Deliverable Number 8

LEGAL AND REGULATORY FRAMEWORK
FOR WIND POWER IN RUSSIA

Global Environment Facility and International Finance Corporation (GEF/IFC)
Activities 5 and 6

MODEL FOR OBTAINING APPROVALS AND LICENSES
AT THE OBLAST AND FEDERAL LEVELS FOR
CONSTRUCTION AND OPERATION OF WIND POWER PLANTS

Contractors

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11 January 2005

This Report forms part of the Medium Size Project for Developing the Legal and Regulatory Framework for Wind Power in Russia under a Grant from the International Finance Corporation (IFC) in its capacity as Implementing Agent for the Global Environment Facility (GEF). The content reflects the views and judgements of the Contractors and does not necessarily represent those of IFC or GEF.
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Project Approvals and Licensing

The GEF team identified and traced the many levels of necessary approvals and the approving bodies and contacts which are required throughout the entire process of bringing the first project to construction and operation. These approvals are related to and need to be staged in tandem with progress in the development of the project, with some necessary approvals to be obtained early on in the process, some as development advances, some before construction, some after construction is completed but prior to commencing full operation.

The approvals required for a wind power plant can be classified as:

- Certification of Equipment
- Design Approvals
- Commissioning
- Licensing

1. Certification of Equipment

The Russian Federation (RF) requires that all equipment brought into the country for installation and operation be certified. Certification is done through a formal process of application of approval by the relevant Russian center, institute or agency responsible for that category of equipment. The Certification Centers are not government agencies but are accredited by Gosstandard. The formal process ends with the registration of the approved submission documents with the Russian Federation agency responsible for standards, Gosstandard. The approving Russian center charges a fee for of several thousand dollars for each piece of equipment it certifies, depending on how it classifies the equipment and how complex the review process is. Figure 8.1 shows the certification process to be used for wind equipment.

![Figure 8.1 Equipment Certification Process](image-url)
Russia does not automatically accept approvals provided to equipment manufacturers by the United States or Europe. The fact that such approvals exist does help to shorten the certification process. Nevertheless, the certification process can take some time, partly in identifying the right agency that can issue certification for a particular kind of equipment. Because large capacity wind turbines have not as yet been certified in Russia, for the fulfilment of Goal 1, i.e. getting the equipment certified for the pilot wind plant, it was a matter for the GEF team identifying the right agency that was recognized within the Russian Federation as the appropriate authoritative organization in this field.

The Certification activity includes the following: adaptation of international regulatory documents ISO-65 to the Russian requirements and defining the certification sphere; standards; terminology; functioning of equipment; issues of quality assurance, including conditions and methods for quality assurance; requirements for training of staff. In addition general requirements must be submitted on the competence of testing laboratories. The process can take several months first in preparing and gathering the necessary support documents, then in preparing the submission document to the approving agency. After submission, analysis and approval can take several months. The approval consists, as noted above, of registration by the approving agency of the document with the RF Gosstandard. Each separate piece of equipment, for example 1.5 MW wind turbines or 3 MW wind turbines have to be reviewed and registered separately.

**International Standards and Recommended Practices**

There exists a body of accepted international standards for wind power projects and equipment that have been discussed with the relevant agencies. For wind turbines and equipment the standards have been published are widely accepted. The primary organization for wind energy standards is the International Electrotechnical Commission (IEC). Key standards are listed in Table 8.1. In addition, the International Energy Agency (IEA), Wind Energy Agreement has an Annex that has developed Recommended Practices as guidelines for wind energy projects and technology development in Russia. These documents are listed in Table 8.2. Russia is now considering joining the IEA to have access to this important source of technology information.

