



PROJECT IDENTIFICATION FORM (PIF)
PROJECT TYPE: FULL-SIZED PROJECT
GLOBAL ENVIRONMENTAL FUND

Submission Date: 16 March, 2010
Resubmission Date: 20 April, 2010
Resubmission Date: 28 April, 2010

PART I: PROJECT IDENTIFICATION

GEF Secretariat Project ID: 4228

GEF AGENCY PROJECT ID: 4290

COUNTRY: Belarus

PROJECT TITLE: Improving Energy Efficiency in Residential Buildings in the Republic of Belarus

GEF AGENCY: UNDP

OTHER EXECUTIVE PARTNER(S): Department on Energy Efficiency under the State Committee on Standardization of Belarus, Ministry of Architecture and Construction, Ministry of Environment

GEF FOCAL AREA: Climate change

GEF-4 STRATEGIC PROGRAMME: CC-SP1 EE in Buildings

NAME OF PARENT PROGRAMME: - Global Framework for Promoting Low Energy Buildings

INDICATIVE CALENDAR	
Milestones	Expected Dates
Inclusion into the GEF Work Programme	June 2010
GEF CEO Endorsement/Approval	April 2012
GEF Agency Approval Date	May 2012
Implementation Start	July 2012
Mid-term Evaluation	Jan 2015
Project Closing Date	July 2017

A. PROJECT FRAMEWORK

Project objective: The objective of this project is to overcome barriers to help ensure that energy efficiency best practices are carried out in the construction of new residential buildings in Belarus, reducing energy consumption in new residential buildings by on average at least 70% when compared to the existing building stock.

Project Components	Investment, TA or STA	Expected Outcomes	Expected Outputs	GEF financing		Co-financing		Total (\$)
				(\$)	%	(\$)	%	
1. Development of legal and regulatory framework for adoption of EE building standards	TA	3 mln. m ² /year of living space is designed, built, and maintained in compliance with new construction codes and standards, which include provisions for modern energy efficiency requirements. Introduction of new codes and minimum energy performance standards by mid way through the project and adoption of revised codes and standards by the end of the project which results in 70% annual improvement in energy-efficiency of new buildings compared to existing building stock	- 50 typical residential buildings audited to determine their actual heat balance, including thermal energy expenses for heating and hot water supply, and interior heat build-up of new residential buildings and at least 50% of the energy audits leading to real investments in energy-efficiency. - Methodology of determination of actual heat balance components and energy consumption calculation for buildings developed in compliance with performance properties of buildings. - National regulatory documents, including Codes of Common Practice for construction of residential buildings revised and amended with energy efficiency (EE) requirements introduced by mid way through the project and passed into law by the end of the project. - Practical procedures developed for creation of a	750,000	55	620,000	45	1,370,000

			mandatory system for EE certification of buildings, including issuing of EE passports by the end of the project.					
2. Building expert capacity of local specialists for application of new EE building codes and standards	TA	<p>In each year of the project, significant increases in the number of national experts trained in methods of improving energy efficiency of buildings design</p> <p>The curricula of university courses includes courses which deal specifically with the application of the EE building codes and standards</p> <p>Successful monitoring of EE in new Buildings is introduced into the Republic of Belarus</p>	<ul style="list-style-type: none"> - At least 200 construction experts trained in improving energy efficiency of residential buildings. - At least 200 architects and designers of residential buildings trained in application of new EE standards and technologies, including solar water heating technology, waste energy utilization systems, energy consumption calculations, and ways to reduce them. - 200 Architects and designers (100 people) from major state organizations trained and are using integrated three-dimensional computer-aided building design methods. - 200 Construction inspectors trained to use EE building assessment methodology. - Training courses on energy efficiency in buildings developed and introduced into university curricular. - Methodology and programme of monitoring energy savings and CO2 emission reductions in buildings developed. - Procedures for audits of EE building energy efficiency established. - Monitoring of energy savings and CO2 emission reductions in buildings assigned to a state organization (selected under the project). 	600,000	43	780,000	57	1,380,000
3. Assistance in implementation of pilot projects on construction of new EE buildings	TA	Opportunities and benefits of practical application of EE codes and standards are demonstrated in construction of new residential buildings located in regional centers of Belarus	<ul style="list-style-type: none"> - Two new demo EE residential buildings designed and constructed by local specialists consulted by international experts. - New technologies of construction of EE buildings tested. 	2,540,000	19	10,900,000	81	13,440,000
4. Outreach and Dissemination.	TA	Opportunities and benefits of practical application of EE codes and standards are replicated throughout Belarus	<ul style="list-style-type: none"> -Conducting a public information campaign (EE corners, advertisements, employee education, etc.) in order to increase general knowledge on buildings certificates and to promote adoption of EE measures - System of EE certification of construction materials further enhanced - Holding of Multi- 	250,000	44	320,000	56	570,000

			Stakeholder workshop to disseminate project results - Manuals and guidelines on energy efficiency technologies in the residential sector for construction specialists, architects and energy efficiency specialists; - International conference on energy efficiency in residential sector held in Belarus with a field visit to the pilot sites.					
5. Project management				360,000	25	1,080,000	75	1,440,000
Project total costs				4,500,000	25	13,700,000	75	18,200,000

