

# Final Evaluation of the UNDP/GEF Project

“Cost Effective Energy Efficiency Measures in Russian Educational Sector”

00014622

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This evaluation of the UNDP-GEF project “Cost Effective Energy Efficiency Measures in Russian Educational Sector” (project number 00014622) was carried out between 5 and 30 June 2006.

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## Abbreviations and key terminology

CIS .....	Commonwealth of Independent States
DHCS .....	Department of Housing and Communal Services
Dynamic sustainability .....	refers to the use and / or adaptation of the projects' results by the original target groups and / or other target groups
ENSI.....	Energy Saving International AS, a Norwegian based consulting company
Gcal .....	Unit of work (energy) – 10 <sup>9</sup> calories. 1 Gcal is approximately 1.16 MWh
GEF.....	Global Environment Facility
GHG.....	Greenhouse gases
HCS.....	Housing-Communal Services
HREE.....	Housing rayon exploitation enterprises
MES .....	Ministry of Education and Science of the Russian Federation, Federal Agency for Education
Minobrazovanie .....	The Ministry of Education of the Russian Federation, since 2005 called the Ministry of Education and Science
MST	Ministry of Industry, Science and Technology of the Russian Federation. MST was eliminated in March 2004 with its functions shifted to the new Ministries, i.e. Ministry of Industry and Energy of the Russian Federation and Ministry of Education and Science of the Russian Federation.
MWh .....	Unit of work (energy) – 10 <sup>6</sup> Wh. 1 MWh is 3600 MJ
NEFCO.....	the Nordic Environment Finance Corporation
NGO .....	Non-profit, non-governmental organisation
NNV .....	The Norwegian Society for the Conservation of Nature / Friends of The Earth Norway
Oblast.....	Region – the Russian Federation is made up of 89 regions.
Okrug .....	'Okrug' and 'Federal Okrug' refer to megaregions at the subnational level in Russia. There are seven Federal Okrugs. The project area falls mainly within the North-western Federal Okrug.
PMU.....	Project Management Unit
Rayon.....	Each region (oblast) is divided into many rayons (sub-regions or districts)
RBM.....	Results Based Management
RF.....	Russian Federation
Rosobrazovanie.....	Federal Agency for Education with responsibilities including managing state property, development of educational resources belonging to the Ministry of Education and Science

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SNiP .....	Stroitelnie (Construction) Normi (Norms) i (and) Pravila (Rules) – the norms and rules government construction of buildings in the Russian Federation
Static sustainability .....	refers to the continuous flow of the same benefits to the same target groups
TOR.....	Terms of Reference
TPS.....	Thermal Power Station
UNDP.....	United Nations Development Programme
UNECE.....	United Nations Economic Commission for Europe
UNOPS.....	United Nations Office for Project Services
WB .....	World Bank, part of the International Bank for Reconstruction and Development (IBRD)

## **Introduction**

This evaluation report contains the final evaluation of the UNDP-GEF Medium Scale Project “Cost Effective Energy Efficiency Measures in Russian Educational Sector” (project number 00014622).

The evaluation was carried out by Grant Ballard-Tremeer of Eco, a UK based consultant firm and Elena Kuznetsova from REDA, St Petersburg. A visit was made to the project area in the North-West of the Russian Federation by the international and local evaluation experts between 5 and 17 June 2006 and interviews with relevant project stakeholders, including governmental representatives, municipal representatives, individual project beneficiaries, implementing agency, project executing agency, project staff and others were made. The Terms of Reference for the assignment are given in Annex 1.

This final evaluation aims to contribute to ensuring proper documentation of lessons learned by assessing the project design, the relevance of the project, project performance (progress in terms of effectiveness, efficiency and timeliness), management arrangements focused on project implementation, and overall success of the project with regard to impact, sustainability, and contribution to capacity development. The evaluation assessed project synergies with other similar projects, evaluated the efficiency, relevance and sustainability of the financial instruments tested within the project, including its impact on leveraging co-financing, and makes recommendations for further development of the project.

The approach used for the evaluation was based on the results-oriented ‘outcome evaluation’ approach within the framework of Results Based Management. This approach generally covers a set of related projects, programmes and strategies intended to bring about outcomes<sup>1</sup>. In this case, the focus of the review was a single project. The evaluation thus focuses more on the UNDP contribution to the outcome through the project outputs, and possible improvements that could be made to increase the performance of delivery of outputs and ultimately the desired outcomes.

Details of the people interviewed and the documents reviewed are given in the lists in Annexes 3 and 4. Local operational and technical project staff as well as the UNDP-GEF project staff in Moscow gave excellent support during the evaluation.

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<sup>1</sup> An outcome evaluation focuses on the ‘developmental changes between the completion of outputs and the achievement of impact’ (the outcomes), and encompasses efforts of partners working on the same issues. The evaluation assesses how and why outcomes are or are not achieved within a given context. Outcome evaluations also help to clarify underlying factors affecting the situation, highlight unintended consequences, recommend actions to improve performance in future programming, and generate lessons learned.

## **Executive Summary**

### *Background*

This document contains the terminal evaluation of the UNDP-GEF project Medium Scale Project (MSP) “Cost Effective Energy Efficiency Measures in Russian Educational Sector” (project number 00014622). The overall objective of the project is “to contribute to the abatement of GHG emissions by improving the energy efficiency of Russian educational facilities.” The project, which started in October 2002, aimed to reduce energy consumption by about 20 to 25 percent in project supported schools leading to a reduction in CO<sub>2</sub> emissions by an estimated 9,000 tons over the project period (3 years), and by 60,000 tons over the 20-year average life time of the investments. The project consisted of three components:

- a. An education programme on energy efficiency in secondary schools targeting class 8, and principally addressing awareness barriers at school and household levels,
- b. Demonstration of energy saving and financial models in schools and universities, and
- c. Dissemination of results of the demonstration activities.

### *Project design*

The overall project design is highly relevant to local, regional and Federal development plans. This is exemplified through the five-year programme “Energy Saving” in the Ministry of Education, 1999 to 2004” by the Ministry of Education of the Russian Federation. The project has been timely and topical over the entire project implementation period and remains important at the present time.

The project design is generally clear, practical and realistic. Components, outputs and activities are defined in clear and unambiguous terms in most cases, with the exception of the Public Boards, and some aspects of management arrangement. This clear design has greatly facilitated effective and efficient project implementation in a project, which is challenging from the point of view of geographical breadth and the number of involved stakeholders in the various project components.

The coherence of the project intervention logic could be improved: the three project components address two issues: a) education – awareness at schools and household levels (component 1), and b) technical / financial capacity building and demonstration (components 2 and 3). These two aspects are conceptually separate, and the project’s immediate objective (“to develop replicable models for low-cost energy efficiency measures implementation in both municipal secondary schools and Federal educational buildings (Universities, technical and vocational schools)”), and the indicators at the immediate objective level appear to be unconnected to outcome / component 1. In spite of this, since both components of the project have been successfully implemented, the consequences of this design issue appear to have been minor.

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The project logical framework (project planning matrix) contains indicators of a generally high quality: they include specific details of expected Quality, Quantity and Time.

This project is one to which UNDP is well suited, and the involvement of UNDP as an Implementing Agency is advantageous given their experience and reputation in the field of capacity building.

Management arrangements at the design stage were fairly closely followed during project implementation, and appear to have been appropriate given successful implementation experiences.

### *Implementation*

The overall management appears to have been of a good quality with the selection of working group leaders being highly appropriate. Project organisation appears to have been efficient and management arrangements appropriate with respect to size and composition, organisational structure, personnel management and policy, the qualifications of local staff and consultants. The project manager appears to have had clear and open lines of communication, allowing for effective definition of tasks and responsibilities. Apart from some minor project delays, the quantity, quality and timeliness of inputs for the project with respect to execution responsibilities and budgetary provisions has been good, and overall implementation appears to have proceeded smoothly. Overall stakeholder participation has been satisfactory.

Local resource users have been intimately involved in the day-to-day project implementation and decision-making within the education component. The project made use of existing education-sector to facilitate this, and this approach has been highly successful. The participation of NGOs in the formal processes of curricula development, however, has been less successful despite the fact that this project has its roots in the NGO-initiated SPARE project. This however is largely a characteristic of the formal process-oriented approach to the development of a formal school curricula, and reflects the local context in which the project is being implemented.

The cost-effectiveness of achievements appears to have been fairly high. For a GEF contribution of USD 200,000 in the investment demonstration activities, an emission reduction of 3398 tonnes of CO<sub>2eq</sub> emissions has been achieved during the project period. Assuming this covered an average operation period of 1.5 years, this means a total 20-year lifetime reduction from the investment programme of 45,000 tonnes, yielding a direct cost per tonne of 4.4 USD.

The achievement of most project activities was successful, and are rated “Highly Satisfactory”. The education component has been highly effective and all project targets were met with the exception of those under activity 1.3 (involvement of stakeholders and the public), which suffered from a confused design, lack of clarity on the purpose, inappropriate management arrangements and inadequate

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support. Total reduction of CO<sub>2</sub> emissions in 2005 from the education component was estimated to be over 1 000 tonnes. Average savings made approx. 7% of total annual communal services costs at the pilot schools. The investment demonstration component was also effectively implemented, with all activities rated ‘highly satisfactory’ or ‘satisfactory’. The training courses appear to have been successful, demonstration projects were implemented with good quality, and financing mechanisms as proposed in the project document were successfully tested. The dissemination component has been successfully completed, although a programme at the Federal level to continue the work of the project, which was indicated in the project design, has yet to be achieved. However information about the project has been widely and successfully disseminated to the regions at a Federal Okrug level.

### *Results*

Total emission reductions during the project period from both the investment and the school education programme of 4398 tonnes of CO<sub>2</sub>eq were achieved during the project period, which is 49% of the target. The 20-year emission reductions have not been calculated by project staff, although since the emission reductions from the investment programme of at most covers a 2-year period (the investment projects were mostly realized in 2005, with a few in 2004 and 2006), the lifetime direct emission reductions are likely to exceed 44,000 tonnes (approximately 60,000 tonnes assuming an operation period of 1.5 years).

In the opinion of the evaluators that the intermediate objective of the project to develop replicable models for low-cost energy efficiency models has been successfully completed from a technology perspective, and partially completed from a financing perspective: the financing approaches proposed and tested (municipal targeted saving funds or ‘revolving funds’) are poorly replicable, although financing approaches have been successfully demonstrated and results disseminated. Replication of the financing models has not taken place.

### *Key lessons learnt*

- In most cases the creation of ‘Public Boards’ as a way to facilitate “involvement of stakeholders and public” proved to be inefficient, with possible reasons for this failure including lack of local experience in this type of consultative groupings, poorly defined functions as given in the project document, lack of local buy-in to the approach, and buy-in at Federal, Regional and Local levels, and lack of clarity about the management responsibilities. Although insufficient analysis has been possible on the causes of the lack of success of the approach to public participation, the following lessons have been learned from the partial success, and significant difficulties:
  - Public Boards can be a good meeting point for representatives of NGO’s, public, teaching experts, local authorities, municipal companies to demonstrate, discuss and evaluate the efficiency of energy saving projects in the pilot regions, as demonstrated in some regions.

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- Since there is a lack of experience with such mechanisms, a lot of ground-work is required to build local ownership and understanding of the approaches and benefits. Much more time and attention is thus required to ensure successful functioning of such mechanisms until familiarity has been built up.
- A much clearer definition of the role and responsibilities of such bodies is required.
- Public Boards are incompatible with the current methods of curricula development, and appear to be unnecessary in this context.
- The right level of management is required to reflect the proposed function. It is difficult to create an integrating activities managed within just one of the working groups.
- Local ownership is key to success, and careful attention should be given in the design to build local ownership of new approaches to co-operation.
- Without local co-ordination to integrate the various sub-components of the project, it has been difficult to maximise the possible benefits from addressing both education and investment in the same location. However it is apparent from locations where there was some link, that the synergies can be significant.
- Energy saving education programmes in schools have brought significant benefits in terms of real energy savings in the school and at homes of children (with savings on average of 7% from training in the pilot schools). This impact is hugely significant from the point of view of long-term valuing of natural resources, and promises to be highly cost effective in the middle to long term. Effective school education programmes on energy saving can have an impact in decision-making levels in schools and municipalities.
- The Budgetary Code of the Russian Federation allows for the mechanism of targeted savings for reinvestment in energy saving. However there is no real incentive for municipal authorities to take the risk and uncertainty, and make the efforts required to set up such mechanisms unless they are passionate about energy saving in the first place. Policy changes are also required because political terms of office of local authorities are similar in length to repayment terms, thus increasing political risk.
- Energy saving in municipalities, under the current Budgetary Codes, are most likely where the initial investments are large enough to provide savings in the first year large enough to make further investments from the end of the first year.

### *Main recommendations*

- The Ministry of Education and Science is to be commended for the visionary approach it has shown. It is clear that co-operation with NGOs (on the activities of which much of this project builds) is valuable, and shows the benefits of civil society and public bodies looking for common goals. This co-operation should be capitalized on in future activities.

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- It would be beneficial to continue analysis of new financial instruments in addition to the revolving funds considered here. A case study on ESCO financing should be prepared in addition to the work on revolving funds.
- To build on the significant successes in the educational component of this project, local educational authorities should be strongly encouraged to plan their budgets to support further training of teachers in energy saving (in methodical centres, at the institutes of advanced training, at pedagogical universities).
- Revolving funds can be considered as one of possible tools for energy saving project financing but they cannot currently be widely recommended due to an underdeveloped legal basis.
- A concise set of recommendations should be developed aimed at policy makers responsible for the development of the Budgetary Codes, and a concerted awareness-raising programme developed to seek to address the challenges of investment financing in municipalities.
- Building on the excellent work on curricular development and teaching for class 8, energy saving education to lower and higher grades (starting from 1st) is highly recommended.
- The annual SPARE competition should be strongly supported and expanded, and given a higher media profile. This will provide a strong pull-effect to support further activities.

