ukraine's RES sector and

² UNECE Renewable Energy Status Report 2015 accessed on April 29th 2016 under <http://www.ren21.net/status-of-renewables/regional-status-reports/#UNECE>

3. increase awareness among **Ukrainian policy and decision-makers** on the need for private sector investments and adequate support measures

3 APPROACH

3.1 Interviews with Ukrainian and International Project Developers and Investors

INO GATE experts have interviewed a total of 20 international players in the renewable energy industry, of which five (5) are national players in Ukraine while fifteen (15) are international project developers and investors (in some cases also technology providers). The companies that were interviewed can be grouped in the following five categories:

- a) **Emerging market developers** – companies that focus on emerging markets globally. They benefit from the first movers' advantage and explore markets where typical risk averse investors (such as large scale utilities) would not go
- b) **Pure play RES developers with a global scale** (both developing and emerging). Large scale RES developers that have continuously grown their asset base both in developed and emerging markets. Their aims are to develop projects as well as operate them in the long term.
- c) **Regional and national market developers** – regional early market players that have entered into the RES sector over the past decade with the advent of support systems for RES technologies. Such developers often focus on a specific region close to the home market. Such developers may construct and operate the plants, though in the majority of the cases their expertise lies in the development component and they transfer ownership of the projects once they are in operation.
- d) **Technology providers** – large scale or regional engineering, procurement and construction (EPC) providers. Such technology providers may provide capital in a form of bridge financing as a means of securing an EPC component in the project.
- e) **Vertically integrated utilities** – traditional utilities active across the entire value chain, i.e. generation to distribution and consumer services.

Table 1: List of International Investors

Nr.	Company	Country (Headquarter)	Profile
1	Polytechnik	Austria	Biomass boiler manufacturer
2	Confidential	Austria	Renewable energy developer (hydro, Photovoltaic (PV), wind)
3	Confidential	East Asia	Utility, equipment manufacturer, equity investor
4	Guris	Turkey	Developer, investor, constructor
5	Confidential	North America	Solar developer
6	Continental Wind Partners	Bulgaria/Serbia	Renewable energy developer (PV, wind)
7	GreenWorx	Belgium	Renewable energy developer (PV, wind)
8	Briggs Capital	USA/UKR	Private investor in renewable energy and agribusiness
9	Valorem	France	Renewable energy developer (PV, wind)
10	Confidential	Austria	Independent power producer
11	Active Energy Group	UK	Biomass fuel supplier
12	Eurocape	Monaco	Renewable energy developer (hydro, PV, wind)

Nr.	Company	Country (Headquarter)	Profile
13	ABB	Ukraine	Technology provider
14	Confidential	US/Austria	Independent power producer
15	Confidential	Ukraine	Multilateral Financing Institution

Table 2: List of National Investors

Nr.	Company	Profile
1	Association of Private Investors in Ukraine	Private investor in RES and innovations
2	Wind Power LLC	Wind project developer
3	Clean Energy LLC	Solar project developer
4	Energy Power Group Yugener-gopromtrans	CHP biomass project developer
5	Kyivbiocentre LLC	Biogas project developer

3.2 Questions to Project Developers and Investors

The INOGATE team of experts prepared two questionnaires with open questions, the first one targeting international project developers and investors and the second one targeting the Ukrainian counterparts. The questionnaires are mainly structured around the following questions (both questionnaires are attached to this report as Appendices I and II).

Part 1: Track record and target investments of the project developers/ investors:

The investors/developers were asked to provide an overview of their background, of the developer their track record, how many years they have been active in the renewable energy market, at what stage they usually invest in renewable energy projects, the applied technologies they use, the expected return on equity for Ukraine or similar countries and the existence of any internal investment criteria in terms of country sovereign rating (see section 4.1.1)

Part 2: Engagement in the Ukraine (including risks and solutions)

The investors/developers were asked to mainly identify the perceived risks of and barriers for (inter-) national project development and investment and to offer recommendations that would incentivize additional investments in renewable energy in Ukraine (see section 4.1.1 for risks and section 5 for recommended solutions).

3.3 Stakeholder Consultation with Ukrainian and International Institutions between April 18th to April 21st

From April 18th to April 22nd INOGATE experts received valuable comments and feedback on the results of the interviews and the summarized recommendations by

- (i) presenting and discussing the recommendations at the “5th Energy Policy Talks” on April 21st in Kyiv.
- (ii) personal meetings with several bilateral and multilateral donors who support renewable energy activities in Ukraine, such as:
 - Gesellschaft für Internationale Zusammenarbeit (GIZ)
 - Raiffeisen Bank Aval
 - Ukrainian Danish Energy Center
 - United Nations Industrial Development Organisation (UNIDO) project
 - United States Agency for International Development (USAID)
 - The World Bank (WB)

- (iii) personal meetings with several Ukrainian entities such as:
- Ministry of Regional Development and Municipal Economies (Minregion)
 - Ministry of Energy and Coal Industry (MinERgo)
 - National Energy and Utilities Regulatory Commission (NEURC)
 - State Agency on Energy Efficiency and Energy Saving (SAEE)

The comments are reflected in the final version of the recommendations in section 5 of this report.

4 RESULTS OF THE INTERVIEWS

The following section presents the main highlights from both the international and national market players. Section 4.1 reflects the discussions with the 15 international market players and focuses mostly on their direct experience in Ukraine or other emerging markets and is less descriptive of their global activities as industry players but rather focuses on their feedback, lessons learnt and applied mechanism to deal with certain situations. The latter section 4.2 reflects the views of the national developers/investors.

4.1 International Project Developers and Investors

The interviewed parties have extensive experience in both developed and emerging markets. Their aggregate generation portfolio (as investors or constructors) comes to about 50 Gigawatt (GW) with exposure in 7 continents.

4.1.1 Investors' Track Record and Target Investments

Respondents' Experience in Renewable Energy

The respondents are active in all types of renewable energy technologies. Experts have approached a variety of companies with varying degrees of exposure to RES. The technology spectrum covers the whole spectrum of RES from large hydro to small scale solar, biomass but also includes companies which are additionally active in the conventional power sector (coal- and gas-fired power plants). In terms of RES technologies, wind and PV solar are more predominant, with presence in other sectors like biomass, geothermal and municipal waste depending on market and expertise.

Investment Stage Preference

Most of the respondents are early stage developers and prefer to get engaged in the development process as early as possible. The approached investors may be grouped in the following categories, though it should be noted that some investors may alternate strategies depending on the particularities of each market:

- Early/mid developers who specialize in bringing projects to a fully permitted stage or Commercial Operation Date (COD) after which projects are sold to third parties (utilities, funds etc).
- Early/mid developers that seek to bring projects to full commissioning, and hold them until decommissioning.
- Investors specializing in post commissioning acquisitions, which allow them to enter a RES sector in which they have no developing expertise. In addition, such acquisitions also allows investors to be more opportunistic in some markets. Some respondents have sought such opportunities especially in the EU RES market.