B. INDICATIVE FINANCING PLAN SUMMARY FOR THE PROJECT (\$)

	Preparation*	Project	Agency fee	Total
GEF		4,500,000	450,000	4,950,000
Co-financing		13,700,000		13,700,000
Total		18,200,000	450,000	18,650,000

C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE (\$)

Sources of Co-financing	Type of co-financing ¹	Amount
Government	In-Kind	3,700,000
GEF Agency		
Bilateral agencies	(select)	
International organizations	(select)	
Private sector	In-Kind	10,000,000
NGO	(select)	
Other	(select)	
Total co-financing		13,700,000

(To be elaborated in more detail in the PPG)

D. GEF RESOURCES REQUESTED BY FOCAL AREA(S), AGENCY (IES) SHARE AND COUNTRY(IES)*

N/A

PART II: PROJECT RATIONALE

A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED:

1. The Government of the Republic of Belarus is a party to both the United Nations Framework Convention on Climate Change and the Kyoto Protocol and is committed to reducing greenhouse gas emissions to 10% below 1990 levels over the period 2008-12. Improving energy-efficiency across the economy is one measure which will help Belarus to achieve its long term targets to reduce greenhouse gas emissions.
2. The Republic of Belarus lacks considerable energy resources, and has to import up to 90% of energy consumed in the country. Hence, efficient operation of the economy largely depends on energy efficiency in all sectors, including the

¹ Select from the following categories: grant, lax loan, loan, bond, non-monetary contribution.

housing stock consuming 35-40% of the total amount of energy used for heating and hot water supply. As of the end of 2008, the Belarus' housing stock totalled about 220 million square meters of residential buildings, including 170 million square meters of old buildings which were constructed before 1994 according to the old Soviet practices and norms when little or rather no attention was paid to energy performance characteristics of the buildings, and energy efficiency was not considered at all. Annual heat energy consumption in these buildings totals 150–200 kWh/m². Therefore, the old housing stock buildings consume a majority share of energy resources. After 1993, new buildings totaling 50 million square meters of residential floor area were constructed. Since 1993, the following measures have been taken to reduce specific heat losses in the old housing stock buildings:

- thermal energy meters were installed in buildings and central heating units;
 - heat energy management programme controllers were installed;
 - old buildings underwent thermal renovation in compliance with new standards of heat energy consumption.
3. These are typical activities realized at the initial stage of the process of improving energy efficiency in buildings in all countries, including Western Europe and the Belarus' neighbors, both in the CIS area and in new EU member states. These measures have resulted in annual heat loss reductions by more than 60 kWh/m² in newly constructed buildings totaling 50 million square meters. The annual heat loss rate in new 9-storey buildings and higher is 86-91 kWh/m²; and in 4-5-storey buildings – 89.1-105 kWh/m².
 4. 1993 saw the adoption of a new national standard “Construction Heat Engineering”, which provided for increasing thermal shielding of building envelopes by 2 – 2.5 times and reducing space-heating energy consumption by 30–35%. The annual space-heating energy consumption norms for new buildings are 86–105 kWh/m², which is comparable with similar norms in Russia and Ukraine, but exceed the EU standards. For instance, in line with the new EnEV adopted in Germany in 2002, depending on compactness of buildings, the space-heating energy consumption rates fluctuates from 50 kWh/m² (multi-storey buildings with compactness value, i.e. proportion of the building envelope in relation to the net useful floor area, equaling 0.2) to 110 kWh/m² (single-storey buildings with compactness value exceeding 1). Many EU countries are developing new regulatory documents, which envisage transition to construction of buildings with space-heating energy consumption rates less than 30 kWh/m² a year. To facilitate construction and renovation of buildings in compliance with the new standard, Belarus started production of new for the country energy efficient insulating materials, new thermal energy regulators and meters to be used in construction of new buildings and thermal renovation of old housing stock, introduced new types of window design. In the past few years, annual construction of new residential buildings in Belarus has averaged 5-6 million square meters. Enforcement of these new regulations has not been a problem.

Table 1. Comparative estimated heat consumption in old and new buildings.

Type of building	Total housing space, mln. m²	Specific heat consumption rate, kWh/m² per year	Total heat consumption, mln. kWh/m² per year
Old housing stock (constructed before 1993)	170	150	25,500
New buildings (constructed after 1993)	50	100	5,000

(Source: Scientific and Design Institute of Construction, 2005 – more research will be carried out under the PPG)

5. From this table, it would appear that the largest scope for reducing GHG emissions in Belarus lies in the renovation of old buildings. However, the Government of Belarus has indicated a strong preference to focus a new GEF project on energy-efficiency in buildings on removing barriers to improved energy-efficiency in new construction because activities on the thermal rehabilitation of existing buildings have been ongoing for well over 10 years. The Ministry of Architecture and Construction implemented several pilot projects retrofitting old buildings from as early as 1996.