## I. The Development Context

### A. Background

1. In 1999 the Ministry of Education of the Russian Federation established a five-year programme “Energy Saving in the Ministry of Education, 1999 to 2004”. The programme aimed at the introduction of energy efficiency in education at all levels, and achieving increased energy efficiency in the educational sector. The programme included establishment of 27 energy efficiency centres at universities all over the Russian Federation for implementing energy saving measures in educational buildings with the total budget about USD 6 million (matching contribution from the Ministry of Education and Regional Authorities). Within the programme, Petrozavodsk State University coordinated Russian-Nordic cooperation. Additionally approximately USD 0.5 million was allocated to research and implement educational projects.
2. This GEF project, which addresses energy efficiency in the Russian education sector, builds on long-term co-operation dating from the early 1990s between regions and municipalities in North-western Russia and Scandinavian countries. This co-operation included NGO programmes to raise awareness in schools, as well as training of energy experts, and co-financing of municipal energy saving projects. Under school education, a key project on which the GEF MSP built was the Norwegian SPARE programme, an NGO initiative on resource saving education for school children. Nordic countries Development of Norwegian-Russian Educational Program on Energy Efficiency in Building Sector; Development of the combined energy supplement based on utilization of local renewable, communal-waste energy resources for educational buildings). The project was also highly complimentary with investments planned by NEFCO, the Nordic Environment Finance Corporation, which is a risk capital institution financing environmental projects in Central and Eastern Europe. NEFCO aims to “facilitate the implementation of environmentally beneficial projects in the neighbouring region, with transboundary effects which also benefit the Nordic region”. During most of the project period NEFCO promoted a lending approach in North-western Russia aimed at the establishment of revolving (saving-account) funds in municipalities (based on the fact that municipalities cannot take loans). This approach has now been abandoned this in favour of soft loans up to 90% of the investment costs.
3. This project was initiated based on the results of previous projects implemented under the framework of Russian-Scandinavian cooperation in raising awareness and school-level initiative generation through developing and disseminating education programs for secondary schools in energy efficiency and related environmental education for universities and comprehensive schools (in particular, the Norwegian SPARE programme led by the Norwegian Society for the Conservation

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of Nature / Friends of The Earth Norway; the Development of a Norwegian-Russian Educational Programme on Energy Efficiency in Building Sector; and financial support activities of NEFCO).

4. Preparation for the project was started in 2001 with the GEF MSP brief endorsed 29 November 2001. The project was started in October 2002.
5. The project is co-financed by the Global Environmental Facility (GEF), and the GEF Implementing Agency is the UNDP. The Government of the Russian Federation, through the Federal Ministry of Science and Education, local governments of the pilot territories, and the Norwegian Ministry of Foreign Affairs, and NEFCO provides other co-financing.
6. The focus of the project is on energy efficiency in the Russian education sector. The following system of subordination is used in the Russian educational sector:
  - Most state high schools (Universities) (approximately 95%) as well as technical schools (medium level of professional education) are subordinate to the Federal Ministries and organisations and are financed from the Federal budget.
  - The most part (approximately 70%) of state vocational schools (the lowest level of professional education) are federal and are financed from the Federal budget. The remainder of such schools are financed from the budgets of the Subjects of Federations (regions, oblasts, krai's, republics, etc.).
  - Most kindergartens and secondary schools are subordinate to the municipalities and are financed by the local budgets. In case there is deficit of financing at the municipal level, subsidies from the regional budgets are used.
  - Private high schools can be also financed partly from the Federal budget but only after they have undergone state accreditation.
7. The Russian Federation Ministry of Education<sup>2</sup> develops basic educational programmes and national standards of education for all levels. This Ministry is responsible for managing the educational process in Russia<sup>3</sup>. Regional educational authorities (in the 'Subjects of the Federation') use these programmes and standards as the basis for the regional educational policy. They complete these basic provisions with specific local elements thus adapting the basic programmes to local conditions. Final versions of obligatory educational programmes are defined at the level of municipal departments of education. In addition special methodical centres are usually arranged at

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<sup>2</sup> Since 2005, this Ministry has been renamed the "Ministry of Education and Science"

<sup>3</sup> A number of other Federal Ministries also participate in the management process but through the structures of the Ministry of Education. These are the Ministry of Finance, the Ministry of Labour, the Ministry of Economic Development, and the Ministry of State Property.

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the municipal level (in the framework of the local department of education or affiliated to it) where new educational programmes can be developed and later recommended for optional or elective courses at schools. Schools have no influence on the basic educational programmes but they can decide on the set of optional and elective courses they use.

8. *Optional* courses may be offered to pupils by schools depending on the interests of the school and pupils – if there are insufficient scholars wishing to follow an optional course schools can choose not to offer it. *Elective* courses, on the other hand, must be made available to pupils in a school, even if only one pupil electing to follow that course.
9. The main sources of financing of educational institutions in Russia are federal<sup>4</sup> (approx. 18%), regional (approx. 19%) and municipal/ local budgets (approx. 63%)<sup>5</sup> (depending on the subordination of educational institutions – see above). The budgets of all levels are formed for 1 financial year; resources are distributed according to certain budget lines. Reallocating money between different budget lines is possible<sup>6</sup>, although retaining savings from the overall budget and/or specific budget lines from one year to the next is not possible according to the Federal Budget Code: infrastructure investments which save resources thus only ‘benefit’ from the financial savings during the year of investment (when agreed budget lines can be reallocated). One possible exception to this under the Budgetary Code of the Russian Federation allows for accumulation under a ‘Targeted Use’ programme, which requires special approval, has fixed dates and predicted repayment rates, and allows for the creation of a ‘profit and loss budget’, and returning savings into a sub-account (fund) (Zenyutich et al 2006). To provide the proper balance of financing regional and municipal educational institutions in the regions/ municipalities with different level of income a system of state support (additional transfers from the Federal budget) is used.
10. Educational institutions have the right to perform commercial activities/ to provide paid services<sup>7</sup>, e.g. renting their premises and equipment, trading goods and equipment, providing intermediary services, acting as shareholders of other educational institutions, acquisition of shares, bonds, etc., additional educational services on paid basis, etc. Profits after taxing can be used for the needs of the educational institutions. The Budgetary Code of the Russian Federation does not permit state financed organisations to take loans except for cases of budgetary shortfalls. According to the budget

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<sup>4</sup> Approx. 70% of budget of federal educational institutions (high schools and professional schools) comes from the Federal budget

<sup>5</sup> Source: data from the Russian Ministry of Education

<sup>6</sup> This can be done, for instance, in case when there is economy of funds inside one budget line and deficit inside another line

<sup>7</sup> Article 47 of the Federal Law on Education

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code the budgets can accept grants (provided on non-refundable basis) (part ii, chapter 2, article 6 point 45) . Local and regional budgets have the right to finance their needs through local and regional target programmes (part ii, chapter iii, article 10, part 79) and they also have the right to take loans from banks and other financial institutions (part iv, chapter 13, articles 95 and 96).

11. Covering expenses for educational institutions from federal budget sources is only possible through the Federal Treasury bodies. The Federal Treasury controls all the payments made by budgetary institutions.
12. The budget of the educational institution is made in the form of estimates where all types and amounts of costs planned in the forthcoming year are fixed. The educational institution itself has the responsibility to define the types and amounts of costs<sup>8</sup>.
13. Each level of authority (federal, regional and municipal/ local) is responsible for technical maintenance only of the buildings of educational institutions financed from corresponding budgets (e.g. federal institutions are financed from the federal budget and so on).

### ***B. Project outcomes and objectives***

14. The overall objective of the project is “to contribute to the abatement of GHG emissions by improving the energy efficiency of Russian educational facilities.” Apart from direct energy saving potential, educational sector of the project had the intention of influencing the general public through educational programmes at schools. The project aimed to reduce energy consumption by about 20 to 25 percent in a number of pilot schools and thereby lower their energy use by 7.5 GWh, leading to a reduction in CO<sub>2</sub> emissions from boiler plants by an estimated 9,000 tons over the project period (3 years), and by 60,000 tons over the estimated average life time of the investments, i.e. 20 years.
15. The immediate objective (outcome) was “to develop replicable models for low-cost energy efficiency measures implementation in both municipal secondary schools and Federal educational buildings (Universities, technical and vocational schools)”. The immediate objective was to be achieved through awareness raising, training and capacity building, demonstration program, and models for sustainable administrative and financial solutions.

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<sup>8</sup> According to Article 12 of the Federal Law on Education

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16. These goals / outcomes were to be achieved by addressing institutional, financial, and information / awareness barriers to energy efficiency in the educational sector.
17. Barriers to energy efficiency in the education sector are not discussed in great detail in the project document. However barriers that are mentioned in the proposal text include the following general issues:
  - Institutional inefficiencies, including unclear administrative responsibilities,
  - Billing according to metering requiring the consent of the supplying district heating companies,
  - Financial disincentives, including the fact that heat is “normally paid according to [calculated] norms rather than according to actual [metered] use”,
  - Inadequate awareness and knowledge of the possibilities for energy saving,
  - Lack of practical examples of successfully completed low-cost energy efficiency projects in the Russian education sector,
  - Limited financial resources for energy efficiency measures in the educational sector, meaning that the development of a potentially profitable project often stops due to the lack of capital,
  - “High interest rates and undeveloped lending and mortgage market are major obstacles”,
  - Establishment of revolving funds where the savings are reinvested in energy saving is an attractive option, but the lack of guidance and best practices in the establishment of such financial mechanisms have constrained their wider development,
  - Energy efficiency is not a core task of any existing administrative entity.
18. The term ‘revolving funds’ requires additional clarification since it is a major part of the GEF project (under component 2), and the term ‘revolving fund’ as used by the project is non-standard. The project has focused on saving mechanisms for local authorities, allowing monetary savings from energy efficient investments to be retained within a sub-account of the entity (for three years) provided they are used for further energy saving investments. Revolving fund in this context does not imply a loan arrangement, but a savings account. Some municipalities has an interest in these mechanisms even though they restrict reallocations of funds between budget lines since they can provide the only viable option to retain benefits of energy saving investments for more than one year. In effect the municipality using such an approach can maintain budget allocations to energy at pre-investment levels for a period following the investment, and save the difference received in a sub-account (‘fund’) for future use in similar (energy saving) investments.
19. To overcome the barriers to energy efficiency in the education sector, the was designed with three main project components:
  - a. Education programme on energy efficiency in secondary schools (including dissemination activities), and principally addressing awareness barriers at the school and household levels,

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- b. Demonstration of energy saving and financial models in schools and universities,
- c. Dissemination of results of the demonstration activities.

20. The main outputs of the project, corresponding to these components are:

- a. Energy efficiency education programme established at secondary schools, increased public awareness, and motivation to initiate implementation of practical energy efficiency measures.
- b. Demonstrated feasibility, effectiveness, and cost-efficiency of proposed energy efficiency measures in educational facilities, and revolving financial mechanisms.
- c. Project development capacity built in the Russian University Network of Energy Efficiency Centres and the Barents Energy Focal Points for the nation-wide dissemination of results and best practice, and effective replication of the demonstration programme and revolving financial mechanisms.

21. For UNDP, the intended outcome as stated in the Country Results Framework (CRF) is “Improved capacity of national/sectoral authorities to plan and implement integrated approaches to environmental management and energy development that respond to the needs of the poor”. The project comes under Goal G3 “Environmentally sustainable development to reduce poverty”, sub-goal G3-SGN1 “Sustainable environmental management and energy development to improve the livelihoods and security of the poor” and SAS 02 “Institutional framework for sustainable environmental management and energy development”

***C. Key stakeholders and beneficiaries for this outcome***

22. The key stakeholders for both the UNDP and the GEF outcomes include:

- Ministry of Education and Science of the Russian Federation, Federal Agency for Education
- Administrations of the Republic of Karelia, Tver, Arkhangelsk and Murmansk Oblast
- Local municipalities in the project regions
- Local NGOs and community representatives
- Barents and University Energy Efficiency Centres
- Leading regional universities involved in the project
- Norwegian Energy Efficiency Group (NEEG)
- Energy Saving International AS (ENSI)
- The Norwegian Society for Conservation of Nature / Friends of The Earth Norway (NNV)

23. The project beneficiaries include:

- Schools
- Pupils, and through them households
- Municipalities
- Regional governments and administrative institutions

## II. Findings and Conclusions

24. The discussion that follows covers the current status of the project outcomes, and reviews key factors that affect the achievement of the project outcomes.

### ***A. Project formulation (relevance & design)***

#### ***Relevance to local and national development priorities***

25. The overall project design is highly relevant to local, regional and Federal development plans. This is exemplified through the five-year programme “Energy Saving” in the Ministry of Education, 1999 to 2004” by the Ministry of Education of the Russian Federation, established by the Board of the Ministry by order No. 575 dated 05.03.99. This programme aimed at the introduction of energy efficiency in education at all levels, and achieving increased energy efficiency in the educational sector, and allocated a total budget about USD 6 million with matching contributions from Regional Authorities.

26. The project has been timely and topical over the entire project implementation period and remains important at the present time. The project design was highly relevant and addresses a core issue for the financing of municipal infrastructure in general and specifically educational facilities. In addition, with significant changes in the way the population pays for energy (in particular heat), and increasing costs for natural resources, issues of energy saving in households have grown in importance: how and how much this costs, whether family budgets will be enough for this, and whether exactly this amount shall be paid, how to calculate it and to check it – these are some of the major questions of the day.

27. The project is highly relevant to the major priorities of the 2003 Energy Strategy of the Russian Federation for the period up to 2010. This strategy includes:

- a. The reduction of specific costs for generation and use of energy resources by means of rational use, application of energy saving technologies and equipment, losses reduction;
- b. The improvement of financial sustainability and efficiency of the use of a energy sector potential, increase of the labour productivity.
- c. Maximally efficient use of natural fuel-energy resources and energy sector potential for economic growth and improvement of the quality of living of citizens.