Investors of the first two categories prefer to get engaged very early on the development process as they seek to leverage on their development experience, which is where they bring their added value in developing and structuring bankable projects. In addition, early engagement allows them to have visibility in terms of the quality and strategic direction of the development process.

Focus on Ukraine:

It is evident that investors' ability to engage early on in the project development process is a major determinant of success. In Ukraine, due to the limited foreign investment in the market during the past 3 years, there has been a decrease in good quality projects that are currently being developed.

In addition, given the infancy of the sector in the country, there is a general shortage in the capacity to develop renewable energy projects. Some developers have stated that given the limited development expertise in the country, they have had to develop their downstream business division to ensure high quality project planning.

Project Development Preferences

In this particular area respondents were asked about the project development preferences, i.e. if they prefer to do their own development from concept to ready-to-build status or, alternatively, if they prefer to partner up with other local developers, particularly in emerging markets.

The majority of the respondents do their own development in own home markets as they are very familiar with the market and have the necessary know-how to undertake such projects. However, a majority of investors interviewed prefer to develop projects jointly with a local partner in other markets, though this may depend on the market they are looking.

Partnerships with local players allow them to get access to local knowledge and expertise. In such situations, they often prefer for the local developers to remain a minority shareholder in the project up until commissioning to align interests and avoid speculations. A majority ownership by the international investors post commissioning is often preferred as well, in order to be able to control the direction of the company in case there is a change of strategy.

In addition to the local know-how, joint developments also may allow international developers to diversify risk and share equity costs with another partner. Therefore, since these are infrastructure investments with a very large capital outlay, such partners look at local developers who have the financial capability to place the necessary investments in the project during the construction, which represents the biggest project cost.

Focus on Ukraine:

In conjunction with the previous section on investment stage preference, in which it is clear that early engagement is of key importance, the ability to jointly develop projects with local partners (in whatever form or ownership scheme) is also an important element for international developers. On this front and closely related to the observations of the previous section, in Ukraine there may be a shortage of available renewable developers.

Project Size Preference per Technology

Preferred project sizes depend on the technology. Generally speaking the respondents' preferences per technology are listed below:

Solar (PV)

- Large scale solar developers with a minimum project size of 50 Megawatt (MW). Such projects may consist of smaller scale projects, however preference lies in developing or acquiring portfolios to achieve scale.
- Smaller scale developers whose primary market is not solar PV look for projects in the range of 2 -20MW.

Wind

- Large scale wind developers prefer large scale utility size projects with a capacity ranging from 50 to 250MW.
- Smaller scale developers focus on projects between 10 and 50MW.

Small Hydro Power Plants (SHPPs)

- SHPPs typically range between 2 and 3MW, allowing producers to focus on smaller projects and diversify market exposure.
- Alternatively, some developers also develop SHPPs in the range of up to 10MW.

CHPs from Biomass/ Municipal Waste

- CHP projects are sought in the range of 50-100MWth

There were two takeaways from the discussions with developers. Firstly, when it comes to investment in RES, they are wary of the available support schemes in each respective country, primarily due to the negative experiences in EU markets such as Bulgaria, Romania, and Spain, where national governments had cut the support tariffs for RES projects and in some cases even retroactively. In order to mitigate such possible risks, they prefer to limit the size of their involvement in each country in order to diversify and minimize their exposure. Secondly, the size of the project is typically determined by the amount of equity required. For larger projects some developers seek cooperation with other partners to share participation in equity.

Focus on Ukraine:

Respondents have explained that after the introduction of the green tariffs in Ukraine, local developers and international players were eyeing the development of larger scale projects (above 200MW for wind, for example). While this may have been an efficient way of ensuring economies of scale, there has been a tendency to decrease the size of RES projects in Ukraine. Following on the takeaways listed above, local developers should take into consideration when sizing their projects that smaller projects may have a higher chance of attracting the right investors who, from their perspective, seek to minimize country risk and capital risk exposure.

Target Market Preferences and Selection Criteria

Most of the respondents are open in terms of the targeted markets as long as such markets fulfil some of their key investment criteria. In fact, most investors do not have any strict internal criteria for including or excluding markets (such as OECD country, country rating etc.). However, such elements are always taken into consideration to set their internal rates of return per country.

General investment tenets for renewable energy projects are:

- Strong support for renewable projects and a serious ambition and commitment to RES.
- Reliable and stable government and national policies with respect to RES and other areas that affect RES projects.
- Transparency in the permitting process.

One characteristic that stands out from the approach of the majority of queried investors is their strategy of focusing on emerging markets. Most of the investors prefer emerging markets because they believe they can obtain a competitive edge due to a series of factors, chief among which are:

- they are less risk-averse compared to large utilities
- they demonstrate quick decision making as opposed to larger corporations

- they have the ability to provide EPC solutions in emerging markets where other Western providers are not as yet present

Another important aspect that came out of the discussions was that investors seem to have shifted away from the bottom-up approach, where project attractiveness was the major determinant for investment, to a more macro approach, where political stability and consistency of the regulatory framework is now the major determinant to entering a new market. Lack of consistency in RES support systems in the EU is one of the reasons this happened.

Focus on Ukraine:

There are two key takeaways for Ukraine in this respect. Firstly, it is evident that Ukraine should seek to attract such emerging market developers who are comfortable with riskier markets and have experience in managing such risks through bankable structures. Secondly, the shift towards political/country stability as the main criterion for entering a market should be taken into full consideration. While green tariffs and RES resources may be competitive in a given market, lack of political and regulatory stability would deem such markets non-bankable.

Expected Internal Rate of Return (IRR)

Naturally, all investors follow general investment principles of adjusting expected returns to the level of risk exposure in terms of development risk, counterparty risk, regulatory risk with respect to support scheme, availability of insurances, likelihood of government changing applicable legislation, ability to source agreements etc. As such, investors seek a higher return expectation in emerging markets.

In markets with a lower credit rating and, therefore expectations for a higher rate of return some developers have looked into more innovative solutions like arranging PPAs with reputable creditworthy industrial players, a practice which has not only made such structures more bankable but also allowed investors to decrease return expectations.

Focus on Ukraine:

Given the level of political and counterparty risk in Ukraine, there was a general consensus among respondents that a minimum level of IRR given the current market would be in the high teens, with a range of ~16-20%.

4.1.2 Engagement in Ukraine - Typical Barriers to Investing in RES Projects

In terms of respondents' engagement in Ukraine, they may be grouped in the following three categories:

- a) Investors that are present or have been active in the past in the Ukrainian RES market
- b) Investors that have at some point looked at the market but have not proceeded with any investment
- c) Investors that have not particularly looked at the Ukrainian market but are active in other emerging markets

Group (a) investors began their activities in 2009 after the introduction of the green support scheme. During the early days, many such developers got directly involved in developing RES projects, with some projects reaching advanced stages of development and financial structuring with MFI financing on board. Most developers of this group are still active, though since the political changes in 2013 they have experienced a slowdown, particularly in terms of arranging financing.

