UNITED NATIONS DEVELOPMENT PROGRAMME
GLOBAL ENVIRONMENT FACILITY

Medium-Sized Project Brief - Czech Republic

PROJECT IDENTIFIERS	
1. Project name: *Low-Cost/Low-Energy Buildings in the Czech Republic*	2. GEF Implementing Agency: *UNDP*
3. Country or countries in which the project is being implemented: *Czech Republic*	4. Country eligibility: *Eligible under paragraph 9(b) of the GEF Instrument. Ratified the UNFCCC 7 October 1993.*
5. GEF focal area(s): *Climate Change*	6. Operational programme/short-term measure: *OP5: Removal of Barriers to Energy Efficiency and Energy Conservation.*
7. Project linkage to national priorities, action plans, and programmes: *Following the 1996 elections, the new Government of the Czech Republic listed housing as one of its top priorities. Growth in this industry is therefore expected to rise. Prague, for example, plans to construct roughly 140,000 new individual apartment units by 2010. Estimated national potential is about 100,000 new residential single family houses and 30,000 new multi-family apartment buildings by 2010.*	
8. GEF national operational focal point and date of country endorsement: *Ministry of Environment (14 June 1996).*	
PROJECT OBJECTIVES AND ACTIVITIES	
9. Project rationale and objectives: *1) Reduction of CO2 emissions related to energy needs in buildings (based on estimated 40-50% lower energy consumption)* *2) A country wide adoption of standards for low-energy buildings in construction of new buildings and renovating the existing ones*	Indicators: *1) Lower CO2 emissions related to energy needs in buildings* *2) Number of new and renovated buildings which have adopted the new standards for low-energy buildings*
10. Project outcomes: *Removal of barriers to increase the energy efficiency in buildings, including:* *(a) A detailed technical design and the construction of the first low cost - low energy building;* *(b) Analysis of the performance of the building;* *(c) Increased awareness of decision makers, architects and construction companies regarding the possibilities to increase energy efficiency in buildings with little or no additional costs;* *d) Revision of the existing standards and/or creation of new ones to increase the energy efficiency in buildings;* *e) A government plan to promote the adoption of new standards;* *f) A financial mechanism designed, tested and included in a financial plan for future investments;* *g) The future potential for developing low-cost low-energy buildings has been assessed and potential investments identified;* *h) Local capacity for project development of similar type of projects has been increased and/or strengthened;*	Indicators: *(a) The first low-cost/low-energy building in place;* *(b) A report on the performance of the building (in Czech and English)* *(c) Seminars and workshops to disseminate the experiences to non-participating organizations/ professionals;* *(d) A set of new building standards to increase the energy efficiency in buildings;* *(e) A government plan to promote the adoption of new standards;* *(f) A financial plan for future investments;* *(g) An overview of the total potential in the Czech Republic and 5-10 business plans/investments plans for projects for future investments;* *(h) The (increased) number of local people sufficiently capable to undertake project development activities;* *(i) Training workshops and seminars; and* *(j) Final report (published in Czech and English)*

i) Training of the relevant stakeholders to apply the new standards; and *j) Final report (published in Czech and English)*	
11. Project activities to achieve outcomes (incl. cost in US$ or local currency of each activity): *(a) Analysis of the concept of low-cost/low-energy building and preparation of the construction ($42,250);* *(b) Selection of site and investor/municipality, finalization of the technical design, and the actual construction ($180,750);* *(c) Analysis of the performance of the building and dissemination of the information and lessons learnt ($46,500);* *(d) Proposal for new/revised standards($23,500);* *(e) Facilitation of the adoption of new/revised standards ($28,000)* *(f) Development of a financial mechanism and plan ($14,240)* *(g) Development of a pipeline of 5-10 projects for future investments ($46,000)* *(h) Strengthening local project development capacities ($23,140)* *(i) Organization of training workshops and seminars to apply the new guidelines($32,000)* *(j) Monitoring and evaluation of adoption of new standards and energy savings of new buildings ($11,620);*	Indicators: *(a) Report of the analysis;* *(b) Status of the design and the actual construction;* *(c) Report of the performance of the building; published information material; number of workshops and seminars organized;* *(d) Proposal for new/revised standards;* *(e) Report on the existing and potential economic incentives for adopting the new standards; workshops, seminars and negotiations with the relevant stakeholders;* *(f) Financial plan;* *(g) Business plans/investments plans developed for 5-10 future projects;* *(h) Increased number of people who are sufficiently capable to develop similar type of project for future investments;* *(i) Number of workshops and seminars organized* *(j) Report on energy savings from newly-designed building.*
12. Estimated budget (in US$): PDF: - GEF: *448,000* Co-financing: *980,000 (local investments)* TOTAL: *1,428,000*	
INFORMATION ON INSTITUTION SUBMITTING PROJECT BRIEF	
13. Information on project proposer: *The Charles University Environmental Center, Petrska 3, 110 00 Prague 1, Czech Republic*	
14. Information on proposed executing agency (if different from above): *SEVEN/Energy Efficiency Center*	
15. Date of initial submission of project concept: *Project.*	
INFORMATION TO BE COMPLETED BY IMPLEMENTING AGENCY:	
16. Project identification number: *PIMS RBEC/349*	
17. Implementing Agency contact person: *David Vousden UNDP/RBEC (+1 212 906 6402) and Vesa Rutanen UNDP/Bratislava (+421 7434 7437)*	
18. Project linkage to Implementing Agency programme(s):	