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### *Relevance to target groups*

28. Teachers involved with the educational component of the project are proud of the work that has taken place during the project. This was evident during meetings and discussions with involved teachers during the evaluation field visits. Teachers have further developed the teaching materials, adapting them to other classes (the materials has been developed specifically for class 8, and teachers have adapted / expended the material to class 9 and 10). This ownership proves the project expediency and local ownership / driveness of the original project concepts.
29. The project outcomes remain in the ownership of the Federal Ministry of Education, as well as at the regional (Oblast) level, where teachers clearly demonstrated their strong intention to continue with project activities after the end of the project period.
30. Self-evaluation of the impact and acceptance of the education programme on school children and parents showed a high level of interest, acceptance, and behavioural change as a result of the course content. This evaluation provided the following summarized impacts:
- a. Arkhangelskaya Oblast: 60% of the 15 pilot schools showed reduction of energy consumption, ranging between 0.3% and 16%. An influence on parents' behaviour was observed, with approximately 40% of families of pupils following the course in pilot schools implementing energy saving measures as a result of the Programme.
  - b. Murmanskaya Oblast: Reduction of CO<sub>2</sub> emissions from energy saving measures were recorded in 75% of schools that took part in the educational pilot (estimated at a total of approximately 500 tonnes during the course of 2005).
  - c. Republic of Karelia: 21 pilot schools showed 3% up to 7% energy savings in years 2004 - 2005. In families of the pupils from pilot schools energy savings made 3 – 15 kWh per week, with the share of families using energy saving approaches and equipment reaching 50%.
  - d. Tver and Tverskaya Oblast: In the 15 pilot schools a reduction of energy consumption of between 0.5% and 19.6% was recorded for 2005.

These indicative impacts underline the relevance of the educational component to the project beneficiaries.

31. The Public Boards established under Activity 1.3 were intended to allow “involvement of stakeholders and public”. However the Public Boards have had only limited success, and effectively did not work at all in at least two oblasts. The difficulty appears to stem from a combination of ambiguity and lack of clarity in project design (discussed in paragraph 42 below), lack of experience with such mechanisms in the Russian Federation, and some questions over the relevance of the

## Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector

approach. The result has been a low level of co-ordination between the two project components (output 1 on education, and output 2 on investment demonstration) at the Oblast level, and reduced scope for NGO and public involvement in the project.

32. Stakeholder participation in information dissemination, consultation, and “stakeholder” participation in design stages of project development, as born out by project impacts, appears to have been adequate to the scale and scope of the project.

### ***Overall rating<sup>9</sup> of Stakeholder Participation:***

Satisfactory

### ***Project design***

33. The project design is generally clear, practical and realistic. Components, outputs and activities are defined in clear and unambiguous terms in most cases, with the exception of the Public Boards, and some aspects of management arrangement. This clear design has greatly facilitated effective and efficient project implementation in a project, which is challenging from the point of view of geographical breadth and the number of involved stakeholders in the various project components.
34. The project intervention logic is somewhat incoherent: the three project components address two issues: a) education – awareness at schools and household levels (component 1), and b) technical / financial capacity building and demonstration (components 2 and 3). These two aspects are conceptually separate, and the project’s immediate objective (“to develop replicable models for low-cost energy efficiency measures implementation in both municipal secondary schools and Federal educational buildings (Universities, technical and vocational schools)”), and the indicators at the immediate objective level appear to be unconnected to outcome / component 1.

From a design point of view, according to the project brief and document, the educational component is also physically separate from the technical / financial components, and it is apparent that the whole project could feasibly be implemented as two separate and unrelated projects. This separation is evident in both the planned activities and the organisational structure proposed in the Project Document, where the working groups have vertically defined responsibilities, and no overall project coordination covering both aspects exist at a regional or local level.

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<sup>9</sup> The rating scale is: Highly Satisfactory, Satisfactory, Marginally Satisfactory, and Unsatisfactory. See “Annex 5: Summary of Evaluation Ratings” for a summary of all the ratings given.

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This logical disconnect apparent in the project design would in most cases mean a poor project design. However, in this case, since both aspects of the project have been successful, the consequences of this design issue appear to have been minor.

During the evaluation field visits it appeared that the education programme had the potential to make both short and long term impacts on teachers, pupils and parents. It was frequently pointed out to the evaluators during the field visits that majors and city administrators (particularly in small towns and villages) were themselves influenced in their thinking by the effectiveness of the education programme. In addition, and on the other hand, energy saving investments made during the investment demonstration activities also had an impact on the attitudes of school children and teachers to energy use within the schools. Thus there is a real link, which is evident from project implementation experiences, between the education and investment demonstration activities.

While implementation of both aspects of the project activities was good, it is certainly arguable that a project design in which education and demonstration were physically joined (i.e. with the education programme taking place in schools where demonstration activities were planned to take place), the overall impacts could have been even greater. It is not entirely clear from the project document whether the Project Boards were intended to providing a co-ordination forum linking the two main project components, but if so, management of this activity (1.3) should have been at the project co-ordinator level to ensure links between the working groups.

35. As a GEF climate change project under Operational Programme 5 (overcoming barriers to energy efficiency), the project should aim to overcome existing barriers to energy efficiency. However, the barrier analysis given in the barrier analysis is rough: unspecific and overly superficial. It is thus unclear whether the selected intervention strategy (focused on the two-fold activities of education and investment demonstration) truly addressed the root causes and principal threats in the project area.

Within the project document, the barriers addressed by the education component are poorly specified. Both the overall objective (“To contribute to the abatement of GHG emissions by improving the energy efficiency of Russian educational facilities”), and the immediate objective do not appear to relate very closely to barriers addressed by educational programmes aimed at 13-14-year old school children.

Based on the barrier analysis presented in the proposal, technical training conducted in the scope of the project does not appear to address any particular barriers, and later implementation has not shown that this was really an existing barrier, which the project has contributed to overcoming.

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Undoubtedly the training was beneficial for those that have participated, but the barrier orientation of the activity remains unclear.

The project document on the other hand does identify the main generic financial barriers (and disincentives) facing municipal investments for energy saving, and components 2 and 3 address these barriers directly.

Other barriers raised in the project brief, such as ‘institutional inefficiencies’, “unclear administrative responsibilities”, the consent required from district heating companies before billing by meter can be introduced, and payment according to norms, and the lack of personnel in municipal administrations with “energy efficiency as a core task” do not appear to be addressed through project activities. These barriers are thus likely to remain unchanged after the project, unless the project context has changed sufficiently during the project period, or they have been addressed through actions of other stakeholders.

36. The project logical framework (project planning matrix) contains indicators of a generally high quality: they include specific details of expected Quality, Quantity and Time. Exceptions include the indicator for the overall objective (“Reduction of heat and power consumption over the project lifetime at participating education facilities”), which does not detail how much reduction is expected, and what the project lifetime is. The same is generally the case for the indicators for the immediate objective, which are non-specific.
37. The indicators at the output level are in most cases excellent. An example is indicator 1c: “impact on behaviour and energy saving monitored and documented in 5 schools: target 3 to 5 % saving”.
38. Indicators under outcome 3 are somewhat unclear, and the same is true for activities 2.4, 3.1 and 3.2. These indicators do not adequately specify the ‘Quality’ aspect of best practice for quality indicators since it is unclear what terms such as ‘system of distribution established’, ‘role... defined’, ‘information system’ and ‘programme adapted’ really mean, and how to assess whether they have been adequately addressed.
39. Considering that this project is a Medium Scale Project, and funding of 1 million USD from GEF to address these issues of benefit to the whole of the Russian Federation is remarkably small, the replication approach can be considered to be well designed, and represents a cost effective way to get the project findings disseminated as widely as possible through the Federation. However, it could be argued that dissemination over the entire country was always overly ambitious, and activities that aimed at legislative developments at the Federal level may have been more realistic. This however is

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speculative, and the impacts from either option could not be guaranteed. Overall the replication approach selected is well designed, and appears appropriate.

40. This project is one to which UNDP is well suited, and the involvement of UNDP as an Implementing Agency is advantageous given their experience and reputation in the field of capacity building.
41. Management arrangements at the design stage were fairly closely followed during project implementation, and appear to have been appropriate given successful implementation experiences. An alternative might have been to have joint co-ordination of components 1 and 2 at an Oblast level as has been discussed under paragraph 34 above.
42. The project design given for the Public Boards (activity 1.3) is confusing:
- a. The boards come under Output 1, and were the responsibility of the team leader for Working Group 1. However, the boards had a wider role, and could potentially have provided the basis for the linking of Components 1 and 2. This arrangement is implied in the Project Implementation Structure given on page 16 of the Project Document where the Public Boards appear to come under the responsibility of the Steering Committee and without involvement of the Project Director or Project Management Unit. How this could have been realized in practice is unclear since the Steering Committee is in most cases unable to play an executive role in projects.
  - b. There is also some lack of clarity of exactly what the Boards were intended to do, with the intention of providing an avenue for public input, information exchange, dissemination of results, and co-ordination. These do not appear to be compatible responsibilities, in particular because this type of mechanism is unusual in Russia and would require careful and ongoing support / coaching during early years.
43. Overall, based on successful implementation experiences, the project design can however be considered to be rather appropriate, in spite of there being room for improvement.

<b><i>Overall rating<sup>10</sup> of Conceptualization/Design:</i></b>
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Satisfactory
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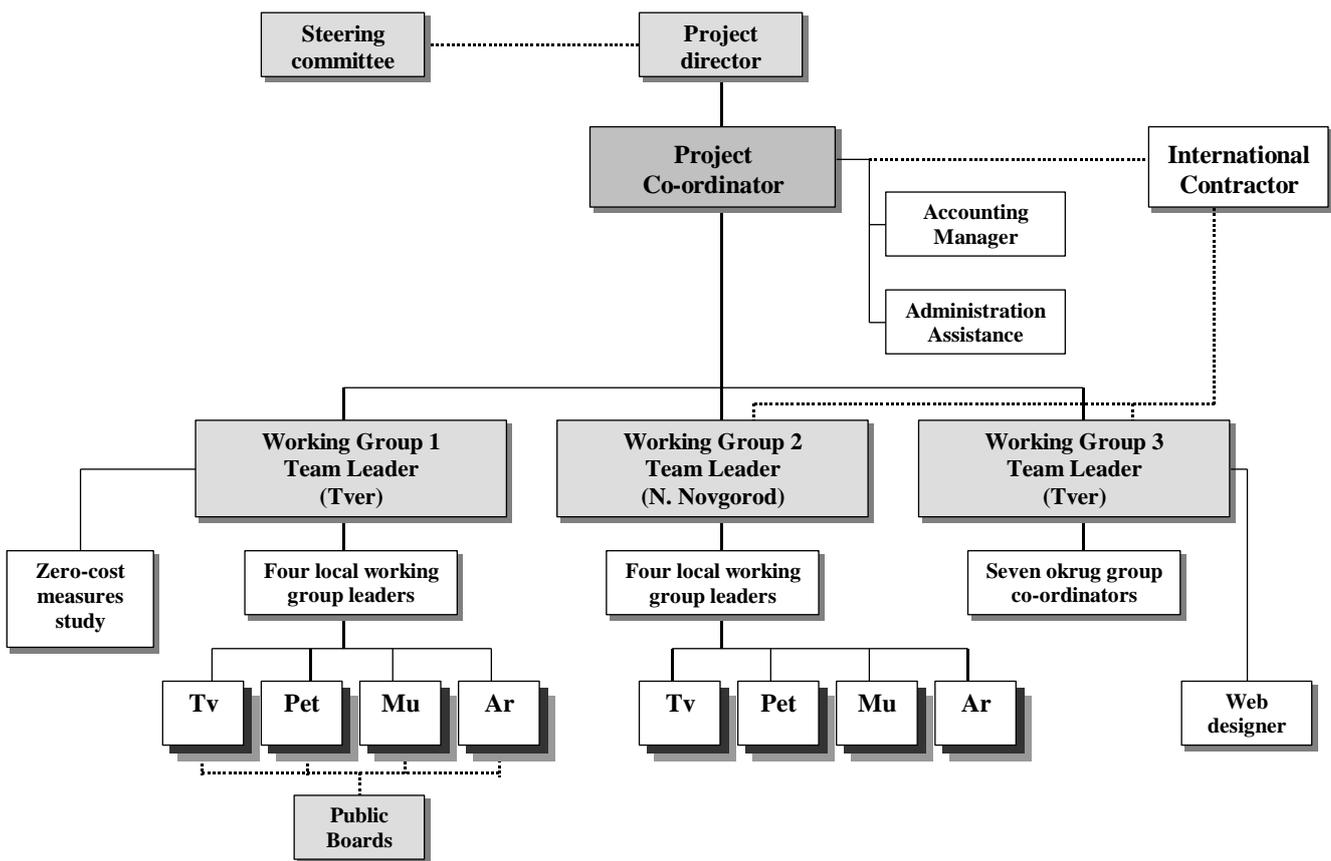
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<sup>10</sup> The rating scale is: Highly Satisfactory, Satisfactory, Marginally Satisfactory, and Unsatisfactory. See “Annex 5: Summary of Evaluation Ratings” for a summary of all the ratings given.

## B. Implementation

### Implementation approach and management arrangements

44. The Ministry of Education and Science of the Russian Federation executed the project. The implementation of project activities was carried out through two Project Support Units situated in Moscow and Petrozavodsk (during the first three years of implementation, following which this was moved to Tver). Three working groups were created to backstop implementation of project outputs, one based in Tver State University (WG 1 focusing on the education programme), one in Nizhny Novgorod Regional Innovative Energy Efficiency Centre (WG2 focussing on the technical and investment component), and one in Petrozavodsk / Tver (WG3 focussing on dissemination to other regions of the Russian Federation). The project management structure used during implementation, developed by the evaluation team during stakeholder meetings and discussions, is shown in the diagram below.



