

UKRAINE

**UKRAINE RENEWABLE ENERGY
DIRECT LENDING FACILITY**

**EUROPEAN BANK
FOR RECONSTRUCTION AND DEVELOPMENT**

Project Summary

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SUMMARY FACT SHEET

UKRAINE RENEWABLE ENERGY DIRECT LENDING FACILITY	
DTM ID:	39850
Client:	Companies developing renewable energy projects in Ukraine.
Existing Exposure:	None.
EBRD Transaction:	<ul style="list-style-type: none"> ▪ EUR 50 million for the Ukraine Renewable Energy Direct Lending Facility (“UREDLF” or the “Facility”) to provide debt financing for renewable energy in Ukraine; ▪ Financing will be determined for each project on a case-by-case basis based on credit quality and available funding sources but will include EBRD financing up to 50% and CTF financing up to 20%. The balance may be from sponsor’s equity or other sources. ▪ Each individual transaction will be subject to the Bank’s usual approval procedures except loans less than EUR 10 million will be approved by the Operations Committee on a delegated basis. <p>The Facility will be complemented by Technical Co-operation funding of up to EUR 5.72 million from the Global Environment Facility (see “Associated TC” for details). Additional grant funding may be sought at a later stage to support specified investments such as grid connection or grid reinforcement.</p>
Project Description / Business Purpose:	<p>The Facility will provide the Bank with an additional financial instrument to meet the growing need for investments in renewable energy in Ukraine.</p> <p>The two main objectives of the Facility are:</p> <ul style="list-style-type: none"> ▪ to provide financing and technical assistance for the realisation of early renewable energy projects, which will demonstrate the benefits of utilisation of renewable energy sources; ▪ to encourage and support policy dialogue and institutional capacity building in respect of renewable energy, in order to foster the development of a favourable environment for the implementation of such projects in Ukraine. <p>The Facility is designed to be complementary to Ukraine Energy Efficiency Credit Line (“UKEEP”, DTM number 37001 and 38902).</p>
Associated TC:	<p>The Facility and this TC will build on the Ukraine Renewable Energy Development Framework which is being funded with support provided by the Government of Netherlands.</p> <p>Up to USD 8.45 million (EUR 5.72) million from the Global Environment Facility to provide:</p> <ul style="list-style-type: none"> ▪ Pipeline Preparation to conduct initial analysis of the project pipeline and prepare early due diligence for first projects to be financed under the Facility; ▪ Institutional Support aimed at: <ul style="list-style-type: none"> ▪ policy dialogue and supporting Ukraine government in implementing legislative and regulatory reforms for renewable energy; ▪ creating an appropriate environment for the development of renewable

	<p>energy projects; and</p> <ul style="list-style-type: none"> ▪ providing resources to ensure information dissemination and co-ordination between government, agencies and developers; ▪ Environmental Support <ul style="list-style-type: none"> ▪ conduct Strategic Environmental Assessments (SEAs) covering the main technologies and regions to benefit from the Facility; ▪ Environmental approval procedures and standards will be assessed and guidance given on how these can be adapted to properly reflect the characteristics of renewable energy projects; and ▪ Project Development Support <ul style="list-style-type: none"> ▪ screen projects to assess technical and commercial viability; ▪ assist borrowers under the Facility in project preparation including: (a) project permitting and licensing; (b) feasibility studies; (c) commercial negotiations (e.g. with regulators and network operators); (d) legal support in preparation of loan documentation; (e) project management and (f) environmental and social due diligence; ▪ conduct project monitoring to ensure successful completion and that required institutional support measures continue to be implemented. 		
Key Parties Involved:	<ul style="list-style-type: none"> ▪ Donors for TC funding ▪ EBRD ▪ Companies developing renewable energy projects in Ukraine 		
Maturity / Exit Strategy:	<p>Average tenor of individual loans is expected to be about 10-12 years. Specific conditions will depend on project economics and will be determined on a case-by-case basis and in line with target parameters for the Facility. Availability of the Facility will be two years. Should the facility prove to be successful, the availability period may be extended and additional funds sought to support more projects.</p>		
Security / Guarantees:	<p>To be negotiated separately with each Borrower on a case-by-case basis.</p>		
CLASSIFICATIONS		APPROVAL TIMETABLE	
Environment:	Private	Concept Review:	17 October 2008
Procurement:	Private	Structure Review:	Off-line
Portfolio:	Private	PSD release date:	22 October 2009
Project Risk Rating:	N/A	Final Review:	6 November 2009
Transition Potential:	Excellent	Board Approval:	25 November 2009
Transition Risk:	High	Signing:	N/A

1. THE CLIENT AND THE PROJECT

1.1 SECTOR / BACKGROUND

Ukraine relies heavily on imported fuel (up to 80% of primary energy needs during peak demand) and its own generating assets are ageing and highly polluting. The need to improve energy security and reduce the environmental impact of its energy sector is acute. Renewable energy can play a key role in addressing both these issues: Ukraine has great potential yet these resources have hardly been utilised so far - the technical potential for wind energy is estimated at 40 TWh/year, small hydro - 8.3 TWh/year, biomass - 120 TWh/year, and solar energy - 50 TWh/year, yet current production is only 0.5 TWh/year. The main reason for this low level of activity is that until now the legislative and regulatory frameworks have not been adequate to allow the implementation of the numerous potentially feasible projects in this area.

The Bank is already active in addressing this through a technical assistance programme to assist the Ukraine government in preparing legislation to support renewable energy. Following extensive stakeholder consultation the first phase of this assignment was completed in 2008 with a set of recommendations for the basic structure of legislative framework and required implementation steps. During the first part of 2009 the Government of Ukraine has issued primary legislation setting a green tariff for renewable energy and recently the National Energy Regulator of Ukraine (NERC) has issued the first green tariff approvals to developers. The green tariff sets a minimum inflation indexed price for renewables based on different multiples of the retail tariff (depending on the renewable technology) and fixed in Euro terms as at 1 January 2009 and is applicable until 2030. As retail prices and exchange rates vary the Hyrvna price is re-calculated every month to take account of exchange rate movements. The Hyrvna price is then adjusted to ensure the Euro price does not fall below the specified minimum Euro price. The table below gives the Hyrvna and Euro equivalent green tariffs for the eligible renewable technologies as at January 2009.

Ukraine Renewable Energy Tariffs

Type of E-RES	Minimum Green Tariff (Res. 857) kopek/kWh (excl VAT)	Euro/MWh
Wind (below 600kW)	70.15	64.6
Wind (above 600kW and below 2000 kW)	81.84	75.4
Wind (above 2000 kW)	122.77	113.1
Biomass	134.46	123.9
PV on the ground	505.09	465.3
PV on roofs (above 100kW)	484.05	445.9
PV on roofs (below 100kW)	463.00	426.5
Small Hydro	84.18	77.5

With the Bank's support (through Dutch funded technical assistance) NERC is now preparing detailed implementation procedures for renewable energy including grid

protocols, technical requirements and other related procedures with the aim to finalise all these by the end of 2009.

In parallel with these developments the Bank has engaged consultants to assess demand for renewable energy projects in Ukraine and prepare a pipeline of projects for consideration for financing under the proposed Facility (further details on the pipeline are provided in Section 1.4. below). This work has resulted in a initial pipeline of projects and the Bank is in detailed discussions with a number of developers with the intention to agree financing arrangements once the Facility is available. However it is also clear that developers continue to face significant obstacles compared to similar projects in countries with a more developed framework for renewables. These include permitting and licensing procedures, land rights, environmental assessments as well as managing what is still an emerging tariff methodology under development by NERC. Therefore developers are still hesitant to commit equity to projects where development expenses and outcomes are uncertain.

The Bank's existing Ukraine Energy Efficiency Programme (UKEEP) involves a framework facility of €150 million to participating Ukraine banks for on-lending for smaller energy efficiency and renewable energy projects. However UKEEP focuses on smaller loans to corporate clients (the maximum loan amount is USD 5 million (EUR 3.44 million) and the average loan size is USD 2.5 million). Furthermore, Ukrainian banks are generally only willing to consider loans that are over collateralised with liquid assets and are not willing to consider the project finance model proposed in this Facility. This leaves many renewable energy projects which could be financed on a limited recourse basis still not able to obtain financing through UKEEP.

The proposed Facility will therefore complement UKEEP by providing a source of limited recourse financing and institutional support for renewable energy projects in Ukraine.

1.2 THE FACILITY

The project consists of the establishment of Ukraine Renewable Energy Direct Lending Facility of up to EUR 50 million (UREDLEF or the Facility) together with associated technical assistance component of up to USD 8.45 million (EUR 5.72 million) from the Global Environment Facility (the GEF). The Facility will provide loans to eligible projects with the possibility to finance on a limited recourse basis if required.

1.2.1 Target Projects

The Facility will consider all forms of renewable energy generation project including hydro, wind, biomass and solar. Biomass would come from sustainable sources and/or organic waste. On an exceptional basis projects for the production and/or distribution of biomass fuel (such as wood pellets) may also be considered but on the basis of corporate loans rather than project finance. Production and distribution of liquid biofuels will not be eligible.

1.2.2 Eligibility Criteria

General eligibility criteria will be consistent with the Bank's normal rules for direct lending for corporate or limited recourse projects as appropriate. The Facility will not compete with UKEEP and will only consider projects which are either too large for UKEEP or require forms of financing which participating banks are not able to provide (e.g. limited recourse finance) or where UKEEP can only provide a part of the required finance.

As the Facility is focused on project investments there will be no restrictions on the size of companies able to submit proposals.

The Facility will not impose any preliminary financial eligibility criteria (such as minimum value for the expected project IRR). The financial viability of each project will be judged on a case-by-case basis in line with the Bank's normal criteria.

1.2.3 Facility Procedures and Resources

Experience with other similar facilities (including DIF, DLF, WBSEDLF and WBLEF) has shown that small investments with local enterprises require streamlined approval procedures. Therefore, it is proposed that a similar set of procedures be applied with respect to the UREDLF, as follows:

- The facility will be managed by the Power and Energy Team (the "Facility OL") with permanent assistance from the Energy Efficiency & Climate Change Team and the Kyiv RO (the "Facility Team");
- For each project an OL will be nominated either from PEU, E2C2 or Kyiv RO as appropriate (depending on the project needs) but will receive support and supervision from the Facility Team;
- The Bank will retain consultants on a permanent basis in Ukraine to support the Facility and the Project OL in each transaction. The consultants will assist in: (i) identification and screening of prospective projects, (ii) project feasibility studies and preparation support; (iv) environmental assessments; (iv) technical and legal due diligence and documentation; and (v) project monitoring and follow up. See Section
- 1.3 below for more details.

Bank approval procedures for individual projects will be as follows:

- Projects below EUR 10 million will be subject to delegation by the Board to the Operations Committee. The approval procedure will be Concept Review by the Operations Committee followed by offline Final Review after a signed term sheet has been agreed with Credit; and
- Projects above EUR 10 million will be subject to the Bank's usual Operations Committee approvals and Board approvals. The reason for including these in the Facility is to ensure that the GEF-funded technical assistance support programme is formally available for these projects.

1.2.4 Legal Documentation

Legal agreements under the UREDLF will be governed by English law. With the assistance of a local counsel, the Bank will review relevant Ukraine laws and identify potential legal risks. To simplify the legal due diligence and lower processing costs of prospective projects model financing agreements will be developed for limited recourse and corporate transactions.

These tasks will be included in the technical assistance programme described in Section 1.3 below

1.3 TECHNICAL ASSISTANCE PROGRAMME

The Facility will be supported by a comprehensive technical assistance programme designed to provide both institutional and project support. This will be implemented through a consultancy team based in Ukraine throughout the duration of the assignment and working directly with government and project developers as well as the EBRD (where necessary different teams will be engaged to avoid conflicts of interest between the Bank and project developers). Funding of USD 8.45 million (EUR 5.72 million) has been granted initial approval by the GEF Council, subject to final approval after EBRD Board approval of the Facility. The draft full scale proposal for endorsement by the GEF Chief Executive Officer is provided in Annex 3. This will be submitted immediately following EBRD Board approval of the Facility. The components of the technical assistance programme and principle beneficiaries are described below:

1.3.1 Pipeline Preparation

This phase was completed in June 2009 based on the work conducted by Fichtner (see section 1.4 below) (TCS number 25328). Funding for this was provided the GEF Project Preparation Grant and the Special Shareholder Fund. The principle beneficiary of this assignment was the Bank, but also indirectly the project developers which were identified for possible participation in the Facility.

1.3.2 Institutional Support

1.3.2.1 Renewable Energy Regulatory Support and Institution Building

The Institutional support programme will build on the existing assignment *Ukraine Renewable Energy Development Framework (Phase I)* (TCS numbers 21216 and 25329) which is being funded by the Government of Netherlands. This first phase of the assignment involved extensive stakeholder dialogue to establish the appropriate structure for renewable energy regulation in Ukraine. This phase was completed in 2008 with a recommendation to implement a feed-in tariff together with a comprehensive package of enabling legislation to ensure projects can be successfully implemented. Following introduction of the primary legislation for renewables in September 2008 and the green tariff in the first half of 2009 the second phase of the assignment is focusing on assisting NERC is developing the green tariff methodology, refinements to the primary legislation and development of detailed technical and operational procedures for assessment and approval of renewable energy projects. The initial work is due to be completed by the end of 2009 but it is envisaged that on-going assistance will be provided to NERC and other relevant entities (such as WEM) throughout the implementation period of the Facility.

The following areas are being or will be covered:

- Assessment of the full life cycle of project approval for renewable energy projects – from land acquisition and planning approvals through to grid connection and off take agreements, identifying bottlenecks and constraints to be addressed within the overall framework for renewable energy in Ukraine;
- Working with the government, NERC and the private sector to prepare a detailed framework for primary and secondary legislation and assist the government as required in implementation;

- Assistance to all involved licensing authorities (land, buildings, environmental, energy etc.) to prepare streamlined, transparent and clear procedures for approval of renewable energy projects;
- Working with project developers to assist in communication with government and involved authorities and agencies; and establishment of resources to enable information sharing and communication on a permanent basis.