1. Rationale and objectives

The proposed project is consistent with GEF operational programme 5, "Removal of Barriers to Energy Efficiency and Energy Conservation". The project aims to reduce CO_2 emissions related to energy needs in buildings by overcoming barriers that prevent the adoption of energy efficient building standards in the Czech Republic. The specific barriers in the Czech Republic to the adoption of those standards include:

1. Lack of experience with the technical, economic, social and environmental aspects associated with low-cost energy efficient buildings;
2. Lack of information to formulate new standards and proposals to promote the construction of low-cost energy efficient buildings based on economic, social and environmental benefits associated with them;
3. Lack of awareness of the decision makers, architects, builders and general public of the possibilities and benefits of increasing the energy efficiency in buildings with little or no extra costs;
4. Lack of expertise to incorporate measures and technologies to increase the energy efficiency in buildings in the planning and construction phases in a cost-effective manner;
5. Remaining residential energy-price subsidies; and
6. Lack of incentives and financial plans to support the higher up-front costs of common energy efficient buildings.

For a clear understanding of the objectives of the project, the agreed definitions of the concepts are the following:

- The energy needs considered are for residential buildings and focus on space and water heating;
- A low-energy building is defined as a building with significantly lower energy consumption (of about 40-50%), than that of comparable new buildings constructed, according to existing energy standards; and
- A low-cost building means a building with investment costs comparable to those of a standard building. Before project completion and adequate market penetration, a 5 to 10% investment difference will be considered acceptable

A low-cost low-energy building will be designed and constructed after which the achieved building performance will be evaluated. A proposal will be developed on what specific type, structure, and time-frame of subsidy would be necessary to develop sufficient market penetration, to bring the concept of low-energy buildings to a state of self-sufficiency, and to thereby make these buildings competitive on the market.

2. Current situation

In the early 1990s, after the collapse of its centrally planned economy, the Czech Republic faced a rapid decrease in new residential building construction, which fell from about 50,000 new apartments per year down to less than 5,000 apartments per year. During the economic transformation, banks developed new products for financing residential buildings construction, such as mortgage loans, and the state developed subsidy schemes to support private and municipal investment in new residential dwellings. Following the 1996 parliamentary elections, the new government listed housing as one of its top priorities and a renewed growth in this

industry is therefore expected. For example, the City of Prague is planning the construction of about 140,000 new individual apartment units in its region by the year 2010. The total potential market for the Czech Republic in terms of estimated number of residential dwelling units is about 300,000-400,000 by the year 2010, of which 100,000 are residential single family houses and the rest is about 30,000 multi-family apartment buildings.

The process of changing the centralised communist economy to a market-oriented one requires a fundamental shift in economic and energy policies. As a result the prices of all types of energy have been raised by 100-500% since 1989, although some energy prices for the domestic sector are not yet to market levels. The expectation is that this trend will continue to the point that all energy prices, including energy prices for domestic sector, have reached world market levels by 2002-2005.

This newly growing market provides a unique opportunity to reduce the energy consumption and environmental pollution of residential housing, if more advanced low-energy techniques are implemented. The existing and envisaged governmental and municipal support schemes, municipal co-financing of new residential housing developments, and other municipal tools could, if implemented, support cost-effective and rapid penetration of low-cost low-energy buildings on the local market.