45. The project logical framework has been closely followed, and all activities proposed in the original project design have been implemented with the exception of those under Activity 1.3 (“Establishment of Public Boards in pilot regions for co-ordination of the programme and facilitating of sustained activities”), which had mixed success.

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46. Work-plans were prepared for activities under the education component of the project, and these appear sufficiently comprehensive and realistic, although evidence of adaptive management and/or; changes in management arrangements to enhance implementation were not evident. It appears that no specific work-plans were prepared for the other project components.
47. The overall management partnerships in project implementation appear to have been excellent, with the selection of working group leaders, in particular for components 1 and 2, being highly experienced, and with excellent reputations and a high level of peer respect. Project organisation appears to have been efficient and management arrangements appropriate with respect to size and composition, organisational structure, personnel management and policy, the qualifications of local staff and consultants.
48. The project has been well executed. The project manager has been effective, and has executed the tasks of selection, recruitment, assignment of experts, consultants and national staff members well. The project manager appears to have had clear and open lines of communication, allowing for effective definition of tasks and responsibilities. Apart from some minor project delays, the quantity, quality and timeliness of inputs for the project with respect to execution responsibilities and budgetary provisions has been good, and overall implementation appears to have proceeded smoothly.
49. Project implementation mechanisms outlined in the project document were closely followed. The role of the various working groups and their activities were generally executed according to the plan, with the exception of the project boards.
50. Three Project Steering Committee meetings were held (10 December 2002, 15 September 2003, and 6 December 2005). Based on the minutes of the meetings the Steering Committee has not played a significant role in the development of the project, and has mainly been used as a forum for reporting on progress. Contrary to the Project Implementation Structure given on page 16 of the Project Document, the Steering Committee does not seem to have been instrumental in the creation of the Public Boards and the work under the seven centres of energy efficiency in the Federal Okrugs (see also 42 above).
51. Supervision and administrative and financial support provided by UNDP appears to have been appropriate to the needs of the project, and delivered in a timely way.
52. Both men and women have been heavily involved in the project, although women were mostly involved in the education component, and men dominated the technical component. This however

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has not appreciably detracted from the achievement of the project objectives, and reflects the wider society in which the project is being implemented.

### ***Overall rating<sup>11</sup> of Implementation Approach:***

Satisfactory

### ***Stakeholder participation***

53. Overall stakeholder participation has been satisfactory.

54. Information was produced throughout the project, particularly in the educational component. The project design proposed an iterative approach to the production of the course materials, and this was closely followed. Ownership of information and informational materials was particularly high, with local teachers making significant efforts to adapt and expand on the existing materials according to local conditions. The materials produced have been of a high quality, and widely disseminated to stakeholders

The investment demonstration components have so far produced less information for dissemination, partly as a result of some delays in the realization of the investment projects. The informational materials most recently published, are however of a high quality.

55. Local resource users have been intimately involved in the day-to-day project implementation and decision-making within the education component. The project made use of existing education-sector to facilitate this, and this approach has been highly successful.

The participation of NGOs in the formal processes of curricula development, however, has been less successful despite the fact that this project has its roots in the NGO-initiated SPARE project. This however is largely a characteristic of the formal process-oriented approach to the development of a formal school curricula, and reflects the local context in which the project is being implemented.

The project activity 1.3 “Establishment of Public Boards in pilot regions for co-ordination of the programme and facilitating of sustained activities” specifically was designed to facilitate involvement of the community and NGOs (Activity level indicator: “NGO activities established to participate in dissemination”), but this has had mixed results in the project areas: Quite a limited number of NGOs were involved into project implementation/ information dissemination. The most prominent of

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<sup>11</sup> The rating scale is: Highly Satisfactory, Satisfactory, Marginally Satisfactory, and Unsatisfactory. See “Annex 5: Summary of Evaluation Ratings” for a summary of all the ratings given.

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them were “GAIA” (Murmansk), AETAS (Arkhangelsk) and All Russian Union for Nature Protection (Petrozavodsk). All these NGOs provided their expertise in composing and testing the textbook as well as in training programmes and extra class activities design based on the SPARE programme from Norway/NNV. In Arkhangelsk no public board was created, and in Murmansk the Public Board was created but was estimated as ineffective by the involved stakeholders. In the Republic of Karelia the Public Board was established, and includes about 10 representatives of the Stakeholders (Ministry of Education of the Republic, Regional Energy Commission, NGOs, teachers, lectures from the local Universities, etc.), and was positively estimated by the Project participants. In Tver a Public Board was established and met at regular intervals – its role has been seen as one of dissemination of results more than local co-ordination.

56. The investment demonstration activities have effectively establishment partnerships and collaborative relationships with local (municipal) and district level entities and the co-operation has been very positive.
57. The Ministry of Education has been heavily involved in the project, principally through the PMU and project manager. This is positively rated.

### ***Overall rating<sup>12</sup> of Stakeholder Participation:***

Satisfactory

### ***Monitoring and evaluation***

58. A mid-term evaluation was completed in February 2005. This evaluation identified a number of areas for improvement and recommendations, and is of a high quality. However the project would have benefited more from having the mid-term evaluation scheduled in mid-2004, allowing more time for recommendations to be followed and adjustments to be made.
59. There is no clear evidence that feedback from Monitoring and Evaluation activities was used during the project as a management tool, and changes do not appear to have been made to the project actions as a response to changing conditions and/or feedback from Monitoring and Evaluation activities. Recommendations given in the mid-term evaluation do not appear to have been addressed in subsequent activities – for example, the difficulties with the key numbers method at schools was emphasised in the mid-term evaluation, but no corrective action appears to have been taken.

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<sup>12</sup> The rating scale is: Highly Satisfactory, Satisfactory, Marginally Satisfactory, and Unsatisfactory. See “Annex 5: Summary of Evaluation Ratings” for a summary of all the ratings given.

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60. Other monitoring and evaluation activities included the Steering Committee meetings (three held, on 10 December 2002, 15 September 2003 and 6 December 2005), and ongoing supervision of activities by the Project Management Unit and the UNDP.

### **Overall rating<sup>13</sup> of Monitoring and Evaluation:**

Satisfactory

### **Financial planning**

61. The committed contributions compared to the actual contributions are given in the table below:

<b>Cost-sharing source</b>	<b>Committed</b>	<b>Realized</b>
GEF	1,000,000	1,000,000
NEEG	400,000	500,000
NNV	200,000	278,500
NEFCO	250,000	320,000
Ministry of Education	650,000	1,670,000
Regional budgets	211,000	210,000
<b>TOTAL</b>	<b>2,711,000</b>	<b>3,978,500</b>

As is evident from the table, co-financing contributions have matched or exceeded the levels given in the project document.

62. The investment component has been implemented using ‘revolving funds’ (saving accounts at municipal or university level), which has meant a high level of leverage.

63. The cost-effectiveness of achievements appears to have been fairly high. For a GEF contribution of USD 200,000 in the investment demonstration activities, an emission reduction of 3398 tonnes of CO<sub>2eq</sub> emissions has been achieved during the project period. Assuming this covered an average operation period of 1.5 years, this means a total 20-year lifetime reduction from the investment programme of 45,000 tonnes, yielding a direct cost per tonne of 4.4 USD.

64. Details of the investments are given in the table below:

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<sup>13</sup> The rating scale is: Highly Satisfactory, Satisfactory, Marginally Satisfactory, and Unsatisfactory. See “Annex 5: Summary of Evaluation Ratings” for a summary of all the ratings given.

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Pilot regions	Institution	Investments (thousand USD)				
		Total	including			
			GEF	NEFCO	Ministry of Education	Regional Administrations
Arkhangelsk Oblast	School 4, Novodvinsk	153.60	25.60	76.80	-	51.20
	School 1, Novodvinsk	107.14	25.60	45.06	-	36.48
	Arkhangelsk State Technical University	229.63	10.24	-	219.39	-
Murmansk Oblast	School. 5, Apatity	102.40	25.60	51.20	-	25.60
	School 7, Kirovsk	92.16	25.60	46.08	-	20.48
	Murmansk State Technical University	211.33	10.24	-	201.09	-
Karelia Republic	Derzhavin Liceum, Petrozavodsk	70.40	25.60	30.72	-	14.08
	School 4, Petrozavodsk	69.63	25.60	34.18	-	9.86
	Petrozavodsk State University	128.00	-	-	128.00	-
Tver Oblast	School 8, Tver	51.20	25.60	-	-	25.60
	School 17, Tver	51.20	25.60	-	-	25.60
	Tver State University	138.24	10.24	-	128.00	-
<b>TOTAL:</b>		<b>1404.93</b>	<b>235.52</b>	<b>284.03</b>	<b>676.48</b>	<b>208.90</b>

### *Project effectiveness*

65. Progress in project implementation against outcomes and activities is shown in the following table:

OUTCOMES & ACTIVITIES	INDICATORS	STATUS	RATING
<p>OUTCOME 1</p> <p>Energy efficiency education programme established at secondary schools, increased public awareness, and motivation to initiate implementation of practical energy efficiency measures.</p>	<p>INDICATORS</p> <p>School educational programme on environment and energy efficiency developed and approved on local and regional level</p>	<p>The programme was developed and approved by the Federal Ministry of Education, Departments of Education of Arkhangelsk City, Murmansk Oblast, Republic of Karelia, City of Petrozavodsk, City of Tver.</p>	<p>Highly Satisfactory</p>
	<p>Programme widely spread in the 4 pilot regions and implementation started in the other 5 Federal Okrugs</p>	<p>The programme has been widely spread in 4 pilot regions. Training materials were delivered to:</p> <ul style="list-style-type: none"> <li>• Arkhangelsk: 100 schools</li> <li>• Murmansk Oblast: 41 schools</li> <li>• Republic of Karelia: 65 schools</li> <li>• Tver Oblast: 186 schools</li> </ul>	<p>Highly satisfactory</p>
	<p>Impact on behaviour and energy saving monitored and documented in 5</p>	<p>The training programme caused a noticeable impact on energy saving:</p> <ul style="list-style-type: none"> <li>• Arkhangelsk: 60% of pilot schools (15)</li> </ul>	<p>Highly satisfactory</p>

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	<p>schools; target: 3 to 5 % saving</p> <p>Public and Stakeholders involvement into the project through the established 4 Public Boards in the pilot regions</p>	<p>showed reduction of energy consumption<sup>14</sup>, from 0,3% up to 16%. Extended influence on parents behaviour is observed: approx. 40% of families of pupils from pilot schools, implemented energy saving measures as a result of the Programme.</p> <ul style="list-style-type: none"> <li>• Murmansk: Reduction of CO2 emissions due to energy saving measures in 10 out of 15 pilot schools monitored made approx. 500 tons per 2005. No estimation of energy and heat savings were made due to lack of motivation of teachers.</li> <li>• Republic of Karelia: 21 pilot schools showed 3% up to 7% energy savings in years 2004 – 2005. In families of the pupils from pilot schools energy savings made 3 – 15 kWh per week, with the share of families using energy saving approaches and equipment reaching 50%.</li> <li>• Tver and Tver Oblast: In 15 pilot schools reduction of energy consumption of 0,5% – 19,6% took place<sup>15</sup>. Summarised score of the Programme efficiency made 18 – 25.</li> <li>• Arkhangelsk: no public board was created.</li> <li>• Murmansk: the Public Board was created but was estimated as inefficient by the stakeholders.</li> <li>• Republic of Karelia: the Public Board was established, incl. about 10 representatives of the Stakeholders (Ministry of Education of the RK, Regional Energy Commission, NGO's, teachers, lectures from the local Universities, etc.) . Positively estimated by the Project participants, but met only occasionally.</li> </ul>	<p>Unsatisfactory</p>
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<sup>14</sup> In other 40% of schools increase of energy consumption took place; however, the reason for that was installation of new computer equipment.

<sup>15</sup> The highest level of savings was achieved at schools where new energy metering and saving equipment was installed in the framework of GEF project. The highest level of savings without using technical installations made 12,8%

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		<ul style="list-style-type: none"> <li>In Tver the Public Board was established and functioned. However it was not seen as a co-ordination tool but more as a publicity mechanism.</li> </ul>	
1.1 Development and adoption of an optional pedagogical programme and textbook on environment and energy efficiency for 8 <sup>th</sup> grade	Educational programme developed	<p>The basic set of training materials was prepared, incl. a textbook for schoolchildren, a guidebook for teachers and a working notebook for pupils. Total number of copies: 10 050.</p> <p>Training materials were tested in:</p> <ul style="list-style-type: none"> <li>Arkhangelsk: 15 pilot schools</li> <li>Murmansk: 15 pilot schools</li> <li>Republic of Karelia: 21 pilot schools</li> <li>Tver: 15 pilot schools</li> </ul> <p>A brochure with additional set of methodical materials on energy saving and results of testing the new textbook has been developed by the working group of training experts in Arkhangelsk. The brochure (200 copies) is distributed by the local Department of Education and the local Methodical Centre to schools interested in integrated the course in energy saving into their current programmes.</p>	Highly satisfactory
1.2 Provision of the programme, support and training for teachers, evaluation and documentation of results	System for training of teachers developed	<p>Special Teachers' Training Programmes were developed. Teachers were trained to deliver the energy saving course:</p> <ul style="list-style-type: none"> <li>Arkhangelsk: 52 pers.</li> <li>Murmansk Oblast: 30 pers.</li> <li>Republic of Karelia: 65 pers.</li> <li>Tver and Tver Oblast: 186 pers.</li> </ul> <p>2 workshops were arranged to introduce the new training materials (1) and to assess the initial results of energy saving courses implementation in pilot schools (2) for representatives of pilot regions and 5 federal okrugs.</p> <p>Federal teaches' training programme in energy saving is being developed for 7 Federal Okrugs.</p>	Highly satisfactory
	The programme and textbook adopted as a	<ul style="list-style-type: none"> <li>Arkhangelsk: the Programme is adopted as an optional course for the</li> </ul>	Highly satisfactory



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	<p>Scientific evaluation of the results and documentation of energy saving from 60 schools</p>	<ul style="list-style-type: none"> <li>• Tambov Oblast</li> <li>• Nizhny Novgorod Oblast</li> <li>• Altai Krai</li> <li>• Kaluga Oblast</li> <li>• Moscow</li> </ul> <p>A system of testing the knowledge and of evaluating the results was developed. Tools of testing:</p> <ul style="list-style-type: none"> <li>• Questionnaires for schoolchildren</li> <li>• Questionnaires for parents</li> <li>• Social surveys of teachers</li> <li>• Statistic data analysis</li> <li>• Analysis of knowledge of energy saving goals and tools</li> <li>• Analysis of practical skills</li> </ul> <p>Evaluation took place in all 4 pilot regions.</p> <ul style="list-style-type: none"> <li>• Arkhangelsk: 60% of pilot schools (15) showed reduction of energy consumption<sup>16</sup>, from 0,3% up to 16%. Extended influence on parents behaviour is observed: approx. 40% of families of pupils from pilot schools, implemented energy saving measures as a result of the Programme.</li> <li>• Murmansk: Reduction of CO2 emissions due to energy saving measures in 10 out of 15 pilot schools monitored made approx. 500 tons per 2005. No estimation of energy and heat savings were made due to lack of motivation of teachers.</li> <li>• Republic of Karelia: 21 pilot schools showed 3% up to 7% energy savings in years 2004 – 2005. In families of the pupils from pilot schools energy savings made 3 – 15 kWh per week, with the share of families using energy saving approaches and equipment reaching 50%.</li> <li>• Tver and Tver Oblast: In 15 pilot schools reduction of energy</li> </ul>	<p style="text-align: center;">Highly satisfactory</p>
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<sup>16</sup> In other 40% of schools increase of energy consumption took place; however, the reason for that was installation of new computer equipment.