The institutional building component has substantial potential to generate transition impact in the region by supporting the efforts of the authorities to put in place a favourable environment for the realization of SE projects. In addition to that, this component can help significantly to increase the number of projects to be financed under the Facility and will lay the background for their implementation.

1.3.2.2 Environmental Assessment and Procedures

Most renewable energy projects have a material environmental impact and, when a number of projects are built in one region, the cumulative effect can be materially adverse. Local environmental procedures have not been prepared to efficiently deal with renewable energy projects and there is no procedure in place for considering the likely cumulative impact of a number of similar projects being built close together (for example in a particular windy location or down a long river with several small hydro plants). The environmental support component will cover three main aspects which are described below. Engagement of consultants to undertake the various components will take account of possible conflicts by separating the SEA and procedures & standards assignments from the project support assignment:

- **Strategic Environmental Assessments (SEAs)** to assess the cumulative impact of renewable energy projects and establish the overall capacity for specified renewable energy projects in a region together with criteria to be met for approval. This will then form the basis of approval for each individual project application and will give both project developers and local parties clear and consistent information about what projects will be permitted, and provide a clear framework for permitting authorities to work from. The timeframe required for completion of SEAs will extend into many months and it is therefore proposed that initial projects will be approved on the basis of stand-alone evaluations so that these processes can run in parallel. SEAs will be organised by the Bank in consultation with the relevant environmental authorities in Ukraine; and
- **Environmental approval procedures and standards** will be assessed and guidance given on how these can be adapted to properly reflect the characteristics of renewable energy projects. The beneficiary of this component will be the relevant environmental authorities in Ukraine.

1.3.3 Capacity Building

This component will focus on developers and investors, aiming to provide the foundations for the takeoff of the renewables market through capacity building and awareness raising / marketing. Key components include:

1.3.3.1 Training and capacity building for developers and investors

This output will focus on building the capacity of developers and investors to get involved in renewable energy projects in Ukraine.

Activities will include:

- **Training needs assessment:** As a preparation and input to the training needs assessment, surveys will be made of relevant target groups to define knowledge gaps and subsequently training goals.
- **Develop training materials on the basis of trainings needs assessment:** This will include the refinement of a ‘Developer’s Handbook’ (drafted during the PPG) which may provide the basis of a general guide to developing projects. The handbook will include information in English and Ukrainian, and should include presentations and training materials on renewable energy resources in Ukraine, contact details of main sector stakeholders, development procedures, supporting legislation overviews, integration procedures and standards, critical risks and constraints along with other issues identified during the training needs assessments.
- **Train the trainers:** Based on the findings of the needs assessments training for local training service providers, to build capacity of investors and developers will be provided.
- **Implement training activities:** Local trainers, with the support of international technical experts as required, will then be used to provide the capacity building needed.

Training and Knowledge Evaluation: An important part of the training programme will be the obtaining of feedback on the training delivery and impacts, as part of an evaluation system for the capacity building activities.

1.3.3.2 Awareness raising and marketing of investment opportunities

Using GEF resources, EBRD will play a proactive role in engaging the wider investor / developer community in raising awareness of the opportunities and business case for renewable energy. The project will develop a communications strategy that will provide accurate information, technical information and assistance, and build awareness through dissemination of pertinent information.

1.3.4 Project Development Support

On-going project development support will be provided through a permanent Project Support Team (PST) based in Kyiv for the duration of the availability period of the Facility. The main purpose of the PST will be to work with the Bank in order to screen projects for support under the Facility and then to work with developers of selected projects in order to prepare proposals for EBRD financing. Through this approach the Bank will be able to provide developers the support they need to prepare projects in Ukraine while at the same time ensuring the information required for the Bank’s due diligence is prepared in a thorough and consistent way for each project.

The main components will be as follows:

- **project screening:** initial assessment of project proposals on behalf of the Bank to identify strong candidates and weed out weak ones. This analysis will take account of

the basic technical and commercial viability of the project, the sponsor's experience and financial strength and assess support needs going forwards for those projects which are accepted for further work. The output of this phase will be the information which the Bank requires in order to make a decision to proceed for Concept Review;

Following a positive decision from the Bank to proceed with a project the PST will then work with each developer as required to prepare their projects for final approval by the Bank. Although working closely with developers in order to help them prepare projects the consultants will do so under instructions from the Bank and with regular feedback and monitoring to ensure resources continue to be deployed effectively.

- **project permitting and licensing:** currently project developers have to negotiate for necessary approvals and contracts required for renewable energy projects on a unilateral basis working through a complex range of processes which are time consuming, expensive and with uncertain outcomes. Combined with the support provided to government and involved agencies this component will establish permanent resources to help project developers work through the approval process and clarify what steps have to be taken and what standards have to be met;
- **feasibility studies:** while developers will be expected to prepare adequate feasibility studies themselves some will benefit from advisory support to improve the rigour of analysis and identify additional issues to be addressed. This support will be combined with pre-screening of projects by the consultants so there will be an effective process to weed out weak applications and focus effort on good ones;
- **commercial negotiations** (e.g. with regulators, oblenegos and WEM): many projects are delayed or fail because of difficulties in agreeing arrangements with regulators and grid companies. Through this component developers will receive additional support in this process and both sides will benefit from the possibility to establish consistent terms between projects and harmonise with longer term legislation being prepared in parallel. Again this support will only be provided to screened projects which meet required criteria;
- **legal support in preparation of loan documentation:** outside counsel will be retained by the PST to prepare model loan documentation for finance from the Facility. Counsel will also be utilised to review all other relevant agreements and comment or advise on conditions or necessary amendments as required. Depending on project specific needs the Bank may also directly retain separate outside counsel to assist in finalising project documentation on behalf of the Bank. This will be determined on a case by case basis as required by OGC; and
- **project management:** While developers will be expected to manage their projects effectively many local enterprises lack the skills and experience in project management consistent with international best practice. This does not make them bad developers but simply reflects the scarcity of project management experience in the Bank's counties of operation, which in turn makes it harder for developers to raise finance. Consultants will assess developers' project management experience and approach and provide additional assistance as required. Again this component will be valuable in screening out weak projects as well as strengthening the good ones.
- **Environmental and social project support** to be conducted at the project level to support sponsors in conducting environmental and social analysis and facilitating the Bank's due diligence. The beneficiaries of this component will be project developers.

1.4 PROJECT PIPELINE

The Bank has engaged Fichtner to identify renewable energy projects which may be considered by the Facility. Fichtner's assignment (which was funded from a combination of project preparation grant provided by the GEF and the Special Shareholder Fund) was to identify as many potential projects as possible and to prepare a priority pipeline for consideration by the Facility based on financial viability and capability of the developer. This pipeline will form the basis for initial projects to be considered for financing by the Facility. However it is expected that additional projects will be identified as the Facility is developed.

Fichtner held meetings with over 50 companies in Ukraine and conducted analysis on around 40 projects based on information provided by developers. A total of seventeen projects have been recommended for inclusion in the Facility pipeline covering wind, small hydro, biogas and biomass projects. Details of these are summarised in the following table:

Proposed Feasibility Project Pipeline

Project Name / Investor / Developer	Type of Project	Capacity (MWel)	Investment Amount (mln Euro)
Eko Optima Wind Park Staro Sambor	Wind Power	20 MW	35.0
Zaporizhya Fat and Oil Enterprise reconstruction of boiler house	Biomass (Sunflower Husk)	3.8 MW	11.9
Pology Oil Extraction Enterprise biomass project	Biomass (Sunflower Husk)	2.8 MW	8.4
Westa Factory Wind Project	Wind Power	2.0 MW	4.9
Tis Eco Mariupol Landfill 2	Landfill gas	1.6 MW	2.8
Bakhmut Agrarian Union biogas plants on pig farm	Biogas	1.5 MW	3.2
Tis Eco Mariupol Landfill 1	Landfill gas	1.0 MW	1.9
Energoimpuls Slavuta SHPP	Hydro rehabilit.	1.0 MW	1.4
Energoimpuls Sluch SHPP	Hydro rehabilit.	0.9 MW	1.8
Podilskyi Farmer biogas project on pig farm	Biogas	0.5 MW	1.9
LAN Biogas plant on pig farm	Biogas	0.5 MW	2.0
Novosvit SHPP Buk	Hydro rehabilit.	0.5 MW	1.0
Novosvit SHPP Yurpil	Hydro rehabilit.	0.5 MW	1.0
Energoimpuls Koretsk SHPP	Hydro rehabilit.	0.3 MW	0.4
Novosvit Troyanovska SHPP	Hydro rehabilit.	0.26 MW	0.54
Novosvit Kryvo-Kolina SHPP	Hydro rehabilit.	0.2 MW	0.4

An additional twelve projects have been suggested for inclusion in the Facility at a later stage, mostly because more time is needed to establish technical parameters and financing arrangements. Some of the projects and companies identified so far are described below. These give a good indication of the type of projects under consideration. Full details of the project pipeline and related analysis are provided in Annex 2.

- The Bank has already held discussions with several renewable project developers in Ukraine, the most advanced of which is Novosvit, a developer of small hydro projects. Novosvit has been operating in Ukraine for over 10 years and has successfully developed 14 projects with total investment over UAH 21 million (€3.1 million). These have all been financed with short term bank debt and Novosvit's growing equity reserves. Debt is re-financed every 2-3 years. The company has a pipeline of 6 to 7 larger projects with total investment needs around UAH 56 million (€8.2 million) but will be unable to finance these without access to longer term limited recourse finance. Other companies in Ukraine are in a similar position.
- Another company "Closed Joint Stock Company Bakhmut Agrarian Union" owned by the Industrial Union of Donbass (the EBRD client) operates one of the largest pig farms in Ukraine (70,000 pigs). To date Bakhmut Agrarian Union uses diesel for the production of the heat and hot water and gets its power from the grid. The company plans the installation of a biogas-fuelled CHP plant with a gross electrical capacity of 1.5 MW and a gross heat capacity of 1.5 MW on its premises for future generation of electricity, the production of heat for the pig complex, administrative buildings, and for production of hot water. Well-know technology from EnviTec Biogas AG of Germany for its biogas component and GE-Jenbacher generator sets will be used. Total project costs are estimated at EUR 4.8 million with expected project IRR at 20%.
- Pology Oil Extraction Enterprise, one of the largest vegetable oil producers in Ukraine, has already commissioned two boilers fired by sunflower husk and is going to replace the third old gas-fired boiler with a new husk-fired one (with 2.8 MW steam turbine generator). Thus the plant will be converted into a CHP. The plant has about 11.2 tons/hour of husk waste available for energy uses, of which 9.3 tons would be used under the proposed concept. Total project costs are estimated at EUR 8.3 million with expected IRR at 42%.

1.5 PROJECT CO-FINANCING ARRANGEMENTS

The Bank will seek or require equity and co-financing participation in projects supported by the Facility. Availability of commercial financing for renewable energy projects in Ukraine is extremely limited at the current time. Hard currency lending is restricted to larger corporates with export revenues and high levels of collateral. Hyrvna loans are relatively short term (generally not more than 5 years) and unlikely to be available on a limited recourse basis. This gives developers very few possibilities other than their own equity and short term debt which can be raised against collateral. Therefore the number of co-financing sources is likely to be limited. The most likely sources are the following:

- **Other IFIs:** principally the IFC with which the Bank has been in regular contact to discuss the overall programme for renewables in Ukraine and to co-ordinate our activities. The IFC is interested to consider co-financing renewable energy projects supported by the Bank under the proposed Facility, although this may be limited to larger projects only with total investment needs exceeding €50 million;
- **Ukraine banks:** in practice at the current time only UkrExim bank is likely to be able to consider long term financing for renewable energy projects, and then only in local currency. The Bank will continue to discuss project opportunities with UkrExim bank as well as help to develop its strategy for renewables in line with the priorities agreed with the Government of Ukraine. If any commercial banks expresses and interest in

co-financing any projects under the Facility the EBRD will make available information from the consultancy services under the technical assistance programme and will decrease its loan amount to allow maximum leverage of available commercial finance;

- **UKEEP:** under UKEEP participating banks are able to consider renewable energy projects although so far non have been proposed and, as noted above, participating banks are likely only to be able to provide smaller loans in local currency fully covered by collateral – which may be limited for developers seeking some or all of the required finance on a limited recourse basis. Where possible the Bank will seek and encourage financing through UKEEP including co-financing with the Facility provided acceptable risk-sharing terms are established;
- **The Clean Technology Fund (CTF):** the CTF has, subject to (i) approval of the Ukraine Investment Plan by the CTF Trust Fund Committee at its session on 20/21 October 2009, and (ii) approval of the project concept during November 2009, an amount of US\$ 75 million allocated to support investment in renewables in Ukraine, jointly to EBRD and IFC, with the exact split to be determined. This will include funding for projects developed under the Facility. Once the two approval steps have been taken, there would be no further requirement from the CTF side to have individual sub-projects approved. The Bank will have flexibility in determining the volume required for support of the facility out of the US\$75 million.

The concessional funding from the CTF is able to cover up to 20% of the investment needs of a project, with the exact level of concessionality structured to reflect project needs, but no better than 75 BP, 20 years maturity, 10 years grace. CTF financing will be subordinate to commercial finance but not to EBRD loans. Such use of CTF concessional loans will be designed to allow decreased risk to potential private lenders and encourage their participation. The Bank will seek to make full use of the CTF funding wherever possible consistent with the financing needs of each project and with the Board approved paper on the Climate Investment Fund (BDS09-201); and

- **Developer's equity:** the Bank will seek a realistic level of equity contribution from developers and other investors. This may be through corporate structures where the project owner is an existing business (such as farming operations developing biomass or biogas projects based on farm waste) or developers with an existing portfolio of projects available as security.

Given the current limitations in the Ukraine credit market the initial financing is likely to be based around financing from the Bank and CTF only alongside developers' own equity. While project financing will be determined on a case by case basis depending on both credit quality and availability of funds the general financing structure which is proposed based on current market conditions is: sponsor's equity 30%; CTF 20% and EBRD 50% - always subject to sound banking principles. While this level of Bank financing for project finance exceeds the normal limit of 35% this is consistent with the Bank's lending guidelines which, inter alia, allow an exception where (i) the amount of Bank lending is below €15 million or (ii) where an operation is "especially important to the Bank's priorities" and where limited external financing is available. When commercial banks are willing to participate as senior lenders the level of EBRD financing will be reduced accordingly – maintaining the proposed level of subordinate CTF funding.