Following on from these pilot demonstration activities, the retrofit of old buildings where there is large energy savings potential became routine and therefore further support for demonstration activities in this area will not make much difference in terms of replication potential. Finally, the utilization of heat from the ventilation systems in old residential buildings is problematic and in some cases not even feasible due to the design solutions which were implemented in Belarus during the Soviet period. This makes it problematic to implement effective energy-efficiency solutions in many old buildings. For this reason, the Government of Belarus has determined that the best opportunities for a GEF energy-efficiency barrier removal project in the buildings sector with good replication potential lies in the area of new residential buildings.

6. Today, Western Europe is witnessing a transition to construction of ‘passive home’ standard buildings, which consume only 10-20% of the current heat supply level during the heating period, or just 15 kWh/m² a year. This specific annual heat consumption value is not accidental, but is based on the prevalent level of residential heat emissions in Germany’s housing stock and opportunities of combination of heating and ventilating functions. By the year 2015, the Western European ‘northern belt’ countries intend to enforce new energy consumption norms in accordance with the ‘passive home’ standard. This project will aim to assist the Republic of Belarus in ensuring that new buildings are developed in a manner that is consistent with the new EU standards.
7. The construction industry of the Republic of Belarus is ready to make a leap forward in reduction of heat losses of buildings to 30 kWh/m² a year. Today, the Belarusian Ministry of Architecture and Construction sets the objective to move towards mass construction of energy efficient buildings in Belarus. Nevertheless, despite the availability of technical means and materials, and capacities to apply new technologies, there are still certain technical, legislative, institutional, economic and technological barriers to improving energy efficiency in residential buildings in Belarus.
8. The old approach to building design is one of the shortages of the Belarusian system, when one element of a building is considered separately from the others, thus impeding optimization of the building structure as a whole energy system. The main focus is on development of constructive-technological and space-and-planning solutions. Operational heat loss reductions are achieved only by thermal insulation of building envelopes. Engineering support is left aside. Ignored are heat losses related to ventilation emissions of buildings, and an opportunity of reducing losses of heat energy used for hot water supply. Hot-water supply requires the same amount of heat as for buildings heating.
9. Belarus has in place a well-organized system of supervision of construction standards application. All projects undergo mandatory state certification for compliance of technical solutions with the effective standards. A state inspection agency carries out construction quality control, and a developer exercises field supervision of proper implementation of the project. If required, specialized agencies conduct instrumental examination of a building, including a thermo-vision study, to identify actual heat-shielding characteristics of the building envelope.
10. Belarusian design agencies lack sufficient experience in designing energy efficient buildings. This gap could be filled with design and construction of EE buildings in Minsk along with organizing training seminars and awareness activities on the new standards. The construction of new-type energy efficient buildings is scheduled for 2009-2012. An incomplete national regulatory framework is one of the main barriers to increased energy-efficiency in residential buildings. For example, the current energy supply terms in building designing are calculated on the basis of standards set in the outdated construction norms “Construction Heat Engineering” developed in 1993. It is necessary to develop a new code raising the requirements with respect to energy efficiency in buildings, along with regulatory documents facilitating designing of energy efficient buildings. In addition to this, a special regulatory mechanism for providing financial support to private persons for construction of EE buildings and execution of EE activities with account of the available EU experience.
11. No wide spread energy surveys or audits of buildings are carried out in Belarus resulting in a lack of reliable statistical data on actual energy consumption and energy balance of existing buildings which complicates analysis of opportunities for energy consumption reduction.
12. No economic mechanisms stimulating implementation of energy saving activities in residential buildings are developed and applied. The state does not provide any incentives for private persons to improve energy efficiency of the buildings that belongs to them. Construction companies have an incentive to keep costs to a minimum. Private

home owners receive no premium for their apartments for having energy-efficiency buildings. No overall assessment was made of the efficiency of investments in improving EE of buildings in the country. Accordingly, no analysis was made of GHG emission and the potential of emission reduction in residential buildings. This work would be carried out as part of the PPG activities before launching the full project.

13. Moving towards construction of new EE residential buildings, and applying measures to reduce the heat energy used for hot water supply could result in energy savings in the public utility sector alone by more than 70%. Development of building design regulation aimed to reduce energy consumption, along with investing into improving energy efficiency of heating, ventilation and water consumption systems, EE furnishings, as well as reduction in heat losses in buildings during the operation stage, could bring considerable economic and environmental benefits.
14. The direct greenhouse gas emission reductions from this project are estimated as **409** tonnes of CO₂e per year based on the two pilot demonstration projects (one of 7,000m² and one of 6,000m²). This is based on the assumption that using best practice for the design of these two buildings there will be an improvement of 70 κWt/h/m² in energy-efficiency. These figures will be further refined as part of the PPG activities once the selection of the demonstration buildings are made.
15. With planned annual construction of 10 million square meters of new residential buildings, and assuming that 30% of this floor area will be constructed in accordance with new energy efficient construction norms and standards (3 million square metres of new residential buildings which have been influenced by this project), assuming also that the annual space-heating and hot water supply energy consumption will be reduced by 70%, resulting in indirect GHG emission reductions by **104,000** tons annually by the end of the project. Energy consumption reduction in new residential buildings will total to 70 κWt/h/m² (by 70%, from 100 до 30). With planned construction per year of 10 mln. м², and assuming that 30%, or 3.3 mln. м² out of this 10 mln м² of floor area will be constructed using new energy efficient norms and standards, we have savings up to 231,000 MWt/h. Given that the Belarusian energy system emits approximately 0,45t CO₂/MWt/h, we have annual indirect GHG emission reduction of **104,000** tons of CO₂ equivalent by the end of the project. These figures will be further analysed during the PPG stage. For point of comparison, the figures are compared to the estimates from the UNDP GEF Energy-Efficiency project in the State Sector which is currently ongoing in Belarus.