**Table 8.1 – International Standards for wind energy**

<table>
<thead>
<tr>
<th>International Standard</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC WT 01 {Ed.1 en 2001}</td>
<td>Turbine design, manufacturing and installation certification testing procedures and Normatives. Covers machinery, power quality, noise testing, operation and maintenance and other topics</td>
<td>In revision</td>
</tr>
<tr>
<td>IEC 60050-415 {Ed. 01 199-04} International Electrotechnical Vocabulary – Part 415: on Wind turbine generator systems</td>
<td>International Electrotechnical vocabulary</td>
<td>Generally accepted, for example as Svensk Standard SS-EN 45510-5-3</td>
</tr>
<tr>
<td>IEC/DIN EN 45510-5-3, Guide for procurement of power station equipment,</td>
<td>Power stations, equipment, facilities, wind turbines, connection, controls,</td>
<td>German and related CENELEC (European) standard</td>
</tr>
</tbody>
</table>

International Standards and Recommended Practices

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<table>
<thead>
<tr>
<th>International Standard</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 5-3: Wind turbines</td>
<td>instrumentation manufacturing and projects</td>
<td></td>
</tr>
<tr>
<td>IEC 61400-1 Second Ed. 1999-02 Wind Turbine generator systems, Part 1: Safety requirements</td>
<td>Wind turbine electrical and mechanical, installation, commissioning and operating safety standards</td>
<td>Eventually it is anticipated that a turbine testing facility will be established in Russia. This would not likely occur until Russian industry is manufacturing turbine equipment for domestic use and for export.</td>
</tr>
<tr>
<td>IEC 61400-12 First Ed. 1998-02 Wind Turbine generator systems, Part 12: Wind turbine power performance testing</td>
<td>Wind turbine testing methods, wind measurement procedures, instrumentation and reporting requirements</td>
<td></td>
</tr>
<tr>
<td>IEC 61400-21 First Ed. 2001-12 Wind Turbine generator systems, Part 21: Measurement and assessment of power quality characteristics of grid connected wind turbines</td>
<td>Wind turbine power quality, characteristics, measurement methods and assessment</td>
<td></td>
</tr>
<tr>
<td>IEC 61400-11 Second Ed. 2002-11 Wind Turbine generator systems, Part 11: Acoustic noise measurement techniques</td>
<td>Methodology to ensure consistency and accuracy in the measurement and analysis of acoustic emissions by wind turbines</td>
<td>Covers audible and low frequency impulsive noise</td>
</tr>
<tr>
<td>There are additional IEC Standards that apply only to wind turbine design</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The authoritative agency that would provide certification was identified as VNIINMASH and the contact people identified. Coordination with this agency has been started by the GEF project Team and they are prepared to begin the certification process.

Table 8.2 – International Energy Agency (IEA) Recommended Practices for Wind Turbine Testing and Evaluation

<table>
<thead>
<tr>
<th>Vol.</th>
<th>Title</th>
<th>1st Ed.</th>
<th>2nd</th>
<th>3rd</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>POWER PERFORMANCE TESTING - Superceded by IEC 61400-12, Wind Power Performance</td>
<td>1982</td>
<td>1990</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>ESTIMATION OF COST OF ENERGY FROM WIND ENERGY CONVERSION SYSTEMS</td>
<td>1983</td>
<td>1994</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>FATIGUE LOAD CHARACTERISTICS</td>
<td>1984</td>
<td>1989</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>ELECTROMAGNETIC INTERFERENCE</td>
<td>1986</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>STRUCTURAL SAFETY – Superceded by IEC 614000-1, ed</td>
<td>1988</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Turbine Certification Status

In fulfilment of Goal 1, getting the wind equipment and specifically GE 1.5 MW turbines ready to be certified for installation and use in the pilot project, involved an extensive gathering by the GEF team of documentary material in Europe and the US. Data from the international standards groups was supplied to the various Russian standards groups.

Germanisher Lloyd, the German Certification Agency, has certified the GE turbine selected for use in the project as meeting IEC standards. See Appendix A and D. Under reciprocity agreements most European and US accept this certification and do not require retesting. At the appropriate time this information will be submitted to VINIINMASH. For a fee these documents will be reviewed and analysed in light of Russian norms and standards. This process is expected to take several months and will be accomplished after plant design is underway and the specific turbine model has been selected.