2. RATIONALE FOR THE BANK'S INVOLVEMENT

2.1 TRANSITION IMPACT AND BANK STRATEGY

Bank strategy

The proposed Facility is consistent with the EBRD Ukraine strategy (BDS/UK/07-01) which states that “the Bank will promote renewable projects as an alternative to fossil-based projects and will engage in policy dialogue and consider TC funding to help introduce renewable related tariff structures to support such projects”. The strategy also prioritises “*promoting energy efficiency and security, environmental protection and sustainable use of natural resources throughout all sectors of the economy*”. The strategy also sets an operational focus to “*accelerate policy dialogue in the area of energy efficiency; providing support to the National Agency for Efficient Use of Energy Resources and the Parliamentary Committee for Fuel and Energy Complex, which are developing energy efficiency and renewable energy legislation, in particular on small hydro and ‘green energy tariffs’*”.

In respect of grant financing (such as from the GEF and also applicable to concessional financing such as the CTF) the strategy states “*The Bank will also seek to attract and utilise grant co-financing from EU and other donors to complement projects in the infrastructure, municipal, energy efficiency and renewable energy sectors...*”.

The Facility is consistent also with the Bank’s Energy Operations Policy (BDS06-093), adopted in July 2006, which states the “*Bank will support all forms of renewable energy...[and]...will support new financial instruments to meet the specialised needs of the renewable energy sector...[and]...will consider smaller transactions below its normal thresholds*”. With respect to policy dialogue the Policy states “*the Bank will engage in policy dialogue and encourage the development of supportive regulatory frameworks, including promoting energy markets that guarantee access to the grid by small scale generation, which in most cases involve alternative and renewable energy sources*”. The Policy also provides for TC support stating the “*Bank will seek TC resources to provide technical assistance and support capacity building. TC support will also be considered at the project level where this helps overcome market failures, or other hurdles, for example where there are additional environmental appraisal or other technical or commercial due diligence needs which are more challenging than in established markets.*”

Transition impact potential

UREDLF is expected to have the following sources of transition impact:

- *Supporting framework for renewable energy market through regulatory reforms and capacity building.* Part of the TC funds will be used to support dialogue with the Ukraine authorities on adoption of new legislation to support renewable energy sources, as well as in building the necessary institutional capacity for implementation both at the project level and within the enabling institutions such as the regulator and UkrEnergo. This will create a proper framework for the development of renewable energy projects in Ukraine and will help the country in its much needed efforts to reduce dependence on energy imports and the environmental impact of energy production.
- *Demonstration of replicable products and processes which are new to the economy:* The project will support development and financing of some of the first renewable

energy projects in Ukraine, all of them private in the generation sector, which is dominated by state controlled nuclear and thermal power plants. The facility will provide a highly visible demonstration to other potential developers that projects can be successfully implemented in this market. By assisting in the development of power off-take and financing contracts and project documentation the Facility will help establish commercial standards that can be replicated and will further encourage other developers to enter the market. Furthermore, the Project will support and facilitate financing structures which are not widely available for these types of projects from local banks but which may be expected to enter the market once precedents are established. As long term limited recourse financing is essential to enable increased levels of investment for renewable energy projects in Ukraine the Facility could have a fundamental role in establishing this market in Ukraine. Financing from CTF is structured so as not to distort the market: (i) CTF loans will be priced close to EBRD loans, (ii) as a subordinated instrument CTF loans will leverage private lenders once they are available; (iii) the risk of crowding out of private finance is also mitigated because during the lifetime of the Facility long-term limited recourse finance is not likely to re-emerge. Should it become available the subordinated status of CTF loans would leverage rather than displace private finance;

- *Transfer of skills:* The project is expected to build and transfer expertise related to renewable energy project development to Ukraine companies. In particular this will bring much needed expertise in project management as well as promotion of renewable technologies and assistance to UkrEnergo in managing power from renewable sources connected to the grid;

<i>Transition impact objectives of project</i>	<i>Monitoring benchmarks</i>	<i>Implementation timing</i>
<ul style="list-style-type: none"> - Strengthening frameworks for renewable energy market 	<ul style="list-style-type: none"> - RES law revised by Verkhovna Rada to remove deviations from good international practice - Feed-in tariff methodologies and procedures approved by NERC and effective - Detailed technical and operational procedures for assessment and approval of renewable energy projects by distribution companies adopted and effective - Streamlined procedures for permitting of renewable energy projects adopted - SEAs completed and approved by authorities covering key regions with RES potential 	<ul style="list-style-type: none"> - 2010 - 2010 - 2010 - 2010
<ul style="list-style-type: none"> - Demonstration of new replicable behaviour/activities 	<ul style="list-style-type: none"> - At least 10 projects financed and connected to the grid - At least 90 MW of renewable capacity installed and connected to the grid - At least 350,000 tonnes of CO₂e avoided per annum - At least 75% of projects financed on limited recourse basis - Commercial finance attracted to cover at least 20% of the total borrowing under the facility - Commercial success of the projects and undisturbed repayment of loans - At least 80% of the volume of the CTF loans will be priced commercially and no further subsidies obtained by the projects. 	<ul style="list-style-type: none"> - 2012 - 2012 - 2012 - Throughout the life of the facility - Throughout the life of the facility - Throughout the life of the facility - Through implementation

<i>Transition impact objectives of project</i>	<i>Monitoring benchmarks</i>	<i>Implementation timing</i>
- Transfer and dispersion of skills	- Number of firms reached through marketing for investments in renewable energy projects: 20	- 2012

Transition risks

The main risks to the transition impact of UREDLF relate to the satisfactory development of the regulatory framework necessary for long terms support of renewable energy projects in Ukraine and to the performance of the underlying investments in increasing the level of utilization of renewable energy sources. These risks are mitigated by: i) providing comprehensive and sustained support to the Government of Ukraine in developing the regulatory framework; and (ii) the clear need for Ukraine to reduce dependence on energy imports and by implication develop all possible alternatives as quickly as possible.

At the project level risks are mitigated by (i) enforcing appropriate screening and eligibility criteria; (ii) providing comprehensive project support through the TC programme combined with efficient monitoring to identify problems at an early stage; and (iii) pursuing policy dialog as part of the institutional capacity building component.

2.2 ADDITIONALITY

UREDLF achieves additionality by offering: (i) medium and long term limited recourse financing for renewable energy projects; and (ii) technical expertise and know how in assessing and structuring such projects. There are no commercial lenders that currently offer limited recourse finance for renewable energy projects in Ukraine or that can combine the Bank's relationships and expertise in Ukraine, its sustainable energy mandate and tailored technical consultant services into a commercial financing scheme comparable to the UREDLF.

Additionality Dimension	Verification and/or counter factual results	Timing
- Terms	- Medium/Long term financing on a limited recourse basis for renewable energy projects is not readily available in Ukraine.	<i>During the implementation of the Facility</i>
- EBRD attributes	- Dialogue with Ukraine authorities on main impediments to realisation of renewable energy projects; - TC offered to borrowers to facilitate efficient project implementation;	<i>During the implementation of the Facility. (Assess timeline)</i>
- Conditionality	- Through specific key covenants in the agreements, the Bank will encourage clients to	<i>During the implementation of</i>

Additionality Dimension	Verification and/or counter factual results	Timing
	apply high standards of corporate governance and business conduct in line with the Bank’s policies and practices, e.g. transparency of ownership, adequate management capacity, sound reputation and integrity. - Covenants on compliance with environmental standards will be also imposed.	<i>the projects.</i>
- Commercial Mobilization	Whenever appropriate, commercial (or co-) financing will be mobilised, even though this is not the main objective behind UREDLF, given the small size of the target projects.	<i>During the implementation of the Facility</i>

2.3 ENVIRONMENT

The operation is categorised C/0 and as such it will not require any environmental due diligence studies.

Sub-projects financed through this Facility will be appraised on a case-by-case basis utilising, in the first instance, a simplified environmental questionnaire which will be developed by the Environment and Sustainability Department (ESD). The questionnaire will be completed by borrowers seeking a loan and sent to ESD for review. Proposed Strategic Environmental Assessments will inform decisions on individual projects. Particularly where the Bank is investing in higher environmental risk companies, additional studies will be carried out with assistance from external consultants (preferably engaged locally) to fully understand all environment-related liabilities and environmental risks associated with the company’s operations, and to develop and agree upon the environmental action plan as required. Borrowers will be required to comply, at a minimum, with national standards for environment, health and safety and provide the Bank with an annual environmental report on environmental, health and safety issues.

2.4 PROJECTED PROFITABILITY FOR THE BANK

Projected profitability will be determined separately for each sub-project.

2.5 OTHER RELEVANT ISSUES

None.

2.6 MEASURING / MONITORING SUCCESS

The project’s success should be assessed with respect to:

- the performance of the portfolio;
- the performance of individual investments; and
- the degree to which the Facility strengthens the development of the renewable energy sector in Ukraine.

The Facility will be monitored at the level of each investment, as well as on an aggregate basis. The performance of individual investments will be monitored through quarterly (where possible) and annual financial statements and project progress reports. To ensure that the objectives and requirements of the Facility are met, the TC consultants will monitor and report on implementation of each sub-project and will also verify the project when the implementation is completed. The Bank will also monitor client performance through regular visits to the client premises during investment implementation. The overall success of the Facility will be measured by its overall return, transition impact, the number of clients supported and the quality of the projects financed.

3. KEY RISKS AND SENSITIVITY ANALYSIS

3.1 SENSITIVITY ANALYSIS / RISKS

Risks	Effect / Probability	Comments
Country risk	Medium/High	These risks mainly involve deterioration in the macro-economic and political situation in Ukraine and adverse changes in the legal and regulatory framework, which can adversely affect the performance of the projects. These risks will be assessed upon submission of the specific projects as well as on a portfolio basis.
Implementation risk	Medium / Medium	Local developers usually lack experience in project finance and project management. This is why UREDLF will employ TC funds to engage consultants which will advise clients on issues related to project design and implementation, among others.
Performance risk	Medium/Low	The potential clients will be carefully selected in accordance to the Bank's investment criteria and credit risks will be thoroughly analysed during the Bank's streamlined due diligence with active RO involvement and external assistance from the outside technical experts. Specific key covenants will be incorporated in the legal documentation and closely monitored during the project implementation. TC funded post-investment advisory services may be provided. Performance risks related to repayment and debt service capability will be addressed.
Regulatory risk	High/Low to Medium	The local legislation and regulatory framework may not be brought quickly into a state that will facilitate efficient realisation of renewable energy projects. In the long run, the appropriate regulatory framework and market environment will emerge. In the short run, however, the regulatory risk is present. The institutional capacity building component of the Facility will assist in mitigating this risk.

ANNEXES TO REPORT

Annex 1 Review of the Renewable Energy Sector in Ukraine

Annex 2 Terms of Reference

ANNEX 1 - REVIEW OF RENEWABLE ENERGY SECTOR IN UKRAINE

A review of the development prospects for Renewable Energy Sources (RES) in Ukraine taking account of scientific, technical and economic forecasts for home produced equipment that was undertaken by NAER (the National Agency for Efficient Use of Energy Resources) showed the theoretically achievable potential for the main types of renewable energy sources to be:

Table: RES Potential in Ukraine¹

Direction of development of non-traditional and renewable energy sources	Annual energy potential			
	Theoretically possible		Technically achievable	
	billion kW·h	million tce	billion kW·h	million tce
Wind Power	270.0	97.2	41.7	15.0
Small Hydro Power	12.5	4.5	8.3	3.0
Biomass	407.0	50.0	162.8	20.0

In 2001 a group of Ukrainian scientists compiled a comprehensive atlas of renewable energy resources of Ukraine. This atlas showed the geographical distribution of different renewable energy resources and calculated their physical, technical and economic potential. The atlas indicates that Ukraine has significant potential for the development of all types of renewables, gives a general picture of present status of renewables utilization and recommendations for further development. The atlas was updated in 2005².

1. WIND

1.1. Wind Atlas

According to data of the Institute of Renewable Energy of NASU³ Ukraine has significant wind energy resources - the annual technical wind energy potential is estimated at 30 billion kWh.

The use of wind generators on a commercial scale is most efficient in the regions of Ukraine with an annual average wind speed of 5 m/s at a height of 10m above ground level. These are the Sea of Azov and the Black Sea coast, in Odeska, Khersonska, Zaporizska, Donetska, Luhanska, Mykolayivska oblasts, the Autonomous Republic of the Crimea and in the region of the Carpathians. Data from Renewable Energy Agency⁴ identifies annual average wind speeds greater than 5 m/s in seven regions and two zones: Karpatsky, Prychornomorsky, Pryazovsky, Donbasky, West-Crimean, East-Crimean regions and Kharkovska and Poltavaska zones.