Group (b) investors have looked into the market and have not proceeded predominantly due to the difficult business environment and lack of transparency, high counterparty risk in terms of guaranteed payment as well as lack of political stability following the conflict. They consider the recent changes to be major determinants on why they withdrew their interest from the country.

The latter Group (c), as described, did not have particular direct experience in the market but have provided their insights in developing and structuring projects in other similar emerging markets.

The following paragraphs reflect discussions with respondents and their opinion on the **key project risks in RES projects**.

Market Risks

Market risks encompass all market related elements that may affect a producer to generate, supply or get paid for the produced power. In this context and based on the discussion with investors, market related risks have been split into sub-risks affecting different aspect of the project.

Counterparty Risk

A credible counterparty for the offtake is necessary to ensure project bankability. In the absence of such a counterparty (e.g. financially strong public, state-owned entity or industrial off-taker) a form of insurance is sought to mitigate such risk.

Currently private investors in RES in Ukraine are exposed to a relatively high level of counterparty risk given the fragile state of the Ukrainian economy (credit rating CCC). Additionally, it is currently difficult for investors to insure against counterparty risk. For example, it has been understood that the Multilateral Investment Guarantee Agency (M.I.G.A.) is providing political insurance for projects in Ukraine only to a limited extent, while private insurance is very expensive and sometimes not available.

The current fragile state of the Ukrainian economy as a whole and of the respective state-owned utilities in particular, as well as the limited options for securing any form of guarantee (sovereign guarantee or MFI partial risk guarantees), significantly increase counterparty risk and, consequently, the ability of prospective developers to secure funding for their projects.

One interesting case that was brought up by one of the respondents was in Argentina, which similar to Ukraine has a low sovereign credit rating (CCC). To boost its renewable energy penetration in the market, the country has recently embraced corporate PPAs through a new law, which shifts responsibility towards corporate energy consumers who are obliged to buy renewable energy or face stiff penalties. This allows developers to enter into direct PPAs with corporate buyers, which can in some cases significantly remove the state counterparty risk, as they are essentially working with global multinational corporate players with very strong balance sheets. This in turn also reduced return expectations from the developers even by as much as 7%.

Power Purchase Agreement (PPA)

The PPA is one of the most important agreements in a power generating project finance structure. Such agreements need to be robust and give a high level of protection to investors/lenders.

Based on discussions with respondents, it was understood that, as per the current legislative procedures, a producer is obliged to first construct and commission the project after which it can sign a PPA and receive the green tariff. This approach substantially increases risks for project developers and is not in line with international practices as it does not help producers to arrange the necessary financing.

In addition, it was also understood that while the green tariff is guaranteed for producers up to 2030, the current version of the PPA agreement has a one-year duration and producers should extend the agreement on an annual basis.

Regulatory (Change-in-law) Risk

As stated in earlier sections, regulatory risk (alternatively mentioned as change-in-law risk) has become a major barrier to RES projects developers as a result of past experience in certain EU markets. This has made investors rather risk-averse and wary of such potential changes. To mitigate such risks, investors are seeking special protection to any such changes whereby the PPA would include special provisions (implemented for example by a grandfathering clause) which would guarantee producers that old rules continue to apply to producers in operation or those already in development while any new rule would apply exclusively for the future and to new projects. Other respondents have also stated that they seek for the concession / implementation agreement to include provisions for compensation should there be any changes to the legislation/support scheme made and to actually get the compensation in a reasonable time.

In terms of Ukraine and given the global developments and past experiences, some investors do not feel that the current support scheme provides them with the necessary comfort that FITs will not be cut or that a new law which may affect projects in operation or development won't be introduced.

Grid Connection

Risks related to the process of connecting projects to the national grid systems in emerging markets are rated very highly from investors. Interviewed investors have stated that they often face serious bureaucratic hurdles in the process of obtaining grid connection, which may include extensive negotiations, approvals, official mailing, etc. This factor may significantly lengthen the time needed to complete a project.

Often investors face ambiguous information and lack of transparency in terms of available capacities to connect. Undoubtedly, grid connection represents a very important component of any RES project since it is closely associated with the right to sell the produced power to the national grid. In addition, physical connection often comes with significant costs depending on the technical features as well the connection distance. As such, it is of extreme importance that investors are provided with transparent information during the development process in order for them to be able to estimate the time and costs for connecting the project. Any significant variation in terms of time and budget may significantly increase project costs and deem the project unfeasible.

Connection to the grid should follow national legislation and be free from undue influence by political actors, lobbying factions or other types of extraneous leverage. In some markets, investors have been presented with abrupt, novel and *ex post* introduced requirements in terms of procedures and additional investments when it came to connecting their projects to the grid. In some cases investors have experienced that connection points in high demand by RES projects tend to become a potential source of ambiguity. To hedge for such risks, they have opted for connection points that are less crowded and further away but also, as a result, significantly more expensive (with costs increasing by up to EUR 10 million). However, this approach allows them to more accurately estimate connection costs, signing of the agreement and project COD.

Some investors have claimed that they often seek to mitigate risk of delayed connection by incorporating special provisions either in the PPA or the grid connection agreement whereby the producer would be compensated for loss of profit due to grid operator's failure to connect the project as per the foreseen schedule. In addition, proper clauses that protect the producer from loss of revenue from curtailment are favoured.

In Ukraine, developers had faced similar barriers with delayed processes and lack of transparency on the reasons that connection for particular projects is not being granted, especially in regards to large projects. However, developers have stated that there has been an improvement recently in terms of ease of getting information. Nevertheless, grid connect still remains a major barrier that needs to be addressed appropriately towards investors with the necessary comfort on the allocation system

before they enter the market and commit their capital in project development.

Permitting Related Risks

Similar to the grid connection aspect, permitting procedures also represent a high risk component as emerging markets often lack clear guidelines in terms of the steps necessary to get the project permitted. In addition, there are often cumbersome bureaucratic requirements in place that demand an extensive amount of permits and stamps from different authorities, a practice that makes the whole process very tedious. Lastly, due to the novelty of the RES sector, investors sometimes find that local authorities are not experienced in the industry, which results in procedural delays.

Respondents have stated that to mitigate such risks they often seek local developers to bring their expertise and know-how in local processes and legislative requirements. However, there is also a tendency in emerging markets that simplified rules or shortcuts apply to local players while international players have to go through the lengthy process. In addition, similar to the grid connection aspect, there are also experiences in some markets that permitting is objected or unnecessarily delayed by special interest groups, a practice which can significantly hamper the development process.

Having a streamlined process is very important for Ukraine due to the sheer size of the country, which often requires developers to travel long distances for constant permitting application processes. Such applications are made only by physical presence at the relevant authorities which makes the process very cumbersome. As such, transfer of EU best practices, especially by the potential digitalization of the permitting processes, have been recommended.

