FINAL EVALUATION

GEF/UNDP PROJECT LAT/00/G35/A/1G/99

Economic and Cost-effective use of Wood Waste for Municipal Heating Systems in Latvia

Evaluation conducted for
United Nations Development Programme by
Ms. Stephanie Hodge, UN Policy Advisor and
InfoSab Ltd.

May-June, 2005

EXECUTIVE SUMMARY

This report summarizes the final evaluation of the GEF - Medium scaled project 'Cost Effective Use of Wood Waste for Municipal Heating Systems in Latvia' Project # LAT/00/G35. A terminal evaluation exercise was conducted on behalf of the GEF, UNDP and "Vides Projekti", between May 12 and June 10, 2005 in accordance with the revised (March 2005) UNDP/GEF Project Monitoring and Evaluation Policy. The evaluation was conducted by a team of four independent evaluators whom had no prior experience working with the project.

The final evaluation report includes:

- An assessment of progress achieved since the project's mid-term evaluation, and consistency of project implementation and compliance with the primary project objectives;
- Further guidance to the Latvian Government regarding economically feasible sustainability initiatives that can be implemented by the renewable energy sector;
- A summary of lessons learned and best practices that may be applicable to similar projects or project approaches;
- Final recommendations and a follow-up course of action to the Latvian Government that facilitates the submission of additional project proposals in the field of renewable energy to international institutions.

The evaluation approach considered five closely related issues with emphasis on assessing the first three in-depth:

- Outcome and outputs
- Sustainability
- Quality of monitoring and evaluation systems
- Documenting the project's lessons learned
- Evaluating the project cost and accountability

The report is structured as follows. Chapter 1-2 provides the project background, development context and a summary of the document preparation. Chapter 3 and 4 features a summary of the evaluation findings according to the GEF Terminal Evaluation criteria[1]. Chapter 5-7 constitutes the final assessment of the projects results, lesson learned and also some key recommendations that emphasize actions related to the project sustainability.

The quality of the project's monitoring and evaluation (M/E) approach is assessed in Chapter 3 (Section 3.6). The evaluation determined that the M/E approach had been a critical factor in the project's success. The M/E framework had been continuously adapted based upon recommendations stemming from two external evaluations, three annual project implementation reports and nine project steering committee (PSC) meetings, all (M/E mechanisms) were found to be very effective. The prominent role of the Steering Committee is highlighted in this section. UNDP introduced an important soft assistance element early in the implementation phase involving the UNDP, Project Steering Committee, and MoE representatives in dialogues with Ludza municipality in order to address technical, institutional, and political issues. Soft assistance also included multidisciplinary discussions sponsored by UNDP and MoE, lobbying for sustainable energy use during seminars, etc. This strategy provided the basis for improving the Project strategy on a continual basis in response to external factors impacting on the projects implementation.

The development objectives, outcomes and outputs are summarized individually in Chapter 4.1- 4.1.2. In summary, the first development objective – '*Establishment and development of financially and environmentally sustainable energy companies throughout Latvia to reduce CO2 emissions'* was full met and has been rated by the evaluation as (HS) highly satisfactory according to the GEF rating scheme as since 2003 there was 100% reduction in CO2 emissions in Ludza municipality. The original project indicator was designed to measure the results of the project in Ludza and 4 - 6 other municipalities. However, because the Project was revised and other municipalities were incorporated, the team felt that it was difficult to accurately measure the outcome success. The evaluation determined that these changes have contributed to the original goal in terms of total per capita CO2 reduction but it was not possible to base the assessment on real data as the first set of measurements will only become available after the first heating season (2004 /2005). The Latvian Environmental Investment Fund (LEIF) is expected to collect this data at the end of 2005.

The second development objective -'*Support conditions necessary for strengthening the institutional framework to secure sustainability of biomass use in municipal heating systems'*, although, rated (S) satisfactory, the team felt requires additional inputs in order to be fully realized. The evaluation noted however, that key project activities such as the continuous public consultations, soft assistance for M/E, PR campaigns, media attention,

[1] Chapter 3 and 4, summarizes the evaluation findings by considering the following criteria (according to the GEF Project Review methodology

seminars, and study tours have indirectly and *positively* impacted on strengthening the institutional frameworks by facilitating enhanced environmental and energy awareness.

Chapter 4.2-4.5 outlines the projects outputs and result, this section also analyzes the project sustainability. In general, the evaluation found that the real measure of Project success (i.e. long term sustainability) depends not only on the successful implementation of Project activities, but also on the effective transformation of the Latvian economy in general, and the fostering of greater prosperity in the eastern regions of the country[2]. In this regard, the project demonstrates that energy, environmental protection, and energy efficiency issues must be linked. For example, significant gaps (barriers) still remain at the institutional level that could prevent the establishment of a market transformation to wood waste as an alternative fuel. For example, the team found energy efficiency issues (poor housing insulation) has negatively impacted on the project demonstration and that more work can be done in this regard.

The Project provides a basis for improved sectoral coordination and linkages among the targeted stakeholder groups. In order to ensure long-term Project sustainability and to complement/support project activities related to promoting changed individuals behavior and markets transformation (municipal capacity building, institutional framework development and public education in particular) further assistance will be required from stakeholders in order to address institutional and other gaps identified through this Project. The team felt that significant institutional and education related gaps still exist at many levels and weak information dissemination networks created by the project need's further reinforcement. For example, the results demonstrate that renewable energy, environmental protection and energy efficiency issues must be linked in perception and in decision making goals and strategies. These linkages must also be made more readily available and comprehensible to technical personnel, decision makers, and the general populace in order to establish institutional frameworks for the use of wood biomass heating systems and to promote the use of Renewable energy in Latvia in general.

Based on the review of Project outputs and the analysis of compiled data, a number of recommendations (emphasizing project sustainability) have been drafted including;

Recommendation 1: Facilitate the revision of the National Energy Programme/ Strategy by emphasizing that strategic documents (National Programme on Energy) include a plan for the comparative use of all forms of renewable energy (geothermal, wind, etc.) and non-renewable energy (natural gas, fossil fuels, etc.).

