

Bioenergy projects in the current Ukraine: Challenges and needs

Input to the Round Table Discussion “Substitution of Natural Gas by alternative
fuels in Ukraine



Dr Lesya Matiyuk
Agency for Renewable
Resources

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bioenergy
PROM

1. Introduction: FNR and its activity in Ukraine
2. Project readiness: Pilot-based analysis
3. Challenges for the financing of Bioenergy Projects

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1. Introduction: FNR and its activity in Ukraine

Who we are: Agency for Renewable Resources e.V. / FNR
Central coordinating agency in the area of
“Renewable Resources” in Germany

Founded: October 1993

Head office: Gülzow, Mecklenburg-Western Pomerania

Support: Federal Ministry of Food and Agriculture (BMEL)

Employees: >80

Legal status: Registered association



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1. Introduction: FNR and its activity in Ukraine

Current activity: BIO-PROM (2013-2016)

Full title:

Promoting sustainable production and use of bioenergy in the Russian Federation and Ukraine

Objectives:

- Preparation of promising bioenergy projects
- Support to technology transfer and development of financing concepts
- Capacity building in the field of bioenergy

Partners:

Agency for Renewable Resources e.V. (FNR) / Coordinator,
GFA Consulting GmbH, Scientific Engineering Centre “Biomass” (SECB)

Project website:

www.bio-prom.net

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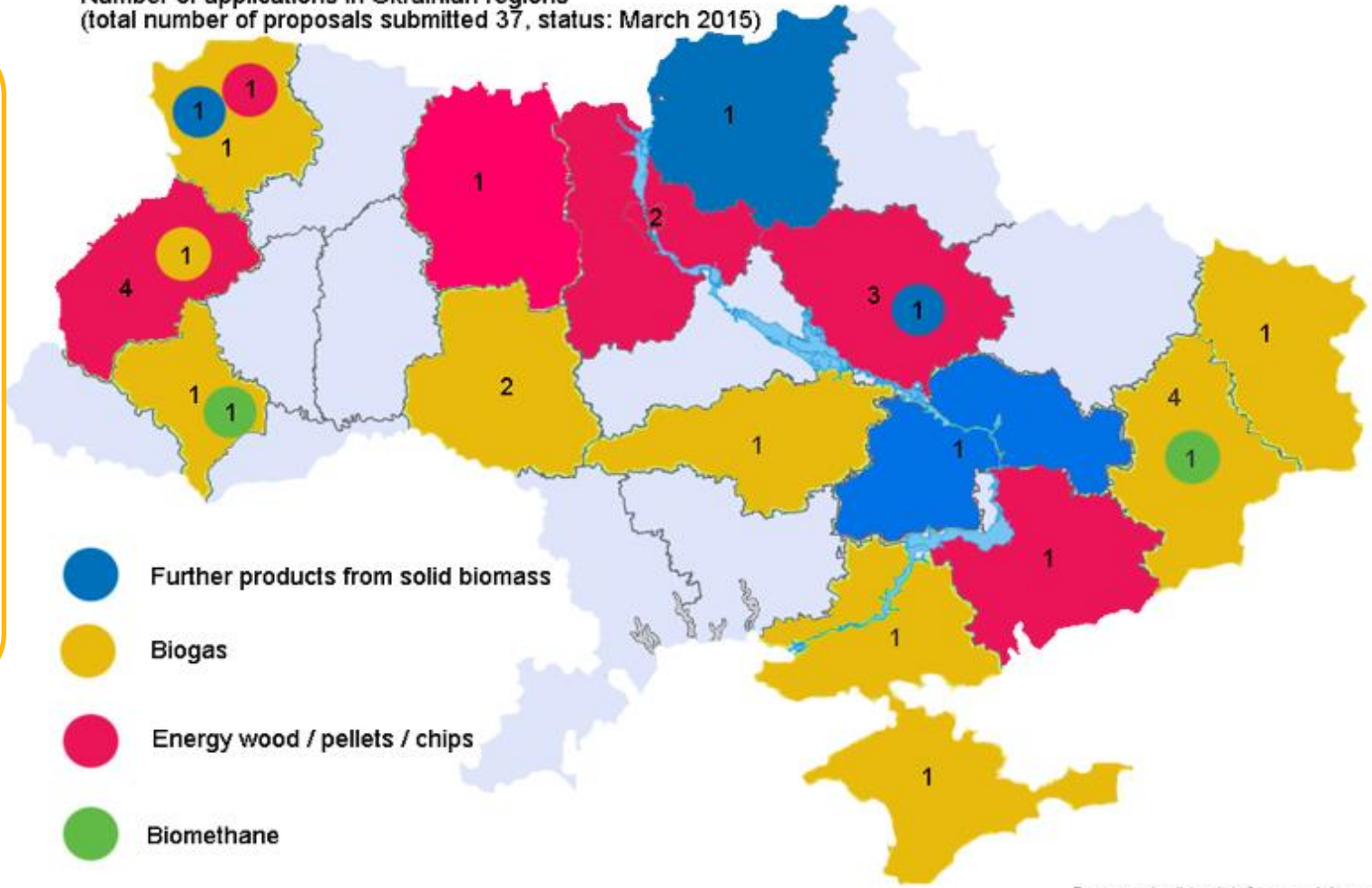