One respondent from the solar industry has indicated that often local authorities are not informed about the importance of a transparent system not only in terms of bringing the project online but also in terms of how such process may affect project bankability. In solar industry, as the production costs of PV modules decreases, that means that other non-hardware costs or “soft costs” become more important in the development budget. In the U.S. such soft costs (including all non-hardware costs) represent 64% of the total project costs. Therefore countries should understand that ability to lower these costs has a big impact on investors’ willingness to enter the market and it is not merely based on panel costs.

Dividend repatriation

The ability to repatriate dividends is a very important investment criterion. Currently, dividend repatriation in Ukraine is not allowed as per the Currency Conversion and Exchange Transfer restrictions imposed by the National Bank of Ukraine. One of the respondents has deliberately stated that unless dividend repatriation is available they would not enter any market.

Balancing Costs

Project financiers require visibility in terms of operating expenses (OPEX) during the operating period of the power plant. Any potential variation of costs is sought to be mitigated depending on the cost item at hand. One particular such item that has been observed during discussions with investors was the introduction of balancing costs, which as per the new draft law on electricity market reform such costs would be borne by RES producers. This is particularly important for wind producers as wind plants typically experience the higher rate of fluctuation in actual producer power versus the forecast.

Private investors have voiced their concern that such steps, although in harmony with the EU 3rd Energy Package, are premature for Ukraine, especially taking into consideration the following:

- the lack of high quality wind data in Ukraine;

- the nascent level of RES penetration in the market ;
- the lack of sufficient forecasting technologies; and
- the lack of established Ancillary Services Provider and Guaranteed Buyer.

Land Access Risks

Land access has been stated by investors as an important criterion to developing RES as it ensures that they are able to use the locations with best RES resources in a particular country. This has been stated as a challenge in the Ukrainian market since according to the current Ukrainian legislation (Land Code of Ukraine) agricultural land cannot be used for RES installations but must be converted to "lands of industrial, transportation, communications, energy, defence and other purposes". The procedures for re-zoning land for RES usage are very complicated and time consuming. Investors have stated that the process may take up to 4 years. To avoid such time consuming processes, investors have opted to use the land in areas which are not always optimal for RES and in some cases also have additional problems, for example in situations when power plant design required them to redesign the location of turbines (in the case of wind) and possibly end up partly in neighbouring agricultural land.

Exchange/Currency Risk

Proper exchange rate mechanisms are also very important for investors as most projects are financed with debt denominated in EUR or USD while revenues are earned in local currency. Any devaluation of the local currency can have a major impact on the economics of the projects.

In Ukraine, the legislation provides for such a mechanism whereby the FIT is adjusted quarterly to the official Euro to Hryvnia currency exchange rate set by the National Bank of Ukraine. However, there is a level of discomfort in terms of applicability of this rule in the long run as investors have already faced one situation in the past when the government had stopped paying producers as per the FIT/EUR exchange. This lasted for 7 months and as a result many producers faced difficulties in meeting their obligations to the lenders.

Social Acceptance Risks

Despite the imminent need to diversify energy resources amid the current political crisis and energy dependency from Russia, there is a general sentiment among the national authorities, policymakers and general population that RES technology is too expensive and does not benefit the country in the long run. However, they do not take into account the fact that the existing fossil fuel power plants are very old and obsolete. To date there has been no planning for long term reinvestment to replace those old assets. This has naturally kept power tariffs low but those tariffs, in their current state, do not reflect the true costs of replacement. In order to accommodate such sentiments, proper assessment and campaigns should be done to calculate and educate on the precise effects of RES penetration on the state budget and the reflection on the retail price for the end consumers.

4.2 National Project Developers and Investors

As introduced in the beginning of section 4, the following summarizes the activities and experiences of national investors and project developers in Ukraine.

4.2.1 Investors' Track Record and Target Investments

In addition to the categorization of interviewed parties under section 3.1, national respondents can be grouped as follows:

- a) **Association of private investors**, which are interested in renewable energy but also other resource saving activities

b) **Small and large scale** renewable energy developers in PV, wind, biomass and biogas technologies

The size of separate current investments by Ukrainian project developers vary from 150-200MW of wind power plants to 3-8MWe CHPs to rather small scale PV installations in the size of 30kW.

The respondents' primary reasons for investment are summarized below:

- Reducing natural gas consumption as a way of reducing the national dependency on gas supplies from Russia
- Benefiting from the attractive green tariffs on electricity from RES
- Employing RES at lower costs than the costs of natural gas
- Producing and using clean energy with zero emissions
- Selling carbon credits

Due to the diverse background of the Ukrainian investors interviewed, the description of target investments indicators varies widely between the respondents:

Capital investments

Investors typical for projects in the capital range of USD 300 thousand to USD 200 million;

Payback period

The ideal pay-back period identified is up to 6 years;

Installed capacity and duration of project implementation

Large scale projects implemented for 2 years on average, including for instance:

- 100MW wind farm for 4 years;
- MW solar plant for up to 1 year;
- MW CHP biomass plant for 2 years;
- 3 MW biogas plant for 1 year;

Internal rate of return (IRR)

The targeted IRR for national investors is above 23%. It should be noted that this is line with the international investor estimations as described above whereby international investors expect IRR for projects in Ukraine to be in the range of 16-20%. National developers, in fact, have higher expectations.

Location

The selection of location depends on the following factors:

- regional need for new power generation assets (depending on respective regions' energy balance)
- resource availability in terms of wind and solar potential, as well as availability of feedstock, logistical infrastructure and transportation (for biomass and biogas projects). Generally speaking, most of the interest is targeted in the South, West and Central Ukraine;

The **prerequisites for project implementation** depend on the following main factors:

- Technical capability for the connection of the power plant to the electrical grid;
- Wind projects - results of wind measurement and monitoring;
- Solar projects – relatively easier to implement (construction, inspection, operation) than any other source.

4.2.2 Typical Barriers to Investing in RES Projects

Besides the barriers cited by the international project developers and investors, national counterparties have additionally mentioned the following barriers to investing in RES in Ukraine:

Market Risks

Availability of National/Local Support to Investors for RES projects

At the national level, the respondents claim that the application to the green tariff support system is functional. They have received the green tariff for the produced power as per the guaranteed programme stipulated in the law.

On a local level, however, investors should in principle be ready to be faced with situations where local authorities are not always well equipped to understand a project's impact, targets and outcomes. In some cases, the respondents have stated that there are concerns for potential lack of transparency.

Financial Sector Risks

Sourcing financing (project debt) from Multilateral Financial Institutions (MFIs) is an option for national investors in relation to the conditions offered; they consider the project assessment and approval period, however, to be rather long for their ambitions. They state that such loan approval processes sometimes may take up to 8 months, which to national investors may not be attractive.

The alternative solution is to use local Ukrainian banks which offer corporate debt (MFI funds challenged by retail local banks). However, local banks often require a 100% guarantee from the parent company (i.e. full recourse debt) and in addition interest rates may be up to 24% which is also discouraging for national project developers and investors.