Recommendation 2: Further promote the tangible social outputs generated by the Project, including enhanced environmental awareness, improved environmental quality, and reduced CO2 emissions. Actively support the institutionalization of the newly established Climate and Renewable Energy Department (the Ministry of Environment by providing technical guidance and further resources. Assess the renewable energy sources available by region and conduct a technical analysis of the viability of wood waste and other renewable energy use in Latvia.

Recommendation 3: Facilitate inter-Ministerial co-operation that ultimately produces a new 'Strategy for District Heating' in collaboration with the Ministry of Economy and the Ministry of Environment. Involve all relevant Ministries that have a stake in energy planning.

Recommendation 4: Facilitate discussions concerning Single Programming document for the use of EU structural funds for the new programming period (years 2007 – 2013), which focus upon the improvement of infrastructure (pipelines, insulation, etc.) to facilitate energy efficiency, particularly in the small municipalities.

Lessons learned

The Project provided a number of valuable lessons, which may guide future GEF Project implementation in Latvia and abroad. The Project provided examples of good practice, which may be applicable to other GEF and UNDP offices. For example, the Project has provided valuable insights concerning project monitoring, replication, flexibility of implementation, and also the strategic timing of initiatives. The main value of the Project was its ability to facilitate co-operation among stakeholders from a wide variety of backgrounds and mandates to solve difficult energy-related problems. The Project stakeholders and staff displayed ingenuity in devising practical solutions to complex problems that were often external in nature. The solution frameworks may be applicable over a broader context.

[2] Also supported finding in the Mid-term review (2003)

This final evaluation of the UNDP-GEF project "*Economic and cost-effective use of wood waste for municipal heating system in Latvia"* (project number: LAT/00/G35) was conducted between May 12 and June 10, 2005 (Evaluation TORs – Appendix 1; Evaluation Workplan – Appendix 2; Mission plan – Appendix 3).

This exercise has been conducted for the United National Development Programme by a team of four independent evaluators (three national and one international). Mr. Ansis Grantiņš (Ansis.Grantins@infosab.lv) acted as the Latvian project manager. Mr. Andis Lazdiņš (anl@silava.lv) provided the technical evaluation. Ms. Mairita Zvirgzdiņa (Mairita.Zvirgzdina@infosab.lv) provided administrative support, notably by administering the two evaluation questionnaires and by providing technical guidance. Ms. Stephanie Hodge, (shodgecanada@verizon.net) acted as international team leader and provided technical guidance of socio-political aspects of the review and the GEF terminal evaluation methods. Ms. Lelde Grantiņa (lelde.grantina@apollo.lv) contributed technical input and compiled tabular summaries of the desk review and interview results.

****Ratings devised for this report:

HS: Highly Satisfactory
S: Satisfactory
MS: Marginally Satisfactory
MU: Marginally Unsatisfactory
U: Unsatisfactory
MU: Highly Unsatisfactory
N/A: Not Applicable

******From GEF Guidebook for Implementing Agencies for conducting Terminal Project Evaluations (March 2005) for definition of each rating.

Table of Contents

ABBREVIATIONS AND ACCRONYMS USED IN THIS REPORT

ACAD	Academic
APR	Annual Project Report
CBO	Community Based Organization
CCF	Country Co-operation Framework
E/E	Environment and Energy
EU	European Union
FSP	Full Scale Project, with GEF support over 1 million USD
GEF	Global Environment Facility
GHG	Greenhouse Gas
GOV	Governmental
IA	Implementing Agency
IPPs	Independent Power Producers
LALRG	Latvian Association of Local and Regional Governments
LEIF	Latvian Environmental Investment Fund
LEDF	Latvian Environmental Development Fund
LIDA	Latvian Investment and Development Agency
LOC	Local
Ltd.	Limited Liability Company
LWEA	Latvian Wood Exporting Association
MEA	Multi-lateral Environmental Agreement
M&E	Monitoring and Evaluation
MOE	Ministry of Environment
MOEPRD	Ministry of Environment Protection and Regional Development
MSP	Medium Scale Project, funding from GEF up to 750,000 USD
NCSA	National Capacity Self-Assessment
NGO	Non-Governmental Organization
NVBR	North Vidzemes Biosphere Reserve
PIR	Project Implementation Report
PJ	Pico joule
POP	Persistent Organic Pollutant
PR	Public Relations
PSC	Project Steering Committee
PVT-SEC	Private Sector
RES	Renewable Energy Strategy
RBM	Results Based Management
SD	Sustainable Development
SCM	Steering Committee Meeting
SHD	Sustainable Human Development
SME	Small and Medium-Sized Enterprise (less than 250 employees)
SRF	Strategic Results Framework
TE	Technical Evaluation
TOR	Terms of Reference
TRAC	UNDP Core Funds
TTF	UNDP Trust Fund
UNDP	United Nations Development Programme
UNDP CO	United Nations Development Programme Country outcome
UNDP PIU	UNDP Project Implementation Unit
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value Added Tax

1. INTRODUCTION

This report summarizes the final evaluation of the GEF - Medium scaled project *Cost Effective Use of Wood Waste for Municipal Heating Systems in Latvia'* Project # LAT/00/G35. The UNDP Latvia office initiated the evaluation of UNDP/GEF project, which was conducted in accordance with the UNDP/GEF Project Monitoring and Evaluation Policy (revised version March 2005).

The Monitoring and Evaluation (M&E) Policy at the project level in UNDP/GEF has four objectives: a) to monitor and evaluate results and impacts; b) to provide a basis for decision making on necessary amendments and improvements; c) to promote resource use accountability; and d) to document, provide feedback, and disseminate lessons learned. A variety of tools are applied to ensure effective project monitoring and evaluation. Some tools are applied continuously throughout the project (e.g. periodic monitoring of indicators) while others consist of discrete scheduled exercises (e.g. mid-term reviews, audit reports and final evaluations).