Sub-Sector	Measure	Potential Savings from Demonstration Projects	Potential Savings from indirect reductions in GHG emissions
Residential Sector	Increased energy efficiency among new buildings built throughout Croatia	409 tonnes of CO ₂ e per year	104,000 tonnes CO ₂ e per year
State Sector	Increased energy efficiency in the State Sector in Belarus (ongoing UNDP GEF project)	23,437 tonnes of CO ₂ e	351,555 tonnes of CO ₂ e

16. The cancellation of state subsidies of heat and hot-water supply for public utility users and population in Belarus made the issue of residential buildings energy efficiency even more prominent. Suddenly, energy bills become more important for low-income households and energy-efficiency becomes more of a priority. The incentive to act is increased and it will be further enhanced by the activities of this project.
17. According to data provided from its national communications to the UNFCCC, the energy-intensity of Belarus dropped from 16.33MJ/USD of GDP in 1993 (one of the highest in the world) to 9.03MJ/USD of GDP in 2006 a drop of almost 50%. This compares to an Annex I average of 9.97MJ/USD of GDP in 1993 to 8.58MJ/USD of GDP in 2006. The main reason for this massive improvement in energy-efficiency was the increase of fuel prices (from Russian fuel imports of oil and gas) from highly subsidized prices to prices approaching world levels. This forced Belarussian industry to place a heavy emphasis on industrial energy-efficiency in order to reduce costs and remain competitive. So the decline in the energy intensity of the Belarussian economy over the past ten years can, in most

part, be attributed to improvements in industrial energy-efficiency brought about by higher fuel prices. At the same time improvements in energy-efficiency in new buildings has not received such similar high priority.

18. The focus of this project will be on reducing barriers to energy-efficiency in new buildings for reasons already stated. Government programs have already assessed opportunities for energy-efficiency in existing and renovated buildings and undertaken renovations in many cases and so there is no point in repeating what has already been done. In addition, the Government of Belarus has made it clear that this is the priority area for them for energy-efficiency (i.e – new residential buildings).

19. The following table provides an overview of the barriers related to energy-efficiency in buildings in Belarus.

Sub-sector	Barrier to be addressed	Type of assistance to overcome barrier
Efficiency in the new construction on buildings	Lack of technical knowledge among architects, builders, and inspectors for energy efficient new construction	Technical assistance in development of software, training of 200 construction experts, 200 architects/designers.
Efficiency in household sector energy management	Lack of knowledge about CFLs, energy efficient appliances and passive and active renewable energy sources among households and citizens and to a certain extent among construction companies.	Public information campaign assistance to increase knowledge about energy-efficiency in new buildings. Two pilot demonstration projects used and promoted as examples to encourage replication.
Energy-Efficiency Laws and Regulations	National standards for building do not currently address best practice and there is no system of building certification or energy passports.	Development of new standards and of a system of building certification and a system of energy passports.
Efficiency in renovations of existing building stock	Limited barriers remaining as the Government has already implemented a considerable number of activities in this area.	Energy audits, certificates and inspections are ongoing. Further technical assistance from this project not required.

Addressing these barriers will include augmenting the existing programs which are being funded by the Belarussian government, the EU, and other institutions, as well as spurring improvements to go above and beyond the existing targets for CO₂ reduction due to energy efficiency in the buildings sector.

20. The four project components envisaged by this project are as follows:

Component 1: Development of the legal and regulatory framework and mechanisms to enforce the legislation for improving energy efficiency in newly constructed residential buildings.

- 1.1: Overall assessment of the potential for increasing energy-efficiency in residential buildings in Belarus with identification and ranking of the most cost-effective opportunities.
- 1.2: Carrying out at least 50 free energy audits to provide factual energy consumption and energy balance components for the existing residential buildings in the city of Minsk
- 1.3: Development of methodology for building energy consumption calculation in line with contemporary international standards;
- 1.4: Revision of national standards regulating energy supply, hot-water supply, ventilation and heat losses (to 30kWh per m²) for newly built residential buildings and helping to ensure that the revised standards become law;
- 1.5: Elaboration of practical procedures for establishment of a mandatory system of EE certification of buildings, including issuing of an EE passport for a building and ensuring that these procedures are adopted by the Government of Belarus;
- 1.6: Development of a system of EE certification of construction materials and accessories produced in the construction sector and ensuring that the certification scheme is adopted by the Government of Belarus.