5 RECOMMENDATIONS

This section summarizes the most important recommendations made by national and international project developers and investors. The INOGATE experts have classified the recommendations into those addressing mainly the Government of Ukraine and those addressing mainly international donors to support the work of the Ukrainian Government.

5.1 Recommendations for the Ukrainian Government

The recommendations for the Ukrainian Government fall into three major categories:

- a) **Bankability** - issues related to project bankability i.e. what equity investors and debt financiers require deploying financing in renewable energy projects (e.g. counterparty risk, power offtake, etc.)
- b) **Project development** – issues related to the ease of developing renewable energy projects in a given country (e.g. permitting, grid connection, etc.)
- c) **Overarching issues** – issues related to the wider context of governance that would in fact support investments overall (e.g. long-term stable and reliable policies and support systems, credit rating of the country, transparency and decentralization to local authorities)

Issues concerning bankability are the most important to de-blocking RES investments in Ukraine as this provides the necessary comfort and confidence to investors so that they can raise the necessary capital for their projects. Ease of developing projects signals a healthy environment to develop or acquire developed projects; however without mitigating bankability concerns, fully permitted projects will not be realized. The third category is part of a longer and wider process of reforms needed.

Table 3 below summarizes the problems and the solutions in terms of what barriers have been identified by (inter-) national investors in Ukraine and specific recommendations for introducing solutions to overcome these barriers that would allow a “de-blocking” of renewable energy investments in Ukraine.

The table also includes the comments and feedback from the stakeholder consultations between 18 and 21 April 2016 as well as comments received during the high-level policy talk that took place in Kiev on 21 April 2016 on this topic of investments in RES.

Table 3: Summary of Barriers to RES Investments in Ukraine as seen from the Private Investors’ Point –f-view and Recommendations for the Ukrainian Government		
<i>Category</i>	<i>Identified barriers in Ukraine</i>	<i>Possible solutions/recommendations</i>
Bankability		
Counterparty risk	A credible counterparty for the offtake is necessary to ensure project bankability. In the absence of such counterparty (e.g. financially strong public, state-owned entity or industrial off-taker) a form of insurance is sought to mitigate such risk.	While the top level of Government and a number of ministries would need to be involved in overcoming the issue of counterparty risk, the National Bank of Ukraine could take the leading role. The following forms of credit enhancement can be assessed to mitigate counterparty

	<p>Currently private investors in RES in Ukraine are exposed to a relatively high level of counterparty risk given the fragile state of the Ukrainian economy (credit rating CCC). Additionally, it is currently difficult for investors to find to insurance against counterparty risk. For example, it has been understood that MIGA* is providing political insurance for project in Ukraine only to a limited extent, while private insurance is very expensive and sometimes not available.</p> <p><i>*MIGA is a Multilateral Investment Guarantee Agency – a member of the World Bank Group which offers political risk insurance and credit enhancement guarantees to help investors protect foreign direct investment in developing countries)</i></p>	<p>risks:</p> <ul style="list-style-type: none"> • Bilateral and Multilateral agencies – explore other possibilities with bilateral and multilateral agencies for insurance programs in Ukraine. • Export Credit Agencies – stimulate use of ECAs for commercial and political insurance provision. • Sovereign Guarantee – to the extent possible, a sovereign guarantee mechanism can be provided as a credit enhancement to projects. • Government Funded Account – sovereign government deposits funds pledged to project lenders which would be available for withdrawals to the extent a state owned off-take purchaser is unable to make necessary payments to the project company. • Replacement of offtake counterparty - replacement of state-owned offtake purchasers with other more creditworthy customers (e.g. international corporation, etc.)
<p>Timing of Power Purchase Agreement (PPA) signing and green tariff</p>	<p>International practices guarantee the green tariff to power generating developers during financing phase of their projects and before major investments in infrastructure are made. This is of significant importance as without a signed PPA (and therefore guarantee power offtake); financiers do not have the confidence to deploy the needed capital.</p> <p>It has been identified that as per the current legislative procedures, a producer is obliged to first construct and commission the project after which it can sign a PPA and receive the green tariff which increases risks for project developers substantially.</p>	<p>Allow to enter into conditional, time-limited (2 to 3 years) PPA before commissioning of the RES installation. This would allow developers to raise the financing needed.</p> <p>In the absence of any firm progress from the developer on the financial structuring and construction of the project, the conditional PPA may be revoked.</p>
<p>PPA improve template</p>	<p>Developers are asked to sign a template PPA document, which (as per investor discussions and their feedback from financiers) is considered not to be acceptable by most lenders.</p>	<p>Revise PPA template and align it with international standards including proper protection clauses embedded in the document such as:</p> <ul style="list-style-type: none"> • State FIT duration until 2030 • Guaranteed offtake for the lifetime of the project, with regards to volume • Address change-in law risks with regards to FIT, exchange rate mechanisms etc. • Provisions for curtailment compensation • International arbitration in third country

		A possible way to do this is by adding it as secondary legislation.
Power offtake (PPA) duration extension	<p>Power purchase Agreements (PPAs) should guarantee a certain duration of guaranteed offtake to make projects bankable i.e. remove both volume and price risk for the produced power.</p> <p>As per the current regulation, PPAs in Ukraine for renewable energy projects are signed for one year with state owned enterprise “Energorynok”. The producer is obliged to re-sign the PPA annually. This process is not considered to be line with international power offtake contracting as it exposes investors/financiers with an additional source of project risk.</p>	Amend the model PPA for the sale of electricity establishing the validity of the PPA till the 1st January 2030 as the end of "green" tariff action in line with the Law "On electricity".
Balancing costs (for wind and solar developers)	<p>Project financiers require visibility in terms of operating expenses (OPEX) during the operating period of the power plant. Any potential variation of costs is sought to be mitigated depending on the cost item at hand.</p> <p>It has been observed that as per new draft law on electricity market reform (No. 4493 from April 21st 2016) on the introduction of the Third Energy Package in Ukraine, balancing costs shall be borne by renewable energy producers.</p> <p>Private investors have voiced their concern that this is premature given the (a) lack of high quality wind data, (b) nascent level of RES penetration in the market, (c) lack of sufficient forecasting technologies and (d) lack of established Ancillary Service Provider and Guaranteed Buyer.</p>	<p>In consultation with the Energy Community, assess possible compromises, such as:</p> <ul style="list-style-type: none"> • Identify parameters of the phasing approach learning from the EU best practice • A compromise by RES developers in Ukraine has been proposed to introduce balancing cost responsibility post 2020 i.e. once Ukraine reaches 11% RES penetration, as per the National Energy Strategy. Thereafter, a phasing in of balancing costs post 2020 in incremental basis is proposed. • Establish a maximum cap on balancing costs as 5% of revenue.
Project Development		
Grid access	<p>Investor faces a bureaucracy in the energy company responsible for the grid connection. Negotiations, approvals, official mailing, etc. are lengthy and cumbersome processes. This factor may significantly lengthen the time needed to complete a project.</p> <p>Transparency in terms of connection points and available capacities is missing.</p>	<p>Provide guarantees that grid connection will be awarded on time by providing transparency in terms of technical specifications, connection points and available capacities (e.g. involving the <i>National Commission for State Energy and Utilities Regulation</i>; the Commission is responsible that developers get access in time).</p> <p>The Commission could implement a system which regularly reports the technical capabilities of the power grids in the various</p>