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

A final evaluation is intended to assess project relevance, performance and effectiveness by examining early signs of potential impact and sustainability of results. These include the contribution to capacity development and to global environmental goals. The final evaluation may also identify/document lessons learned and devise recommendations that may improve the design and implementation of other UNPD/GEF projects.

1.1. Evaluation aims, approach and scope

The final evaluation was designed to assess the overall project results and impacts as required by the UNDP/GEF M&E Policy.

The primary goals of the final evaluation included:

1. Assessment of progress achieved since the project's mid-term evaluation and consistency of project implementation and compliance with the primary project objectives;
2. Guidance to the Latvian Government regarding economically feasible sustainability initiatives that can be implemented by the renewable energy sector;
3. Identifying lessons learned and best practices that may be applicable to similar projects or project approaches; and
4. Recommendation of a follow-up course of action to the Latvian Government that facilitates the submission of additional project proposals in the field of renewable energy to international institutions.

Evaluation Scope

Following the GEF guidelines for final reporting and guidance from the GEF M&E staff at UNDP in New York, the project team designed an evaluation strategy that considered five closely related issues (see also Appendix 1). The evaluation strategy involved conducting in-depth research and analysis of these issues, with emphasis placed on the first three criteria.

Outcome and Outputs: analysis of the attainment of project objectives, outcomes and impacts, delivery and completion of project outputs (based on indicators) and the contribution to global environment objectives.

Sustainability: assessment of the sustainable benefits derived from project inputs, including project activities that extend beyond the project timeframe.

Quality of Monitoring and Evaluation systems: assessment of issues related to the quality of backstopping and quality assurance, including control of project deliverables described in the project document.

Documenting the project's lessons learned: documentation of best and worst practices regarding issues related to project relevance, performance and success.

Evaluating the project cost and accountability: assessment of project cost-effectiveness with regards to the achievement of the environmental and developmental objectives as well as project outputs in relation to the inputs, costs, and implementation time. The evaluation team examined 1) project compliance with the application of the incremental cost concept, and 2) completion of the standard tables depicting the actual project cost by activity, financial management (including disbursement issues), and co-financing. The results of a financial audit (if conducted) should be described in the TE.

The evaluation considered the following criteria according to the GEF Project Review methodology:

- Implementation approach;
- Country ownership/drive ness;
- Stakeholder participation/Public involvement;
- Sustainability;
- Replication approach;
- Financial planning;
- Cost-effectiveness;
- Monitoring and evaluation.

Key Stakeholders in the Evaluation Process

The main stakeholders in the evaluation process included the UNDP Latvia office, the GEF, the Latvian Ministry of Environment, the project sponsor institution State Ltd (Vides projekti), fifteen Latvian municipalities, the multi-agency project steering group, NGOs and academia.

1.2. Evaluation methods

The evaluation team incorporated an innovative approach with regard to scheduling and management of work. For example, a two-tiered management structure was incorporated where responsibilities were delegated between a national and an international consultant (see Appendix 2). The mission structure included securing adequate time for a comprehensive desk study, development and dissemination of two questionnaires, a technical evaluation, and data compilation in advance of a week-long consultation process during June 2005 (see Appendix 3). The consultations included a field visit to a project site[3] in the Balvi region (See Appendix 4), interviews with key stakeholders, and results analysis. The scheduling of the evaluation programme streamlined the project and facilitated consensus building.

The evaluation methods[4] included;

- An intensive review of the project documentation (See Appendix 24).
- Interviews with Latvian UNDP personnel, central and local authorities within the project area, the project steering committee, UN staff and associations, the private sector, local communities, other projects supported by donors and related financial backers, individual project beneficiaries, State Ltd "Vides projekti", project staff, former project managers and others. (See Appendix 9).
- A site visit to the Balvi municipality on Tuesday, June 7, 2005 and a meeting with representatives from other interested municipalities in Riga on Wednesday, June 8, 2005 (See Appendix 5).
- Two questionnaires (the first oriented towards management and operations issues, the second oriented towards sustainability and implementation issues) (See Appendix 7 and 8)
- Use of participatory approaches for data collection and the facilitation of discussion concerning barriers to implementation, brainstorming, semi-structured interviews, etc.

[3] During the mission in June 2005, the team conducted a field visit to the municipality of Balvi in the Latgale region and chaired a regional stakeholders meeting. A second stakeholder group meeting was held in Riga in order for the team to meet with other interested municipalities. Details of both stakeholder meetings are described in Appendix 4 and Appendix 5.
[4] GEF M/E guidelines -March 2005

2. THE PROJECT AND ITS DEVELOPMENT CONTEXT

2.1. Project overview

The project initiated activities in Ludza municipality, the main project site, in March 2001. According to the original project document the scheduled completion date was December 31, 2003. During project revision "B", the completion date was altered and the revised completion date of the fieldwork component was May 1, 2004. The proposed completion date of the financial component was also rescheduled for May 1, 2005. However, during project revision "C", the project completion date was again revised and the scheduled completion date of the fieldwork component was set for December 31, 2004. The proposed financial completion date was also rescheduled for December 31, 2005. The final revised completion date for the project is June 30, 2005.

2.2. Problems that the project seeks to address

In the Country Cooperation Framework cycle 2001-2004, UNDP support consisted of assisting Latvia to gain access to GEF funds with the aim of achieving the following results: (a) sustained biological diversity through improved management of biotope sites, and (b) decreased greenhouse gas (GHG) emissions through the promotion of renewable energy sources. These initiatives were designed to support the Latvian government in fulfilling its commitments under relevant UN Conventions and were primarily directed to the development and improvement of capacity.