### 2. Design Approvals

The Russian Federation has clearly marked out processes and authorities for obtaining approvals necessary for construction of any project and all the various levels and aspects within such projects. Approving agencies exist on the federal, oblast and local levels of government. Figure 8.2 shows the design approval process. Preparation of documents for obtaining such approvals is a clearly defined process as well. The process, as in many countries, takes some time and must be pursued diligently, with constant follow-up to the various bureaucracies involved to see that approvals are obtained in a timely manner.

![Figure 8.2 Design Approval Process](image-url)
What do not exist in Russia are the norms and standards relating to wind power plants. There are no standards. There are no standards for design the foundations for the towers for the wind turbines, no regulations for layout of the towers, no norms for restoring the land, no norms for possible electric magnetic impact, no environmental regulations on sound in relation to wind turbines, and while, environmental regulations exist in regard to birds or animals, no such regulations exist for wind turbines.

Therefore the task became twofold for accomplishing both approvals for the pilot project and for the overall creation of a regulatory system for future wind development in that the most pertinent and related existing codes and standards needed to be identified and adapted or shown to have relevance to the project and wind development. In pursuit of this goal the various portions of the existing building codes, called SNiP in Russia, were identified. These included, for example, pertinent codes in relation to design and construction (SNiP 2.02.01-83 and SNiP 11-101-95 included in Appendix B); Footings and Foundations (SNiP 1-02.01.85); Special site investigations for foundations (Addition to SNiP 2.02.01-83);structural units (SNiP 3.02.01-83); Organization, Performance and Acceptance of Work and of Structural Units, and so on. While the overall approval body is Gosstroy, the Russian Federation Committee of Construction, approvals for a project in the Leningrad Oblast requires the approval only of the oblast division of Gosstroy, called State Evaluation of RF Gosstroy.

In regard to the fulfilment of design approvals for the pilot project, the suitable officials within the Expert Department Center, the counterpart in the oblast entity of RF Gosstroy, have been contacted. They have been given the overall design of the project, and the necessary first stage documents for overall approval. They have approved the general design and expressed commitment to providing subsequent approvals in a timely manner.

Establishing such overall norms in Russia, the pilot project will serve as a design standard for widespread usage throughout the country, and it may not prove necessary to initiate for now the rather lengthy procedure of getting new norms and standards directly relating to wind power plants inserted into the SNiP codes.

3. Commissioning

In the Russian Federation, a formal process of commissioning is required before approval is given for operation of newly installed equipment and operations. Each area of equipment for production or other purposes has its own designated approval organs. Operation can be undertaken once installation is complete, but only for the purposes of calibration, testing of equipment and the parallel training of operations personnel. The Commissioning process is shown in Figure 8.3.

For the pilot wind power plant, the bodies designated to provide commissioning are the same as those organizations that give commissioning status to all power projects. The key organization is the one which rules on safety and protection of operations and is called Energonadzor.
EnergoNadzor. Once the first pilot project is commissioned, it will serve as the model for commissioning of future wind power plants.

For the pilot wind power plant, commissioning is anticipated to be conferred in the fourth quarter of 2005.

4. Licensing

For all wind power plants to be developed, the process of licensing allows the wind power plant to register as a power supplier. Once the plant is commissioned (has the approval of EnergoNadzor), it can be registered. A requirement for licensing is that the plant must demonstrate it is to be operated by personnel trained in the energy sector, with the necessary educational background and degrees. Registration as a power supplier can be done on the oblast level only if the plant anticipates selling only to industrial consumers within the oblast. If registration on the federal level is required for customers beyond those operating in the oblast, as, for example, the nationwide wholesale power market, then application is made to the Federal Energy Commission. The documents conferring the license by the oblast are submitted to the federal level with the application of licensing as a power producer. The Licensing process is shown in Figure 8.4.

For the pilot project, this process of licensing is anticipated to be required and accomplished toward the end of 2005.