There exist numerous examples of low-energy buildings in European and North American countries as well as expert groups with sufficient practical experience in this field. Their recent activities have primarily been focused on maintaining the low-energy design with little or no additional investment costs. The main barrier to promoting such a concept is insufficient market penetration of these advanced building designs. The combination of both these elements -- that is up-to-date technical and economical practical experience with low-energy buildings, and the possibility of a relatively fast and massive market penetration of low-cost low-energy residential buildings through municipal involvement -- represents a unique opportunity to implement low-energy design as a common business practice in a country with economy in transition.

3. Expected project outcomes

The project's aim is to overcome barriers that prevent the widespread adoption of new standards for low-cost/low-energy buildings. As an immediate outcome of the project, the following outputs are expected:

1. Technical design and actual development and construction of the first low-cost/low-energy building in the Czech Republic. The first low-cost/low energy residential building will be developed in cooperation with a municipality which will invest in the construction of the building. A suitable and interested municipality, the city of Susice, has been pre-selected and has expressed its interest to participate in the project. The pilot project will serve as a first practical domestic experience with implementation of a low-cost low-energy concept in a residential building;
2. Analysis and review of concrete results and performance of the low-energy building constructed (in the Czech and English language);
3. Increased awareness of decision makers, architects and construction companies regarding the possibilities to increase energy efficiency in buildings with little or no additional costs;
4. Revision of the existing building standards and/or creation of new ones to increase the energy efficiency in buildings;

5. Proposal for a government plan to promote the adoption of new energy efficient building standards;
6. A financial mechanism set-up, tested and included in a financial plan for future investments in low-cost low-energy residential buildings;
7. Strengthened and increased capacity to develop business plans for future investments in low-cost low-energy buildings;
8. The potential for future low-cost low-energy buildings in the Czech Republic has been quantified and a pipeline of this type of projects has been developed, ready for investments;
9. Relevant stakeholders trained to apply the new energy efficient building standards; and
10. Final report of the project (published in Czech and in English), including chapter(s) summarizing the seminars and the ways in which the expertise gained and lessons learned were disseminated.

As such, the project will focus not only on demonstrating technical possibilities in constructing low-energy houses, but also on methods and ways to develop low-energy houses with competitively low budgets in a country with an economy in transition. Nor does the project focus solely on developing a single showcase. The aim is rather to attain multiple effects through sufficient market penetration of low-energy buildings so that the economies of scale will allow a reduction in their costs. The goal is to make the life cycle and investment costs low enough so that the low-energy building will be able to compete with traditional buildings without any long-term subsidies.

For the initial phase, however, a proposal for a government plan will be developed to accelerate the market penetration and compensate the higher up-front costs of low-energy buildings. In that regard, the life cycle costs and performance of the first demonstration site will be analysed together with the life cycle costs and the government subsidies (including the residential energy price subsidies) for the standard new constructions.

4. Energy efficient technologies, estimated energy and cost savings[1]

The construction of a low-cost low-energy building is based on the following three key factors:

- its architectural design;
- utilisation of energy efficient technologies; and
- appliance and adherence to the technical requirements during construction.

An appropriate combination of all three of these factors will be crucial to comply with the need for low investment costs of the developed energy efficient building.

4.1 Energy efficient technologies

Energy conservation measures in three areas are considered, given the fact that these will have the largest influence on the reduction of the building's energy consumption; i) building envelope, ii) space heating system and iii) domestic water system.

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[1] Information provided in this section is taken from a USAID-funded study entitled 'Energy Efficient Building Technologies in the Czech Republic (1991-1993) – focussing on the city of Pilsen' by F. Polasek, SVUSS, Prague, Czech Republic and A. Popelka, TYSAK Engineering Co., MA, USA.

Building envelope
Activities in this area relate mainly to insulation of external walls, top floor ceiling, the attic and the floor above the basement. Given the fact that some 20-25% of the building shell consists of glass combined with the 3-4 times higher heat losses of glass compared to walls, the installation of triple pane windows will significantly reduce heat losses. It is expected that these measures will reduce heat losses by up to 40%.