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<p>1.3 Establishment of Public Boards in pilot regions for co-ordination of the programme and facilitating of sustained activities.</p>	<p>System of training of teachers established in the pilot regions</p> <p>NGO activities established to participate in dissemination</p> <p>Four public boards in</p>	<p>consumption of 0,5% – 19,6% took place<sup>17</sup>. Summarised score of the Programme efficiency was 18 – 25.</p> <p>Total reduction of CO<sub>2</sub> emissions in 2005 was estimated to be over 1 000 tonnes. Average savings made approx. 7% of total annual communal services costs at pilot schools.</p> <p>Teachers' Training courses were developed and implemented in the pilot regions:</p> <ul style="list-style-type: none"> <li>• Archangelsk: Pomorsky University, Department for vocational education/ professional development. Training: 2 years, 52 teachers</li> <li>• Murmansk: Murmansk State Pedagogical University, Institute for Advanced Training. Programme: 30 teachers, more training programmes planned</li> <li>• Republic of Karelia: Petrozavodsk State University, Institute of Advanced Training. Programme: 2 years, 65 (30 + 35) teachers,</li> </ul> <p>Training Programmes and materials are available at the above high schools as well as at the local methodical centres.</p> <p>Quite limited number of NGO's were involved into project implementation/ information dissemination. The most prominent of them were "GAIA" (Murmansk), AETAS (Arkhangelsk) and All Russian Union for Nature Protection (Petrozavodsk). All above NGO's provided their expertise in composing and testing the textbook as well as in training programmes and extra class activities design based on the SPARE programme, Norway.</p> <ul style="list-style-type: none"> <li>• Arkhangelsk: no public board was</li> </ul>	<p>Highly satisfactory</p> <p>Un-satisfactory</p> <p>Un-</p>
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<sup>17</sup> The highest level of savings was achieved at schools where new energy metering and saving equipment was installed in the framework of GEF project. The highest level of savings without using technical installations made 12,8%

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	operation in the pilot regions	<p>created.</p> <ul style="list-style-type: none"> <li>• Murmansk: the Public Board was created but was estimated as inefficient by the stakeholders.</li> <li>• Republic of Karelia: the Public Board was established. Positively estimated by the Project participants, although it only met a few times during the project.</li> <li>• Tver: the Public Board functioned, although a vague definition of its role meant it focused on dissemination of results of activities, not local co-ordination.</li> </ul>	satisfactory
<p style="text-align: center;"><b>OUTCOME 2</b></p> <p>Demonstrated feasibility, effectiveness, and cost-efficiency of proposed energy efficiency measures in educational facilities, and revolving financial mechanisms.</p>	<p style="text-align: center;"><b>INDICATORS</b></p> <p>Programme for combined training and project development completed with 15 experts trained and 20 projects developed.</p> <p>Low cost measures with 20–25 % reduction in energy consumption demonstrated in 12 –14 educational buildings</p> <p>The feasibility of revolving financial mechanisms demonstrated by operational RFM’s in all pilot regions</p> <p>Guidelines on methods, schemes and tools for practical implementation of EE projects developed</p>	<p>4 training sessions implemented in which 32 students were trained (28 receiving a certificate)</p> <p>15 Business Plans developed during the training courses. 6 of which were merged into 3 so in total 12 plans remained</p> <p>8 pilot projects were implemented in schools (2 per region). 2 investments in energy saving were made in Universities (Arkhangelsk &amp; Tver). One University invested in training equipment (Murmansk)</p> <p>Revolving fund mechanisms have been created in Arkhangelsk (Arkhangelsk Univ + Novodvinsk), Murmansk (two locations, Pedological Univ), Karelia (Petrozavodsk), and Tver (University, Regional Energy Efficiency Centre)</p> <p>Key numbers method has been adapted to local conditions. Training materials have been prepared for training of energy auditors. A number of guidebooks have been published, notably “Cost-effective energy efficiency measures in the Russian Education Sector” (in English and Russian, 2006) and “Energy saving in the Russian Education Sector: Technologies and energy efficiency and financial mechanisms” (in Russian, 2006).</p>	<p style="text-align: center;">Highly satisfactory</p> <p style="text-align: center;">Highly satisfactory</p> <p style="text-align: center;">Satisfactory</p> <p style="text-align: center;">Satisfactory</p>

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		Unofficial agreement from the Ministry of Education was obtained to use the method.	
2.1 Combined Training on energy audit, business planning and project implementation and Development of energy efficiency demonstration projects for the experts from Barents Energy Focal Points and University Energy Efficiency Centres.	15 experts trained  20 school energy efficiency projects prepared	32 students were trained  15 business plans were prepared	Highly satisfactory
2.2 Implementation of low cost energy efficiency measures in 8 - 10 municipal school buildings and 4 universities (tasks: detailed energy audit, finalisation of business plan, work plan, procurement, installation and works)	Success rate of the demonstration projects  Minimum of 20 % energy saving in 8 to 10 municipal schools  Minimum of 30 % energy saving in four university buildings	All demonstration projects have been successful. 8 school investments and 3 university investments took place, with 184,000 € funding from GEF, 221,900 € from NEFCO, 528,500 € from the Ministry of Education, and 163,200 € from Regional Administrations  All investments resulted in energy savings of over 30%	Highly satisfactory

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<p>2.3 Development of schemes and establishing of Revolving Funds for the demonstration programme</p>	<p>Schemes for revolving mechanisms for municipalities developed and operational</p> <p>Schemes for revolving mechanisms for the federal educational objects developed and operational</p> <p>Investment in demonstration programme linked to revolving funds.</p>	<p>Attempted. Limited due to legal (Municipal Budget system in RF) and willingness / complexity / subjective. Four revolving funds were created in municipalities (in Petrozavodsk, Apatity, Kirovsk, Novodvinsk), and one in an energy efficiency centre (Tver). The Kirovsk, Petrosavodsk and Novodvinsk funds look not look like they will continue for long after the end of the project, or likely to be repeated.</p> <p>Revolving funds in federal educational objects (universities) have been created in three universities.</p> <p>All investments made have been linked to revolving funds</p>	<p>Satisfactory</p>
<p>2.4 Development and dissemination of methods, schemes and tools for low cost energy efficiency measures, and 'Key Number Method' for quick energy audit and project assessment based on reference values for energy consumption in buildings and climatic data for representative zones</p>	<p>Key numbers developed and approved for typical Russian buildings and climatic zones</p> <p>Manuals and software available, system of distribution established.</p>	<p>The key numbers method has been adapted to local climatic conditions.</p> <p>Approval has been unofficial, by the Ministry of Education</p> <p>The manuals and software is available, although the system of distribution is unclear apart from availability on the website</p>	<p>Satisfactory</p>

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<p style="text-align: center;"><b>OUTCOME 3</b></p> <p>Project development capacity built in the Russian University Network of Energy Efficiency Centres and the Barents Energy Focal Points for the nation-wide dissemination of results and best practice, and effective replication of the demonstration programme and revolving financial mechanisms.</p>	<p style="text-align: center;"><b>INDICATORS</b></p> <p>Programme on training of university experts in project development completed</p> <p>Programme for the dissemination of the project outcomes through the network of Ministry of Education Energy Efficient Centres</p> <p>7 Coordination centres, one in each Okrug, appointed and in charge for replication of the project outcomes</p>	<p>Training of 15 university teachers from the 7 Federal Okrugs took place in 2004 through four week-long sessions, held in four locations, Vladivostok, Irkursk Nizhny Novgorod, &amp; Tver, and spread out over the year.</p> <p>The outcomes are being disseminated through workshops, and via the designated Energy Efficiency Centres at Universities</p> <p>7 coordination centres were appointed. Lead lecturer was appointed in each, with overall responsibility to engage with administration, develop demonstration projects based on own funding. This has been most successful in Vladivostok, Nizhny Novgorod and Tartarstan.</p> <p>5 million Rubbles per centre has been provided by the Federal Ministry of Education for energy audit and training materials.</p> <p>The technical and financial methods were published (each centre received ~50 copies to use in their work)</p> <p>Approx. 500 schools in Okrugs were financed for energy saving from local resources (NN people from Univ. assisted 200 vocational schools each received 100,000 Rubbles during 2004-5 for energy saving).</p>	<p style="text-align: center;">Satisfactory</p>
<p>3.1 Development and implementation of a programme for training of trainers on Project development, Energy Auditing and Financial Engineering from the Universities in the pilot regions and the Okrug Focal Points.</p>	<p>20 experts trained and follow-up training started</p>	<p>15 experts were trained. The training programme included preparation of lectures. Some universities have started diploma courses and education programmes</p>	<p style="text-align: center;">Highly satisfactory</p>
<p>3.2 Development of the approaches and</p>	<p>The role of seven university EEC's defined,</p>	<p>No official role has been defined, and it has been left to the decision of the</p>	<p style="text-align: center;">Marginally satisfactory</p>

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<p>mechanisms for dissemination of information, and administrative and financial experiences gained within the project to other Russian regions</p>	<p>dissemination launched</p> <p>Information System covering the network of all project stakeholders and interested parties</p> <p>A programme for sustained activity on Federal level adopted</p>	<p>centres to develop their own approach. Their overall, central role is to disseminate the information</p> <p>Web page created, and available at <a href="http://www.energy-efficiency.ru/project/index.php?uid=-1&amp;land=rus&amp;page=6&amp;staticid=1">http://www.energy-efficiency.ru/project/index.php?uid=-1&amp;land=rus&amp;page=6&amp;staticid=1</a></p> <p>Website contains some useful information about the project, with recent information &amp; resources under preparation</p> <p>A new programme on energy efficiency at the Ministry of Education and Science has not been adopted to date. A programme was created in 2005, (“energy efficiency economy” but is currently not functioning). An application has been made for continuation of the Federal Ministry programme (only at high schools) a further three years for the with a total budget of ~40 million USD.</p>	
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## Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector

### C. Results

#### Impact

66. The project’s overall objective was “to contribute to the abatement of GHG emissions by improving the energy efficiency of Russian educational facilities”. The indicator given in the project planning matrix (“Reduction of heat and power consumption over the project lifetime at participating educational facilities”), does not include measurable targets, although the body of the Project Document states that the project “will [...] lower energy use by 7.5 GWh, leading to a reduction in CO<sub>2</sub> emissions from boiler plants by an estimated 9,000 tons over the project period (3 years), and by 60,000 tons over the estimated average life time of the investments, i.e. 20 years.”

Consolidated figures are not yet available, although the following indicative results of CO<sub>2</sub> emission reductions were collected by the evaluators and provided by working group leaders during field visits:

Pilot regions	Location	Reductions of main energy carriers	CO <sub>2</sub> eq (tonnes)
Arkhangelskaya Oblast	School 4, Novodvinsk	176 tonnes coal 126 MWh electricity	679
	School 1, Novodvinsk	95 tonnes coal	167
	Arkhangelsk State Technical University		140
Murmanskaya Oblast	School. 5, Apatity	52 tonnes coal	91.6
	School 7, Kirovsk	31 tonnes heavy oil	96.7
	Murmansk State Technical University	122 tonnes heavy oil 47 MWh electricity	519
Karelia Republic	Derzhavin Liceum, Petrozavodsk	76 k.m <sup>3</sup> natural gas	240
	School 4, Petrozavodsk	41 k.m <sup>3</sup> natural gas	130
Tverskaya Oblast	School 8, Tver	55 k.m <sup>3</sup> natural gas	102
	School 17, Tver	37 k.m <sup>3</sup> natural gas	68.5
	Tver State Technical University	525 k.m <sup>3</sup> natural gas	973
	Tver State University	179 k.m <sup>3</sup> natural gas	332
<b>Total investment programme</b>		<b>796 k.m<sup>3</sup> natural gas 270 tonnes heavy oil 323 tonnes coal 172.8 MWh electricity</b>	<b>3398</b>
School education programme	Combined reductions for all pilot schools in the four regions (based on questionnaire)		1000
<b>GRAND TOTAL</b>			<b>4398</b>

Thus emission reductions during the period of 4398 tonnes of CO<sub>2</sub>eq were achieved during the project period, which is 49% of the target. The 20-year emission reductions have not been calculated

## Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector

by project staff, although since the emission reductions from the investment programme of 4398 at most covers a 2-year period (the investment projects were mostly realized in 2005, with a few in 2004 and 2006), the lifetime direct emission reductions are likely to exceed 44,000 tonnes (approximately 60,000 tonnes assuming an operation period of 1.5 years). Replication occurred during the project, and the project team identified 14 further investments that they attribute to the project's influence (Dudnikova LV, 2006). These indirect emission reductions have been estimated to be 28268 tonnes CO<sub>2eq</sub> during the project period.