At the onset of 2001, the Latvian energy sector offered great potential for improvements within its structure, increased energy efficiency measures, and the growth of renewable energy sources. A number of economically feasible options for mitigating GHG emissions in the energy sector had been identified, such as:

- energy efficiency measures: reduction of energy transmission and distribution losses, heat energy conservation in buildings, and implementation of a system for analysis and control of energy consumption,
- renewable energy measures: increased use of biomass in district heating systems, co-generation and increased use of wind and geothermal energy.

The increased use of biomass in district heating (and co-generation) in Latvia seemed promising in terms of cost-effectiveness and the reduction of GHG emissions, particularly for municipalities with a low probability of being connected to the main gas grid. The problems associated with the main gas grid and the anticipated future cost of gas, made biomass utilization appear to be a viable energy alternative.

The project had intended to focus on the economic and cost-effective use of wood waste for municipal heating systems throughout Latvia by the promotion and replication of the pilot project in Ludza municipality. It was proposed that the end-user pays principle would be applied through the introduction of heat meters, billing and administrative procedures while a new physical infrastructure would be devised for the district heating supply, transmission and distribution companies. The intention was to co-invest in one biomass-based municipal heating system (pilot project in Ludza) and to facilitate future investments in 4 to 6 additional biomass-based municipal heating systems.

Two levels of activity were envisioned for the development and dissemination of a new technology, process, and/or approach. First, activities would be implemented at the project level (a pilot project). Second, conditions required for the replication of the pilot project, including addressing institutional barriers at the Ministry level, would be identified.

The main project objectives were:

- Promotion of the use of wood waste by removing/reducing barriers that currently hamper the substitution of imported heavy fuel oil (mazut) with local sustainably-produced wood waste for municipal heating systems[5];
- Promotion of the development and implementation of commercially viable municipal heating system that includes generation, transmission and distribution in the municipality of Ludza; and
- Assist in removing/reducing technical, legislative, institutional/organizational, economic, information and financial barriers related to the replication of a pilot project in 4 - 6 additional municipalities in Latvia.

[5] Barriers include those of a policy and regulatory nature (no policy context/regulatory framework existing to facilitate the introduction and dissemination of commercially viable municipal heating systems), management nature (lack of skills and experience with municipality-based management of energy technology systems), informative nature (limited knowledge on how to set up and operate municipal heating systems in a business-like manner, limited information on lessons learned elsewhere) and others.

The project corresponded to all elements included in Latvian energy policy and is expected to assist the Government of Latvia to meet the goal of achieving an 8% reduction in greenhouse gas emissions from 1990 levels by the year 2010.

2.3. Development objectives of the project

Development and Immediate Objective (s)

The development objectives of this project are to decrease Latvia's emissions of greenhouse gases and to support the development of the capacity in the local municipality of Ludza (later - local municipalities) to provide commercially efficient and environmentally friendly heating to residents.

This project was designed with two immediate objectives:

1. Establishment and enhancement of financially and environmentally sustainable energy companies throughout Latvia

- Indicator 1: CO_2 emissions are reduced by direct reductions in the use of heavy fuel oil (mazut) by 80% (from 3600 t/y) at the end of the project in Ludza municipality – baseline- in year 0- 14000 CO_2 emissions.
- Indicator 2: Further CO_2 emissions reduced after replication in 4 - 6 other municipalities, reaching an estimated reduction of 750,000 tons over a 10-year period.

2. Support to conditions necessary for strengthening the institutional framework required to secure sustainable biomass use for municipal heating systems.

The project activities that were assessed during the GEF Final Evaluation include:

1.Objective	**Financially and environmentally sustainable energy companies throughout Latvia**
1.1	Analysis of project parameters completed in Ludza municipality.
1.2	Heat meter system and local heating points improved (energy efficiency mechanisms in apartment buildings).
1.3	Billing system designed to recapture full cost of investments introduced.
1.4	Ludza Energy Department established and Energy departments in other municipalities supported.
1.6	Creation of support mechanisms for low – income population.
1.7	Public awareness and promotion campaign conducted.
2. Objective	**Institutional framework to secure sustainable biomass use in municipal heating systems**
2.1	Conditions for implementation of National strategy for district heating systems created involving biomass combustion and other renewable sources.
2.2	Capacity of biomass projects enhanced.
2.3	Establishment of institutional/financial set-up for project implementation.
2.4	Impact of UNDP/GEF intervention monitored.

A complete description of project activities (source: project revision 'B') is detailed in Appendix 6.

2.4. Main partners and stakeholders

State institutions

Environmental Sector Institutions

- Ministry of Environment;
- Ministry of Regional Development and Local Government;
- Latvian Environmental Investment Fund;
- Latvian Academy of Sciences, Physical Energetics Institute;
- Ministry of Agriculture;
- Latvian University of Agriculture, Wood Techniques Institute.

Other State institutions

- Latvian Investment and Development Agency;
- Ministry of Economy;
- Ministry of Finance.

Municipalities

- Ludza City Council;
- Jumpravas Municipality;
- Tukuma City Council;
- Vabole Council;
- Preili District Council;
- Lielplatones Municipality;
- Lielauces Municipality;
- Katvaru Municipality;
- Raunas Municipality;
- Aglonas Municipality;
- Pelēču Municipality;
- Dagdas Municipality;
- Viļakas Municipality;
- Šķaunes Municipality;
- Balvi Municipality.

NGOs.

- Latvian Association of Local and Regional Governments;
- Latvian Wood Export Association;
- Latvian Association of Wood Producers;
- Latvian Municipalities Training Centre;
- Latvian Association of Heat Producing Companies;
- Latvian Association of Energy Consumers

Others

- United Nations Development Programme Latvia
- World Bank
- Ludza Municipality Heat Supplier Ltd., *Ludza Bio-Enerģija*;
- "Essent Baltic"
- "Tehniskie partneri" Ltd.
- "Strasa Konsultanti"
- "Tukuma Siltums"
- "Preiļu saimnieks"

2.5. Beneficiaries

As a result of project strategy adaptations in 2003, the number of beneficiaries expanded during project implementation. The original beneficiaries included the Municipality of Ludza and its inhabitants, the Ministry of Environmental Protection and Regional Development (currently MoE), the equity stakeholders of *Ludza Bio-Enerģija* and similar companies that were to be supported in four other municipalities, and the local and global environment. This group was expanded in 2003 to include 8 additional municipalities (See map of Latvia in Appendix 23), rural schools, hospitals and municipal public buildings, and a broader populace.