The implementation of the national program for the development of wind power for 2010 envisages a total annual electricity production at wind farms and stand-alone wind generators of approximately

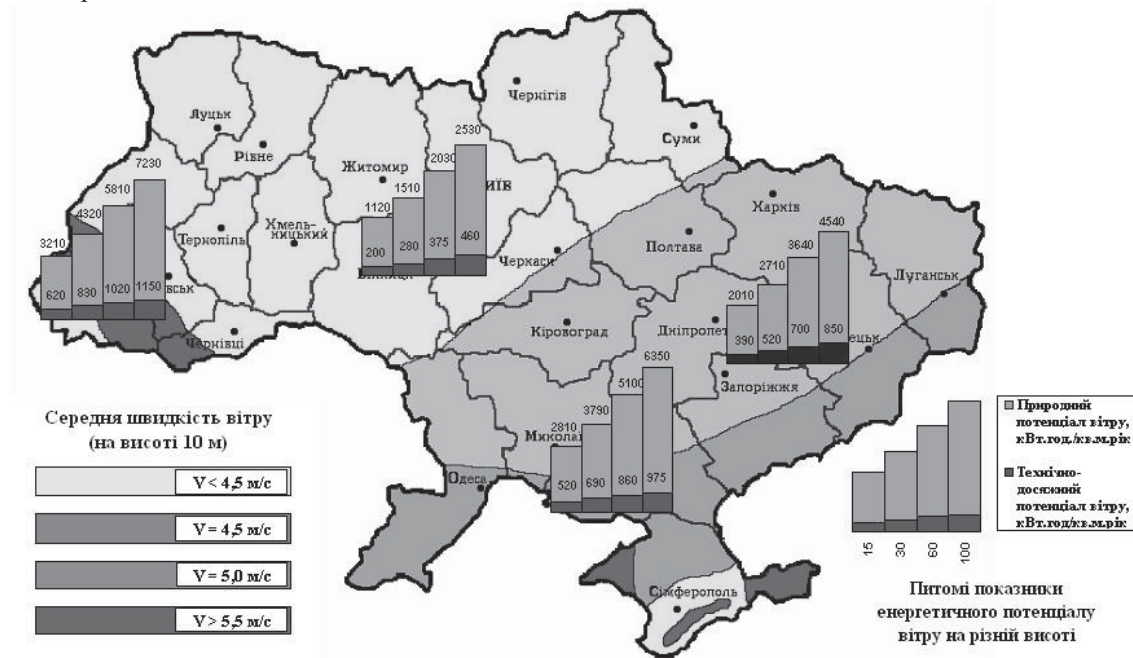
¹ Additional Measures to the Program of State Support for the Development of Nontraditional and Renewable Energy Sources and Small Hydro and Heat-Power Engineering for the period of 2008-2015, draft, NAER, Institute of Renewable Energy of NAS of Ukraine

² Institute of Renewable Energy of NAS of Ukraine, <http://www.ive.org.ua/>

³ Institute of Renewable Energy of NAS of Ukraine, <http://www.ive.org.ua/>

⁴ Renewable Energy Agency. <http://www.rea.org.ua/>

5.7 million MWh, which would equate to approximately 2.5% of the total annual energy consumption in Ukraine.



Енергетичний потенціал вітру на території України

Figure: Wind potential in Ukraine (source: Institute of Renewable Energy, NASU) (brown and red zones are identified as promising locations)

The estimated technical potential in regions is estimated at 16,000 MW. This estimate is based on available land in regions with a windspeed higher than 5.0 m/s at 10 m height. This 16,000 MW corresponds to a possible annual electricity production of about 30 billion kWh.

1.2. Wind measurements

A wind atlas has been developed for the Ukraine. This wind atlas was based on the following data^{5,6}:

- long-term observations (20-30 years) from meteorological stations in the system of Derzhhidromet of Ukraine carried out in accordance with the methodology of the World Meteorological organization;
- observations of wind characteristics at permanent computer-aided meteorological posts at operating wind farms certified under the international standards;

⁵ Substantiation of supplement to “Energy Strategy of Ukraine for the Period until 2030” with regard to the development of wind industry (NASU, Institute of Renewable Energy, NSAU, SR&PE “Ukrenergomash”, draft, 2007)

⁶ Substantiation of supplement to “Energy Strategy of Ukraine for the Period until 2030” with regard to the development of wind industry (NASU, Institute of Renewable Energy, NSAU, SR&PE “Ukrenergomash”, draft, 2007)

- observations of temporary computer-aided meteorological posts of the Interbranch Scientific and Technical Center for wind energy of NASU and other organizations, which are installed on the sites where construction of wind farms is expected.

This wind atlas is the basis for the wind potential estimates.

1.3. Current Wind Plant Locations

The following table gives an overview of the current wind plant locations in the Ukraine.

Table: Current wind farm locations

Name	Location	Turbines	Capacity	Year of commissioning
Tarkhankut	Tharkankut Cape, Crimea	127 x 107.5 kW 4 x 600 kW	18.5 MW	2001
Novoazosk	Novoazovsk district, Donetsk Oblast	204 x 107.5 kW 6 x 600 kW	21.9 MW	?
Donuzlav	Donuzlav, Crimea	101 x 107.5 kW	10.9 MW	1992
Chornomorske	Donuzlav, Crimea	2 x 600 kW	1.2 MW	2007
Sudak	Meganom Cape, Crimea	58 x 107.5 kW	6.2 MW	2001
Myrne	Saki District, Crimea	177 x 107.5 kW 3 x 600 kW	22.6 MW	1998
Prisnovodnenske	Lenin District, Crimea	52 x 107.5 kW	5.6 MW	2006

An indication of the theoretical and realised energy yield in 2006 for two different locations and wind turbines is shown in the following chart. This should be viewed as indicative only since no firm conclusions may be drawn from a single year of operation.

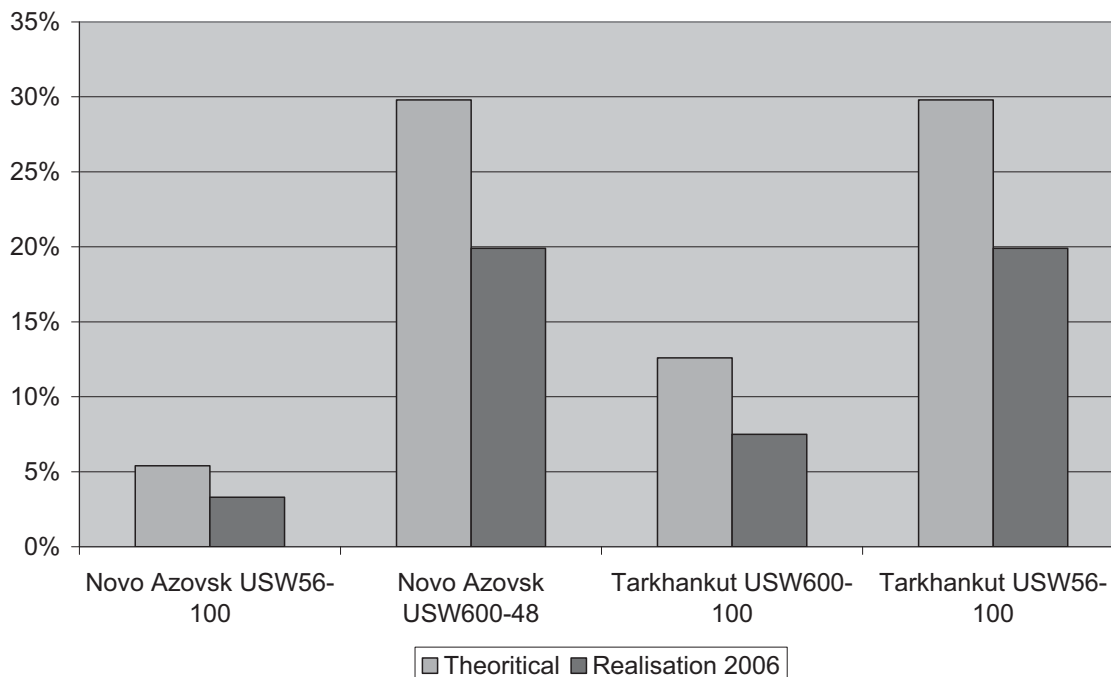


Figure: Overview of theoretical energy yield and realisation in 2006

2. SMALL HYDRO

Ukraine has over 63,000 small rivers and streams with a total length of 153.8 thousand km, but, approximately 60,000 (95%) of them are very small (with a length less than 10 km). Most small rivers with a length of less than 10 km have a catchment area from 20.1 to 500 km². The rivers of the Carpathians feature the largest flow, the run-off of which depends to a great extent on the altitude of the basin.

2.1. Atlas

According to data of the Institute of Renewable Energy of NASU⁷ the total theoretical hydropower potential of small rivers in Ukraine is approximately 12.5 billion kWh or 3 MTCE, which is approximately 28% of the total hydro potential of all rivers of Ukraine. This number is confirmed by Institute “Kharkivhidroproekt”, Institute “Ukrsilenergooproekt” and the atlas of water resources. The technical potential is 8.3 billion kWh per year. At present, 67 Ukrainian operating power plants generate 320-390 million kW·h of electricity per year, i.e. 5% of the technical potential of small hydropower is used.

Table: Hydropower potential of small rivers of Ukraine (primary replaced energy)

General potential		Technical potential	
billion kWh/yr	million tce /yr	billion kWh/yr	million tce /yr
12.5	4.5	8.3	3.0

These figures are in line with those given by the Ministry of Energy of Fuel and NASU.

⁷ Institute of Renewable Energy of NAS of Ukraine, <http://www.ive.org.ua/>



Гідроенергетичний потенціал малих рік України

Figure: Hydropower potential of small rivers of Ukraine (source: Institute of Renewable Energy, NASU)

2.2. Existing and Potential Sites

By the beginning of 2005 there were 158 small HPPs in Ukraine, of which 65 (total capacity of 106 MW) were in operation generating between 278 and 395 million kWh per year depending on weather conditions⁸. The largest are operated by the Ministry of Energy and Fuel (Minpalyenergo of Ukraine), are connected to the distribution systems operated by the oblast electricity supply companies and generate more than 80% of the total amount of electricity generated by small hydroelectric power plants. These include relatively large power plants including those at Tereble-Rykska, Haivoronska, Korsun-Shevchenkivska, Steblivska and Ladyzhynska. The remaining small hydropower installations belong to Derzhvodhosp and Minagropolytyky of Ukraine, local executive bodies and individual business entities.

The technical condition of these operating HPPs is reported to be poor, many with worn-out turbines and generators, undermined water control structures and faulty electrical equipment. The actual condition of many small HPPs is unknown. The property boundaries of most non-operating small HPPs is reported to be poorly defined and there are indications that some dams have no inspection and repair arrangements in place.

⁸ All-Ukrainian Association “Ukrhydroenergo”

3. BIOMASS

The Institute of Renewable Energy of NASU⁹ considers that the total energy potential of biomass is the sum of the energy potential of animal agricultural biomass, vegetable agricultural biomass and energy potential of forest waste. The STC Biomass (under the Institute of Thermophysics of NASU)¹⁰ estimates the total annual amounts of such waste in Ukraine to currently be of the order of 120 million tonnes, which is equivalent to 23 million tce per year. This includes agricultural and forestry residuals also the biomass potential produced by dedicated agricultural activities, including crops for biofuel production and energy crops (willow, poplar, miscanthus). Taking this into account the estimates of the Institute of Renewable Energy of NASU and the STC Biomass are approximately the same. A large difference exists in the use of peat for energy purposes, where IRE indicates a much higher potential than the biomass institute. It is expected that the use of peat might become problematic in the future because of environmental concerns resulting in prohibition of its use.

Technically available biomass resources capable of use in the power industry are estimated at 14 million tce per year. Renewal and further development of the national economy is expected to create a further increase in the amounts of biomass waste. The energy potential of biomass in Ukraine is given in the table below.

The main application of biomass is currently for heating purposes. For electricity generation use can be made of combined heat and power plants or by means of co-firing the biomass in thermal plants. However, there are technical limits to the co-firing of solid biomass. Typical (energy) ratios for biomass to coal are 5% for co-firing straw and 10-15% for co-firing wood, which limits the co-firing in coal fired plants to 2-4 Mtce/year, which is the same order as the available potential.

Table: Energy potential of biomass in Ukraine (source: STC Biomass)

Type of biomass/biofuel	Energy potential, million tce/yr
Crops straw	4.6
Corn stalk, cobs for chipping	2.6
Sunflower stalk and peeling	2.6
Biogas from manure	1.6
Waste gas	0.2
Gas from organic waste	0.3
Wood waste	1.6
Fuel from municipal solid waste	1.9
Liquid biofuels (biodiesel fuel, bioethanol)	2.2
Timber (cane, poplar, China reed)	5.1
Peat	0.6
Total	23.3 (16 million tonne of oil equivalent)

⁹ Institute of Renewable Energy of NAS of Ukraine, <http://www.ive.org.ua/>

¹⁰ Biomass Center (Institute of Thermophysics of NASU)

3.1. Wood

Forests cover some 16% of the Ukrainian territory; most located in the Carpathians and Polissia. According to the Institute of Renewable Energy of NASU the energy potential of forest waste in Ukraine is 861,6 thousand tce/yr for replacement of fossil fuel.



Енергетичний потенціал відходів лісу в Україні

Figure: Energy potential of forest waste in Ukraine (source: Institute of Renewable Energy, NASU)

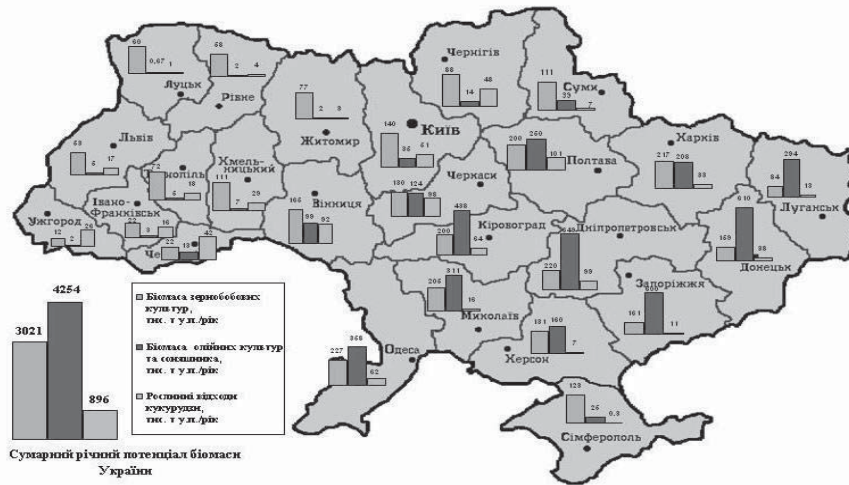
The NTC Biomass (under the Institute of Thermophysics of NASU) indicates that Ukraine harvests 14 million cubic m of wood. For energy needs 1.6 mln m³/yr of harvesting residues, 2.1 mln m³ of wood processing waste, and 3.8 mln m³/yr of firewood are available which is equivalent to 2 Mtce/year. Location of the potential of harvesting residues in Ukraine is given in the Figure. The figure shows that the major wood resources are mainly in the western part of the country, while the coal power plants are in the east.