67. The project's immediate objective was "to develop replicable models for low-cost energy efficiency measures in both municipal secondary schools and Federal educational buildings (Universities, technical and vocational schools). Four indicators were proposed:
- a. Models for municipal and federal institutions approved and adopted by relevant maintaining bodies,
  - b. Implementation successfully demonstrated,
  - c. Results disseminated in pilot regions and beyond,
  - d. Replication started by the end of the third year of the project.

In the opinion of the evaluators, indicators a, b, c, and d have been successfully completed from a technology perspective, and partially completed from a financing perspective: under 'indicator a', the financing approaches proposed and tested are poorly replicable, although financing approaches have been successfully demonstrated and results disseminated (indicators 'b' and 'c'). Replication of the financing models has not taken place ('indicator d').

68. The project has successfully achieved significant emission reductions over the project period. Although this is slightly lower than the target in the project proposal, the difference can be attributed to timing of investments lying largely outside the control of the project team. Based on the 20-year target given in the proposal (which implies an annual 3000 tonnes reduction per year, making the 20-year total of 60,000), the reductions achieved exceed global expectations. While the development of 'replicable models' have been only partially successful, the evaluators believe that successful creation of replicable financial models depends in part on factors outside the control of the project team (in particular necessary changes to Federal Budgetary Code to make saving mechanisms more favourable for municipalities).

<p><b><i>Overall rating<sup>18</sup> of Attainment of Outcomes/ Achievement of objectives:</i></b></p>
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<p>Satisfactory</p>
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<sup>18</sup> The rating scale is: Highly Satisfactory, Satisfactory, Marginally Satisfactory, and Unsatisfactory. See "Annex 5: Summary of Evaluation Ratings" for a summary of all the ratings given.



## Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector

### *Sustainability and replicability*

69. **Financial:** The project was successful in leveraging co-financing from a wide range of sources. As a result of the trilateral agreements between Municipalities, NEFCO and UNDP there is a very high probability that money saved from the investments in schools at the locations where revolving funds have been created, will be used for further energy efficiency investments. In all locations where interviews were made (in particular in the municipalities of Novodvinsk – plans exist for a further 15 schools – and Apatity where plans exist for a further 10 schools and kindergartens) it was clear that savings would be used as equity contributions for loan applications to NEFCO for energy efficiency projects.
70. After the end of the project, financial resources for investments in energy saving will be available from a number of sources including NEFCO (which has recently changed their financing model, now offering a soft loan on 90% of investment costs to municipalities for energy efficiency infrastructure projects), and the “National Project on Education”, a three-year project that will fund equipment for 9000 schools per year between 2006 and 2008 (some schools will opt to use this funding for energy saving). Other investment resources include local and regional budgets. There is however a low chance that the revolving fund / saving account mechanisms piloted in this project are replicated on a significant scale without legislative changes at a Federal level to simplify the process of making savings and applying them to further project.
71. Current market trends – the significant increase in prices of energy carriers – further supports ongoing activities to finance energy efficiency in the municipal sector.
72. For the education component of the project, there are positive signs in most of the pilot regions, where in Archangelsk, Murmansk, and Tver there are plans to make the school curriculum an elective course (meaning an obligation to make the course available to children who select it) following the success of the curriculum on an optional basis. There also appears to be demand from other regions to introduce the school curriculum into teaching.
73. **Socio-political:** Stakeholder ownership is especially high in the education component of the project, and the outcomes and benefits of the project are likely to be sustained by enthusiastic teachers, pedagogical universities and education innovation centres. The activities of the NGO SPARE project further supports local ownership and interest to continue with energy efficiency education in the pilot regions and throughout the Federation, and plans are underway for the school project competition run by SPARE in parallel to the GEF project to be held annually.

## Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector

74. There is a positive attitude to the project approach and outcomes at the Federal Ministry level, and an interest to promote energy savings activities at schools and universities. This support appears sufficient under the education component, but concrete plans do not exist to address the investment financing aspects of the project.
75. **Institutional framework and governance:** The project has made important contributions to the policy and practice of municipal finance for energy efficiency. However with the changes in financing requirements at NEFCO, no municipalities expressed the intention to continue with the revolving fund / saving fund approach piloted in the project, and this approach is unlikely to be sustained without outside donor requirements for the approach. Regulatory & legal frameworks still require attention for ongoing use of these methods on a wider scale. The required technical know how is in place.
76. **Ecological:** The project and ongoing replication will lead to sustained ecological benefits, and is very positively assessed for both the educational component and the investment component – both have immediate and long-term benefits for Russian society and the environment.

### III. Lessons Learned

77. In most cases the creation of ‘Public Boards’ as a way to facilitate “involvement of stakeholders and public” proved to be inefficient. As has been pointed out in the body of the report the possible reasons for this failure are many and varied, including:

- a. Lack of local experience in this type of consultative groupings in North-Western Russia, meaning that they do not form or become self sustaining naturally
- b. Poorly defined functions as given in the project document
- c. Lack of local buy-in to the approach, and buy-in at Federal, Regional and Local levels
- d. Lack of clarity about the management responsibilities: Is it under the steering committee, PMU, or local staff? Is it a task under Working Group 1, or does it aim to link Working Group 1 and 2 activities (and if the later, how is it to be managed)?
- e. Incompatibility with the normal process for the development of formally developed school curricula.

Although insufficient analysis has been possible on the causes of the lack of success of the approach to public participation, the following lessons have been learned from the partial success, and significant difficulties:

- a. Public Boards can be a good meeting point for representatives of NGO’s, public, teaching experts, local authorities, municipal companies to demonstrate, discuss and evaluate the efficiency of energy saving projects in the pilot regions. This has been shown in Tverskaya Oblast, and to a lesser extent in Murmanskaya Oblast. Such meetings could provide better information exchange between the local authorities, population and companies, raise public awareness on energy saving projects implemented by the local administrations and create positive public opinion on the issue.
- b. Since there is a lack of experience with such mechanisms, a lot of ground-work is required to build local ownership and understanding of the approaches and benefits.
- c. For the same reason, much more time and attention is required to ensure successful functioning of such mechanisms until familiarity has been built up.
- d. A much clearer definition of the role and responsibilities of such bodies is required, than was given in the project document.
- e. Public Boards are incompatible with the current methods of curricula development, and appear to be unnecessary in this context.
- f. The right level of management is required to reflect the proposed function. It is difficult to create an integrating activities managed within just one of the working groups.
- g. Local ownership is key to success, and careful attention should be given in the design to build local ownership of new approaches to co-operation.

## **Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector**

78. Without local co-ordination to integrate the various sub-components of the project, it has been difficult to maximise the possible benefits from addressing both education and investment in the same location. However it is apparent from locations where there was some link, that the synergies can be significant. As mentioned above, the Public Boards could have played this role. Future projects would benefit from closer integration of the two key project components.
79. Energy saving education programmes in schools have demonstratively brought significant benefits in terms of real energy savings in the school and at homes of children (with savings on average of 7% from training in the pilot schools). This impact is hugely significant from the point of view of long-term valuing of natural resources, and promises to be highly cost effective in the middle to long term. It was also noted during stakeholder interviews, that effective school education programmes on energy saving can have an impact in decision-making levels in schools and municipalities.
80. Investments with payback periods below 4 years are fully possible in the education sector, and these investments bring multiple benefits – saving of energy, reduction of costs, improved comfort etc.
81. The Budgetary Code of the Russian Federation allows for the mechanism of targeted savings for reinvestment in energy saving. However there is no real incentive for municipal authorities to take the risk and uncertainty, and make the efforts required to set up such mechanisms unless they are passionate about energy saving in the first place. Thus legislative / policy changes (in the budgetary code) and awareness raising are essential components of viable actions. The policy changes are also required because political terms of office of local authorities are similar in length to repayment terms, thus increasing political risk.
82. Energy saving in municipalities, under the current Budgetary Codes, are most likely where the initial investments are large enough to provide savings in the first year large enough to make further investments from the end of the first year. This was the case in Novodvinsk where three projects were financed at the same time. Annual savings were significant enough to use the saved money immediately for additional activities. This provided significant incentives to the local authorities since savings could be used during the same political cycle.
83. Excellent technical capacities exist in Russia, and for most activities local experts can ably handle all aspects of project execution. The only exception is possibly in the area of participatory approaches where local experience and culture is unfamiliar with these approaches.
84. It is worth underlining the size and diversity of the Russian Federation. Rather small projects such as this one were able to make a real impact because of the focus on a few regions. The scale-up of these, and the impacts from local activities on overall Federal level policy and legislation is highly

## **Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector**

complex and beyond the scope and ability of such a project. However, the design used appears to be an optimal balance between local and federal action.

## **IV. Recommendations**

85. The Ministry of Education and Science is to be commended for the visionary approach it has shown. It is clear that co-operation with NGOs (on the activities of which much of this project builds) is valuable, and shows the benefits of civil society and public bodies looking for common goals. This co-operation should be capitalized on in future activities.
86. It would be beneficial to continue analysis of new financial instruments in addition to the revolving funds considered here. A case study on ESCO financing should be prepared in addition to the work on revolving funds.
87. When foreign methods and tools are used in energy saving activities (Key Numbers Method) more profound work on localisation and adaptation of such tools should be planned for them to meet completely the goals and needs of such activities. The Key Numbers Method should be simplified and further adapted so that it could be wider used at schools, or other already existing software in use in schools should be used.
88. To build on the significant successes in the educational component of this project, local educational authorities should be strongly encouraged to plan their budgets to support further training of teachers in energy saving (in methodical centres, at the institutes of advanced training, at pedagogical universities).
89. Revolving funds can be considered as one of possible tools for energy saving project financing but they cannot currently be widely recommended due to an underdeveloped legal basis.
90. A concise set of recommendations should be developed aimed at policy makers responsible for the developed of the Budgetary Codes, and a concerted awareness-raising programme developed to seek to address the challenges of investment financing in municipalities.
91. Building on the excellent work on curricular development and teaching for class 8, energy saving education to lower and higher grades (starting from 1st) is highly recommended.
92. New technical installations (new heating points, metering equipment, energy saving lamps etc.) should be linked closer to the education components. Use of metering equipment installed could then be one of the practical tasks in educational programmes.

## **Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector**

93. More practical tasks for the education programme should be developed to increase/ stimulate the creativity of children and teachers. The annual SPARE competition should be strongly supported and expanded, and given a higher media profile. This will provide a strong pull-effect to support further activities.
  
94. The school education materials should be made available through the project website.

## **Annex 1: Terms of Reference**

for the Final Evaluation of the UNDP/GEF Project

### **“Cost Effective Energy Efficiency Measures in Russian Educational Sector”**

00014622

#### **I. INTRODUCTION**

##### **UNDP/GEF Monitoring and Evaluation (M&E) policy**

The Monitoring and Evaluation (M&E) policy at the project level in UNDP/GEF has four objectives: i) to monitor and evaluate results and impacts; ii) to provide a basis for decision making on necessary amendments and improvements; iii) to promote accountability for resource use; and iii) to document, provide feedback on, and disseminate lessons learned. A mix of tools is used to ensure effective project M&E. These might be applied continuously throughout the lifetime of the project – e.g. periodic monitoring of indicators -, or as specific time-bound exercises such as mid-term reviews, audit reports and final evaluations.

In accordance with UNDP/GEF M&E policies and procedures, all regular and medium-sized projects supported by the GEF should undergo a final evaluation upon completion of implementation. A final evaluation of a GEF-funded project (or previous phase) is required before a concept proposal for additional funding (or subsequent phases of the same project) can be considered for inclusion in a GEF work program. However, a final evaluation is not an appraisal of the follow-up phase.

Final evaluations are intended to assess the relevance, performance and success of the project. It looks at early signs of potential impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. It will also identify/document lessons learned and make recommendations that might improve design and implementation of other UNDP/GEF projects.

##### **Project objectives**

The overall objective of the project is to contribute to the abatement of GHG emissions by improving the energy efficiency of Russian educational facilities. There is a very substantial potential for energy saving in the Russian educational sector’s buildings. Apart from direct energy saving potential, educational sector has potential to influence general public through educational programmes and to provoke change of behavior in connection with the energy use. It is expected that education and public awareness

## **Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector**

schemes would result in increased energy efficiency not only in educational buildings, but in residential sector as well, as the benefit of energy saving will be demonstrated to children and their parents. The immediate objective is to develop replicable models for low-cost energy efficiency measures implementation in both municipal secondary schools and Federal educational buildings (Universities, technical and vocational schools). The immediate objective will be achieved through awareness raising, training and capacity building, demonstration program, and models for sustainable administrative and financial solutions

Project location: Tver, Murmansk, Arkhangelsk Oblasts and Republic of Karelia

Project support offices: Moscow, Ministry of Education of the Russian Federation

The main outputs of the project are:

- Energy Efficiency Education Program for secondary schools and related program for public awareness on the local and global benefits of energy efficiency.
- Effectiveness and cost-efficiency of proposed energy efficiency measures in educational facilities, and revolving financial mechanisms demonstrated
- Project development capacity built in the Russian University Network of Energy Efficiency Centres

The project is executed by the Ministry of Education and Science of the Russian Federation (MES). The implementation of project activities are done by Project Support Units situated in Moscow and Petrozavodsk (first three years of implementation). Three working groups were created to backstop of implementation of project outputs.