2.6. Outputs/products/results expected

The outputs and activities described in the original project document and subsequent revisions are summarized in Table 1 (also see results summary in Appendixes 11 and 12).

The immediate objectives have not changed since the project was signed but two new results/activities were introduced during revision 'B': 1) creation of support mechanisms for low - income population (Output 1.5), and 2) conditions for the implementation of a National Strategy for district heating systems involving biomass combustion and other renewable sources (Output 2.1).

The following three project activities were still pending completion as of end of June 2005:

- Pilot project on billing system implementation in Balvi;
- Television series concerning alternative energy with a companion DVD (a compilation of the series), and a publication on renewable energy and energy efficiency mechanisms;
- Long-term training program on the administration of Municipal Heating systems;

All other activities have been completed.

Table 1. Elements of the logical framework used for the realization of the results

Specific Initial Project Objectives	**Specific Revised objectives/ changes since project was signed**	**Awaited activities/results (planned achievements)**	**Activities/results observed (Status)**
Immediate Objective 1: Establishment and enhancement of financially and environmentally sustainable energy companies throughout Latvia	Same	**Output 1.1** Analysis on the current situation completed in the Ludza municipality.	**Completed** ✓ *Ludza Bio-Energija* Ltd in operation since 2000 (indirect support from the project). ✓ Ludza Energy Department in operation since 2002. ✓ Cooperation ongoing in capacity development field.
		Output 1.2 Heat meter system and local heating points improved (energy efficiency in apartment buildings).	**Completed** ✓ Investments in 4 municipalities (Tukums, Balvi, Vabole, Jumprava).
		Output 1.3 Billing system to recapture full cost of investments introduced.	**Completed** ✓ Strategy/recommendations document for billing system improvement in 3-4 municipalities (Balvi, Tukums, Vabole). **In Process** ✓ Pilot project on billing system implementation in Balvi (to be completed by June 30, 2005).
		Output 1.4 Ludza Energy Department established and Energy departments in other municipalities supported.	**Completed** ✓ Technical support/computer delivery (5 municipalities). ✓ Training of local staff and administrative assistance from the project team.
		Output 1.5 Creation of support mechanisms for low - income population.	**Completed:** ✓ Handbook on support mechanisms issued. ✓ Pilot project 'Energy Brigades" realized in Dagda and Vabole municipalities. ✓ Technical assistance provided to the local NGO.
		Output 1.6 Public awareness and promotion campaign conducted.	**Completed:** ✓ 4 publications issued (3 audiences). ✓ 5 seminars in municipalities. ✓ Leaflets in local newspapers throughout Latvia. ✓ National competition held for high-school students. **In Process** ✓ Television series about alternative energy will be completed by June 30, 2005. ✓ Additional activities: companion DVD and publication on renewable energy/energy efficiency to be issued.
Immediate Objective 2: Support conditions necessary to strengthen the institutional framework to secure sustainability of biomass use in municipal heating systems.	Same	**Output 2.1** Conditions for the implementation of a National Strategy for district heating systems involving biomass combustion and other renewable sources.	**Completed** ✓ Stakeholder workshops. ✓ Report on the conditions required within the National Strategy.
		Output 2.2 Capacity of biomass projects enhanced.	**Completed:** ✓ PR activities. **In process** ✓ Long-term training program on the administration of Municipal Heating systems.
		Output 2. 3 Establishment of institutional/financial support for project implementation.	**Completed:** ✓ Investments in 8 new municipal projects (In co-operation with Latvian Environmental Investment Fund): new municipal projects financial scheme developed. ✓ Research on Wood Market in Latvia. ✓ Database for wood suppliers/demanders.
		Output 2.4 Impact of UNDP/GEF intervention monitored.	**Completed.** ✓ Improved project strategy after Midterm evaluation in March of 2003. ✓ Final evaluation in June 2005.

3. PROJECT EVALUATION[6]

3.1. Project formulation and approach

3.1.1 Conceptualization/design

Evaluation: (HS) Highly Satisfactory

The original project concept, its design and institutional arrangements, were relevant when proposed in 1999. Since the project was initiated, substantial economic changes have occurred. For example, in response to the rapid rise in fuel oil prices, alternative energy sources including natural gas and biomass fuel have been substituted. In addition, the project depended on the successful cooperation between stakeholders, the municipality of Ludza and the Dutch company ESSENT Baltic, which incorporated a heating supply subsidiary called *Ludza Bio-Enerģija* in 2000. The project initially did not constitute a high corporate priority during company startup operations. When the project began, progress in Ludza stalled, in part due to municipal elections in March 2001 during which a new Mayor was elected into office.

The heat purchase agreement was subsequently disputed and technical problems led to inadequate provision of heat to some 'apartment blockhouses'[7]. This triggered animosity between the municipality and *Ludza Bio-Enerģija*, which culminated in each suing the other in mid 2002.

The UNDP staff and the project management staff therefore encountered considerable difficulties in trying to implement project activities during the first year. After considerable mediation efforts by the project team, the Steering Committee, chaired by the Director of the Department of Environmental Protection of the MoE, decided to review the project document and update the outputs and activities to better reflect the new circumstances. This revision was completed and approved by the Project Steering Committee in November 2002 and the revised project document was signed by UNDP and the Government in March 2003.