Space heating system
Activities in this area relate to the installation of thermostatic radiator valves to discourage opening windows to control the indoor temperature, the installation of waste water heat recovery exchanger to preheat cold water (energy savings up to 25%) and the installation of ventilation heat recovery exchangers mainly from bath and kitchen ventilation ducts. It expected that these measures will result in energy savings up to 50%.

Domestic water system
Activities in this area relate to the reduction of domestic water, while providing the same level of water services and/or comfort. This will be done through the installation of low-flow shower heads, flow restrictors in taps and the insulation of hot water pipes in unconditioned spaces. Further the installation of flow meters in the individual apartments will facilitate the billing of actual hot water consumption. It is anticipated that this will reduce overall hot water consumption. It is expected that these measures will result in (hot) water savings up to 40% and energy savings up to 50%.

All the above measures, including technologies required, are available at the local Czech Republic market, thus no expensive import is required.

4.2 Estimated energy and cost savings

We expect that the energy consumption for space heating and domestic hot water in the low-cost low-energy building will be up to 70% lower than the average of the existing building stock and 40-50% lower than the energy consumption of the standard new construction.

It will also mean a substantial reduction in CO_2 emissions, since the energy production in the Czech republic relies mainly on fossil fuels. The CO_2 emissions related to new residential building development will be reduced by the year 2010 by about 25%, i.e. 650,000 tons of CO_2 per year, with an economic lifetime of a residential building of over 50 years[2].

We calculated that the investment costs of individual technologies will be in the range of 0 to 20% higher, but that this will be partially offset by downsizing the heating system. We expect the operating costs (including energy, water, maintenance and other) to be up to 60% lower than those of a standard new construction.

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2 A typical residential dwelling has an end-use consumption of about 60 GJ for warm water and space heating. The share of fuels used for warm water and space heating in residential dwellings is as follows: 57% solid fuels, 33% natural gas, 5% oil and 5% other non-fossil fuels, with average operating conversion efficiency from primary to final energy of 60% for solid fuels, 75% for oil and 80% for natural gas. We assume a 40-60% penetration rate of the low-cost low-energy buildings on the market with assumed total number of newly built residential dwelling units till the year 2010 of 300,000 to 400,000 units total. The low-cost low-energy buildings are characterized with energy consumption about 40-50% lower than a standard new building built at the same time.

The cost-effective savings potential for residential buildings connected to district heating systems (DHS) depend on the (rising) energy price, but for the case of retrofitting existing buildings these are in the range of 22% to 50% depending on the type of residential building considered[3]. (Cost-effectiveness is measured by NPV of installed energy saving measures compared with NPV of energy costs saved during the lifetime of the energy savings measures). It is expected that newly built low-cost, low-energy buildings will be even more cost-effective then retrofits of existing buildings. However the indicated savings potential does not mean that this potential will be used 'automatically'. The UNDP/GEF intervention under attention has been designed to make substantial use of this great potential by providing the local proof of concept.

5. Activities and financial inputs required

The work will be performed according to the following steps:

1. Analysis of the low-cost/low-energy residential building concept by a project team, identification of construction technique to be used, general design of a building, and its review by local experts and foreign consultants;
2. Identification of the investor/municipality, selection of a construction site, finalization of the technical design and actual construction of the building:
   (b) identification of the investor/municipality and most suitable site, identification of efficient equipment to be used and its availability on the domestic market and competitive selection of construction companies and other suppliers;
   (c) finalization of the technical design of a low-cost/low-energy residential building by the project team in cooperation with the construction company, municipalities, equipment suppliers, and foreign consultants and by organizing a public review of the design; and
   (d) actual construction of the building.
3. Analysis of the performance of the building and dissemination of the information, lessons learned, and experience gained during the project to other professionals, architects, construction trade alliances, developers, investors, financing institutions, non-participating municipalities, state government and the general public;
4. Based on the experiences gained, and in consultation with all the relevant stakeholders, develop a proposal for revised/new standards to increase the energy efficiency in buildings;
5. Facilitate the adoption of the revised/new standards by:
   (e) analyzing the potential types and structures of additional time-limited subsidy schemes to make the low-cost low-energy buildings competitive on the market through their sufficient market penetration and cost reductions due to economies of scale;
   (f) analyzing the existing governmental and municipal subsidy schemes and other tools;
   (g) developing a proposal on how the existing subsidy schemes should be revised to support the market penetration of low-cost low-energy buildings (by building on the experiences from the first demonstration site, and reviewing the experiences in other countries); and
   (h) organizing meetings and workshops, and conduct negotiations with relevant municipal and governmental agencies and other relevant stakeholders in order to adopt new standards and agree on the government plan to support the market penetration.
4. The development and testing of a financial mechanism. This will form the basis for a financial plan for future investments in low-cost low-energy residential buildings which will be developed subsequently;

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[3] These number originate from the earlier indicated USAID-funded study (see footnote 1) and originate from a theoretical assessment rather than from real-life situations. Local proof of concept doesn't exist yet.