Russian Federal Government Approval and Endorsement

As a general rule, most approvals for the GEF pilot project are obtained from specifically designated entities and with clearly identified processes and procedures. However, it is always helpful in Russia in facilitating these approvals to have overall interest and endorsement expressed by key federal government organizations with responsibility for such projects. The GEF Team therefore sought through letters and meetings to obtain the support of the Ministry of Industry and Energy, which oversees power plants and renewable energy projects.
Such endorsement was obtained in a letter from the Deputy Minister of this ministry expressing overall interest in and support of the project. This letter, as well as the letters sent by LenWind to the ministry, are provided in C.
APPENDIX A

Abbreviations:
FOREM (ZAO) – Federal Wholesale Market of Electricity of the Russian Federation
GEF – Global Environment facility
IFC – International Finance Corporation, part of the World Bank Group
IEA – International Energy Agency
IEC – International Electrotechnical Commission
PPA – Power purchase agreement
RF – Russian Federation
(RAO) UES – United Energy Systems
WPP – Wind power plant
Abstract:
Procedures for development, coordination and approval of feasibility studies for construction of enterprises, buildings, and structures. These standards would apply to technical feasibility studies for wind power plants.
Appendix C

Appendix C – Ministry of Industry and Energy, Authorization to Enter the Wholesale Market, A.G. Reus Ref 2-421222 dated 10.8.04

Russia’s Ministry of Industry and Energy (V.B. Khristenko)

This is to request your consideration with the involvement of the parties concerned from the federal authorities and organizations on the issues requiring the decision of the Government of the Russian Federation make proposals in the established manner.

25 September 2004

A. Zhukov

AZ-P9-5330


FOR CIRCULATION

Details of documents or copies (number, date, number of sheets)
Letter of Russia’s Ministry of Industry and Energy (ref. 2-421222 dated 10.08.04 on two pages).
Letter of ZAO ‘Lidesm’ and ZAO ‘Investenergostroy’ (ref. 2-46931 dated 15.09.04 on one page).

Attn. (name of institution, organization)

For Council of M.E. Fradkov
For Council of A.D. Zhukov
O.S. Pushkareva, D.A. Kislitsyn

Original – Department for Sectoral Development

A.V. Kamenetsky
(signature, designated responsible officer)

Telephone – 205 4621

16 September 2004
(date)
Re: Development of Wind Power Plants in the Russian Federation
Dated 20 May 2004
No 3055p-P9

In accordance with the letter of the Office of the Russian Federation Government the Ministry of Industry and Energy of the Russian Federation together with Russia’s Ministry for Economic Development has examined the address of the Chief Executive Officers of ZAO ‘Lidesm’ Mr. A.D. Anisimov and ZAO ‘Investenergostroy’ Mr. Yu. I. Kirillov on the development of wind power plants in the Russian Federation and advises as follows.

Currently the development of wind power plants is one of the promising lines of the Energy strategy of the Russian Federation as ensuring a guaranteed minimum of power supply of population and production in the areas of decentralized power supply suffering a shortage of power, prevention of damage from emergency and limiting disconnections. Renewable and ecologically friendly properties of such resources determine the need and the opportunity of their intensive use.
Construction of wind power plants is impossible without the governmental support of the Russian enterprises through pursuing of the relevant investment and power saving policy that in its turn requires the adoption of a number of regulatory documents on the governmental level, which will facilitate the implementation of specific economically efficient project in the field of power engineering, construction of the Leningrad 75 MW WPP should be included in their number.

The power strategy for the period of 2020 envisages the development and approval of the Renewable Energy Sources Federal Act and the appropriate legal regulatory acts of the Government of the Russian Federation in pursuance of which the alternative power sources may function as a part of the Unified Power System of Russia.

Along with that it should be noted that bringing wind power plants into the federal (all-Russian) wholesale market of electric energy (power) –FOREM as a participant of the regulated or wholesale sector of the wholesale market is possible provided that the requirements of the Wholesale Electric Energy (Power) Market for a Transition Period are met as approved by the decree of the Russian Federation Government dated 24 October 2003 No643 and by entering into the accession agreement to the trading system of the wholesale market and making an entry in the Register of the entities of the wholesale market provided for under items 14, 15 and 17 of the said Rules.