Early changes in project strategy/objectives updated

The project goals included activities designed to remove institutional barriers within Ludza. The legal problems associated with the Ludza municipal administration and *Ludza Bio-Enerģija* in 2001and 2002 demonstrated the institutional challenges to be overcome. Also, public relations activities by the municipal government designed to discredit *Ludza Bio-Enerģija* in the local media led to reduced income collection and increased debts. While the remainder the project activities continued, the UNDP/GEF project could not upgrade the district heating system in Ludza if sustainability was not assured by the municipality. The project strategy was therefore reconsidered and subsequently revised to mitigate uncertainty and risk. The Ludza pilot project was then adapted to initiate parallel implementation in five additional municipalities. In early 2003, plans for further investment in Ludza were abandoned and a financing scheme with new partners was developed.

As a result, the original project objectives were expanded to include two new components that supported sustainability within the original strategy including the development of support mechanisms for low - income population and conditions for the implementation of a National Strategy for district heating systems were created which involved the evaluation of biomass combustion and other renewable energy sources (Table 1).

Nonetheless, between the project design and implementation phases, Latvia hosted rapid development in biomass-fired heating systems. Due to the delays in the pilot project and the subsequent lack of data and results from the Ludza, the project incorporated these developments through implementation of a baseline survey of municipalities, designed to assess the prevalence of biomass heating projects in Latvia and identify alternative sites for project replication.

[6] This section will use (per new GEF TE guidelines) a six value rating system *(Highly Satisfactory-HS, Satisfactory-S, Moderately Satisfactory MS, Moderately Unsatisfactory-MU, Unsatisfactory U, Highly Unsatisfactory HU).*

[7] The apartment blockhouses were not initial project targets but are unalienable components of the heating service. Rural 'apartment block housing' can pose problems in terms of the provision of public utilities. These buildings are usually energy-inefficient (not insulated properly) and are often not part of the energy grid. This poses a serious problem. In rural agrarian areas, people traditionally lived on small farms and heated their houses with wood. The apartment blockhouses were built as cheap public housing during the Soviet Era and perpetuated a social problem by providing cheap heating through high GHG and particulate emitting coal fired boilers.

3.1.2 Country-ownership/drive ness

Evaluation: (S) Satisfactory

Origin in National Policies

The project goals complement the goals and national frameworks established by the Latvian Government. The project concept, for example, originated from the Latvian National Energy Programme, approved in 1997 by the Cabinet of Ministers. The strategy determines that:

- Energy legislation and regulations are to be coordinated with the requirements of the European Union, taking into account the interests of both parties;
- Energy tariffs are economically justified and based on actual production and supply costs;
- Restructuring and privatization of energy utilities is desirable, provided they result in an increase in efficiency and competition and a consequent reduction in production and supply costs;
- Foreign investments in the energy sector are desirable, provided they do not cause socially unacceptable increases in tariffs in the domestic market (the policy sees international investment as a potential means of saving and/or complementing domestic financial resources); and
- Environmental pollution will be reduced gradually, taking into account the potential economic strain on energy utilities.

Electricity Sector

One of the Latvian National Energy Programme policy statements relates to the promotion of electricity generation by co-generation and increased use of locally-available renewable energy resources. Total installed capacity totals nearly 2,100 MW, generated by large hydropower projects (1,506 MW), thermal power (520 MW), wind power (1.2 MW), IPPs (63 MW) and micro hydropower projects (1 MW). Electricity tariffs for co-generated electricity depend on the energy source used and when renewable energy sources are used, can be up to 2 times the tariffs on electricity generated by fossil fuels.

Heat Energy Sector

The main Latvian National Energy Programme policy statements relevant to this project are:

- Long-term planning and control of heat supply placed within the scope of competence of municipalities;
- Consistent commercialization of heat supply as an alternative for direct entrepreneurial activities in heat production by municipalities;
- Technical modernization of all stages of heat supply systems; i.e. generation, transmission, distribution and end-use;
- Provision of the rights to select a supplier unless it affects the public interest or harms the environment;
- Implementation of social assistance programmes for the lowest income groups (e.g. pensioners); and
- Consistent increase of efficiency in generation, transmission, distribution and end-use of heat.

Project Outcomes incorporated into National Development and Sectoral plans

Several project activities were originally designed to incorporate the ideas and lessons learned from the project into national sectoral and development plans. For example, the indicator corresponding to Objective 2.1- *Conditions for implementation of a National Strategy for district heating systems involving biomass combustion and other renewable sources*[8] consisted of conducting a national survey of the conditions in which renewable energy and wood waste as alternative fuel sources were viable, and the elaboration of a National Strategy and action plan for consideration by the relevant government departments. Although these activities were physically completed (except for the strategy action plan), they have had a limited influence on policy, regulatory frameworks and planning because of unforeseen events. LIDA, the agency charged with the responsibility to implement these activities has been restructured. Outputs were subsequently not sufficiently promoted and did not have an impact on the outcome goal. Currently, the main output the national strategy has become obsolete.

Alternatively, the Ministry staff when interviewed generally indicated that their work had been positively impacted upon due to the 'successful demonstration' in the municipalities and from their participation in the Project Steering Committee (PSC) meetings. The project has also achieved national recognition through the continuous media coverage throughout its implementation, due to the problems in Ludza and to the active public awareness campaign. Government representatives were the direct recipients of many of capacity building workshops and study tours sponsored by the project (Appendix 12).

[8]Objective 2: Support for conditions necessary to strengthen the institutional framework to secure sustainability of biomass use in municipal heating systems.

Government and others have maintained financial commitments towards activities

The Latvian government and other National institutions have maintained a financial commitment to the project. For example, the Latvian Government, in cooperation with Latvian Environment Investment Fund (LEIF) committed US $800 000 for co-financing activities of eight additional interested municipalities in 2004. The number of municipalities participating was also increased to fifteen. The number of heat producing companies that participated in the project (by receiving technical assistance, applying for financing, attending dissemination events, adopting environmental standards promoted by the project, etc.) was much greater than had been anticipated when the project was conceived (4-6). The co-funding of project activities had been planned at 2,734 millions but the actual amount co-funded was 3,699 millions.