5. The assessment of the future potential low-cost low-energy buildings in the Czech Republic. Furthermore the development of a pipeline of 5-10 projects ready for investments will be developed;
6. On-the-job training of Czech nationals to increase and/or strengthen the local capacity especially related to activities 1,2,3,6 and 7;
7. Organizing training workshops and seminars to apply the new standards; and
8. Monitoring and evaluation of the adoption of new standards and achievement of energy savings by the newly designed buildings and the preparation of a final project report in Czech and English to disseminate the acquired knowledge and experience.

6. Sustainability of the project

The combination of the demonstration building constructed, standards developed (including a proposal for a government plan for implementing them), awareness created, a financial mechanism set-up, a pipeline of similar projects ready for investing and the increased capacity to undertake similar type of activities as mentioned herein significantly contributes to the sustainability of the project. Besides the increasing energy prices provide an excellent basis for increased energy efficiency in residential buildings.

Furthermore total investment costs of future low-energy residential buildings will gradually come down as economies of scale are achieved. The initial GEF assistance is used primarily to gain and disseminate concrete, detailed and hands-on experience and know-how of developing low-cost low-energy buildings to a number of local developers, architects, design engineers, and construction companies.

In the Czech Republic government-funded schemes are also in place for commercial mortgages and bank loans for residential building development. Another form of support is the Czech Energy Agency which also co-funds construction of low-energy buildings. The aim of this project is to make the low-cost low-energy option widely available and thus to ensure that the government grants will be used in the most effective manner.

7. Risks

The main risk of the project is associated with the adoption of new standards and development and implementation of a government plan to support the adoption of it (including the time frame needed for that). The project tries to address this issue by involving all the relevant stakeholders (including government agencies, municipalities, architects, construction trade alliances, developers, investors, financing institutions and the general public) from the beginning of the project, and by efficient dissemination of the results with an objective to demonstrate the economic, social and environmental benefits of the low-cost low energy buildings. In this context it should also be noted that the standards are not expected to be fully adopted within the duration of the project, but rather the project will start a process which, hopefully, will lead to a country wide adoption of new standards.

Another risk is associated with the fact that there is only limited in-country experience with low-energy buildings and practically no experience with the concept of low-cost/low-energy building. Thus, it is very difficult to evaluate concrete project benefits in terms of volume of energy saved and emissions reductions, and actual investment costs, until practical domestic hands-on experience with low-energy and low-cost building exists. The project addresses these risks by

involving international consultants at the initial stages of project combined with continuous on-the-job training of the local counterparts.

Finally, there is a risk connected with the level of energy and environmental awareness of local investors and professional groups, and their limited practical experience with, and ability to adopt the low-cost low-energy concepts into their daily operations and decisions. The project is designed to overcome these barriers by training and wide dissemination of the results of the project through workshops and seminars to raise the awareness of the local investors and relevant professional groups as well as the general public.

8. Stakeholder involvement and social assessment

The total life-cycle costs of low-energy houses, and primarily their operating costs, will be lower in comparison to those of standard buildings, and will thus provide a solution to the housing needs of lower-income social groups. The ultimate goal of this project is to attain environmental benefits with no additional investment costs. After reaching a sufficient penetration rate in the residential sector and decreasing the investment costs sufficiently, low-cost low-energy buildings are expected to become attractive to private investors even without any special subsidy schemes. Besides the residential sector, the low-cost/low-energy concept could also be replicated in the commercial sector.

Low-cost/low-energy houses will replace heat losses with value-added professional and qualified local manual work. Instead of importing energy, the country will enjoy the benefits of newly created job opportunities. The decreased energy demand and reduced needs for energy imports will help diminish the existing trade deficit of the Czech economy and increase the macro-economic stability of the economy in transition. Also, the results and lessons learned from this project could easily be applied to other cities in the Czech Republic and other Central European countries.