Signed

A.G. Reus

A.A. Egorkin
710 5947
Department for the Fuel and Energy Complex
Wind power-response1.doc
TO THE CHAIRMAN OF THE GOVERNMENT OF THE RUSSIAN FEDERATION

Attn. M.E. FRADKOV

Dear Mikhail Effimovich!

The Russian engineering companies ZAO ‘Lidesm’ and ZAO ‘Investenergostroy’ together with the US partners are working on the implementation of the project for account of own and borrowed funds totaling to USD 100 mln., the first industrial-scale wind power plant (WPP) of 75 MW in Russia, Primorsk of Leningrad Oblast.

We've already addressed with this issue (letter dated 11.05.2004 No 69) and on instructions of the Government Office we’ve got a response from Russia’s Ministry of Industry and Energy (dated 10.08.2004 No AR-843) where it is shown an interest in the development of wind energy in our country. The development of the WPP is viewed as topical by the Government of Leningrad Oblast, Ministry of Economy and Trade of Russia, RAO ‘UPS of Russia’ and many leading Russian scholars.

The use of nearly inexhaustible wind power, and our country possesses its vast resources, will permit to improve the environmental situation and save organic fuel, which becomes more and more expensive.

The Electric Power Engineering Federal Act dated 26.03.2003 No AR-35 Article 29 clause 2 reads that the basis of the Government investment policy in electric power engineering is to ensure economic incentives to the introduction of new highly efficient technologies, including small and alternative power engineering.

Along with that the implementation of the Leningrad WPP is impeded due to the imperfect national legal framework and a lack of governmental decisions on the federal level.

Considering that the construction of the Leningrad WPP may become a precedent for the development of industrial wind power engineering in the Russian Federation, we are requesting you, Mikhail Effimovich, to instruct Russia’s Ministry of Industry and Energy to prepare the draft of the Governmental decree for its construction where necessary measures for the decision of all issues pertaining to the formation of legal framework and the form of its support will be shown.

On our part we, in association with our foreign partners, are ready to be actively involved in such work.

Respectfully,

Signed

A.D. Anisimov
Managing Director
ZAO ‘Lidesm’

Signed

Yu.I. Kirillov
Managing Director
ZAO ‘Investenergostroy’

No 120
13 September 2004

Barcode: 55954 2004
TO THE CHAIRMAN OF THE GOVERNMENT OF THE RUSSIAN FEDERATION

Attn. M.E. FRADKOV

Dear Mikhail Effimovich!

The Russian engineering companies ZAO ‘Lidesm’ and ZAO ‘Investenergostroy’ together with the US partners Princeton Energy Resources International, CMT Consulting, Morse Associates, ABB Inc. and GE Wind Energy under support of the Government of Leningrad Oblast are working on the industrial-scale wind power plant project (WPP) of 75 MW, which produces environmentally friendly electric energy.

With financial support of the US Trade Development Agency and the Global Ecological Fund engineering surveys and environmental impact assessment have been fulfilled on the three sites of the Leningrad Oblast as well as the WPP feasibility study has been developed.

Currently no legal regulatory and technical standards documents governing the performance of designing and developing work for WPP, operation and parallel WPP performance with the regional power grids and federal electric power market – FOREM.

The said companies have developed the drafts of many necessary regulatory documents and submitted to OAO RAO ‘UPS of Russia’ for assessment and approval.

Considering the world’s experience in designing, construction and operation of the WPP producing a lot quantities of electric power and formation of the guaranteed delivery of electric power from the same, adjusted for the discreteness of wind load, it is advisable to introduce changes in the operative documents governing rules and standards of the FOREM operations and which will promote the connection of the WPP for a parallel operation with the generating companies and sale of electric energy, and also consider the option of federal and regional support for a partial compensation of the tariff for electric power during the payback period of WPP, including for account of the funds earmarked for power saving.

In view of the foregoing, we are addressing to you, Mikhail Effimovich, with a request to instruct the relevant services in association with our companies to draft and adopt necessary regulatory engineering standards documents ensuring a regular operation of wind power plants in the Russian Federation.

Enclosure. A brief description of the WPP project of 75 MW in the area of Primorsk of Leningrad Oblast.