Component 2: Enhancing the expert capacity of Belarusian specialists for implementing new energy efficiency standards and norms for new residential buildings

- 2.1: Training of at least 50 experts from the Ministry of Architecture and Construction on increased building energy efficiency measures in new buildings;
- 2.2: Training of at least 50 architects and residential buildings designers on using the new EE standards and technologies, including solar water heating technology, on calculation of building energy consumption and ways to reduce it, and methodologies techniques of EE buildings designing;
- 2.3: Training of at least 50 architects and designers on methods of integrated three-dimensional computer design of residential buildings;
- 2.4: Training of at least 50 construction inspectors on methodologies of assessment of building energy efficiency (for residential buildings);
- 2.5: Development and introduction into at least four universities, new courses on building energy efficiency;
- 2.6: Development of methodology and programme of monitoring energy savings and CO2 emission reductions in residential buildings;
- 2.7: Define a national procedure for promoting larger number of energy audits of residential buildings, and development of a mechanism for using auditing results in elaboration of building energy efficiency strategies at the national level;
- 2.8: Identification of a state agency responsible for monitoring of energy savings and CO2 emission reductions in residential building, and developing institutional capacity of this agency.
- 2.9. Three study-tours for construction specialist to European countries advanced in energy efficiency in residential buildings.

Component 3: Demonstrating energy and cost-saving potential of new energy efficient measures in at least two new Residential Buildings in two Belarusian cities (the selection of the two cities will be finalized as part of the PPG activities).

- 3.1 Jointly and in partnership with the Ministry of Architecture and Construction identify at least two new Residential Buildings located in two Belarusian cities for introduction of EE best practice technologies;
- 3.2 Co-finance up to 15% of the total building cost for each of the two selected residential buildings for the introduction of the new EE measures – cost-effectiveness and co-financing will be one of the key criteria for selection of the pilot buildings (i.e – the larger the cost-sharing amount vis-à-vis the GEF contribution, the better);
- 3.3 Provide Energy-Efficiency Expert Assistance to the selected buildings being built;
- 3.4 Monitor energy performance of the two buildings and quantify energy and financial savings and GHG emissions reduction;
- 3.5 Organize at least 30 private showings of the new buildings to selected architects, designers, and builders which would include half-day training sessions with a view to implementing the measures adopted under the demonstration projects in additional buildings;
- 3.6 Advise selected private construction companies on how to integrate elements of energy efficient design in their investment building projects throughout the project cycle from design to construction and building management

Component 4: Outreach and Dissemination

- 4.1 Nation-wide awareness and information campaign advocating for multiple benefits of energy efficiency measures in new buildings, including economic, social, health, environmental and aesthetic aspects of energy efficient building retrofits – includes the development of promotional materials
- 4.2 A set of workshops at the pilot sites at the construction and operation stages for national construction specialists, architects, decision-makers;
- 4.3 Further development of the national system for Energy-Efficiency certification of construction materials;
- 4.4 Development and publication of manuals and guidelines on energy efficiency technologies in the residential sector for construction specialists, architects and energy efficiency specialists

- 4.5 The integration on energy-efficiency into regional plans being developed by the Institute of Urban and Regional Planning (IRUP)
 - 4.6 An International conference on energy efficiency in residential sector held in Belarus with a field visit to the pilot demonstration sites and including coordination with other UNDP GEF Energy-Efficiency projects in the region (in particular Russia and Ukraine);
 - 4.7 Ongoing and updated project website and interactive online training tool
21. This project is focused on energy-efficiency in new residential buildings in Belarus which is an area that no other Implementing Agency is focused on and which is also an area with a high potential for GHG reductions. As has previously been mentioned, the ongoing UNDP GEF Energy-Efficiency project in the State Sector is focused on government buildings and on industrial energy-efficiency. This project does not target the residential sector. As has been mentioned, significant work in Belarus has already been undertaken in the area of improving energy-efficiency in existing buildings.

B. COMPLIANCE WITH NATIONAL PRIORITIES/PLANS:

22. Belarus' housing construction sector is actively developing. It is estimated that up to 10 million square meters of living space are to be built starting from 2011, i.e. one square meter per citizen. Consequently, it is important that this project is able to positively influence this new building. Initial estimates and assumptions are that 30% of new building in Belarus (3 million square metres per year) can be influenced by this project. The process of new building construction is evolving under the 2006-2010 State integrated scientific-technical programme for development of material and technical basis of the construction sector. As part of the PPG activities these growth rates and their impact on GHG emissions will be analysed in more detail.
23. Among other active national programmes aimed to develop new construction technologies are:
- ✓ State integrated scientific-national programme of development and adoption of new resource- and energy-saving materials, technologies, building designs, organizational and technical solutions, reconstruction and thermal renovation of existing buildings improving consumer characteristics of construction products and price reducing (construction materials and technologies);
 - ✓ Integrated programme for designing, construction and reconstruction of residential buildings based on EE standards.
 - ✓ Promotion of new construction technologies related to new energy efficient windows; new forced ventilation systems with heat recuperation; Individual heat consumption meters; individual regulators for heat supply and ventilation installed in apartments; Heat recovery system from waste water with the use of the recovered heat in building heat supply system; Installation in apartments of a system on collecting and remote data transmission on heat, hot and cold water consumption;
24. Belarus has made some steps towards improving energy efficiency so far. In 2007, a national energy security concept was developed and approved by the Council of Ministers of Belarus. An energy saving programme was developed and is effective at all levels of energy production, distribution and consumption. It could serve as a basis for implementation of practical measures on improving energy efficiency and energy saving.