Figure: Location of the potential of harvesting residues in Ukraine (source: Institute of Renewable Energy, NASU)

3.2. Agro Residuals

According to the Institute of Renewable Energy of NASU the potential of vegetable agricultural biomass in Ukraine is as follows: biomass of leguminous plants - 3021 thousand tce/yr, biomass of oil crops and sunflower - 4254 thousand tce/yr, corn waste– 896 thousand tce/yr.



Потенціал рослинної сільськогосподарської біомаси в Україні

Figure: Potential of vegetable agricultural biomass in Ukraine (Source: Institute of Renewable Energy, NASU)

The Renewables Institute of NASU offers this figure as representative of the location of agricultural biomass in Ukraine:



Figure. Agricultural biomass in Ukraine

3.3. Waste

In the past Ukraine produced biogas at wastewater treatment plants but production stopped, mainly when the digesters deteriorated. In Ukraine, landfill gas generated from municipal solid waste during their degradation under anaerobic conditions at open dumps and landfills is be considered as separate type of biomass. Annually about 15 million tonnes of MSW is generated in Ukraine. More

than 90% of MSW is disposed of at open dumps: 700 landfill sites in Ukrainian cities annually receive approximately 9 million tonnes of municipal solid waste. At approximately 140 of these landfill sites landfill gas could be successfully collected. Of these 140 landfills 90 are the largest containing up to 30% of all MSW of Ukraine. They are the most economically rational for extraction and utilisation.

According to the Scientific Engineering Center Biomass, up to 400 million m³/year of landfill gas could theoretically be collected and used for energy purposes. According to the Renewable Energy Agency, technical potential of biogas is 2.3 billion m³ from manure, 0.33 billion m³ from sewage sludge, 2.3 billion m³ from landfill gas, which corresponds to 3500 thousand tce/year. This Agency estimates that biogas production in Ukraine may reach 1.3 Mtce/year by 2030 and 2.1 Mtce/year by 2050. Large-scale CHP biogas plants are to be installed on cattle farms, pig farms and poultry factories. Although the potential figures developed by these organisations differ significantly, they both demonstrate that there is considerable potential for the use of biogas in Ukraine. From the nature of their studies, it is probable that only landfill gas and biogas at larger sewage sites may be realistically supported using one of the conventional methods for supporting renewable energy source electricity. The commercial development of other biogas sources may be capable with construction support being given to farming communities with the main focus being the production of electricity for their own use.

ANNEX 2-TERMS OF REFERENCE

1. PROJECT SUPPORT UNIT TERMS OF REFERENCE

UKRAINE RENEWABLE ENERGY DIRECT LENDING FACILITY

PROJECT SUPPORT UNIT

TERMS OF REFERENCE

1. Background

Ukraine relies heavily on imported fuel (up to 80% of primary energy needs during peak demand) and its own generating assets are ageing and highly polluting. The need to improve energy security and reduce the environmental impact of its energy sector is acute. Renewable energy can play a key role in addressing both these issues: Ukraine has great potential yet these resources have hardly been utilised so far - the technical potential for wind energy is estimated at 40 TWh/year, small hydro - 8.3 TWh/year, biomass - 120 TWh/year, and solar energy - 50 TWh/year, yet current production is only 0.5 TWh/year. The main reason for this low level of activity is that until now the legislative and regulatory frameworks have not been adequate to allow the implementation of the numerous potentially feasible projects in this area.

To assist in addressing these issues and helping Ukraine to realise its renewable energy potential the EBRD has launched the Ukraine Renewable Energy Direct Lending Facility (UREDLF or the Facility). UREDLF aims to provide development support and debt finance to renewable energy projects which meet required commercial, technical and environmental standards. The Facility comprises an amount of up to €50 million for financing projects together with a technical assistance component of €[6] million funded from a grant of \$8.45 million from the Global Environment Facility and [-] (the Technical Assistance). A detailed description of the Facility and related financing arrangements is provided in Annex 1.

The Technical Assistance will provide a comprehensive framework of support for the Facility covering (i) regulatory issues; (ii) environmental assessments; and (iii) capacity building and project support. Different consultants will be selected for each of these three components. A more detailed overview of each component is provided in Annex 2.

2. This Assignment

This assignment (the Assignment) is to provide capacity building and project support for the Facility. The detailed terms of reference are set out below.

3. Objectives

The overall objective of the Assignment is to assist the launch and implementation of the Facility. More specifically, the Consultant will:

- Market the Facility and ensure that the widest range of stakeholders are informed about the Facility and its benefits, in order to ensure a prompt uptake of the financing and the related benefits;
- Provide capacity building and training support
- Ensure effective screening of projects to identify and support those that are technically and commercially viable and to screen out those projects which are not;
- Supporting potential borrowers in identifying appropriate investment opportunities and developing proposals for financing under the Facility;
- Ensure that borrowers proposing projects are, in all respects, compliant with national and applicable EU, environmental, health, safety and labour standards;
- Establish an efficient tracking, monitoring and reporting system to ensure the availability of accurate data for the utilisation of the Facility;

4. Scope of Work

The main components of the scope of work are as follows:

- Marketing of the Facility and development of a pipeline of energy projects;
- Training and capacity building for developers and financiers;
- Assistance to the borrowers in the preparation of energy projects and the provision of support to the EBRD in the assessment/due diligence of potential borrowers and energy projects; and
- Administration and monitoring of the Facility.

Each of these four areas of activity is described below. Additional details on the division of responsibilities between the Consultant and EBRD are outlined in Annex 2.

4.1 Marketing

In order to ensure an effective launch and utilisation of the Facility, the Consultant will conduct, with the preliminary agreement of the Bank for each of the tasks, the following marketing activities:

- Preparation of a strategy and marketing plans for the Facility and the business case for renewable energy. The Consultant will be responsible for developing a communications and marketing strategy that will build awareness of the opportunities and of the facility, and implementing the marketing plan with the relevant parties. Design and maintenance of a website for the Facility. The website shall provide information about the eligibility criteria for projects, their benefits, the eligibility criteria for borrowers, the procedures, the regular updates on the performance of the Facility and other relevant information. The website shall make reference to the financial support provided by the EBRD, GEF and other donors;
- In close cooperation with the EBRD, the Consultant will prepare and disseminate marketing materials that will outline the structure of the Facility, the

advantages for prospective borrowers, the nature of eligible projects and the available consultancy services. The marketing materials shall be completed within six weeks from the start of the assignment;

- In promoting the Facility, the Consultant will work with government ministries and departments responsible for energy, energy agencies (if applicable), business associations, renewable energy associations (if applicable) and other agencies in Ukraine in order to promote the Facility to likely recipients;
- At least three workshops for presenting the Facility shall be held. The Consultant shall aim to attract participation from as many potential borrowers as possible. Advertising shall be placed in suitable publications and web-sites as appropriate.
- Providing continued marketing services to companies enquiring about the Facility including, where agreed with the EBRD, additional workshops for specific regions or sectors for which such additional marketing would improve awareness of and interest in the Facility;
- Take appropriate actions to ensure that marketing activities have the required impact for the Facility.

4.2 Training and capacity building

In order to build the capacity of developers and investors to get involved in renewable energy projects in Ukraine, the Consultant will conducting the following training and capacity building activities:

- Training needs assessment. As a preparation and input to the training to be delivered, the Consultant will prepare and implement surveys should be made of relevant target developer and investor groups to define baseline levels of knowledge and experience (to identify knowledge gaps and establish baseline capacity levels (a ‘renewable energy capacity score¹¹) and to define training goals;
- Develop training materials on the basis of training needs assessment. This will include the refinement of a ‘Developer’s Handbook’ (drafted during the PPG) which will provide the basis of a general guide to developing renewable projects in Ukraine. The handbook will be available in English and Ukrainian, and should include comprehensive and practical information on renewable energy resources in Ukraine, contact details of main sector stakeholders, development procedures, supporting legislation overviews, integration procedures and standards, critical risks and constraints along with other issues identified during the training needs assessment. Presentations and curricula will be developed to accompany the Handbook thus allowing training to be delivered within the project and by local trainers within the context of their own training courses. The Handbook and other training materials will be made available freely to local trainers for their own use;

¹¹ Scores are to be assigned based on results of the start of project review, and compared to that in the mid-term and end-term reviews. Indicators for enhanced investor / developer capacity may include: technical knowledge, understanding of environmental and legal issues, business skills, and practical experience of developing renewable energy investments (track record).

- Training of local trainers. Capacity building for local training service providers, such as staff at technical and business universities, or consultants that may provide training or coaching in practical Renewable Energy development, will be provided by the Consultant to ensure that they can deliver training based on the Handbook and curricula effectively. The best local trainers will then be hired by the project to support capacity building activities for investors and developers;
- Implement training activities. A series of training courses shall be delivered to investors and developers, at least once per year of the project by the local trainers with the support of the technical experts of the Consultant. Individual training sessions shall be evaluated and improvements made to the training materials and delivery as required;
- Assessment of training and knowledge. An important part of the training programme will be the obtaining of feedback on the training impacts, as part of the evaluation system for the capacity building activities. The change in capacity will be assessed by the Consultant through surveys of a sample of developers and investors, and the capacity score that was measured in the baseline shall be reassessed after year 2 and at the end of the project.

4.3 Project Preparation

4.3.1 General

The Consultant shall be familiar with the energy policy objectives in the field of renewable energy in Ukraine as well as with the EU Directive on the promotion of electricity from renewable energy sources, the Habitat Directive and the IPCC Directive. In performing the Assignment, the Consultant shall equally take into account the current developments contained in the Kyoto Financing Mechanisms and the EU Emissions Trading Scheme.

When reviewing potential energy projects, the Consultant shall ensure that companies applying for financing under the Facility shall meet the following general eligibility criteria:

- For existing businesses: proven track record and sound credit history, including with reporting according to the local accounting standards. Start-up energy projects will be judged on the basis of the customary technical and market due diligence, as well as satisfactory financial projections;
- Good reputation and corporate governance practices including satisfactory results from the Bank's integrity due diligence;
- Willingness to introduce International Financial Reporting Standards ("IFRS") reporting (where not present) within a reasonable time-frame from the signing of the loan agreements (up to two years);
- Sound management and organisational structure;
- Sound financial structure (including sufficient security package for proposed borrowing); and

- Compliance with the Bank's procurement and environmental requirements.

Projects shall also comply with the applicable EBRD, national and European Union requirements for environment, health and safety, especially but not restricted to the Habitat Directive on the assessment of the effects of certain public and private projects on the environment. If a project is likely to affect sites of nature conservation importance as defined in the Habitats Directive, an appropriate assessment according to Art. 6 of the Habitats Directive shall be documented.

4.3.2 Initial Steps

Prior to commencing the work with a prospective borrower, the Consultant shall ensure that EBRD has obtained a Waiver Letter from the borrower (the format will be provided by EBRD). For each potential project, the Consultant will submit to the designated project officer at the EBRD Resident Office in Kyiv a preliminary technical screening containing the following information:

- A brief description of the potential borrower with basic (financial) information of its business and operations;
- A brief description of the proposed project with preliminary assessment of the project cost, proposed capital structure, anticipated energy generated and preliminary assessment of project profitability; and
- An analysis of the strengths and weaknesses of the project based on assessments of the commercial, financial, technical and environmental aspects of the project.

Such information will be based on available documents provided by the sponsor. It is expected that in both cases the Consultant will make preliminary investigations as it sees fit including as necessary, site visit(s) and acquisition of additional information needed for an assessment of the scope of the proposed project and compliance with eligibility criteria.

4.3.3 Technical Due Diligence

The Consultant will proceed with technical due diligence of the project when agreed with the designated EBRD person.

The technical due diligence will be conducted in order to allow the preparation of a Project Appraisal Note (PAN). PANs will typically include the following:

- Description of the project;
- Recommendation about energy project and confirmation that it meets all eligibility criteria for the Facility;
- For each proposed investment, a financial analysis of the costs and benefits (financial and physical energy). The analysis will be based on the information provided by the Sponsor but adjusted by the Consultant where it considers necessary in order to provide a sound analysis for a financing decision. Any adjustments to the sponsor's data should be clearly indicated. The Consultant will summarise these in tabular form in an Excel spreadsheet indicating for each project the IRR, NPV and debt cover ratios taking account of the proposed

capital structure. The analysis will include a review of availability of the fuel (gas, biomass etc. as the case may be-) or source of energy of the project (wind, water, sun) based on existing data base provided by the Sponsor (to be reviewed and assessed for reliability and accuracy by the Consultant) and determine two scenarios to be used as a base case and stress case in the financial model (e.g. P75 and P98 for wind project; average year and driest -1 year for hydro, etc.).

- For each proposed investment a technical analysis assessing the renewable resource; project design; cost estimates; equipment selection (or process for selection); construction and contracting arrangements; grid connection arrangements (if applicable) and operating and maintenance arrangements. The analysis should be based on the information provided by the Sponsor and the Consultant's own assessment of the project and assess both the adequacy and accuracy of information and whether the conclusions or proposals are considered to be acceptable for a project to be financed by the Bank;
- For each proposed investment a commercial analysis assessing the proposed contractual arrangements including licensing and permitting; land use; grid connection; off-take arrangements; and operating and maintenance arrangements. The analysis should be based on the information provided by the Sponsor and the Consultant's own assessment of the project and assess both the adequacy and accuracy of information and whether the conclusions or proposals are considered to be acceptable for a project to be financed by the Bank;
- Estimates of greenhouse gas emissions reductions resulting from each proposed project following the applicable rules from the emissions trading regime, e.g. JI or other relevant methodology;
- An Activity Based Schedule ("ABS") for the project detailing key tasks from design through to commissioning of equipment and commencement of operations;
- Assessment of any operational or management measures that should be implemented by the sponsor in order to ensure successful implementation and operation of the energy project (e.g. dedicated project manager, use of modern project management techniques etc.);
- Assessment of any support or training needs for the borrower in order to ensure successful implementation and operation of the energy project ;
- Assessment of any other benefits from the proposed investments such as reduced maintenance, pollution impact, etc ;
- Assessment of borrower's compliance with national standards for environment, health and safety and recommendations/action for addressing any areas of non-compliance;
- Assessment of impact of the project and the aggregate portfolio of energy projects on the energy balance of Ukraine;
- For hydro projects, confirmation that the proposed energy project meets the "Eligibility Criteria for Small Hydro Power Projects" developed by the EBRD or the "Eligibility Criteria for Wind Projects" developed by the EBRD (both to be provided by the Bank)

A template of the PAN table of contents is provided in Annex 4.