9. Incremental costs

The objective being pursued by the Czech Republic in this project is the provision of adequate housing to the population at the lowest possible cost. To achieve this objective building standards have been updated in the early 1990's and are comparable to West European average standards, where it concerns safety, construction materials, health, lifetime and quality of the building. However, there still exists a huge potential (40-50% lower) to decrease energy consumption related for warm water and space heating. The new housing that is built would continue to be built with the 'old' building standards that pay limited attention to improving building techniques to account for greater energy efficiency. This results not only in a greater use of energy to provide space heating and the energy costs related to that, but also greater emission of CO_2 from the combustion of the fossil fuels required to supply the energy. To date, limited activities have been undertaken to improve upon the thermal performance of buildings and to develop building standards, which result in lower life-cycle costs by taking into consideration the energy requirements. These activities have not been taken because of the existence of certain barriers, which are identified in this brief. The project is designed to remove those barriers.

Under the project case, project activities are intended to analyze the potential energy and financial savings from improved building design, standards and techniques; test to see if the

anticipated savings actually materialize; propose a new set of standards; mobilize support for the adoption of those standards; develop ways in which the new front-end costs for these buildings can be financed; develop training materials and train staff in the new building design, construction techniques and standards; and monitor and evaluate progress. These activities have been carefully designed to overcome the identified barriers related to policy, economics, finances, human resources and capacity. Without the project, none of these barriers would be removed in the short term. Therefore, project activities are required to improve the thermal performance of buildings in the Czech Republic.

It should also be noted that there could be a reduction in sulphurous emissions as an indirect benefit of the energy savings. The Czech Republic emission standards regulate the 'concentration' in milligram/cubic meter (rather than the absolute amount in tons per year) of sulphur (and other environmental damaging substances) in exhaust smoke produced by the boiler. In case the sulphurous emissions exceed the emissions standards the boiler will be shut down. Thus the relative sulphurous emissions are independent from energy efficient operation, but by increasing end-use energy efficiency the absolute sulphurous emissions will decrease. It is explicitly mentioned here that the UNDP/GEF intervention will not be used to meet the Czech Republic emission standards, but that the decrease in sulphurous emissions is completely in addition to the regulated level of emissions before the UNDP/GEF intervention.

All of the incremental costs requested are related to the costs of removing the barriers identified. The incremental costs of each project activity are briefly summarized in the following table.

Incremental Cost Matrix

Activity Number	Baseline	Alternative	Increment(Alt- Base)
1: Concept Analysis: Global Environment Benefits (GEB)	Link between bldg design & global benefits unclear	Link between bldg design & CO_2 established	Understanding of design and CO_2 established
Domestic Benefits			
Costs	-0-	$42,250	$42,250
2: Site ID G.E.B.			
Domestic Benefits	No site for test	Site selected	Site selected
Costs	$980,000	$1,160,750	$180,750
3: Assess Bldng Performance: G.E.B	No evaluation of design & CO_2	Evaluation of design links to CO_2	Design & CO_2 linked
Domestic Benefits	No data on energy %	Data gathered	Design & % linked
Costs	-0-	$46,500	
4: Proposal Dev't: G.E.B.	No proposals energy eff. Building Standards	Proposal energy eff. building standards	Proposal for % Bldg Standards
Domestic Benefits	Weak bldg standards	% Bldg stand.	Proposal made
Costs	-0-	$23.500	$23,500
5: Facilitate standard adoption: G.E.B.	Standards not implemented	Standards implemented	Energy % Bldg Standards in place
Domestic Benefits			
Costs	-0-	$28,000	$28,000
6: Financial Mech. G.E.B.	No financing for new buildings	Financing for new buildings	More efficient buildings financed
Domestic Benefits	No new finance	More building finance	Greater financing
Costs	-0-	$14,240	$14,240
7: Assess Future Pot. G.E.B.	No idea of potential future for buildings	Estimate of future needs	Future needs & potential understood
Domestic Benefits	Unable to plan	Able to plan	Planning takes place
Costs	-0-	$46,000	$46,000
8: Training: G.E.B.	No info available on new standards	Training material on standards provided	Info on standards widely available
Domestic Benefits			
Costs	-0-	$23,140	$23,140
9: Workshops G.E.B.	No trained personnel	Training held	Trained personnel
Domestic Benefits			
Costs	-0-	$32,000	$32,000
10: M&E G.E.B	No info on progress	Info on progress	Info available
Domestic Benefits			
Costs	-0-	$11,620	$11,620