		regions and inform of potential grid extensions etc.
Permitting	<p>RES projects in Ukraine usually go through a lengthy and complex system of approvals, permitting, and local government engagement that requires extensive time.</p> <p>The obtaining permits to start building as well as access to land plot for construction is non-transparent and unpredictable process; procedures can be distinct in different regions.</p> <p>The legal deadlines are often not actually enforced.</p>	<p>Introduce one-stop-shop for RES developers, preferably with online capabilities to shorten duration of permitting procedures and reduce their number (e.g. single procedure/permit for capacity to be installed, allocation of connection costs, land zoning permits etc.)</p> <p>This could preferably be an independent central agency, with bird's-eye view of the market which should oversee the permitting procedure, ensure transparency and impartiality and should have the administrative obligation to reply within a few months.</p> <p>A small fee per application could help to finance the process.</p>
Land zoning	<p>According to the current Ukrainian legislation (LAND CODE OF UKRAINE) agricultural cannot be used for RES installations but must be converted to "lands of industrial, transportation, communications, energy, defence and other purpose".</p> <p>The procedures re-zoning land for RES are very complicated and time consuming</p>	<p>Adopt Draft Law 2529a from 08.26.2015 "On Amendments to Certain Legislative Acts of Ukraine about simplification procedures on land allocation and/or power generation facilities from renewable energy and/or biofuels"</p> <p>The Draft Law proposes to allow the construction of power and heat generation facilities from renewable energy/ biofuels:</p> <ul style="list-style-type: none"> • Without changing the utilization purpose of land; • Without detailed plans of territories up to 01.01.2018
Develop capacity in regions for RE	<p>Due to the limited foreign investment in the market during the past 3 years, there has been a decrease in good quality projects that are being developed. In addition, given the infancy of the sector in the country, there is a general shortage in the capacity to develop renewable energy projects.</p> <p>During our discussion with international investors, the necessity for good local project developers was singled out as, according to them, having a local partner is a requirement to tackle some of the local specific topics.</p> <p>In their previous experiences, investors have reported that some projects they have reviewed were sub-par (e.g. missing bird studies, sub-optimal detailed planning in terms of size of</p>	<p>Support development of credible projects by:</p> <p><u>Short term:</u></p> <ul style="list-style-type: none"> • Mapping existing and perspective projects as well as potential of all kind of RES and available feedstock in regions, supporting inter alia ongoing mapping of RES potentials in the Ministry of Regional Development. • Development of the road map for investors with clear description of all steps for RES projects implementation and relevant contacts of authorities involved in each stage of project in the regions. <p><u>Medium term</u></p> <ul style="list-style-type: none"> • Providing a series of consultations and seminars with local business, experts

	<p>turbines etc.).</p> <p>Lastly, in some cases, local authorities are not aware yet of the benefits of RES.</p>	<p>and government representatives to discuss the process of implementation of renewable energy projects in Ukraine.</p> <ul style="list-style-type: none"> • Carrying out (locally focused) public awareness campaigns about tasks and targets of clean development and RES usage, aimed at improvement of social acceptance of RES in regions. • The availability of human capital to meet the needs of investors should be promoted at the state level. • The educational program should be updated for the relevant colleges and Universities in Ukraine in order to guarantee the availability of high-skilled specialists to be involved in renewable energy sector. • The state agency on energy efficiency and energy saving of Ukraine (SAEE) as organization in charge of implementation of the NREAP 2020 could take a leading role for these mentioned activities.
Overarching issues		
National commitment on RES	<p>While the country has made a national commitment to increase the share of renewables in the total energy consumption to at least 11%, the policy action seems to lack tangible midterm goals on how it shall achieve such targets. Considering the fact that large-scale renewable energy investments require over 10 years of payback, investors are also missing signals for a long term goal beyond 2030.</p>	<p>Develop sector-specific road maps covering:</p> <ol style="list-style-type: none"> a) power generation b) heating (including CHPs) c) biofuels for transport <p>The roadmap could include the following aspects:</p> <ul style="list-style-type: none"> • Assess development pathways (scenarios per each sector) • Identify and categorize areas/projects in terms of priority • Assess economic and strategic implications for each pathway (security of supply and cost implications) • Identify regulatory changes imminent to implement pathways • Assess funding / investment opportunities for implementing projects • Identify and assign national & local roles and responsibilities per sector • Develop action plans per sector (sub-sector) and monitoring procedures.
Heat market diversification with biomass	<p>Ukraine has very good grounds to develop the biomass heating as well as CHP (combined heat and power) sector due to a) availability of district heating networks for heat and b) availability of</p>	<p>Stimulate a diversification of fuel sources for the Ukrainian heat market in line with international practices by:</p> <ul style="list-style-type: none"> • Defining an acceptable model of heat

	<p>domestic biomass resources for fuel.</p> <p>However, one of the barriers to introducing biomass in the heat sector is the absence of a competitive heat market in Ukraine. Local district heating (DH) companies are local monopolies which are not incentivized to enter into long term heat offtake with developers. Only a few small scale heating or CHP projects exist.</p>	<p>market in Ukraine (including modification of existing and implementation of new legislation)</p> <ul style="list-style-type: none"> • Work with municipalities to build reliable biomass supply chains at local level which could encourage further conversion of local heat systems to biomass • Coordinate actions with a more radical reform of the heat system efficiency (e.g. with a focus on reducing network losses). • Increasing options for private capital influx (through RES generation PPP or tendered concessions) • Analyse conditions at the regional/municipal level and make a comprehensive roadmap for technical and regulatory modernization of the whole sector.
Biofuels for transport	<p>Transport fuel policy is not recognising the specificities of biofuels. There are no clear targets or measures to allow for the significant potential to be realised. For example, bioethanol-based fuels are more linked to the regulations for drinking alcohol. Lack of the recognition of proper biofuels results in excessive taxation.</p>	<p>Re-evaluate the status of biofuels from a classification and taxation perspective.</p>
Dividend repatriation	<p>Ability to repatriate dividends is very important investment criteria. Currently, dividend repatriation in Ukraine is not allowed as per the Currency Conversion and Exchange Transfer restrictions imposed by the National Bank of Ukraine.</p>	<p>Engage in consultations with relevant parties to address the currency restrictions and their effect on the business climate in Ukraine.</p>

5.2 Recommendations for International Donors to Support the Ukrainian Government

Some key recommendations for the international donor / financial community have been developed that would give support to the Ukrainian Government in both areas mentioned above – bankability and project development.