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1. Introduction: FNR and its activity in Ukraine

Possible projects in Ukraine identified within BIO-PROM

Number of applications in Ukrainian regions
(total number of proposals submitted 37, status: March 2015)



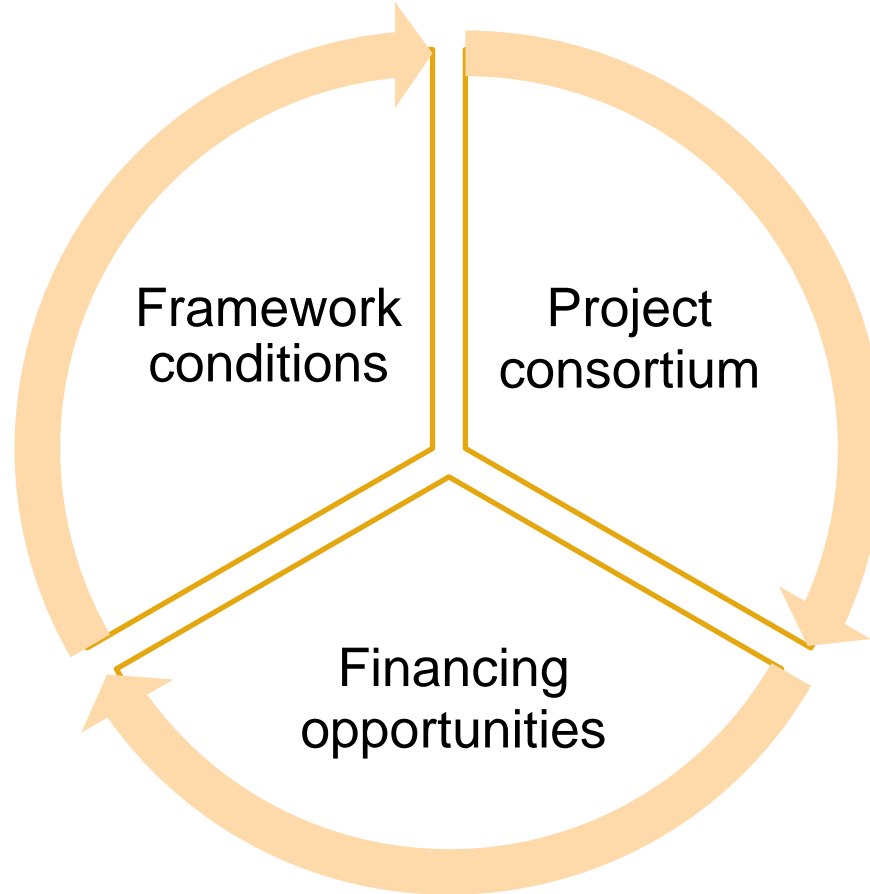
Due to the instability of the energy sector, the number of possible projects is increasing!

7 proposals did not define a certain region

1. Introduction: FNR and its activity in Ukraine

Basic components for project implementation

- Availability of raw materials
- Legal framework
- National strategies and obligations



- Clearly defined relations within the consortium
- Clear benefits for all participating partners

- Availability of suitable financing instruments
- Transferable experience in the application of financing instruments

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2. Project readiness: Pilot-based analysis

Bioenergy applications selected by BIO-PROM:

- **Solid biofuels (straw pellets):**

P01 UA: Production of EN-ISO certified **straw pellets** for the European and Ukrainian market in Volyn Oblast

- **Biogas CHP (heat & power):**

P04 UA: Establishment of the first industrial **biogas plant** in the Western Ukraine, Gnidava

- **Biogas (biomethane):**

P34 UA: Industrial **Biomethane Plant** in Ukraine (concept development)