Total Project: Global environmental benefits	High emissions due to inefficient building designs that require too much energy for heating	Reduction in emissions from district or autonomous building heating due to more energy efficient building designs	Reduced CO_2 emissions
Domestic benefits	Residential buildings built for low capital cost	Reduced life cycle cost of buildings that are more efficient	Same or improved comfort level residential buildings
Costs	**US$980,000**	**US$1,428,000**	**US$448,000**

10. Incremental cost analysis

This project seeks to improve upon the energy efficiency in residential buildings by removing the informational, human capacity, demonstration, and incentive barriers. The project costs to GEF include the costs of identifying designs, selecting materials and contractors, analyzing the performance of the first results, formulating proposals to new standards and government plans to support the adoption of new standards, training, information dissemination, public awareness raising, and monitoring and evaluation. The costs of the demonstration building will be borne by the local developer (municipality).

11. Public involvement plan

Stakeholder identification
Aside from GEF and UNDP, the key stakeholders are the national government, local communities, technical experts, architects, construction professionals, developers and investors.

Information dissemination
The project structure allows for dissemination of lessons learned, information and experience gained during the project, by means of seminars, workshops, training and the publication (in Czech and English) of reports, articles and analyses.

Social and participation issues
National participation in the project will be by architects, designers, developers, investors (municipalities), construction engineers and other professionals.

12. Budget by input (US$)

The sum of $980,000 will be provided for the actual investment for construction of a low-cost low-energy residential building by a local developer. The City of Susice has already expressed its interest to participate in this project.

Component	GEF	Other sources	Project total
PDF:	-	-	-
Personnel:	154,500		154,500
Subcontracts:			
- International	83,500		83,500
- National	107,300		107,300
Training:	44,200		44,200
Equipment:		980,000	980,000
Travel:	23,500		23,500
Evaluation mission(s):	12,000		12,000
Miscellaneous:	10,000		10,000
Support costs (3 %):	13,000		13,000
Project total	**448,000**	**980,000**	**1,428,000**

13. Project implementation plan

DURATION OF PROJECT (IN MONTHS) 42 MONTHS								
ACTIVITIES	PROJECT-MONTHS							
	6	12	18	24	30	36	42	48
1. Analysis of the concept.	[ ]{8mns}							
2. Selection of construction site, investor/ municipality, and building contractor; finalization of the technical design; and undertaking the actual construction.	[ ]{24mns}							
3. Analysis of the performance of the building and dissemination of lessons learned.				[ ]{18mns}				
4. Proposal for new/revised standards	[ ]{30 mns}							
5. Facilitation of the adoption of new/revised standards	[ ]{36 mns}							
6. Financial mechanism and plan				[ ]{18 mns}				
7. Development of a pipeline of 5-10 projects for future investments				[{onward}				
8. Strengthening local project development capacities	[{onward}							
9. Organization of training workshops and seminars to apply the new standards						[ ]{6 mns}		
10. Monitoring/Evaluation of the adoption of new standards and energy savings of new buildings						[*onward*		

14. Monitoring and evaluation plan

The project implementation modality will be National Execution (NEX) through the UNDP Office in Bratislava. Furthermore, the implementation of the project will be monitored by UNDP-Bratislava in consultation with UNDP/RBEC and UNDP/GEF. The methodologies for monitoring and evaluating the achievement of energy savings by the newly designed building will draw upon the framework established in the International Performance Measurement and Verification Protocol (IPMVP).

15. Technical review

(Not obligatory: project under $750,000.)

Charles University

Environmental Center
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CZ-110 00 Praha 1
Bedřich Moldan, Director

FAX MESSAGE

for Ms Annie Roncerel, UNDP, New York
from: B.Moldan, Charles University, Prague

Dear Annie,

Prague, June 14, 1996

I am sending you the project proposal „Development and Preparation of Energy Efficiency Actions in the Czech Republic". We hope that the funding from PPF would be possible. Please let me know if the attached documents are O.K. We are prepared to correct anything according to your kind advise and send it by mail immediately after obtaining your comments. In the meantime I am sending this documents also by mail.

Looking forward to hear from you soon.