C. PROJECT COMPLIANCE WITH GEF STRATEGY:

25. The project is aimed at removing legislative, regulatory, institutional and technological barriers to improving energy efficiency of new residential buildings in Belarus. Hence, the project is in full compliance with the requirements of GEF – SP1 Strategic programme “Promotion of Energy Efficiency in Residential Buildings” of the ‘Climate Change’ thematic area. The project forms an integral part of the UNDP-led GEF Global Framework for Promoting Low Carbon Buildings with a primarily focus on two thematic approaches promoted by the Global Framework: a) Promotion and increased uptake of High Quality Building Codes and Standards; and b) Public Buildings and Municipalities as Promoters of Energy Efficiency. The coordination offered by the global program

will help Belarus to learn from experiences and best practices from countries with similar EE building projects in CIS region (Croatia, Russia, Armenia, Kyrgyzstan, Uzbekistan etc ...) and globally.

D. JUSTIFY THE TYPE OF FINANCING SUPPORT WITH GEF RESOURCES:

26. The nature of the project is policy development, capacity building, training, awareness raising, piloting and demonstration. The project objective will be achieved through the provision of technical assistance. No loan or revolving-fund mechanisms are proposed; considering the nature of barriers to be addressed and the proposed interventions, grant type funding is considered adequate to enable successful delivery of the project outcomes.

E. COORDINATION OF ACTIVITIES WITH OTHER RELATED INITIATIVES:

27. During the preparation of the PIF a series of initial discussions were held with other ongoing related initiatives in Belarus with the objective of identifying synergies and areas for cooperation. One main outcome of these discussions was that it was identified that while significant work has already been undertaken in the area of retrofit of existing buildings, there is currently no other major donor initiative in Belarus aimed at increasing energy-efficiency in the residential sector. The results of these initial consultations are presented below. The synergies will be further explored and detailed at PPG stage in order to further define the cooperation of these initiatives with this new UNDP-GEF project.

Organization/Programme	Scope of work and areas for collaboration with UNDP-GEF project
The State Committee on Standardization of Belarus and its Department on Energy Efficiency	The State Committee on Standardization of Belarus and its Department on Energy-Efficiency is the main Governmental body in charge of policy coordination in the sphere of energy efficiency, development and enforcement of technical norms and standards, and metrology. The Committee performs evaluation of conformance and oversight of construction, exercises control for compliance of projects and budgets with established norms and standards, and checks rational usage of fuel, power and heat energy. The Department on Energy Efficiency under the State Committee of Standardization of Belarus will act as a national executing agency for this project
The Ministry of Architecture and Construction of Belarus	The Ministry is the main governmental body in charge of development and implementation of the state technical policy in the field of construction, architecture, urban building, production of construction materials, investment activities in construction, technical norm and standard setting, production certification, licensing and regulation. Renovation programmes for old buildings have been ongoing since 1996. The Belarusian Ministry of Architecture and Construction will act as a main national partner for this project
Ministry of Natural Resources and Environmental Protection of the Republic of Belarus	The Ministry is the main Governmental agency in charge of environmental control and nature protection in Belarus. The key responsibilities include: • to elaborate and pursue a common public policy in environmental control and rational utilization of natural resources. • to exercise integrated environmental control in the country, coordinate activities of other republican bodies of state administration and corporate bodies along these lines. • to exercise state control over environmental protection and nature management. • to make public aware of the environmental conditions and actions taken for environmental recovery, to establish a system of environmental education and training, and interact with public environmental associations to maintain international ties within its competence.
UNDP/GEF project “Biomass Energy for Heating and Hot Water Supply”	The main objective of the project was to reduce GHG emissions of Belarus by removing barriers to economically feasible wood and wood waste utilization for heat and hot water supply. The project was completed in 2008.
UNDP GEF ODS Phase-Out Project (Belarus, Ukraine, Tajikistan, and Uzbekistan)	The project preparation is being developed in 2010 and 2011. During the project formulation stage, the links with energy-efficiency in buildings will be further explored in better detail. This will be achieved by analyzing the manufacturing of foam insulation materials and their potential usage in the construction sector, as well as by assessing HCFC replacement technologies in such cases which would have only low or no GWP effect.
UNDP/GEF project “Removing the Barriers to Improving Energy Efficiency in the State Sector of	The project aimed at attracting domestic investment in implementation of energy efficiency activities in the state sector. The project started in 2006, and is currently under implementation. This project is focused on energy-efficiency in the State Sector. It does not target EE in residential buildings. Nevertheless, synergies between the two projects will be further explored