## **II. OBJECTIVES OF THE EVALUATION**

The evaluation is intended to provide a comprehensive overall assessment of the project and provides an opportunity to critically assess administrative and technical strategies, issues and constraints associated with large international and multi-partner initiatives.

The purpose of the Evaluation is:

- To assess overall performance against the Project objectives as set out in Project Document and other related documents
- To assess the effectiveness and efficiency of the Project
- To critically analyze the implementation and management arrangements of the Project
- To list and document initial lessons concerning Project design, implementation and management

## **Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector**

- To assess Project relevance to national priorities.

The Report of the evaluation will be stand-alone document that substantiates its recommendations and conclusions.

The Report will be targeted to meet the evaluation needs of all key stakeholders (GEF, UNDP, MES, project co-funding partners, regional administrations involved in the project and other stakeholders).

### **III. PRODUCTS EXPECTED FROM THE EVALUATION**

The evaluation report outline should be structured along the following lines:

1. Executive summary
2. Introduction
3. The project(s) and its development context
4. Findings and Conclusions
  - 4.1 Project formulation
  - 4.2 Implementation
  - 4.3 Results
5. Recommendations
6. Lessons learned
7. Annexes

The length of report normally should not exceed 50 pages in total. The draft report will be submitted to UNDP/GEF and the Ministry of Education and Science no later than June 9<sup>th</sup> 2006. Based on the feedback received from stakeholders a final report will be prepared by 16<sup>th</sup> of June 2006.

The report will be submitted in Russian and in English.

The report will be supplemented by:

#### **Summary presentation of findings to be presented in final evaluation meeting**

Team leader will conduct a final meeting for selected stakeholders and prepares summary presentation of conclusions and findings of the Final Evaluation. The presentation will be followed by a question & answer session and round-table discussions on effective implementation of evaluation recommendations.

## **Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector**

### **IV. METHODOLOGY FOR EVALUATION APPROACH**

The Final Evaluation will be done through a combination of processes including a desk study, selected site visits and interviews - involving all stakeholders (but not restricted to): MES, regional and local administrations involved in the project, leading regional universities and other educational facilities involved in the project, regional Barents and University energy efficiency centres, international project partners, UNDP, local NGO's, communities.

Evaluators should seek guidance for their work in the following materials, which could be found at ([www.undp.org/gef](http://www.undp.org/gef)):

- UNDP Handbook on Monitoring and Evaluation for Results
- UNDP/GEF M&E Resource Kit
- Measuring Results from Climate Change Programmes (Performance indicators for GEF)

The methodology for the evaluation is envisaged to cover the following areas:

- Desk study review of all relevant Project documentation
- Consultations with MES , UNDP , PIU and team leaders
- Site visits to the pilot project regions
- Interviews with stakeholders
  - Russian Ministry of Education and Science, Federal Agency for Education
  - Administrations of the Republic of Karelia, Tver, Arkhangelsk and Murmansk Oblast
  - Local Municipalities
  - Local NGOs and community representatives
  - Barents and University Energy Efficiency Centres
  - Leading regional universities involved in the project
  - NEEG/ENSI
  - NNV

### **V. EVALUATION TEAM**

The Final Evaluation will be carried out by an international expert or expert team. Qualifications of the evaluation team/expert:

- expertise on areas of international projects' monitoring and evaluation with the focus on energy efficiency and climate change;
- profound expertise in the field of energy efficiency in Russia's public sector, knowledge of educational system is a plus;
- expertise on general climate change issues, knowledge of GEF is a plus

## Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector

The evaluation team is responsible for the successful completion of the evaluation and finalizing the Final Evaluation report. The team is expected to be familiar with the region and have basic knowledge of the project area (Russia's North-West).

### VI. IMPLEMENTATION ARRANGEMENTS

#### Management arrangements

The UNDP Country Office is the main operational point for the evaluation. It will be responsible for liaising with the project team to set up the stakeholder interviews, arrange the field visits, and ensure the timely provision of per diems and travel arrangements within the country for the evaluation team. These Terms of Reference follow the UNDP GEF policies and procedures, and together with the final agenda will be agreed upon by the UNDP/GEF/Regional Coordinating Unit, UNDP Country Office and the Government. These three parties will receive a draft of the final evaluation report and provide comments on it prior to its completion.

#### Timeframe (to be confirmed with the evaluation team)

- Selection of evaluators and contracting by 10 May 2006
- Desk review 18-24 May 2006
- Briefings for evaluators 25 May 2006
- Visits to the field sites (including allocation for travel),  
Interviews\*\* 25 May - 3 June 2006
- Debriefing 2 June 2006
- Validation of preliminary findings with stakeholders  
through circulation of initial reports for comments,  
meetings, and other types of feedback mechanisms by 9 June 2006
- Preparation of final evaluation report by 16 June 2006

#### \*\* Travel and field visits:

Travel to **Moscow** and debriefing with UNDP (25-26 May)

Travel to pilot North West regions

(**Arkhangelsk, Murmansk, Kirovsk, Petrozavodsk**) (27-31 May)

Travel to **Tver**: participation in the final project conference,  
school competition and Steering Committee meeting (1-3 June)

### VII. SCOPE OF THE EVALUATION- SPECIFIC ISSUES TO BE ADDRESSED.

## **Outline of Final Evaluation Report**

### **1. Executive summary**

- Brief description of project
- Context and purpose of the evaluation
- Main conclusions, recommendations and lessons learned

### **2. Introduction**

- Purpose of the evaluation
- Key issues addressed
- Methodology of the evaluation
- Structure of the evaluation

### **3. The project(s) and its development context**

- Project start and its duration
- Problems that the project seek to address
- Immediate and development objectives of the project
- Main stakeholders
- Results expected

### **4. Findings and Conclusions**

In addition to a descriptive assessment, all criteria marked with (R) should be rated using the following divisions: Highly Satisfactory, Satisfactory, Marginally Satisfactory, Unsatisfactory

#### **4.1. Project Formulation**

- Conceptualization/Design (R). This should assess the approach used in design and an appreciation of the appropriateness of problem conceptualization and whether the selected intervention strategy addressed the root causes and principal threats in the project area. It should also include an assessment of the logical framework and whether the different project components and activities proposed to achieve the objective were appropriate, viable and responded to contextual institutional, legal and regulatory settings of the project. It should also assess the indicators defined for guiding implementation and measurement of achievement and whether lessons from other relevant projects (e.g., same focal area) were incorporated into project design.

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- Country-ownership/Drivenness. Assess the extent to which the project idea/conceptualization had its origin within national, sectoral and development plans and focuses on national environment and development interests.
- Stakeholder participation (R). Assess information dissemination, consultation, and “stakeholder” participation in design stages.
- Replication approach. Determine the ways in which lessons and experiences coming out of the project were/are to be replicated or scaled up in the design and implementation of other projects (this also related to actual practices undertaken during implementation).
- Other aspects to assess in the review of Project formulation approaches would be UNDP comparative advantage as IA for this project; the consideration of linkages between projects and other interventions within the sector and the definition of clear and appropriate management arrangements at the design stage.

### **4.2. Project Implementation**

- Implementation Approach (R). This should include assessments of the following aspects:
  - (i) The use of the logical framework as a management tool during implementation and any changes made to this as a response to changing conditions and/or feedback from M and E activities if required.
  - (ii) Other elements that indicate adaptive management such as comprehensive and realistic work plans routinely developed that reflect adaptive management and/or; changes in management arrangements to enhance implementation.
  - (iii) The project's use/establishment of electronic information technologies to support implementation, participation and monitoring, as well as other project activities.
  - (iv) The general operational relationships between the institutions involved and others and how these relationships have contributed to effective implementation and achievement of project objectives.
  - (v) Technical capacities associated with the project and their role in project development, management and achievements.

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- Monitoring and evaluation (R). Including an assessment as to whether there has been adequate periodic oversight of activities during implementation to establish the extent to which inputs, work schedules, other required actions and outputs are proceeding according to plan; whether formal evaluations have been held and whether action has been taken on the results of this monitoring oversight and evaluation reports.
- Stakeholder participation (R). This should include assessments of the mechanisms for information dissemination in project implementation and the extent of stakeholder participation in management, emphasizing the following:
  - (i) The production and dissemination of information generated by the project.
  - (ii) Local resource users and NGOs participation in project implementation and decision making and an analysis of the strengths and weaknesses of the approach adopted by the project in this arena.
    - (iii) The establishment of partnerships and collaborative relationships developed by the project with local, national and international entities and the effects they have had on project implementation.
  - (iv) Involvement of governmental institutions in project implementation, the extent of governmental support of the project.
- Financial Planning: Including an assessment of:
  - (i) The actual project cost by objectives, outputs, activities
  - (ii) The cost-effectiveness of achievements
  - (iii) Financial management (including disbursement issues)
  - (iv) Co-financing <sup>19</sup>
- Sustainability. Extent to which the benefits of the project will continue, within or outside the project domain, after it has come to an end. Relevant factors include for example: development

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• <sup>19</sup> Please see guidelines at the end of Annex 1 of these TORs for reporting of co-financing

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of a sustainability strategy, establishment of financial and economic instruments and mechanisms, mainstreaming project objectives into the economy or community production activities.

- Execution and implementation modalities. This should consider the effectiveness of the UNDP counterpart and Project Co-ordination Unit participation in selection, recruitment, assignment of experts, consultants and national counterpart staff members and in the definition of tasks and responsibilities; quantity, quality and timeliness of inputs for the project with respect to execution responsibilities, enactment of necessary legislation and budgetary provisions and extent to which these may have affected implementation and sustainability of the Project; quality and timeliness of inputs by UNDP and GoC and other parties responsible for providing inputs to the project, and the extent to which this may have affected the smooth implementation of the project.

### **4.3. Results**

- Attainment of Outcomes/ Achievement of objectives (R): Including a description and rating of the extent to which the project's objectives (environmental and developmental ) were achieved using Highly Satisfactory, Satisfactory, Marginally Satisfactory, and Unsatisfactory ratings. If the project did not establish a baseline (initial conditions), the evaluators should seek to determine it through the use of special methodologies so that achievements, results and impacts can be properly established.
- This section should also include reviews of the following:
  - Sustainability: Including an appreciation of the extent to which benefits continue, within or outside the project domain after GEF assistance/external assistance in this phase has come to an end.
  - Contribution to upgrading skills of the national staff

### **5. Recommendations**

- Corrective actions for the design, implementation, monitoring and evaluation of the project
- Actions to follow up or reinforce initial benefits from the project
- Proposals for future directions underlining main objectives

### **6. Lessons learned**

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This should highlight the best and worst practices in addressing issues relating to relevance, performance and success.

### **7. Evaluation report Annexes**

- Evaluation TORs
- Itinerary
- List of persons interviewed
- Summary of field visits
- List of documents reviewed
- Questionnaire used and summary of results
- Comments by stakeholders (only in case of discrepancies with evaluation findings and conclusions)

### **VIII. TERMS OF REFERENCE ANNEXES**

- Annex 1: Project planning matrix and indicators
- Annex 2: Terminology in the GEF Guidelines to Terminal Evaluations
- Annex 3: List of Documents to be reviewed by the evaluators

## Annex 2: Itinerary

**Final Evaluation Mission**  
**UNDP/GEF project 00014622**  
**“Cost effective energy efficiency measures in Russian educational sector”**  
**6-16 June 2006**

<b>Date/time</b>	<b>Event</b>	<b>Comments</b>
<b>06 June, Tuesday</b>		
	Meetings in Moscow: <ul style="list-style-type: none"> <li>- UNDP</li> <li>- Federal Agency for Education</li> <li>- Briefing with National Project Director and project team</li> </ul>	
<b>07 June, Wednesday</b>		
10:00	Depart to Arkhangelsk from Moscow SVO	Flight SU 689
11:45	Arrive Arkhangelsk, Accommodation at the Hotel	
13:00-14:00	Lunch	
14:00-18:00	Meetings in Arkhangelsk: <ul style="list-style-type: none"> <li>- Arkhangelsk Regional Administration, Department for Education</li> <li>- Arkhangelsk Energy Efficiency Centre, Alexander Pitukhin</li> <li>- Arkhangelsk State Technical University</li> </ul>	EE projects, training of energy experts, energy audits
<b>8 June, Thursday</b>		
9:30-12:30	Meetings in Arkhangelsk continued: <ul style="list-style-type: none"> <li>- Local WG1 coordinator, Alla Kirilova</li> <li>- Poliarny University – Department for vocational education/professional development. Meeting with school teachers</li> <li>- SPARE NGOs</li> </ul>	Educational programme  Training of teachers, introduction and piloting of educational programme
12:30-13:30	Lunch	

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13:30-18:00	Optional: Trip to Novodvinsk to be arranged by the project, meeting with the local Administration, visit to the project site	Revolving Fund
<b>9 June, Friday</b>		
10:30	Departure from Arkhangelsk to Murmansk	Flight 5H-79
12:20	Arrival to Murmansk, Accommodation at the hotel	
13:30-14:30	Lunch	
14:30-18:30	Meetings in Murmansk: <ul style="list-style-type: none"> <li>- Murmansk Regional Administration, Department for Education</li> <li>- Murmansk State Pedagogical University + Murmansk Energy Efficiency Centre</li> <li>- Meeting on educational component of the project: Local WG1 Coordinator, Institute for Vocational (Professional) Education, Irina Mitina + SPARE NGOs + pilot schools</li> </ul>	
<b>10 June, Saturday</b>		
8:30	Depart Murmansk – Apatity, train	Train #225
12:30	Arrive Apatity	
13:00-14:00	Lunch	
14:00-17:00	Meetings in Apatity: <ul style="list-style-type: none"> <li>- Local Administration</li> <li>- Apatity ESCO</li> </ul> Visit energy efficiency project site (school project)	
	Bus/car to Kirovsk, Accommodation in Kirovsk	
<b>11 June, Sunday</b>		
	Meetings in Kirovsk: <ul style="list-style-type: none"> <li>- Local Administration</li> <li>- Kirovsk Energy Efficiency Centre</li> </ul> Visit energy efficiency project site (school project) Over-night in Kirovsk	
<b>12 June, Monday (state holiday)</b>		
	Work on the report Bus/car to Apatity	
12:32	Train to Petrozavodsk	Train #201
<b>13 June, Tuesday</b>		