Best regards

tel: (42-2) 231 5334, 231 5309 *e-mail: bedrich.moldan@ruk.cuni.cz*
fax: (42-2) 231 5324

16. Project checklist

PROJECT ACTIVITY CATEGORIES			
Biodiversity	**Climate Change**	**International Waters**	**Ozone Depletion**
Prot. Area zoning/mgmt:	Efficient prod. & distribution:	Water body	Monitoring
Buffer zone devpt:	Efficient consumption: X	Integrated land & water:	Country programme:
Inventory/monitoring:	Solar:	Contaminant:	ODS phaseout:
Ecotourism:	Biomass:	Other:	Production:
Agro-biodiversity:	Wind:		Other:
Trust fund(s):	Hydro:		
Benefit-sharing:	Geothermal:		
Other:	Fuel cells:		
	Other:		
TECHNICAL CATEGORIES:			
Institution building:			
Investments:			
Policy advice:			
Targeted research:			
Technical/management advice: X			
Technology transfer: X			
Awareness/information/training: X			
Other:			

Ministry of Environment of the Czech Republic
Vladislav Bizek
Deputy Minister

Prague, 14 June 1996

The Ministry of Environment of the Czech Republic was acquainted with the Project proposal: „Development and Preparation of Energy Efficiency Actions in the Czech Republic", prepared by the Charles University Environmental Center in Prague.

The Czech Republic belongs to the countries with the highest energy intensity per unit of GDP as well as per capita. The consequence of this high energy intensity is economic inefficiency and diminished international competitiveness of the economy, strong dependence on imported or low quality domestic energy sources, and severe local and global environmental impacts. The Czech Republic contributes significantly to the man-induced increase of the greenhouse domestic contribution to the GHG emissions.

Recognizing the fact that the energy efficiency in the Czech Republic is still in an unsatisfactory shape, the Ministry of Environment support this project „Development and Preparation of Energy Efficiency Actions in the Czech Republic" for its realization.

1060

To Ms. Annie Roncerel
Adviser
Division for Europe and the
Commonwealth of Independent States
United Nations Development Program
304 East 45 th Street
New York, NY 10017

Project Proposal

to

Project Development Facility
Global Environmental Facility
United Nations Development Programme

Development and Preparation of Energy Efficiency Actions in the Czech Republic

June 1996

Submitted by:

The Charles University Environmental Center
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Tel: +42-2-231 5334, 5309, fax: +42-2-231 5324

starosta Města Sušice Karel Janda
Město Sušice
Nám. Svobody 138
342 20 SUŠICE I.

TEL. 0187 - 52 65 40
FAX 0187 - 52 64 24

SEVEn7
p.Jiří Zeman
FAX 02 - 2424 7597

Věc : Nízkoenergetický nízkonaročtový obytný dům (2 krát 10 b.j.)

V Sušici 12.2.1998

Vážený pane,

tímto Vám zasílám náš zájem účastnit se projektu, jehož produktem by měla být příprava a realizace výše zmíněného záměru, pracovně můžeme zřejmě hovořit o „ekologickém domu".

TEXT : Letter of Commitment

Expression of Tentative Interest in Participating in the „Low-Cost Low-Energy Building Project"

The City of Sušice is very interested in participating as the owner of and investor in the residential building proposed for the „Low-Cost Low-Energy Building Project" as part of the United Nations Development Programme and Global Environmental Facility - supported Medium Sized Project Program.

The City of Sušice is situated in southwestern Bohemia at the foot of the Šumava Mountains, which form the border with Germany, and near a Protected Rual Area and National Park. In Vojtěška district of the city the infrastructure has been put in place for construction of a new residential development and since 1995 over ten residential dwellings have been already built. In 1999-2000 the City is planning to construct 2 multi-family residential buildings having approximately 10 units (each) on this site and is prepared to secure the necessary funds for the construction from its own and external sources.

By participating in the project the City would like to invest in such a way that a low-energy residential building will come into existence at a cost comparable to that of conventional construction. A further benefit would be the spread of know-how and practical experience with the design and construction of low-cost

low-energy buildings among local experts and the possibility that similar buildings might be built in Sušice and in other cities in the region.

Yours sincerely,

.....

signature of the person responsible for the geographical area

TOWN MAYOR

(Title of the signatory)

13 FEBRUAR 1998

Date and Place TOWN SUŠICE

Stamp