Table 4 below summarizes the problems and the solutions in terms of what barriers have been identified by (inter-) national investors in Ukraine and specific recommendations for introducing solutions to overcome these barriers that would allow a “de-blocking” of renewable energy investments in Ukraine.

The table below also includes the comments and feedback from the stakeholder consultations between 18 and 21 April 2016 as well as comments received during the high-level policy talk that took place in Kiev on 21 April 2016 on this topic of investments in RES.

Table 4: Summary of Barriers to RES Investments in Ukraine as seen from the Private Investors’ Point-of-

view and Recommendations for International Donors		
<i>Category</i>	<i>Identified barriers in Ukraine</i>	<i>Possible solutions/recommendations</i>
Resource Maps	Technical information about Ukraine's RE potential and project pipeline is only available to a limited extend or considered unreliable unless done by a reputable international firm. Such information is also costly to obtain.	Undertake comprehensive assessment of Ukraine's RE potential by region/city (Ukraine's RE atlas) to provide data-driven basis for project development Introduce project development facility to build on the results of RE atlas and include inter alia additional local resource assessments where needed, feasibility studies, permitting process, training programs learning from the results of EBRD's USELF facility ³
Financing possibilities on Ukrainian market	Project developers – especially Ukrainian developers - need access to finance at reasonable rates. The Ukrainian banks offer the corporate financing only and use credit lines of the international banks, such as the EBRD and the EIB. The main requirement for the recipient of a loan is 100% guarantee. The loans from Ukrainian banks foresee the high level of interest rates (up to 24%), that is not interesting for investor also.	Improve conditions for project financing in Ukraine and access to financing from the local banks. Introduce a financing programme of renewable energy projects in Ukraine; on reasonable terms and conditions through the development of a special-purpose fund to this effect (including a grant scheme to reduce project development costs for developers). Address financial management and budgeting rules in district heating companies and municipalities in order to encourage their role in attracting private investors at local level.

5.3 Key Institutional Actors for Reform

The aforementioned recommendations address a wide span of issues which fall under the competence of various institutional actors; therefore. it is crucial that the competent actor(s) take initiative and responsibility for their implementation. It goes without saying that a concerted and coordinated effort shall be required in fields of overlapping competences among more than one actor(s). In the endeavour to reform the RES landscape of Ukraine, the following institutional actors have been identified as having an important role to play, according to the rules and laws on competence of the domestic legal order:

- **Ministry of Energy and Coal Mining of Ukraine** (Міністерство палива та енергетики України)
- **Ministry of Regional Development, Construction, and Communal Living of Ukraine** (Міністерство регіонального розвитку, будівництва та житлово-комунального господарства України)

³ EBRD, Ukraine Sustainable Energy Lending Facility, Case Study, <http://www.ebrd.com/downloads/sector/sei/uself.pdf>

- **Ministry of Agrarian Policy and Food of Ukraine** (Міністерство аграрної політики та продовольства України)
- **Ministry of Finance of Ukraine** (Міністерство фінансів України)
- **Regional Administrations** (Oblasts) and other self-governing administrative subdivisions
- **National Commission for State Energy and Public Utilities Regulation of Ukraine** (Національну комісію, що здійснює державне регулювання у сферах енергетики та комунальних послуг НКРЕКП)
- **State Agency on Energy Efficiency and Energy Saving of Ukraine** (затвердження Положення про Державне агентство з енергоефективності та енергозбереження України - ДАЕЕ)
- **National Bank of Ukraine** (Національний банк України)
- **State Enterprise "Energorynok"** (ДП «Енергоринок»)
- **NEC "Ukrenergo"** (НЕК «Укренерго»)

It is strongly recommended that the relevant key Ministries take the lead coordinating role in planning specific actions (i.e. by developing the aforementioned road maps) needed to stimulate investments, with each Ministry focusing on the specific RES sub-sector that falls under its competence:

- a) **Power Generation:** Ministry of Energy and Coal Mining of Ukraine
- b) **Heating (including CHPs):** Ministry of Regional Development, Construction, and Communal Living of Ukraine
- c) **Biofuels for Transport:** Ministry of Agrarian Policy and Food of Ukraine

Those actions to be planned should take into account the key recommendations presented in this report.

Appendix I – Questionnaire for International Project Developers and Investors

Questionnaire for *International* Investors in Renewable Energy

Your track record as investor:

- Which countries/regions are you active in?
- How many years have you been active in renewable energy business/investment?
- In what stage of the project cycle are you investing (start of development, ready to construction, operation)?
- In what form do you invest in renewable projects (own development, joint venture, PPP structures)

What projects are you looking for in terms of:

- technology,
 - size (installed capacity, financial volume),
 - utility scale, distributed generation,
 - stage of project cycle,
 - countries (and please provide reasons why you would invest in these specific countries)
 - expected rate of return on equity (please provide examples how this indicator depends on the specific country)
- Do you have any internal investment criteria in terms of country sovereign rating?

Your engagement in the Ukraine:

- In what kind of renewable energy projects (technology, installed capacity, size, stage of project cycle etc.) have you been involved in the past in the Ukraine, if any?
- What are the main reasons that have prevented your company from considering investments in the Ukrainian renewable energy market?
- What is or would be the expected return on equity for renewable investments in Ukraine?

What kind of risks do you see for renewable energy investment in the Ukraine **and what kind of solutions** would you recommend?

Please use the table (according to UNDP: *De-risking renewable energy investments*) below as guidance:

Risk Category	Typical Barriers
Market risk	<p><u>Market outlook</u></p> <p>lack of or uncertainty regarding governmental (renewable) energy strategy and targets</p> <p><u>Market access and prices:</u></p> <p>limitations related to energy market liberalization; uncertainty related to access, the competitive landscape and price outlook for renewable energy; limitations in design of standard PPAs and/or PPA tendering procedures</p> <p><u>Market distortions:</u></p> <p>Such as high fossil fuel subsidies</p>
Permits risk	<p><u>Labour-intensive</u>, complex processes and long time-frames for obtaining licenses and permits (generation, EIAs, land title) for renewable energy projects</p>