- **Renewable district heating and replace of natural gas:**

P09 UA: Installation of biomass-based heat plants in Lviv region in combination with the production of biomass feedstock

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2. Project readiness: Pilot-based analysis

Faced product-specific challenges:

Solid biofuels (straw pellets):

Biomass availability and quality:

- There is no well-developed local straw pellet market and not much willingness from the farmers' side to sign long-term supply contracts
- Necessary quality of straw is difficult to reach in order to ensure smooth application of processing equipment
- Long-term agreements with biomass suppliers are required regulating procedures of biomass quality insurance

Distribution of the end product in the local market:

- No straw pellet market – no planning on the side of the end users is possible and visa versa
- Additional construction of boilers combusting straw pellets required which causes higher investment costs for the end users
- Higher environmental standards have to be introduced at plants combusting straw pellets – a difficult issue due to the lack of experience and national quality requirements for the combustion of alternative solid biofuels

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2. Project readiness: Pilot-based analysis

Faced product-specific challenges:

Solid biofuels (straw pellets):

Distribution of the end product in international markets:

- Straw pellets market for energy purposes (!) in Germany
 - due to the competitive coal prices still underdeveloped
 - no concrete industrial-scale collaborations are known
 - Available cooperation in wood pellet sector
- Straw pellets market for energy purposes in Poland
 - Initially, straw pellets were planned to be used for co-firing in the coal combustion plants to decrease CO₂-emissions, special financing was granted by the state
 - Since the state financing is no longer available for straw pellets, the coal prices are again more competitive – and the demand on straw pellets is decreasing

At present – no positive prospects for production and implementation of straw pellets projects for energy purposes in Ukraine can be stated!

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2. Project readiness: Pilot-based analysis

Faced product-specific challenges:

Biogas (CHP) und biomethane:

Biomass availability and quality:

- Long-term agreements with biomass suppliers are required, otherwise there is no chance to get project financing from the banks
- Alternatively – a possibility to include the biomass supplier into the biogas plant SPV should be considered
- Depending on the type of biomass to be used and the amount of the biomass for continuous annual production (industrial-scale) - storage and availability concept must be thoroughly addressed by the project developers

Distribution of the heat and power from biogas in the local market:

- A heat utilisation concept should be well elaborated – considering various locally applicable and available options!
- For power feeding into the grid – the grid connection and feeding point should be well analysed incl. calculation of the required modernisation, procurement, connection and permission costs and time required for this work
- Environmental requirements as well as economically attractive concepts for digestate utilisation lack and must be developed

2. Project readiness: Pilot-based analysis

Faced product-specific challenges:

Biogas (CHP) und biomethane:

Distribution of biomethane in the local market:

- The legal basis for the utilisation of biomethane as well as technical requirements for the injection of biomethane into the natural gas grid must be developed
- No operational biomethane plants in Ukraine available so far – at present, it is difficult to estimate the prospects of the branch development and its value for the substitution of natural gas in the country
- As no estimation is possible – it is difficult to expect state subsidies in the nearest future

Distribution of biomethane in the EU markets:

- No joint regulation on the procedure of the biomethane transport via the natural gas grid in Europe expected this and (most probably) next year!

At present – positive prospects for production and implementation of biogas projects based on utilisation of agricultural residues in Ukraine – only under strong consideration of the faced challenges!

2. Project readiness: Pilot-based analysis

Faced product-specific challenges:

Renewable district heating and replace of natural gas:

Biomass availability and quality:

- Long-term agreements with biomass suppliers incl. quality, price and supply regulations are required, otherwise there is no chance to get project financing from the banks
- Only well-elaborated project concepts with the logistic chain for biofuel provision in the radius of max. 50 km are cost-effective
- Not many companies in Ukraine are able to purchase and efficiently use the expensive high-tech biomass provision equipment
- Due to the energy problems of Ukraine, the woody biomass becomes the most popular resource that can be directly used by the private and industrial heat producers – securing the biomass supply and controlling the biomass price becomes the most difficult issue for solid biofuels projects
- No open exchange for biomass trade on local, regional or national level is introduced in Ukraine – Such an exchange could have a positive impact on the regulation of prices and availability of raw materials for heating purposes in the country!