Respectfully,

Signed
A.D. Anisimov
Managing Director
ZAO ‘Lidesm’

Signed
Yu.I. Kirillov
Managing Director
ZAO ‘Investenergostroy’

No 69
11 May 2004
A Brief Description of the 75 MW WPP Project
In Primorsk, Leningrad Oblast

The Leningrad Wind Power Plant is envisaged for construction in the area of Ozerki settlement of the Vyborg district Leningrad Oblast.

The WPP project envisages to assemble 50 power turbines, 1,500 kW each, stepping up transformer substation 10/35/110 kV, power lines of 110 kV to be run to the substations of Primorsk and Zelenogorsk.

The investments of the projects are anticipated at the level of USD one hundred (100) million.

The construction will commence in the first quarter of 2005, and its completion is expected in 2006.

The electric power output determined by the results of the instrumental measurements of power energy will make 210 KW hour annually.

The wind power plant will be located in the territory of 800 hectares, and plots of land leased for wind units will make a total area of 2.8 hectares (for one unit – 576 m²).

For reference:

1. As of December 2003 the wind turbine electro-generator of total capacity 39,330,000 kW have been installed worldwide.

2. ZAO ‘Lidesm’ was established in 1990, a designing and engineering company. Managing Director – Mr. Anisimov, Alexander Dmitrievich managed construction projects and electric power plants construction group of companies in the systems of the USSR Ministry of Energy.

Place of business: Office 22, 15 a Kondratievsky Pr., St. Petersburg, Russia, 195197
Tel.: (812) 540 6927, fax (812) 540 8498

3. ZAO ‘Investenergoostroy’ was established in 1995, a designing and engineering company. Managing Director – Mr. Kirillov, Yuri Ivanovich managed the electric power plants construction projects. In 1986-1992, he was the Deputy Minister of Energy and Electrification of the USSR.

Place of Business: 6A Semenovsky Val, Moscow, Russia, 105094
Tel. (095) 360 8504, fax (095) 369 1712

Two signatures
Appendix D

Germanischer Lloyd Statement of Compliance for GE Wind Energy 1.5s Turbine

GL-Wind Statement No.: WEC 00-009A-2000, Revision 1

This Statement of Compliance for the Design Assessment of the Wind Turbine

GE Wind Energy 1.5s

is issued to

GE Wind Energy GmbH
Holsterfeld 16
48499 Salzbergen / Germany

The Design Assessment is based on the calculations and fabrication drawings listed in the relevant certification reports referenced below and the characteristic data given in the attached Annex.

Certification Report numbers and titles:

- 71000-1 dated 15-05-2000 Load Assumptions IEC 61400-1 and NVN 11400-0 class IIA, Hub Height 85 m
- 71169-2 dated 19-05-2000 Safety System and Manuals
- 71182 dated 19-04-2000 Rotor Blade APX 70
- 71169-4. Rev. 2 dated 18-07-2001 Machinery Components
- 71169-6 dated 29-05-2000 Electrical Equipment
- 71169-7 dated 31-05-2000 Tubular Steel Tower, NVN 11400-0 class IIA, Hub Height 85 m
- 71674-7 dated 12-07-2002 Tubular Steel Tower, NVN 11400-0 class IIA, Hub Height 64.7 m

Normative references: Dutch Prestandard NVN 11400-0 "Wind Turbines – Part 0: Criteria for type certification Technical Criteria", first edition, dated April 1999, for wind turbine class IIA.

Changes in design are to be approved by Germanischer Lloyd WindEnergie GmbH, otherwise this statement loses its validity. Fabrication surveillance is not part of this Statement of Compliance for the Design Assessment.

Hamburg, 16th July 2002
DaiBlun

Germanischer Lloyd
WindEnergie GmbH

\[signature\]

Germanischer Lloyd WindEnergie GmbH
Johanniskirchen 6-8
20359 Hamburg
Germany

DAP-IE-3443.00

The latest edition of the “General Terms and Conditions of Germanischer Lloyd WindEnergie GmbH” is applicable. German law applies.