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4:32	Arrival Petrozavodsk, Accommodation	
12:00-14:00	Meetings in Petrozavodsk: <ul style="list-style-type: none"> <li>- Karelian Energy Efficiency Centre</li> <li>- Visit energy efficiency project site (school project)</li> </ul>	EE projects, training of energy experts, energy audits
14:00-15:00	Lunch	
15:00-18:00	<ul style="list-style-type: none"> <li>- Local WG1 Coordinator, Tatiana Medvedeva</li> <li>- Centre for Development of Educational Programmes</li> <li>- SPARE NGOs + schools children</li> </ul>	Educational Programme
<b>14 June, Wednesday</b>		
10:00-12:00	Meetings in Petrozavodsk, continued: <ul style="list-style-type: none"> <li>- Petrozavodsk Municipal Administration;</li> </ul>	Revolving Fund
12:00-13:00	Lunch	
13:17	Departure to Tver, train	Train #211
<b>15 June, Thursday</b>		
2:57	Arrival Tver, Accommodation	
10:00-13:30	SC Meeting (agenda attached)	
13:30 – 15:00	Lunch	
15:00-18:00	Workshop: Thematic sessions	
<b>16 June, Friday</b>		
10:00-14:30	Project Workshop (agenda attached)	
14:30-16:00	Lunch	
16:00-18:00	Meetings with Tver stakeholders: <ul style="list-style-type: none"> <li>- University Energy Efficiency Centre</li> <li>- Educational programme development team, Vladimir Izmailov, Olga Bazanova, Yuri Kosivtsov</li> </ul> Visit energy efficiency project site (school project) Overnight in Tver	
<b>17 June, Saturday</b>		
	Return to Moscow	
	Debriefing at UNDP	
	Departure to London	

## Annex 3: List of interviews

### Arkhangelsk

Mr Alexander Pitukhin, Arkhangelsk Oblast Energy Efficiency Centre

Mrs Galina Komarova, Arkhangelsk State Technical University, Vice Rector on International Affairs  
Mrs Natalia Pdorazhanskaya, Arkhangelsk State Technical University, Co-ordinator of International Programmes

Mrs. Elena Erykalova – Chief Expert of Department of Education, City of Arkhangelsk  
Mrs. Ala Kyrillova, Regional Programme Co-ordinator  
Mrs. Liubov Taskaieva, Associate Professor, Natural and Geography Faculty, Petrozavodsk State University named after Lomonosov  
Mrs. Valentina Bedrina, Director of Municipal Educational Institution “Leda”  
Mrs. Marina Chernitsyna, teacher of physics, school No. 45  
Mr. Serguei Kozlov, teacher of physics, non-state school “Xenia”  
Mrs. Alexandra Matroniuk, teacher of physics, school No. 1  
Mr. Vladimir Rokin, teacher of physics, school No. 25

Mr. Viktor Dymov, Arkhangelsk University

....., Mayor of Novodvinsk

Mr. Sergei Bykov, Vice-Mayor in Economics, Municipality of Novodvinsk  
Mr. Artur Ryabov, Head of Investments Department, Municipality of Novodvinsk  
Mrs. Valentina Sivova, Headmaster, School No. 1  
Mr. eter Solsky, Technical Expert  
Mr. Natalia Popova, Headmaster, School No. 4  
Mrs. Zoia Bazhenova, Head of Education Deartment  
Mrs. Elena Timchak, Vice-Mayor for Social Issues

### Murmansk

Mr. Nikolai Bereznoi, Vice-Governor, Head of Department of Industry, Construction and Municipal Housing of Murmansk Region  
Mr. Youri Zelenkov, Kola Energy Efficiency Centre

Mrs. Elena Mitina – Project Manager  
Mrs. Natalia Maslova, School No. 3, Murmansk

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Mrs. Mara Tender, School No. 266, Snezhnogorsk

Mrs. Galina Mitkina, School No. 39, Murmansk

Mrs. Zinaida Zhelianina, School No. 1, Murmashi

Mrs. Valentina Voznitsa

Mrs. Eena Luppova

Mr. Valery Pobedonostsev, First Deputy of the Head of Apatity Administration

Mrs. Olga Savelieva, Deputy Head of Apatity Administration

Mr. Vladimir Shaposhnik, Head of the Kirovsk Municipal Council

Mr. Alexander Toporkov, Deputy Head of Kirovsk Municipal Council

### **Karelia**

Mrs. Tatiana Anokhova, Executive Vice Head of the City Council, Administration of Petrozavodsk City

Mrs. Eugenia Kudriavseva, Expert of Economic Department

Mrs. Anna Igeran, Expert, Department of Foreign Relations

Mrs. Elena Pietilainen, Director, Municipal Centre of Education Development

Mrs. Tatiana Medvedeva, Municipal Centre of Education Development

Mr. Andrei Agarkov, Expert of Department of Education

Mr. Alexei Smirnov, Director, Karelia Energy Efficiency Centre

Mr. Ilya Trofimov, Expert, Department of Economics

Mrs. Marina Talanpoika, Gymnasium No. 17

Mrs. Marina Belova, Lyceum No. 13

Mrs. Ekaterina Dragan, Derzhavinsky Lyceum

Mrs. Diana Shurupova, School No. 34

Mrs. Zinaida Kosikova, School No. 14

Mrs. Oxana Medvedeva, school No. 27

Mrs. Olga Builina, School No. 36

Mrs. Elena Mitrofanova, School No. 8

Mrs. Natalia Verdesh, School No. 3

Mrs. Alexandrovskaya, School No. 25

Mrs. Tatiana Medvedeva, Municipal Centre of Education Development

Mrs. Elena Pietilainen, Director, Municipal Centre of Education Development

Mrs. Ludmila Morozova, Karelian Council of Environment Protection Society, co-chairman

Pupils of schools No. 6, 14, 46, 34

Mr. Anatoly Voronin, Rector, Petrozavodsk State University

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Mr. Boris Yagnyuk, Vice Dean for International Affairs, Associate Professor of the Department of Civil Engineering, Petrozavodsk State University

Mrs. Tatiana Agarkova, Director, Education Innovation Centre; Dean, Teacher Training Department, Petrozavodsk State University

Mr. Viacheslav Tukhas, Director, Scientific and Production Company Proryv

Mr. Anatoly Sherstnev, Chief Mechanical Engineer

### **Tver**

Mr Vladimir Izmailov, Tver State University

Mrs Olga Bazanova, Expert on federal training programme for teachers

Mr Yuri Kosivtsov, Leader of the Expert Group on Influence Evaluation

Mr. A.N.Kundinov, Rector of the Tver State University

Mr. Yu.V.Serkovsky, Deputy Governor of the Tver Oblast

Mrs E.M.Sulman, WG1 Team Leader

### **Others**

Mr. S.K.Sergeev, National Project Director

Mr. A.V.Rozhdestvensky, Deputy Head of the Federal Agency for Education

Mr Veniamin Chan, Deputy Director, Irkursk State Technical University

Mr Victor Kotomkin, Senior Project Manager, ENSI

Mr Dag Høystad, Project Manager, Norges Naturvernforbund (NNV), FoE Norway

Mr Evgeniy Zenutich, Director, NICE, Nizhny Novgorod

### **UNDP project staff**

Natasha Olofinskya

## **Annex 4: List of Main Documentation Reviewed**

Abstract of the report on economic results of energy saving measures implemented in the city of Apatity and Kirovsk, Kola Energy Efficiency Centre, June 2006

Brief information leaflets on energy saving training programmes for advanced training, Murmansk State Pedagogical University

Brief report on implementing energy saving activities in Murmansk and Murmansk Oblast in the framework of the Federal Ministry of Education's Programme "Energy Saving in Educational Sector", Mr. Nikolai Berezhnoi, Vice-Governor, Head of Department of Industry, Construction and Municipal Housing of Murmansk Region

Complex Report on Results of Expert Evaluation of the Educational Programme Impact, City of Petrozavodsk, June 2006

Curriculum of the teachers' training course "Energy Saving at schools", 72 hours, Faculty of Advanced Professional Training and Retraining of Teachers, Petrozavodsk State University

Decision by a joint meeting of the Working Group 1, temporary creative team, and expert teachers, Tver, June 30, 2003;

Decision by a seminar/meeting of teachers from the pilot regions of the UNDP – GEF project "Cost Effective Energy Efficiency Measures in the Russian Educational Sector" based on the results of approbation of the energy efficiency textbook, April 24-25, 2004, Tver;

Development of the programme "Energy Saving" at Arkhangelsk State Technical University, analytical report, Arkhangelsk State University

Dudnikova, LV 2006, "Report of Evaluation of reduction of the greenhouse gases emission due to implementation of the Demonstration Energy Saving Projects in the pilot regions and their replication at other educational institutions of the Russian Federation", NICE, Nizhny Novgorod, June 2006

Economically Efficient Energy Saving Measures in the Russian Educational Sector. Ministry of Education and Science of the Russian Federation, Global Environmental Fund, UNDP - Moscow 2006

Educational programme on additional professional training "Energy Saving at School" (72 hours), Arkhangelsk

Energy Efficiency: methodology recommendations under the elective course program for the 8<sup>th</sup> grade of comprehensive school, Tver, 2004;

Energy Efficiency: Workbook for the 8<sup>th</sup> grade of comprehensive school, Tver, 2004;

Energy Saving in Educational Institutions. Ministry of Education and Science of the Russian Federation, Global Environmental Fund, UNDP - Moscow 2006

Heat Consumption Report for Hostel No. 3, Petrozavodsk State University, period: 01.01.2006 – 17.04.2006, Petrozavodsk State University

## **Evaluation – UNDP-GEF Energy Efficiency in Russian Education Sector**

Information leaflet “Project “Economically Efficient Energy Saving Measures in the Russian Educational Sector”, published by the Russian Federation Federal Agency for Education and UNDP, June 2006

Intermediate report by Kolsky Energy Efficiency Centre under the UNDP – GEF and RF Ministry of Education project RUS/02/G35 “Energy Efficiency in Schools”, March-August, 2004;

Methodical materials for the course “Energy Saving” (for teachers of physics, chemistry, biology and geography), issued by the Information and Methodical Centre, Department of Education, Mayorate of Arkhangelsk, Arkhangelsk, 2005.

Petrova I.A., Mitina E.G., Taskayeva L.G., Luppova E.N. Explanatory notes “Additional professional education program of short-time training of trainers in the “Energy efficiency at school” course;

Protocol No. 1 of the meeting of temporary creative team devoted to the work under subcontract “Development of a program and textbook” of September 19-20, 2003;

Report on Energy Saving Programme Implementation in 2005, Arkhangelsk State Technical University, Federal Agency of Education

Report on Results of All-Russia Contest of School Energy Saving Projects “Energy and Environment” for 2005 – 2006 school year, NGO “Friends of the Baltics”, St. Petersburg, 2006

Sergeyev S.K., Izmailov V.V., Kruzhalin V.I., Matveyev V.G., Uzikova T.I., Hoistad D.A. Energy Efficiency: Textbook for the 8<sup>th</sup> grade of comprehensive school, Tver, 2004;

Terms of Reference “Development of a scientific program to assess the effects of the “Energy Efficiency” educational program and actual savings in educational institutions;

Terms of Reference “Training of trainers in the implementation of the “Energy Efficiency” program in educational institutions”;

Training programme for additional professional training “Energy Saving At School” , 72 hours, Murmansk

UNDP – GEF project “Cost Effective Energy Efficiency Measures in the Russian Educational Sector”, Completion Report, Training Program on Energy Auditing and Business Planning, January 2005;

UNDP – GEF project “Cost Effective Energy Efficiency Measures in the Russian Educational Sector”, Project Implementation Report (PIR), 2003;

UNDP – GEF project “Cost Effective Energy Efficiency Measures in the Russian Educational Sector”, Annual Project Implementation Report (PIR), July 2004;

UNDP – GEF project “Cost Effective Energy Efficiency Measures in the Russian Educational Sector”, Progress Report by the Leader of Working Group 1 on the project implementation in 2003, Tver, 2003;

UNDP – GEF project “Cost Effective Energy Efficiency Measures in the Russian Educational Sector”, Report on the Workshop “Energy efficiency educational program for secondary school”, Tver, November 3-5, 2003;

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UNDP – GEF project “Cost Effective Energy Efficiency Measures in the Russian Educational Sector”, Report of a temporary work team on the subcontract “Training of trainers in the “Energy Efficiency” program implementation in educational institutions”;

UNDP – GEF project “Cost Effective Energy Efficiency Measures in the Russian Educational Sector”, Report by the Public Board manager in Tverskaya Oblast (T.I. Uzikova) for 2004;

UNDP – GEF project “Cost Effective Energy Efficiency Measures in the Russian Educational Sector”, Brief report on the activities of Working Group 1 in 2004;

## Annex 5: Summary of Evaluation Ratings

In addition to a descriptive assessment, all criteria marked with (R) have been rated using the following divisions: Highly Satisfactory, Satisfactory, Marginally Satisfactory, Unsatisfactory

### Project Formulation

*Conceptualization/Design:* Satisfactory

*Stakeholder participation:* Satisfactory

### Project Implementation

*Implementation Approach:* Satisfactory

*Monitoring and evaluation:* Satisfactory

*Stakeholder participation:* Satisfactory

### Results

*Attainment of Outcomes/ Achievement of objectives:* Satisfactory