4.3.4 Implementation Support For Sponsors

While borrowers will have ultimate responsibility for project preparation, the submission of the application for financing to EBRD as well as the project's implementation when financing is secured, the Consultant will have an advisory and support role in the preparation of the projects. The scope of this support will include the following areas:

- Project permitting and licensing. Currently project developers have to negotiate for necessary approvals and contracts required for renewable energy projects on a unilateral basis working through a complex range of processes which are time consuming, expensive and with uncertain outcomes. The Consultant will assist this process by assisting developers to understand the permitting and licensing process in Ukraine, advising what information is necessary to submit the various applications and helping to ensure such information is prepared to the necessary standard. In addition the Consultant will engage with the relevant authorities to discuss issues requiring clarification and thereby help to establish better standards which all projects can benefit from;
- Feasibility studies. While developers will be expected to prepare adequate feasibility studies themselves some will benefit from advisory support to improve the rigour of analysis and identify additional issues to be addressed. The Consultant will not be expected to contribute directly to developers' feasibility studies but will advise developers on how to improve the standard of feasibility studies both in terms of the scope and quality of information required by banks and other involved parties and the nature and scope of independent technical analysis which will be required for the due diligence process;
- Commercial negotiations (e.g. with regulators, oblenergos and WEM). Many projects are delayed or fail because of difficulties in agreeing arrangements with regulators and grid companies. The Consultant will not act directly on behalf of developers but will provide advice on how to prepare for discussions including feedback on proposed commercial agreements and where appropriate provision of model agreements as a basis for discussion. The Consultant may also, with the sponsor's consent, raise issues directly with other commercial counterparts (eg grid company) where this will help to clarify issues which will provide a general benefit for other renewable projects;
- Legal support in preparation of loan documentation. The Consultant will assess the need for preparation of model contracts to assist developers and counterparts in achieving their objectives with the highest possible standard of commercial agreements referenced against international best practice. The Consultant will make this assessment and provide model agreements in consultation with counterparts as well as developers and the EBRD; and
- Project management. While developers will be expected to manage their projects effectively many local enterprises lack the skills and experience in project management consistent with international best practice. This does not make them bad developers but simply reflects the scarcity of project management experience in the Bank's counties of operation, which in turn makes it harder for

developers to raise finance. The Consultant will assess developers' project management experience and approach and provide input to developers on what measures they may need to take to improve project management to an acceptable standard.

4.3.5 Environmental Screening and Due Diligence

As part of the project preparation, the Consultant will make an assessment of the activities of the prospective borrowers and of the projects to be financed, in order to establish whether the proposed project (and related company in the case of renewable projects being part of other commercial operations) meets national and applicable European Union requirements for environment and health & safety. The Consultant shall follow the process described below:

- Each potential sponsor will complete a questionnaire including environmental, health, safety, labour and other social issues. The questionnaire will be provided by the EBRD;
- The Consultant will review the completed questionnaire with the Sponsor to ensure that all questions have been adequately answered and to assist the Sponsor in the case of any misunderstanding.
- Having reviewed the questionnaire and discussed the results with the borrower, the Consultant will then provide a summary report to the Bank on the key issues identified, any recommendations made to the Company, and a recommendation on whether the project should proceed or actions required to address any areas of concern. This recommendation will take account of the following:
 - The project company (where appropriate, for example with renewable projects developed by industrial clients): the company, in all its operations, must demonstrate compliance with national and applicable EU requirements for environment, health & safety (EHS) and national requirements for labour and other social issues. Besides the direct impacts of the company's operations, the Consultant shall also consider the capacity of the company, and the systems in place, to manage EHS issues. Additionally, the Consultant shall consider emerging issues which may impact upon the company such as the need to apply for an integrated permit under the IPPC Directive.
 - The project: the company shall have undertaken, or have a plan to undertake, the required preparatory work for the approval and permitting of the project under national law. This includes any environmental studies such as environmental audits, consultations or impact assessments or site preparation studies such as soil and groundwater contamination assessments. The Consultant shall confirm that any such preparatory work has been completed to the satisfaction of the environmental authorities or that this will be done prior to the start of the project.
 - The Consultant shall check whether an environmental impact assessment ("EIA") is required under national law. If the EIA process has not started yet, the Consultant shall check the terms of reference for the EIA study, the timing for completing the EIA, and the agreed process for public consultation in the scoping and review stages. If the EIA has already been completed the Consultant shall review the EIA to ensure that it is fit for

- purpose and to ensure that adequate public consultation has been conducted.
- Where no EIA is required, the Consultant shall review the project against the Bank's Eligibility Criteria for Small Hydro and Wind Projects to ensure that the energy project meets the Bank's requirements
- Where any deficiencies are noted and when agreed with the Bank, the Consultant will assist the borrowers in developing an Environmental and Social Action Plan (“ESAP”) to address those deficiencies.

4.3.6. Support to the Bank in project approval and implementation

The Bank will critically assess each project before it is approved for financing on the basis of sound banking, transition impact and additionality (the core principles governing the activities of the EBRD). The Consultant will facilitate this process through providing assistance to the sponsors, if needed, in making financing applications to the EBRD. Yet, each prospective sponsor will be ultimately responsible for preparing its loan application and liaising with the Bank on all project related issues.

Based on the application for financing under the Facility, each project will go through the Bank’s internal approval process which will be conducted by the Bank’s staff using inputs provided by the Consultant and the borrower as well as relevant due diligence (financial, integrity and legal) prepared by the Bank as discussed above. A key input from the Consultant will be the PAN together with the results and conclusions from the environmental due diligence of the project. During the approval process, the Consultant could also be asked to provide additional information and clarifications to the submitted PAN, as well as support in the communication with the potential borrowers.

The implementation of energy project is the sole responsibility of the borrower. However the Consultant will monitor the implementation of the projects and will report on that to the Bank (for more information see also section 4.4 below).

4.4 Project Monitoring

The Consultant will regularly monitor implementation of each project financed under the Facility. The monitoring will be done according to procedures defined and approved in the Quality Assurance Manual. The monitoring will be done monthly for each project and the results will be included in the monthly reporting (see also section 6).

5. Implementation arrangements

The anticipated duration of the assignment is up to [48] months with the expectation that this assignment will be completed within 30 months. The assignment may be extended subject to the Facility’s needs, satisfactory performance and availability of funding.

EBRD will monitor the activities of the Consultant and the borrowers. Site visits to the borrowers and the office of the Consultant can be part of these monitoring activities.

The Consultant will maintain an operational base in Ukraine throughout the duration of the Assignment. The base will be equipped and staffed to provide all necessary facilities, services (secretarial support, interpretation, translation) throughout the duration of the Assignment. The Consultant will be responsible for local travel and facilities required in other cities. All drafts and documents that shall be validated by EBRD shall be provided in English; however local communication shall be provided in Ukrainian where appropriate.

As one of the objectives of the Assignment is to transfer skills to local staff, the Consultant shall work closely with the local experts responsible for the projects and with the management of each company.

The Consultant is also required to liaise closely with the EBRD project team in London as well as with the local EBRD offices in Ukraine. To facilitate this, the Consultant will appoint a responsible official who shall be the main contact with EBRD and the EBRD will appoint a principal contact in the Bank.

The Consultant shall be available to attend at least 25 meetings in local offices of EBRD in Ukraine and, if requested by the Bank, up to five meetings in London.

6. Reporting Requirements

During the course of the assignment, the Consultant shall also submit to EBRD the following reports (in paper and electronic versions):

Inception report:

Within six weeks of the start of the assignment, the Consultant will submit an Inception Report reviewing the Consultant's work in preparing for all aspects of the Assignment, identifying any issues which have been encountered and measures taken to address them and highlighting any matters which may adversely affect the implementation of the facility. The Inception Report will also include an initial work plan outlining the sequence and timing of the main tasks described in these ToR. This work plan will be updated for each subsequent monthly report. The Inception Report will also contain (as annexes) the Strategy and Marketing Plan, Operations and Quality Assurance Manual describing all procedures for the project cycle for different target segments of the Facility, specific technical eligibility criteria, and all procedures for the Facility.

Monthly reporting:

Monthly reports will be provided summarising all activities undertaken in the previous calendar month including: (i) an overview of the Consultant's progress against the tasks and timetable defined in the initial Work Plan, (ii) highlight any deviations or anticipated deviations from the original plan with an explanation for such deviation and proposals to correct the problem; (iii) provide an update on

projects implementation progress, including any identified problems or delays, as well as the results of on-site checks.

The Consultant will use a consistent format for the presentation of progress of projects broken down to each task and relevant timetable.

Each third month corresponding to the calendar quarter the Consultant will provide a detailed review of projects funded or in the pipeline. The quarterly report shall report inter-alia on the following indicators:

- Aggregate number of projects prepared and their financing characteristics (incl. number of PANs prepared);
- Aggregate number of loan applications submitted to EBRD and their financing characteristics;
- Total capacity added for the portfolio of renewable energy projects implemented (proposed, planned, financed and completed);
- Total greenhouse gas emission reductions for the portfolio;
- Awareness: number of firms reached through marketing campaigns;
- Sector, company statistics (type, employees, turn-over, age) – as defined and agreed with EBRD;
- Confirmation of compliance with the EBRD's Environmental Exclusion and Referral criteria

Annual project review form for the Global Environment Facility (GEF), to be completed each year, based on a format to be supplied by the EBRD, as a contribution to EBRD's annual portfolio reports for the GEF.

A Draft Final report submitted two months before the completion of the Assignment will cover the activities undertaken and an assessment of whether the Assignment has met its objectives, as well as conclusions and recommendations providing information for the last quarter as detailed above and areas to be addressed in the future. The Final Report shall include a summary of donor visibility measures.

A Final Report taking into account EBRD's comments shall be submitted within 30 days of the end of the Assignment. The Final Report should include an Executive Summary (not more than five pages) of the major findings and conclusions that will contain no commercially confidential information. The Final Report will be provided in English (three copies and electronic format agreed with the Bank).

Other:

- Once complete, a copy of the Strategy and Marketing plan for the Facility, preliminary technical screening of each potential project and each PAN shall be delivered to the EBRD in electronic format (relevant electronic addresses will be provided by the Bank);
- All commercially sensitive information will be treated as confidential and will be provided only to the EBRD through the required information in the PAN and

will not be disclosed to any third party in any form whatsoever without the prior written consent of the relevant borrower;

- Unless otherwise agreed by the EBRD, all reports will be submitted to the Bank in English (in electronic format agreed with the Bank);
- The donors funding this assignment require adequate visibility for their contribution. The Consultant shall collect evidence of donor's visibility, such as media coverage, official notices and press releases, reports and publications referring to the assignment. The Final Report shall detail the ways in which the donor's visibility requirements were adhered to.

2. STRATEGIC ENVIRONMENTAL REVIEW TERMS OF REFERENCE

UKRAINE RENEWABLE ENERGY DIRECT LENDING FACILITY

STRATEGIC ENVIRONMENTAL REVIEW

TERMS OF REFERENCE

1. Background

Ukraine relies heavily on imported fuel (up to 80% of primary energy needs during peak demand) and its own generating assets are ageing and highly polluting. The need to improve energy security and reduce the environmental impact of its energy sector is acute. Renewable energy can play a key role in addressing both these issues: Ukraine has great potential yet these resources have hardly been utilised so far - the technical potential for wind energy is estimated at 40 TWh/year, small hydro - 8.3 TWh/year, biomass - 120 TWh/year, and solar energy - 50 TWh/year, yet current production is only 0.5 TWh/year. The main reason for this low level of activity is that until now the legislative and regulatory frameworks have not been adequate to allow the implementation of the numerous potentially feasible projects in this area.

To assist in addressing these issues and helping Ukraine to realise its renewable energy potential the EBRD has launched the Ukraine Renewable Energy Direct Lending Facility (UREDLF or the Facility). UREDLF aims to provide development support and debt finance to renewable energy projects which meet required commercial, technical and environmental standards. The Facility comprises an amount of up to €50 million for financing projects together with a technical assistance component of €[6] million funded from a grant of \$8.45 million from the Global Environment Facility and [-] (the Technical Assistance). A detailed description of the Facility and related financing arrangements is provided in Annex 1.

The Technical Assistance will provide a comprehensive framework of support for the Facility covering (i) regulatory issues; (ii) environmental assessments; and (iii) capacity building and project support. Different consultants will be selected for each of these three components. A more detailed overview of each component is provided in Annex 2.

2. This Assignment

This assignment ("the Assignment") is to conduct a strategic environmental review focusing on the mini-hydro, wind and solar sectors, to provide a basis for the subsequent development and appraisal of specific investment projects in these sectors.

Hydro-electric, wind power and solar facilities provide a clear environmental benefit by avoiding carbon and other gaseous emissions associated with fossil based generation. They are supporting national and international efforts to reduce global carbon emissions (GHG) and should therefore be an important part of a country's energy development strategy.

Notwithstanding these benefits, renewable energy facilities are also frequently subject to criticism on environmental grounds, as they can have significant negative environmental impacts (ranging from visual impact to a complete change of a water distribution pattern in a catchment area) which can negate any GHG related benefit. Additionally, smaller to medium-sized renewable energy facilities are often not required to undergo detailed environmental due diligence (e.g. an Environmental Impact Assessment and associated mitigation measures for project implementation) as part of the planning and permitting process. The potential negative impacts of single installations are compounded by the fact that with increasing commercial interest in renewable energy facilities in resource ‘hot spots’ there is potentially much greater cumulative impact. While the development and operation of individual small projects does not require much environmental due diligence, the cumulative impact of these small projects in one region taken together may well be significant.

Because of the need to balance the GHG benefits of such installations and the need to protect the environment and local communities from unacceptable impacts there is a clear need to complement any renewable energy development plans with an assessment of potential environmental impacts, with the objective to identify opportunities for new renewable energy plants which are technically feasible, economically viable and environmentally sustainable. This is particularly necessary for underdeveloped areas which still have great biodiversity value and natural beauty (and therefore a future potential for tourism).