Social acceptance risk	Lack of awareness on renewable energy amongst consumers, end-users and local residents Social and political resistance related to renewable energy Not In My Backyards concerns, special interest groups
Resource and technology risk	For resource assessment and supply: inaccuracies in early-stage assessment of renewable energy resource; where applicable (e.g. bioenergy), uncertainties related to future supply and cost of resource For planning, construction, operations and maintenance: suboptimal plant design; lack of local firms offering construction, maintenance services; lack of skilled and experienced local staff; uncertainties related to securing land and limitations in civic infrastructure (roads etc.) For the purchase and, if applicable, local manufacture of hardware: purchaser's lack of information on quality, reliability and cost of hardware; lack of local industrial presence and experience with hardware, including skilled and experienced local workforce
Grid/ transmission risk	Grid code and management: limited experience or suboptimal operational track-record of grid operator with intermittent sources (e.g. grid management and stability). Lack of standards for the integration of intermittent, renewable energy sources into the grid Transmission infrastructure inadequate or in the particular country antiquated grid infrastructure, including lack of transmission lines from the renewable energy source to load centres; uncertainties for construction of new transmission infrastructure
Counterparty risk	Limitations in the utility's (electricity purchaser) credit quality, corporate governance, management and operational track-record or outlook; unfavourable policies regarding utility's cost-recovery arrangements
Financial sector risk	Capital scarcity: Limited availability of local or international capital (equity/and or debt) for green energy infrastructure due to, for example: under-developed local financial sector; policy bias against investors in green energy Limited experience with renewable energy: Lack of information, assessment skills and track-record for renewable energy projects amongst investor community; lack of network effects (investors, investment opportunities) found in established markets; lack of familiarity and skills with project finance structures
Political risk	Uncertainty or impediments due to war, terrorism, and/or civil disturbance Uncertainty due to high political instability; poor governance; poor rule of law and institutions Uncertainty or impediments due to government policy (currency restrictions, corporate taxes)
Currency/ macroeconomic risks	Uncertainty due to volatile local currency; unfavourable currency exchange rate movements Uncertainty around inflation, interest rate outlook performance due to an unstable macro-economic environment

Please summarize the most important requirements to be met by Ukrainian politics providing sufficient incentives for you to invest in the Ukrainian renewable energy market?

Appendix II - Questionnaire for National Project Developers and Investors

Questionnaire for *Ukrainian* Renewable Energy Developers

PART 1: Your track record as investor in Ukraine:

- What are the main reasons and incentives for you to invest in renewables energy in Ukraine?
- Which regions (districts) are you active in?
- How many years have you been active in renewable energy business/investment in Ukraine?

PART 2: Your completed and perspective projects:

- What are the key indicators of your completed project(s):
 - Location (region, district),
 - Installed capacity,
 - Duration of project implementation including all stages from conception, feasibility studies, construction up to the commissioning of the plant.
 - CAPEX
 - Operating expense,
 - Profitability,
 - Payback period etc.
- What were your observations in terms of expectations (feasibility assessment, duration, financial performance, plant size) and your experience in reality?
- Are you going to invest in this sector of RES market in the future? If, yes, what are the main indicators of your next projects?

PART 3: Optimal project indicators identified by you as investor/ developer:

- Type of RES and technology,
- Size (installed capacity, financial volume),
- Regions (districts),
- Expected rate of return on equity.

Please provide reasons why you have been investing or would invest in projects with these indicators.

PART 4: Availability of support/guarantees for you as investor/ developer in RES in Ukraine:

- Does green tariff guarantee an income for electricity generated in practice? How does Company receive money from selling electricity to WEM?
- What is the level of local government support in implementing project?
- Would the decentralization have a positive influence on implementing project in the region? What is your expectation?

PART 5: Financial support programs or other investment opportunities:

- In what form do you invest in renewable projects (own development, joint venture, PPP structures)?
- What type of financial support programs/instruments have been employed for the financing of the project? The main terms of these programs should be identified here, such as follows:

- Debt financing features (duration, interest, other lender protection covenants)
- Decision making timeframe by Lenders from receipt of documents to financial close
- Features (the main **requirements**) of the **project preparation for the financing**,
- Ability to access funding (equity and debt) through international partners
- What are your plans to work with such programs in the future?

PART 6: Risks and solutions for RES projects in Ukraine:

- What is the most complex stage of project implementation? What are the challenges facing development project here? And how the Company has got over the difficulties?
- What kind of other risks do you see for renewable energy investment in Ukraine and what kind of solutions would you recommend?
- What is **important in making this market more attractive? What would you recommend?**
-
- Please use the table (according to UNDP: De-risking renewable energy investments) below at the end of the questionnaire as guidance:

Potential of RES projects in the power sector you have been working:

- Technical potential, including electrical capacity (MW) of new facilities for production electricity from this kind of RES,
- Amount of investment that would be reached in this market.

Risk Category	Typical Barriers
Market risk	<u>Market outlook</u> lack of or uncertainty regarding governmental (renewable) energy strategy and targets <u>Market access and prices:</u> limitations related to energy market liberalization; uncertainty related to access, the competitive landscape and price outlook for renewable energy; limitations in design of standard PPAs and/or PPA tendering procedures <u>Market distortions:</u> Such as high fossil fuel subsidies
Permits risk	<u>Labor-intensive</u> , complex processes and long time-frames for obtaining licenses and permits (generation, EIAs, land title) for renewable energy projects
Social acceptance risk	Lack of awareness on renewable energy amongst consumers, end-users and local residents Social and political resistance related to renewable energy Not In My Backyards concerns, special interest groups
Resource and technology risk	<u>For resource assessment and supply:</u> inaccuracies in early-stage assessment of renewable energy resource; where applicable (e.g. bioenergy), uncertainties related to future supply and cost of resource <u>For planning, construction, operations and maintenance:</u> suboptimal plant design; lack of local firms offering construction, maintenance services; lack of skilled and experienced local staff; uncertainties related to securing land and

	<p>limitations in civic infrastructure (roads etc.)</p> <p><u>For the purchase and, if applicable, local manufacture of hardware:</u> purchaser's lack of information on quality, reliability and cost of hardware; lack of local industrial presence and experience with hardware, including skilled and experienced local workforce</p>
Grid/ transmission risk	<p><u>Grid code and management:</u></p> <p>limited experience or suboptimal operational track-record of grid operator with intermittent sources (e.g. grid management and stability). Lack of standards for the integration of intermittent, renewable energy sources into the grid</p> <p><u>Transmission infrastructure</u></p> <p>inadequate or in the particular country antiquated grid infrastructure, including lack of transmission lines from the renewable energy source to load centres; uncertainties for construction of new transmission infrastructure</p>
Counterparty risk	<p>Limitations in the utility's (electricity purchaser) credit quality, corporate governance, management and operational track-record or outlook; unfavourable policies regarding utility's cost-recovery arrangements</p>
Financial sector risk	<p><u>Capital scarcity:</u></p> <p>Limited availability of local or international capital (equity/and or debt) for green energy infrastructure due to, for example: under-developed local financial sector; policy bias against investors in green energy</p> <p><u>Limited experience with renewable energy:</u></p> <p>Lack of information, assessment skills and track-record for renewable energy projects amongst investor community; lack of network effects (investors, investment opportunities) found in established markets; lack of familiarity and skills with project finance structures</p>
Political risk	<p>Uncertainty or impediments due to war, terrorism, and/or civil disturbance</p> <p>Uncertainty due to high political instability; poor governance; poor rule of law and institutions</p> <p>Uncertainty or impediments due to government policy (currency restrictions, corporate taxes)</p>
Currency/ macroeconomic risks	<p>Uncertainty due to volatile local currency; unfavourable currency exchange rate movements</p> <p>Uncertainty around inflation, interest rate outlook performance due to an unstable macro-economic environment</p>