2. Project readiness: Pilot-based analysis

Faced product-specific challenges:

Renewable district heating and replace of natural gas:

Distribution of produced heat in the local market:

- The heat grids in Ukraine are in a very bad condition and this leads to major heat losses – Not all municipalities are willing to sign biobased heat supply contracts if the modernisation and operation of the district heating system is excluded
- Once the biobased heat producer chooses to go for the whole heat grid operation, much bigger volumes of investments must be calculated in the project and more expertise is required for the project implementation
- Services provided to municipalities, private or industrial end users require different contracts and regulations which are partially underdeveloped by now

Possibility to produce heat and power: A better solution!

At present – positive prospects for production and implementation of biobased heat and power projects in Ukraine – only under strong consideration of the faced challenges!

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2. Project readiness: Pilot-based analysis

Faced general and country-specific challenges:

- Not biomass availability, but its **guaranteed supply on a long-term basis** is the most important issue for the project planning and sectoral development in Ukraine
- **Quality standards, requirements and concepts** for the utilisation of all types of end products (e.g. pellets, chips, biomethane, digestates) are necessary
- **Economic situation** in the country and in the individual enterprises has got worse due to the military conflict in the Eastern Ukraine and the related consequences
- International financing programmes are **aggravating project financing requirements** and **new financing products reflecting the current country needs and possibilities** are still under development
- Still a **lot of intransparency** and **mistaken expectations of enterprises** is noticed

Nevertheless,

- there is a strong political will to support the energy safety both in Ukraine and in the international community!
- financing programmes are developing slowly, but will be available soon!

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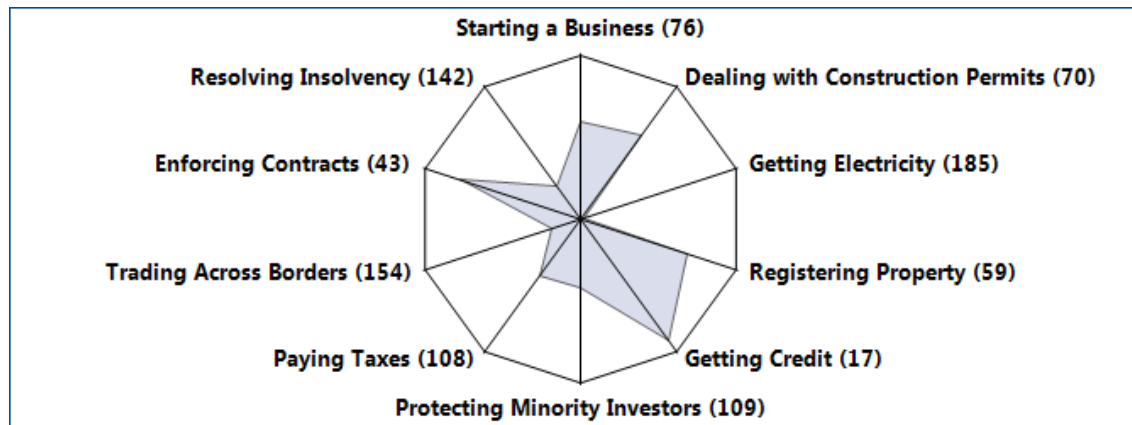
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3. Financing Bioenergy Projects

Major country challenges

Ukraine faces a difficult situation as:

- Country Rating by all international agencies is negative (group C = high default risk with little prospect for recovery)
- Doing Business Index is low (96th rank out of 189 countries and in particular in comparison to other Eastern European economies (22nd rank out of 26 countries))



- Political instability
- Corruption Index high (142nd rank out of 175 countries)
- Economic instability

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3. Financing Bioenergy Projects

Project specific risks

- Lack of transparency regarding ownership of companies
- Lack of internationally recognized accounting standards
- Lack of sufficient experience in the specific business segment
- Lack of sufficient equity

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- Bioenergy project proposals often lack clear information about supply and market conditions
 - Lack of know-how for plant operation
 - Costs (in particular operational costs) often underestimated
 - Revenues often overestimated
 - Currency risks

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3. Financing Bioenergy Projects