It is against this background that the EBRD, in close co-operation with the national authorities in Ukraine, intends to commission a Strategic Environmental Review ("the Review") focussing on wind, mini-hydro and solar technologies in selected areas of Ukraine. The Review is to be carried out in compliance with relevant EBRD Policies notably the Environmental and Social Policy (Performance Requirement 1) and the Public Information Policy. The Review should take account of the requirements and guidance provided in the respective EU SEA Directive (Directive 2001/42/EC) and supporting documentation; and should also meet international best practice in EIA development and best international industry practise in each of the assessed renewable technologies.

The assignment will be undertaken under the auspices of a Project Supervision Group (or PSG) consisting of key stakeholders in the area of mini-hydro, wind and solar development in Ukraine; it may include representatives from Ministries, Regulators, local power utilities, others but excluding the consultant that will act an adviser to the Consultant and will provide all necessary inputs required for ensuring a successful implementation. The Bank will also act as the “Client” for the assignment.

3. Objectives

The Review is closely linked to the national and regional electricity development plans for Ukraine and will ‘contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development’. To achieve this overall aim the Review has the following key objectives

- To provide the environmental dimension to these national and regional development plans and thus contribute to the overall decision making process which

will shape the development of the region as such and more specifically the development of mini-hydro, wind and solar facilities within the region.

- To provide a basis for the subsequent development and appraisal of specific investment projects in the mini-hydro, wind and solar sectors in the region. This will assist the national and regional authorities but will also be in line with project appraisal requirements of International Financial Institutions such as the EBRD.
- To provide a forum for stakeholders, particularly local residents affected by any mini-hydro, wind and solar developments, to participate in the development process and to be consulted on specific projects.
- To provide information and guidance to stakeholders to help them understand the key environmental and social issues associated renewable energy projects and to develop a website where such information can be posted.
- To provide potential future investors with information for the most appropriate location and type of mini-hydro, wind and solar facilities and the key issues of potential concern that would need to be addressed as part of the development process. The Review should also identify any limitations and conditions which should be met and may be part of the permitting process.
- To provide the authorities with guidance and tools to assist in the appraisal of project proposals put forward by developers.
- In addition, this assignment is also aiming at identifying any major technical obstacles (e.g. physical connection to the grid) in implementing the projects and windfall benefits (e.g. carbon credits) that could arise from the related projects.

4. Scope of Work and Tasks

4.1 Scope of Work

The scope of this assignment comprises five inter-related tasks:

- Undertaking of a Scoping Study to define the level of detail to be included in the Review, define the stakeholders to be consulted and develop a Stakeholder Engagement Plan ("SEP");
- Preparation of an SER Report with separate sections on the mini-hydro, wind and solar sectors;
- Public information and consultation associated with the development of each sector as required under EBRD policies, EU Directives and the SEP.
- Assistance in the development of specific investment projects and their appraisal and permitting. This would have two components: the first one is an annotated list of areas/locations most suitable for development of mini-hydro, wind and solar facilities (to provide an indication for future development). The second one is a recommendation for a focused environmental due diligence process for individual projects which takes account of the findings and recommendations of

the SER but, crucially, is short, focused, cost effective and defensible in its approach and outcome.

- Identification and quantification of technical/financial obstacles to be encountered or benefits arising when developing the indicated facilities.

4.2 Specific Tasks of the Consultant

Task 1: Preparation of an SER and the SER Report

The Consultant will:

1. Take account of the definitions, requirements, outputs etc. as defined in EU Directive 2001/42/EC (Directive on the Assessment of the Effects of Certain Plans and Programmes on the Environment); take account of relevant national and international standards and industry guidelines and best practise; take account of international experience in comparable SEAs and international best practice in EIA, SEA and public information and consultation.
2. Review all existing planning, development, technical and environmental information relevant to this study and the regions it covers.
3. Collection of baseline data on for example, protected areas, sensitive habitats, and migratory pathways to assist in defining which areas can be utilised, and which should be avoided, or specific conditions / constraints to consider when developing renewable energy facilities. Outline those areas which are protected under international, national and local requirements and which could be protected under the Natura 2000 system.
4. Assess the possible grid connections at medium and high voltage, identify the possible ways of connecting the new generating facilities to the grid, the technical constraints and the likely costs.
5. Undertake a Scoping Study as required for the SER inclusive of stakeholder engagement. The Scoping Study should determine the likely extent (spatial, temporal and thematic) of the SER, the level of detail that will be needed for the review and to identify what information will be included in the SER report.
6. Working with the relevant authorities carry out a strategic review of the environmental and social impact, opportunities and limitations of the development of hydro, wind and solar facilities within the regions (taking account of (i) the most likely technologies to be used, based on international practise and (ii) the connection requirement to the grid).
7. Prepare an SER Report with chapters for each assessed technology in draft form (for comments) and in final form (after consideration of comments and inputs arising from the public disclosure and consultation plus comments from the Bank and the PSG).

Task 2: Public information and consultation associated with the development of an SER as required under the EU SEA Directive and EBRD policies.

The Consultant will:

- Develop a Stakeholder Engagement Plan for the SER process. As part of the SEP process the consultants should identify those individuals or groups likely to be affected by renewable energy projects as well as any other individuals or groups who may have an interest in such projects;
- Create a website where information and guidance can be made available to all stakeholders and where details on the Scoping Study, the SEP, the SER, and public meetings can be placed.
- Work closely with the relevant national, and regional authorities to ensure that all relevant national and international stakeholders, the public, NGOs etc. are notified and as far as reasonable and practical involved in the scoping and the development of the SER. The public consultation process will also need to take account of international requirements (e.g. the Convention on EIA in the Transboundary Context - Espoo Convention).
- Assist in organising and carrying out the public consultation process as required under the Bank's Environmental Policy and its Public Information Policy. This should include assisting in the logistics and organisation for public meetings and the development and provision of all necessary information material for meetings.
- Provide a summary of the public consultation process

Task 3: Assistance to the future development of mini-hydro, wind and solar facilities and their environmental appraisal and permitting.

The Consultant will:

- Prepare a short-list of areas and locations deemed to be most suitable for development of environmentally sustainable hydro, wind and solar electric facilities (singly or in groups as appropriate according to the nature of the resource).
- Provide the draft of a streamlined project appraisal and (environmental) permitting process for consideration by the national and regional authorities as well as potential funders such as EBRD or banks committed to the Equator Principles. This process should make use of the findings and recommendations of each SER and should enable a focused, short and cost efficient assessment process for individual projects (incl. of groups of projects such as hydro cascades or collections of wind or solar farms).

Task 4: Identification and quantification on technical/financial obstacles or benefits associated with the development of mini-hydro, wind and solar facilities

The Consultant will:

- Review list of documents e.g. technical design, pre-feasibility studies, cost estimates, to confirm the feasibility of the proposed projects from both the

technical and financial perspectives. He will identify the technical obstacles that would arise from the construction and operation of the mini-hydro, wind and solar facilities in the specified areas including the physical connection to the grid.

5. Implementation Arrangements

Timing

The Consultant will commence the work as soon as possible (but at any rate not later than 4 weeks after acceptance of the contract). The assignment is to be completed within 12 months. Key time milestones are as follows:

- End of month 5: submission of a draft SER Report to the Bank [in parallel copied to **PSG**] which will provide comments, following which the Consultant will have 2 weeks to provide an amended version; submission of the draft report on the project due diligence, benefits and obstacles (task 4);
- End of month 6: draft SER Report ready for 120 days public consultation ; public consultation commences; submission of the final report on the project due diligence, benefits and obstacles (task 4);
- End of month 10: end of public consultation; Consultant will amend the draft SER Report as required by **PSG and/or the Bank** comments 4 weeks after the end of the public consultation period);
- End of month 12: submission of the agreed final SER Report and the Report on Public Consultation.

Liaison with the PSG and the Bank

The Consultant will liaise closely with the **PSG and the Bank** and points of contact/responsibility as nominated by the Bank and the PSG.

The Consultant is requested to attend three meetings with the **PSG and/or the Bank** at the Bank's Resident Office in Kyiv or at an in-country venue nominated by the PSG.

- at the beginning of the SER process;
- on submission of the draft inception report (see para 5 below);
- on completion of the final report (for a formal presentation to the PSG).

Facilities, Equipment, Staff

As part of this assignment, and within the budget assigned, the Consultant will

- provide all equipment required for the project (e.g. laptops, pcs, photocopiers etc.) that will remain its property at the end of the assignment;

- arrange any office facilities etc. which may be required for its own use;
- arrange any facilities required for public meetings (as part of public information/disclosure); this should be based on one meeting in the study area;
- arrange for translation facilities at the Consultants expense as provided in the agreed budget;

Through the PSG the Consultant will be provided free of charge all necessary information including [to be specified upfront to avoid any later issue] water flow data, geological information etc required to perform the assignment.

Travel

The Consultant is responsible for all necessary travel arrangements to and within Ukraine.

6. Deliverables and Reporting Requirements

6.1 Reports to be delivered

The Consultant will provide the following written reports.

Inception Report

The Consultant will provide an inception report not later than 6 weeks after commencement of the assignment to **the PSG and the Bank**. This report should include (but not necessarily be limited to) the following:

- identify relevant regulations, guidelines, industry standards etc.;
- identify relevant existing information;
- identify information gaps which are likely to have a significant impact on the assignment and the quality and usefulness of the final report;
- provide all details or any necessary material amendments to the work plan initially proposed;
- identify key stakeholders (e.g. local, national and international institutions and NGOs);
- provide an outline SEP;
- Identify expected benefits and obstacles arising from the mini hydro, wind and solar plants projects construction and operation;
- describe how the Consultant intends to manage interactions with the PSG .

SER Report

The Consultant will provide the **Bank and the PSG** with an SER Report with separate chapters on hydro, wind and solar (and any supporting annexes) in draft form not later than 5 months after commencement of the assignment. The **Bank and the PSG** will provide comments. The Consultant will then (if required) have 2 weeks to amend the draft as necessary.

The SER Report should, in structure, content, detail and presentation, take account of the requirements of the EU SEA Directive and best international practice. The Consultant is encouraged to discuss the report structure and presentation with the **Bank and/or the PSG** at an early stage.

Following acceptance of the amended draft by the **Bank and the PSG**, the reports will be made available for public comment. Following completion of public consultation, in accordance with Bank procedures (120 days), and taking account of any comment from the public, the Consultant will prepare the final SER Report within 2 months of completion of the 120 days period (final comments from the **Bank and the PSG** to be provided to the Consultant not later than one month after completion of the 120 day consultation period).

Technical/Financial due diligence, Benefits/Obstacles analysis

The Consultant will provide the **Bank and the PSG** with a due diligence and benefits/obstacles analysis Report (and any supporting annexes) in draft form not later than 5 months after commencement of the assignment. The **PSG and the Bank** will provide comments. The Consultant will then (if required) have 2 weeks to amend the draft as necessary.

Report on Public Consultation

The Consultant will provide the **Bank and the PSG** with a concise report summarising:

- liaison with interested parties during the development of the SER (e.g. at scoping stage)
- the formal 120 days public consultation process (comments and how these were taken into account).

Monthly Progress Reports

The Consultant will present brief monthly progress reports that will provide the PSG with a summary of progress made (against the initial work plan) and will flag-up any problem which could materially affect the SER implementation. The inception report will count as the first progress report.

Reporting Language and Number of Copies

The Inception Report, the Monthly Progress Reports and all correspondence with the **Bank and the PSG** will be in English. The Final SER Report, the Report on Public

Consultation and all materials prepared for public information and disclosure will be in English and in Ukrainian.

All reports are to be submitted to the **Bank and the PSG** in hard copy and in electronic format. The **Bank and the PSG** requires 5 hardcopies of each report (in both languages as appropriate).

3. REGULATORY SUPPORT PROGRAMME TERMS OF REFERENCE

UKRAINE RENEWABLE ENERGY DIRECT LENDING FACILITY

REGULATORY SUPPORT PROGRAMME

TERMS OF REFERENCE

1. Background

Ukraine relies heavily on imported fuel (up to 80% of primary energy needs during peak demand) and its own generating assets are ageing and highly polluting. The need to improve energy security and reduce the environmental impact of its energy sector is acute. Renewable energy can play a key role in addressing both these issues: Ukraine has great potential yet these resources have hardly been utilised so far - the technical potential for wind energy is estimated at 40 TWh/year, small hydro - 8.3 TWh/year, biomass - 120 TWh/year, and solar energy - 50 TWh/year, yet current production is only 0.5 TWh/year. The main reason for this low level of activity is that until now the legislative and regulatory frameworks have not been adequate to allow the implementation of the numerous potentially feasible projects in this area.

To assist in addressing these issues and helping Ukraine to realise its renewable energy potential the EBRD has launched the Ukraine Renewable Energy Direct Lending Facility (UREDLF or the Facility). UREDLF aims to provide development support and debt finance to renewable energy projects which meet required commercial, technical and environmental standards. The Facility comprises an amount of up to €50 million for financing projects together with a technical assistance component of €[6] million funded from a grant of \$8.45 million from the Global Environment Facility and [-] (the Technical Assistance). A detailed description of the Facility and related financing arrangements is provided in Annex 1.

The Technical Assistance will provide a comprehensive framework of support for the Facility covering (i) regulatory issues; (ii) environmental assessments; and (iii) capacity building and project support. Different consultants will be selected for each of these three components. A more detailed overview of each component is provided in Annex 2.

2. This Assignment

This assignment (the Assignment) is to support the further development of the regulatory framework through assistance to the National Energy Regulatory Commission of Ukraine (NERC).

3. Objectives

The objectives of the Assignment are as follows:

- Alignment of the Ukrainian legislation in the area of E-RES with the provisions of the EU and the Energy Community Treaty
- Bringing into full consistency with each other all legislation relating to E-RES in Ukraine
- Based on monitoring of E-RES development (overall and by technology type), analysis and forecasts of sustainability of the E-RES support framework, provide amendments or additional legislation for a planned and sustainable increase of E-RES production in Ukraine.