Policies /Frameworks

Stakeholder feedback has indicated that some policies and frameworks have been or will be modified to coincide with the project objectives, including:

- Climate change reduction programme 2005-2010, affirmed in April 6, 2005, prepared by MoE;
- The Ministry of Economy has indicated an interest in using the lessons learned from this project to advise the State Investment Program of guidelines to be developed concerning the heat supply sector;
- The lessons learned from this project will be used in the development of new power co-generation rules prepared by the Cabinet of Ministers.

Stakeholders and Public Participation

Evaluation: (S) Satisfactory

The key stakeholders include 15 municipalities, state institutions, private sector companies, NGOs and civil society. Most of the stakeholders have either actively participated in the conceptualizing, monitoring and implementation and/or view the project positively due to the learning that has occurred. The Project Steering Committee (PSC) was established by the State Secretary of the Ministry of Environmental Protection and Development in April 2001, with the mandate to perform the project consultative and supervisory functions, to make decisions regarding project implementation, and to promote information exchange regarding project implementation. The PSC had a unique management and monitoring role in that it had successfully facilitated the active engagement of a broad range of stakeholders including representation from most of the key stakeholder groups including Municipalities, Academia, Ministry of Economy, Agriculture, and Environment, NGOs , the Private Sector, etc (Appendix 21). The PSC was mandated with the power to make critical decisions, albeit in a participatory manner, thus fostering stewardship of the project results. Since project initiation, there have been nine PSC meetings, eight of which were chaired by the Director of the Environment Department of the MoE. These meetings were instrumental in the proactive adaptation of this project to meet evolving external circumstances.

Information Dissemination

Evaluation: (HS) Highly Satisfactory

The production and dissemination of PR materials and information generated by the project, which were designed to enhance stakeholder interest and understanding of the project goals, have been highly satisfactory. However, the team determined that these activities might have been even more effective if they were scheduled at the beginning of the project's implementation. An earlier start would have reinforced the change necessary in attitudes regarding the payment of heat services and other issues related to the initiation of the new system. It may also have mitigated the conflict between the Ludza administration and *Ludza Bio-Enerģija*. The UNDP Environment and Energy outcome review also support is view that '*the public awareness activities have served to raise public awareness around issues of environment, sustainable energy, and sustainable development. The municipal heating project stood out with a focus on the poorer area of Latvia and activities within this project were tackling the issues of poverty'.*

The public awareness campaign produced a number of user-friendly (confirmed by questionnaire and interviews) brochures and handbooks to promote project concepts including:

- 15 000 brochures (in Latvian and Russian) for affected residents,
- 4000 handbooks (in Latvian and Russian) for technical staff;
- 1500 handbooks for municipalities;
- 2000 handbooks for municipalities on energy programs for low-income residents.

The questionnaires (See Appendix 19) also indicated that on average, only one-third of the municipalities involved in the project had received and used the handbooks and brochures except for a handbook for technical staff, which received positive reviews. Approximately 50 % of municipalities evaluated this handbook as a useful information source in their daily work.

A project public awareness and promotion campaign was initiated during autumn 2004. Seminars were organized in Balvi, Dagda, Preiļi, Tukums and Cēsis. Altogether, 260 people participated, including representatives of the 15 municipalities, local and state institutions, energy producing companies, wood supplying companies, media etc. Feedback derived from these seminars indicated that participants evaluated project activities as good interventions and reported that they had obtained new information regarding possible utilization of wood waste in municipal heating systems. The topics and presentations included in the seminars were also reported to have answered many questions concerning the logistics of converting to wood waste from traditional fossil fuel-derived sources.

The public awareness and promotion campaign included articles published in the national newspaper *Diena* and eleven regional newspapers. The prepared publications, because they were simple and straightforward, were useful tools that enabled the average Latvian to acquire basic information about the project activities conducted in various municipalities.

The campaign also included a national competition aimed at high-school students, attracting 62 participants. The students prepared 24 investigations of topics related to renewable energy sources. The competition was an excellent initiative, based upon the responsiveness of participants and upon the quality of information delivered to the students.

The questionnaires (Appendix 19) indicated that 54% of respondents from affected municipalities evaluated the public awareness campaign as good, 31% evaluated it as satisfactory, but 15% of respondents evaluated it as unsatisfactory. The questionnaires also indicated that for project management issues (Appendix 20), 80% of respondents evaluated the public awareness campaign as good while 20% evaluated it as satisfactory.

The television series about alternative energy will be completed by June 30, 2005. Additional activities, including the production of the companion DVD (a compilation of the television series) and publications on renewable energy and energy efficiency measures will also be issued.

Consultation and stakeholder participation

Evaluation: (HS) Highly Satisfactory

UNDP Latvia has fostered relationships between stakeholders in the environmental sector through the facilitation of similar projects. The role of PSCs and/or advisory boards are critical, as they provide an opportunity to improve decision making mechanisms and create better links (communication and coordination) between government ministries and with civil society in general (with the inclusion of NGO representatives in project management bodies).

The PSC delegated the responsibility for ensuring the sustainability of some activities to the municipalities. For example, municipalities are mandated to use wood waste heating within two years of the end of project activities:

- Various project stakeholders have participated in the process of project identification and implementation (Appendix 13);
- The fulfillment of commitments to local stakeholders and their involvement in the project can be considered as adequate.

NGOs, CBOs, Community involvement

Evaluation: (S) Satisfactory

Public Participation

Public participation in the project was effective, based upon a detailed assessment of various related activities (see outputs results section 4). However, public awareness activities were usually implemented late in the process. Capacity building and public awareness can potentially support larger development goals, such as increased environmental awareness, which are necessary to sustain and build upon project momentum. In retrospect, these activities may have been more effectively implemented earlier in the project schedule.

As described above, the project team conducted information seminars in Balvi, Dagda, Preiļi, Tukums and Cēsis, attracting approximately 260 people from a broad spectrum of stakeholder groups. Feedback on the activities indicated that the participants obtained useful information relating to the cost and benefits of the new municipality heating systems. The high school competition was also judged to have been a success.