Belarus”	during the PPG stage.
World Bank Belarus Post-Chernobyl Recovery Project	Approved in 2006 and is still under implementation. The Belarus Post-Chernobyl Recovery Project aims to provide the population residing in the Chernobyl affected area with energy efficient and reliable heat and hot water services in order to improve their living environment. There are three project components. Component 1, the Energy Efficiency Component, improves energy efficiency through upgrading or replacement of heat production and distribution equipment, and improving thermal insulation and lighting in public buildings. Component 2, the Residential Gas Connections Component, provides household connections to existing gas distribution network to improve heat supply and replace utilization of dirty fuels, including those that may be contaminated with radioactive material. Component 3, Project Implementation and Management Support, includes (a) design and supervision for project investments; (b) staffing, equipment, and training; (c) public information; and (d) auditing, and other fiduciary or technical services.
World Bank Social Infrastructure Retrofitting Project	The project was approved in 2001, and is still on-going. The Social Infrastructure Retrofitting Project aims to improve the functional and health environments of social sector facilities, with particular emphasis on reducing energy consumption. The project has two main components. The first component will support investment in physical infrastructure, which includes retrofitting buildings and repairing parts of associated heat networks. Energy retrofitting measures in schools and medical facilities, and associated supply-side improvements will include building envelope and heating system improvements as well as conversion or replacement of individual autonomous boilers. Also included is rehabilitation of limited portions of District Heating Networks where deemed necessary to capture savings at the heat production source. The second component, technical assistance, will support project implementation and advance sector policy discussions. The component will include funding for technical and financial audits, continuation of the public awareness campaign, training for project management unit staff, financing for studies and workshops, and funding for project management unit staffing.
World Bank Energy Efficiency Project	The project was approved in May 2009. The objective of the Energy Efficiency Project is to improve energy efficiency in heat and power generation in selected towns in Belarus. There are three components to the project. The first component is the conversion of existing heat-only-boiler plants to combined heat and power plants. The project will convert existing heat-only-boiler plants to combined heat and power plants at six sites. All plants will use natural gas as the main fuel. The largest plant will be in Borisov with a combined heat and power (CHP) unit with an electricity capacity of about 65 MW, followed by the Mogilev combined cycle CHP plant of 15.5 MW of electricity capacity. The introduction of combined heat and power generation will improve efficiency of the plants and thus reduce gas consumption. The second component is the design and supervision consultancy. The design and supervision consultancy will be performed by Belarusian design institutes and financed by the Belarusian side. In addition, the component will also finance construction management and investment monitoring. Finally, the third component is the project Implementation and management. A Project Management Unit (PMU) will carry out the procurement, contract supervision, and financial management of the project including auditing and other fiduciary requirements.
EBRD Pinskiyev Project	The EBRD is considering providing a senior corporate loan to Pinskiyev, the largest private sector wood processing and furniture group in Belarus. EBRD financing will be used to implement the investment programme of Pinskiyev to upgrade its wood processing and furniture manufacturing facilities. This includes investments in energy-efficiency and environmental improvements. The transition impact potential of the project stems from the demonstration effect. The proposed project would be the Bank’s first to the wood processing sector and only the second direct loan to a private industrial company in Belarus. The successful restructuring of Pinskiyev would provide a replicable platform for the restructuring of other companies in the state dominated sector and have a strong demonstration effect in how to manage a modern industrial plant. The Bank’s financing will be conditional upon acceptance by Pinskiyev of standards for improved corporate governance, including preparation and audit of IFRS accounts.

28. Department on Energy Efficiency under the State Committee of Standardization of Belarus will be the national implementing partner for this project. The project will also cooperate closely with the Ministry of Environment and the Ministry of Architecture and Construction. A Project Steering Committee will be established to

monitor the project implementation, review and approve annual work plans, annual, progress and final reports, and other documents prepared under the project. The Project Steering Committee will include representatives from these three Agencies, from UNDP, and from the NGO sector.

F. PROJECT COMPLEMENTARITY IN TERMS OF GEF PARTICIPATION:

29. GEF participation in this project is necessary to remove legislative, regulatory, and institutional and market barriers to improving energy efficiency in new residential buildings. These barriers come from in handicapped building codes, building construction and maintenance regulations, norms and rules. Calculation of the housing stock energy consumption (current and future) based on the construction plans up to 2020 and an assumption that the current construction tendencies continue, confirms the validity of attracting GEF funds for the implementation of this project.

G. Indicate risks, including climate change risks, that might prevent the project objective(s) from being achieved, and if possible including risk mitigation measures that will be taken:

Risk	Assessment	Mitigation
Future changes in Climate will have an impact on energy-efficiency in Buildings	Very Low	Climate change has the potential to reduce heating costs in Belarus– not increase them. A 1 – 3.5 degree Celsius rise in temperature is not expected to have any long term effect on demand for energy in residential buildings.
Institutional: Lack of governmental support to revision and introduction of more stringent building energy efficient norms and standards	Medium	The Government of Belarus is committed to improving energy efficiency of the national economy. Among the main programmatic documents are the Directive of the President of Belarus No. 3 “Saving and Economy”, the Energy Security Strategy to 2020, and the 2006-2010 Programme of Energy Saving. All the key stakeholders will be fully involved in project formulation (on PPG stage), and implementation to ensure that the project reflect the key state priorities to the most extent.
Financial: Lack of resources for wide application of EE technologies in construction of new and renovation of old residential buildings	Low	The Government of Belarus has been implementing a number of budgetary programmes of new housing construction and thermal renovation of existing housing stock. In view of the high priority given by the Government to social housing construction and to improving energy efficiency of the national economy, there are strong reasons to believe that the current funding will be preserved at the least. An intensive information campaign will be conducted within the project to show the significance of economic and environmental benefits that improvement of energy efficiency in residential building will yield.
Technical: Low level of knowledge and skills among local professionals to develop and implement EE building projects	Medium	Provision of technical assistance to improve energy efficiency of buildings will constitute the major part of the project. This technical assistance will be provided through a “learning-by-doing” approach whereby local specialist will work together with international consultants to design and operate pilot EE projects in social residential buildings. Significant efforts will be put into building capacity of the construction industry in Belarus, including provision of information regarding new technologies to be used to improve energy efficiency in residential building. Demand for energy efficient technologies will increase due to expected further increase in energy prices in Belarus. As energy prices increase, demand for energy-efficiency also increases.

H. EXPECTED COST-EFFECTIVENESS OF THE PROJECT:

30. In accordance with forecasts for housing construction in Belarus, by 2020 the residential floor area will increase by 35% comparing to the year 2000. It is estimated that without this proposed GEF project, the Belarusian construction

industry will continue using the old construction standards (specific heat losses of new buildings can be 90-110 kWh/m²) and apply old construction technologies with little attention to increased energy efficiency of new buildings. It is estimated the existing requirements related to heat losses in the residential buildings will lead to the increase in heat energy consumption proportionate to the increase in the amount of m² of newly constructed buildings by up to 35% higher than current levels. An additional negative aspect of using old technologies and construction standards for new buildings is the currently employed system of using so called “free” ventilation which is accountable for more that 50% of heat losses, compensated currently with additional heat energy consumption. The implementation of the proposed project will result in transition to construction of new energy efficient buildings with heat recuperation from building ventilation system which should lead to significant improvements in energy efficiency. The project will promote the inclusion of new regulatory heat loss requirements for buildings (30 kWh/m² a year) which will lead to significant overall reductions in GHG emissions. Once these new requirements are adopted, it is estimated that it will lead to only a 2%, increase in overall energy consumption, compared to 10% without the GEF intervention, with securing the same growth of residential floor area. Further work on elaborating the baseline will be undertaken as part of the PPG activities.

31. It is expected that the project will help trigger introduction of new energy efficient construction norms and standards, and application of new energy efficient technologies for construction of public and industrial buildings. By contributing to annual indirect GHG emission reductions of 104,000 tonnes of co₂e per annum the cost effectiveness will be 23.1 tonnes of co₂e reduced for each us\$1 of GEF funding spent. In addition the leveraging of an expected at least \$13.7 million in co-financing, the GEF will have leveraged 3:1 in co-financing under this project. In other words, for each us\$1 of GEF funds spent, us\$3 in co-financing will have been leveraged. Further work on this area, will be carried out under the PPG activities.

I. PROVIDE RATIONALE FOR COMPARATIVE ADVANTAGE OF GEF AGENCY:

32. The project fully complies with the comparative advantages matrix approved by the GEF Council. UNDP Belarus has been successfully managing a portfolio of technical assistance and capacity building initiatives in the areas climate change mitigation, including energy efficiency improvements, biodiversity conservation and preventing land degradation. UNDP has an ongoing complementary GEF project in Belarus focused on energy-efficiency improvements in the State Sector and important lessons can be learned and synergies created from cooperation with this project.
33. UNDP Belarus has extensive experience and expertise in policy advice, project management in a highly challenging technical assistance environment in Belarus, as well as an extensive network of national partners. In particular, it is worth pointing out that UNDP Belarus has an ongoing working relationship with the Department on Energy Efficiency under the State Committee on Standardization of Belarus through the ongoing Energy-Efficiency in the State Sector project. This makes UNDP well positioned to continue to work with the Government of Belarus on energy-efficiency matters.
34. UNDP is implementing thirty two (32) GEF – funded projects in the area of energy efficiency in the region through its network of 26 Country Offices and several of these initiatives specifically target the residential sector. Under the climate change focal area, UNDP-GEF activities aim to enhance domestic legal and regulatory basis with respect to energy efficiency in the CIS and developing countries, to build and strengthened countries’ institutional and human capacity in energy efficiency and renewable energy sources fields. UNDP-GEF is supporting efforts to demonstrate the benefits of energy efficiency improvement in both the state and private sectors in the CIS region. Finally, the project is also consistent with UNDP’s focus on poverty reduction as it will bring significant social and poverty reduction benefits by reducing energy bills for the large group of Belarus’s population.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

NAME	POSITION	MINISTRY	DATE
Mr. Vladimir Tsalko	Minister	Ministry of Environment and Environmental Protection	14 January 2010

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation.

Agency Coordinator, Agency name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Yannick Glemarec UNDP/GEF Executive Coordinator	<i>Y. Glemarec</i>	April 20, 2010	John O'Brien	+421 2 59337 413	John.obrien@undp.org