4. Scope of Work

The Scope of Work of the Assignment will cover the following main areas:

1. the further development of secondary legislation (i.e. Rules, Regulations, Methodologies and Procedures)
2. the provision or development of tools and methods required to accompany and monitor the sustainable implementation of E-RES (registers, databases, network analysis tools, impact calculation models)
3. the establishment of implementation capabilities in the various entities that have to be engaged for a successful and accelerated development of E-RES in Ukraine.

Detailed tasks are set out below.

4.1. Full implementation of the existing Green Tariff Law and Methodology

Assessing implementation experience for renewable energy tariffs (Green Tariff) in Ukraine (application process, decision-making, approval etc) with the aim to identify gaps or needs for improvement. In particular, assist in developing a concept for the implementation of green tariff for biomass installations, based on EU experience with auditing the biomass contents of fuel used in biomass installations. If necessary, provide wording for clarification to be added to primary and secondary legislation.

4.2. Long-term Implementation of Green Tariffs in Ukraine

This is about creating a sustainable framework for the long-run implementation of Green Tariffs in Ukraine.

4.2.1 Monitoring and Reporting

Assistance to NERC in monitoring the implementation of the Green Tariff and the impact on the electricity market and the customers. The Consultant will provide a suitable calculation and reporting tool, and a template for publishing statistics for Green Tariff implementation (support volumes, types of generation, impact on electricity prices). The Consultant will advise on the creation of the Registry for E-RES envisaged by the Green Tariff Law and the implementation of a Guarantees of Origin system as required by the EU Renewables Directive.

4.2.2 Forecasting and impact assessment

The Consultant will assist NERC in forecasting the likely development of E-RES based on an analysis of cost conditions for the different E-RES technologies and an estimate of Green Tariff levels for different time horizons. Assist in calculating the expected impact of Green Tariffs on electricity prices and the economy (using a macro-modelling or other suitable tool). Provide an assessment of the sustainability of existing Green Tariff levels.

Provide assistance with developing a methodology for calculating applicable indicative national targets for E-RES in Ukraine (if required for Energy Community Treaty accession).

4.2.3 Assessment and possible adaptations of Green Tariff Concept

Assess the Green Tariff concept currently used in Ukraine, in particular the link of the Green Tariff level to the retail electricity prices, and the cost basis for the coefficients determined for the different technologies and sizes of E-RES. Provide comparison of Green Tariff levels with support tariffs provided in the EU. Develop proposals for amendments of the Green Tariff concept currently employed in Ukraine, providing alternative calculation methods and tariff levels. This may include an analysis of investment, fuel, maintenance and operation costs of E-RES in Ukraine and construction of supply cost curve for E-RES facilities of the various types (i.e. wind on-shore, off-shore, hydro, geothermal, biomass, separate also for large, medium and small facilities).

Develop transitional provisions designed to safeguard the support levels for E-RES generators already in operation.

4.3 Connection of E-RES to the network

This is about making connection to the network a transparent, non-discriminatory, reliable and swift process, and at a fair price.

4.3.1. Connection Rules, Procedures, Guidelines and Template Contracts

Assist with developing a coherent set of documents governing the process of connection of E-RES producers to the network starting from the application until the final energising of the connection (i.e. a coherent set of documents prescribing steps to be taken, timeframes and responsibilities). This will include, but need not be limited to:

- The chapters on connection from the Grid Code and the Distribution Code (if put into force), responsibility for approval - NERC
- General Connection Rules or Guidelines (if still required in addition to the technical codes), responsibility for approval - NERC
- Special Connection Procedures for certain types of producers (if required), responsibility for approval - NERC

- Rules for issuing Technical Specifications, responsibility for approval – Ministry of Regional Building
- Company Codes of Practice for handling connection applications – responsibility for approval the network companies
- Rules for transfer of connection assets from developer to network company, responsibility for approval – NERC
- Template Connection Agreement - responsibility for approval – NERC

The aim will be to fully streamline the process, eliminate contradictions between the documents and make them into a framework for constructive inter-actions between the E-RES developer and the network companies.

4.3.2 Compensation of connection costs

Ukraine legislation has determined that E-RES generators should be connected to the network free of charge. While this is unusual in the European context, the free connection provides an additional support instrument to E-RES developers and may on these grounds be welcomed.

However, the network companies still have to fund the connection costs, and unless a mechanism for compensation can be found they will continue to resist E-RES connections.

This sub-task will provide assistance to NERC and the network companies by providing a viable mechanism for recovering the costs of connection for E-RES within the framework of network tariff regulation in Ukraine. Given the state of network tariff regulation reform (i.e. the concepts and transition plans have been accepted, but the implementation of the new network tariff regulation has not started yet), two scenarios will be considered:

- a) One scenario relates to the current situation, with the existing network pricing methodologies and investment program approval process. The Consultant should assist in devising a mechanism to improve the current process of approval of investment programs and subsequent inclusion of E-RES connection costs into the regulated tariffs of network companies, in order to make it faster and more predictable. This will involve all the entities involved in the process of investment program approval, namely the regional (oblast) administrations (regional development plans), the MFE (including the Energy Inspectorate *Derzhenergonaglyad*), the network companies, and NERC.
- b) The second scenario relates to the implementation of the incentive regulation methodology in Ukraine, via a step by step transition process as outlined in the EBRD Tariff Project¹². This new methodology uses the building block approach, and the Consultant should focus on the capital costs and investment building block with the aim to provide appropriate incentives for network companies to connect E-RES producers to the network.

¹² [provide details]

4.4. E-RES operation in the competitive Electricity Market

This is about providing the mechanism for the participation of E-RES in the competitive power market

4.4.1 Sales of energy

The Consultant will assist in devising a mechanism for selling renewable energy in the competitive Bilateral Contracts and Balancing Market (BCBM), in particular for providing the compensation to E-RES producers or buyers at the Green Tariff. Analysis options for purchase and sale arrangements, including the use of Certificates of Origin for implementation of the Green tariff Support scheme. Analysis of implications for the procedures of issuing, verifying and auditing Certificates of Origin.

This assistance is directed at the current Single Buyer (Energomarket State Enterprise) and NERC.

4.4.2 Imbalance costs and ancillary services

The Consultant will assist in implementing a suitable mechanism for managing imbalance costs to E-RES generators in the BCBM, comparing available options (such as exemption from imbalance charges, joining a residual balancing group, or special renewable balance groups with different imbalance conditions). Comparison of option should be done using market simulation tool.

Assistance in implementing a suitable arrangement for participation of E-RES in the Ancillary Services market.

4.5 Review of existing mechanism for tendering hydro concessions

This task deals with the mechanism for tendering and awarding concessions for hydro facilities in Ukraine. Under this task, the Consultant will:

- review the current hydro concession and permitting framework at local and national level, given the country's strengths and weaknesses;
- carry out appropriate hydro sector analysis to identify issues and barriers in the sustainable development of small hydro energy;
- prepare a policy matrix to address these issues in small- to medium-sized hydropower development and in compliance with EBRD's and other IFI's policy requirements;
- assess institutional capacity of relevant Ministries and Agencies to implement the current concession regulation and permitting process, to adjust the framework overtime and to integrate the mechanism into the broader national energy framework;
- evaluate constraints on private sector participation as well as public sector development and recommend changes in the concession and permitting process, taking into account EBRD's and IFI's requirements;

- review international experience in countries with similar endowments to Ukraine, and draw lessons applicable to the country with regard to the concession regulation and permitting process required for small- to medium-scale hydropower development;
- provide a brief description of the hydro concession regulation and permitting process models adopted in other countries together with an analysis of how each of those models has performed to date in terms of achieving the desired level of installed hydropower capacity and the cost of energy supplied from such capacity;
- comment on potential risks where hydropower development targets would not be met due to small hydro sector regulation (e.g. planning issues, environment permits, off take agreements, permitting and concession transparency, readiness and capacity of ukrainian institutions to adopt the required modifications, etc.); and

4.6 Accreditation, Certification, Verification and Audit

4.6.1 Accreditation of E-RES facilities

This will include

- Assistance in defining criteria for accreditation based on technical characteristics of the different technologies and measurement criteria to ensure correct volume reporting
- Assistance in defining different accreditation regimes depending on technology type, size of facilities and the use (or not) of agents acting on behalf of E-RES (especially for very small producers)
- Assistance in establishing the mechanism for receiving applications for accreditation so they could be processed
- Assistance in establishing procedures for processing accreditation applications (desk-top analysis, physical inspection of 100% of facilities, or physical inspection based on a sampling process)
- Assistance in designing a suitable regime for periodic auditing of accredited facilities
- Assistance in defining the specifications and implementing the registry for E-RES facilities (possibly duplicate registers at NAER and NERC).

4.6.2 Certification of renewable energy production – issuance of Guarantees of Origin (GoO) and/or Certificates of Origin (CoO)

This will include:

- Assistance in designing the process for receiving volume data from each accredited site,
- Assistance in designing and implementing the methods for validity checking of volume data

- Assistance in designing the template for Guarantees of Origins (based on requirements set out in the EU Renewables Directive) and Certificates of Origin (based on requirements for register, transfer and redemption)
- Assistance in designing and establishing the register for maintaining a record of all issued, transferred, redeemed and cancelled Guarantees of Origin and Certificates of Origin.

4.6.3 Organisational and personnel capabilities

This will include

- Assistance with designing the organisational, departmental and staffing structure within NAER (or NERC) responsible for accreditation, certification, verification and auditing
- Assistance in comparing organisational and staffing options (in-house vs. outsourcing)
- Assistance with designing a training program for technical staff engaged in accreditation and certification procedures

5.0 Implementation arrangements

The targets (beneficiaries) would be a number of governmental and regulatory bodies that are involved in the regulation (rule drafting), policy-making and monitoring of E-RES, namely the NERC, NAER, the Ministry of Fuel and Energy, as well as regional (oblast) administration bodies (*oblispolkom*). In addition, it would be important to find a way to engage and provide support to various business entities responsible for planning, design, connection, network operation, and sales of E-RES, namely the TSO (NEK Ukrenergo), the DNOs (*oblenergos*), Energomarket State Enterprise, design institutes.

The structure of the Assignment could be as a number of separate projects, or as one project (possibly with several named beneficiaries). It is generally preferable that the entity receiving technical assistance has a contractual relationship to the project, only then the entity managers and employees take proper ownership of the technical assistance provided.

If the fine-splitting or multiple-beneficiary constructions of the technical assistance are not feasible, the technical assistance intended for a number of entities may be contractually bundled with NERC, while still reaching out to other entities. The mechanism works if an overarching body with established authority can be brought into the arrangements, as happened in the WB contract for the Implementation of the WEM Concept. The contract is with NERC, but the Inter-Agency Commission for the Implementation of the WEM Concept (the Chairman of which is always the Chairman of NERC) has to approve the deliverables, and it also provides the counterparts in the shape of Specialised Stakeholder Working Groups. If the E-RES development would be linked with the implementation of the WEM Concept, the Inter-Agency Commission could undertake such a role. A Specialised Stakeholder

Working Group for E-RES has already been created in response to the Phase 2 Project.

It might be possible that via a NERC+Inter-Agency Commission construction the technical assistance could reach out to most mentioned entities: MFE and NAER are members of the Inter-Agency Commission, and TSO and DNO are companies regulated by NERC. Regional (oblast) administration bodies and design institutes could be integrated by inviting them into the Specialised Working Group.

If the Institutional Component of the technical assistance is provided as one single project with NERC, or as two projects - one with NERC and one with NAER - the tasks can be topic-based, which would allow a comprehensive approach involving improving the regulatory framework, providing/ developing the tools, and establishing the capabilities. The following tasks could be undertaken:

Facilities, Equipment, Staff

As part of this assignment, and within the budget assigned, the Consultant will

- provide all equipment required for the project (e.g. laptops, pcs, photocopiers etc.) that will remain its property at the end of the assignment.
- arrange any office facilities etc. which may be required for its own use
- arrange any facilities required for public meetings (as part of public information/disclosure); this should be based on one meeting in the study area
- Arrange for translation facilities for his own use

The Client will provide free of charge all necessary information including water flow data, geological information etc required to perform the assignment.

Travel

The Consultant is responsible for all necessary travel arrangements to and within country.

6.0 Deliverables and Timeline

The consultant will provide the following deliverables to the Bank:

An Inception Report, to be provided not later than six weeks from the date of a kick-off meeting and, in any event, by not later than [31st March 2010] at the start of the Assignment. The Inception Report will indicate the meetings and discussions that have taken place and describe any relevant issues that have arisen. The Consultant will highlight any issues, if any, which it considers may affect the execution of the Assignment in accordance with the Terms of Reference or the possibilities to achieve the objectives of the Assignment. The Inception Report will also include a detailed project progress plan outlining the timelines and deadlines of all key tasks within the Assignment (the Project Timetable).

Monthly Progress Reports will be provided in respect of each subsequent calendar month up to the end of the Assignment to be delivered by the 7th day of the following month. The Monthly Progress Reports will describe briefly main activities which have taken place during the month, issues that have arisen and actions taken to deal with such issues. Each report will also include an updated project progress chart reflecting the current progress of each task of the Assignment against the Project Timetable.

A Draft Final Report will be provided on completion of all tasks included in the Assignment but not later than 24 months after the signing of the Consultant's contract (unless extended). The Draft Final Report will summarise all activities undertaken throughout the Assignment, highlight material deviations from the intended outcomes of the Assignment and recommend further measures which may be necessary to achieve the objectives of the Assignment after it has been completed.

A Final Report will be provided within 8 weeks of submitting the Draft Final Report, taking account of comments received from NERC, Energy Committee and the EBRD all to be provided to the Consultant upon the receipt of the Draft Final Report.

All reports should be provided in Ukrainian and English.

Staffing

- A renewable energy financial advisor with international experience in the design of tariff and financing frameworks for grid-connected renewable energy systems;
- An institutional economist or an energy lawyer with international experience in the design of regulatory frameworks for grid-connected renewable energy systems and in drafting regulatory/policy documents;
- A power network engineer with in-depth knowledge of the grid systems and load management constraints associated with wind energy projects and with good command of system analytical software;
- A team of local regulatory experts with extensive experience in the energy sector and strong legal/political awareness who are able to communicate at high level in Ukraine; and
- A team of local energy lawyers with significant experience in drafting commercial agreements, regulations, and operation manuals.