Examples of Financing Opportunities

Financing Program	Eligible Measures	Elibility criteria and Financial Products	Financial Parameters
USELF (EBRD) www.uself.com.ua	All forms of renewable energy including biomass, hydro, wind, and solar. Projects should: <ul style="list-style-type: none"> • replace electricity from conventional energy sources • provide GHG emission reductions • use proven technology • be financially viable. • comply with procurement and environmental requirements 	SMEs privately owned, registered and operating in the Ukraine <ul style="list-style-type: none"> • Loans • TA free of charge 	<ul style="list-style-type: none"> • Terms to be negotiated according to project • Loan 1-15 m EUR • Maturity up to 15 years • Grace period of up to 2 years • Minimum equity 40%
UKEEP (EBRD) www.ukeep.org	<ul style="list-style-type: none"> • Rehabilitation and expansion of production facilities using energy efficient equipment; • Usage of renewable energy sources for own needs; • Energy saving measures in commercial buildings 	SMEs (max 50 m turnover) privately owned, registered and operating in the Ukraine <ul style="list-style-type: none"> • Loans via Ukrainian Partnerbanks • TA free of charge 	<ul style="list-style-type: none"> • Terms to be negotiated between bank and project • Loan acc. to bank < 3m and 10 m USD • IRR > 10 %

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3. Financing Bioenergy Projects

Examples of Financing Opportunities

Financing Program	Eligible Measures	Elibility criteria and Financial Products	Financial Parameters
Green for Growth Fund (KfW, EIB) www.ggf.lu	All forms of renewable energy including biomass/biogas, hydro, wind, geothermal and solar.	Private companies and ESCOs <ul style="list-style-type: none"> • Medium- to long-term senior loans, • Subordinated loans • Mezzanine debt 	<ul style="list-style-type: none"> • Terms to be negotiated between bank and project • Maturity up to 8 years • Grace period of up to 2 years • Minimum equity 33%
Investment Fund for Developing Countries (IFU) – Denmark http://www.ifu.dk/en	All kinds of investments which have a development impact	Project sponsor must be private or public/private. Collaboration with Danish businesses, or technology is a must. <ul style="list-style-type: none"> • Equity • Mezzanine • Loans • Guarantees 	<ul style="list-style-type: none"> • Investments at commercial terms (range 70k – 14m EUR) • > 12 % IRR • Expected share <30% • Investment horizon < 8 years

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3. Financing Bioenergy Projects

Examples of Financing Opportunities

Financing Program	Eligible Measures	Elibility criteria and Financial Products	Financial Parameters
NEFCO www.nefco.org	All kinds of renewable energy. The project must produce relevant environmental impacts	Priority to small and medium-sized projects Participation of a Nordic partner is a prerequisite <ul style="list-style-type: none"> • Equity • Loans 	<ul style="list-style-type: none"> • Investments and loans at market rates. • Max. investment / loan per project is EUR 5 million. • Maturity loans < 10 years • Investment horizon equity 7 years • Share capital < 30% • Capital investments < 50%
FinnFund www.finnfund.fi	All kinds of projects with a development impact and interest for the Finnish economy.	Project should have an experienced industrial sponsor. Participation of a Finnish partner is a prerequisite. <ul style="list-style-type: none"> • Equity • Mezzanine • Senior loans 	<ul style="list-style-type: none"> • Terms to be negotiated according to project profile • Maturity 10-15 years • Equity < 50%

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3. Financing Bioenergy Projects

Political & Legal Framework Requirements

- Long-term stable, reliable, transparent FIT scheme
- Simplification of contractual procedures with municipalities
- Governmental guarantee mechanism for securing that municipalities can pay their bills

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Summary:

- First facilitating steps are undertaken, further ongoing work on the improvement of the project implementation should be continued
- All actors are ready and interested in cooperation
- More communication and active collaboration considering the challenges faced by all actors is urgently required
- Transferable concepts for the implementation of bioenergy projects should be developed, tested in practice and made available for public

Thanks for your attention!

Fachagentur Nachwachsende Rohstoffe e.V. Agency for Renewable Resources

Dr Lesya Matiyuk

Hofplatz 1
18276 Gülzow
Tel.: +49 3843/6930-158
Tel. (RU): +7 916 981 5939
Tel. (UA): +38 0958281135
Fax: +49 3843/6930-102
E-Mail: l.matiyuk@fnr.de
Internet: www.bio-prom.net

Visit our website at:
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The brochure cover features a landscape image at the top with the URL bio-prom.net in an orange box. The main title is 'bioenergy PROM' in green and orange. Below it, the text reads: 'Promoting sustainable production and use of bioenergy in the Russian Federation and Ukraine'. The cover is divided into several sections: 'Objectives' (listing project preparation, framework analysis, technology transfer, and capacity building), 'Contact' (providing agency details and contact information), and a grid of images showing forests, agricultural fields, and biomass. At the bottom, it lists supporting organizations: the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety; GfNR (Agency for Renewable Resources); GFA (Consulting Group); and BIOMASS. A small logo for the German Bundestag is also present.