Most of the questionnaire respondents reported that the public awareness campaign run in the national and regional newspapers had either been useful (54%) or satisfactory (31%). Feedback from public consultations indicated that the public awareness campaign and related activities should continue beyond the project termination date, due to the effectiveness of the campaign as a public educational tool.

NGO involvement

Three NGOs, the *Latvian Wood Export Association (LWEA), the Latvian Association of Local and Regional Governments (LALRG) and Rezeknes Volunteer Support Centre "Meridiāns plus*", were actively involved in the project either through formal membership in the PSC or through innovative partnerships developed to support specific project activities. The NGOs expressed general satisfaction with the project results, noting that a major accomplishment of the project was the promotion of information exchange between municipalities and the wood producers. This was accomplished through project activities including the development of the national strategy and related promotional seminars, and/or from the public awareness campaign. The NGOs indicated that by building "trust" concerning the use wood biomass as fuel, the project has had a positive impact on removing institutional barriers that were related to the lack of capacity at the municipal level. However, representatives of NGOs interviewed stated that their involvement in the PSC could have been more formalized (including the financial support for work in the PSC) in order to facilitate greater participation in project activities and development goals.

Latvian Wood Export Association (LWEA)

The LWEA was a member of the PSC and was actively involved in developing the project strategy. LWEA had a predefined role '*to promote the private sector's involvement in district heating in Latvia'*. This NGO was very involved with promoting private sector involvement in the Ludza pilot project. The private public partnership aspect of this project has been difficult to assess, given that the activity in Ludza is still in the initial stages and a longer time frame may be required to accurately gauge the relationship. The technical and financial support (project grant and loan scheme) provided by LEIF has stimulated the active involvement of many privately owned companies including heating suppliers and wood producers. The wood market survey and the database of wood suppliers and consumers have been reported as useful tools for the private sector and municipalities. There may be a need to update this information periodically according to municipal sources, and that the project managers should consider developing a 'database maintenance' strategy.

Latvian Association of Local and Regional Governments (LALRG*)*

As a member of the PSC, the LALRG was actively involved in the identification of eight new municipalities interested in project replication after the new strategy was developed and provided the data used to design the initial selection criteria. LALRG was instrumental in the development of the innovative financing scheme supported by LEIF (see section 3.12). LALRG also distributed critical information concerning synergies between linked activities in the communities regarding heating systems. For example, LALRG actively promoted the Housing Agency's new 'Energy Audits'. The innovative audits enabled homeowners to obtain credit in order to improve residential energy efficiency. LALRG is also lobbying to obtain EU funding in order to facilitate heating system improvements in the smaller, marginalized communities.

Energy Brigades

During project revision 'C', a new component was added to provide a support mechanism for low-income earners. The new dimension was supported by partnerships with a community based **NGO-Rezeknes Volunteer Support Centre "Meridiāns plus" (Energy Brigades)** which worked on the shortcoming based on lessons learned from the Ludza pilot. The "Energy Brigades" is a volunteer based organization and has provided support to insulate 25 rural apartment blockhouses. Energy Brigades have also worked with the UNDP project in Dagda and Vabole municipalities. This type of collaboration provided a concrete means of demonstrating the tangible effects of energy efficiency improvements and should be encouraged in the future.

Private Sector

Private sector involvement was encouraged through the strategy of *Private, Public, Partnerships* (PPPs). For example, a private sector company had been commissioned in Ludza municipality in order to provide the heating system and related services. Lindeks Ltd. had provided input indirectly to the project, as it was contracted to supply waste wood to *Ludza Bio-Enerģija* for 15 years and Lindeks Ltd. branch office is also located in Ludza. The private sector's involvement is hard to assess in terms of the service it will provide in the future as the problem in Ludza (non payments of individuals - dispute with municipality) are only beginning to settle. Also the new municipalities did not have a significant role for the private sector in converting their heating systems however the team felt that the role of the private sector involvement should be assessed in due course (one year).

It should be noted that feedback from the private sector relating to the project was often difficult to obtain. The assessment was based primarily on interviews and personal communications.

3.1.3. Comparative advantage of UNDP IA for this project

Evaluation: (HS) Highly Satisfactory

UNDP was the motivating force behind the PSC and played a critical role in project facilitation. UNDP also fostered project stewardship, namely a sense of shared ownership and co-responsibility for the project results, and thus has been critical to the successful adaptation of this project.

UNDP is respected by the Latvian government policy makers and is in a unique position to implement 'demonstration projects' that provide policy guidance in sectors such as environment and energy. Throughout the project, UNDP has also worked as an effective mediator, facilitating information exchange between various Energy sector stakeholders in Latvia.

UNDP has effectively employed the scope of it influence through targeting two levels of government, namely the national and municipal levels. Ideally, the strategy should have stimulated the development of sectoral policies, laws and regulations that support project goals. The development of the National Strategy and the expected removal of institutional barriers to facilitate additional capacity for on-grid renewable energy generation capacity indicate that this approach is working within this project. More work remains to be done to promote some of the related project outputs, such as the National Strategy and the market survey (see Output 2.1) and lessons learned.

Project Implementation

Evaluation: (S) Satisfactory

The municipal heating project experienced difficulties from the start, due in part to a project design which relied on a *single demonstration project* in which the key components to be demonstrated and replicated lay outside the control of the project management, and due in part to unavoidable external influences. However, with the agreement on the revised project outputs and activities in March 2003, the project concept, design and institutional arrangements were once again appropriate in the local context and relevant to the needs in Latvia[9]. The project was appropriately revised to include *demand side management* through efforts to '**connect**' energy consumption and costs, and thus ensure the sustainability of the transition to biomass energy.

Changes in the project design

When the revised project document was signed in March 2003, the project activities were expected to be completed in April 2004. The Mid-Term Evaluation found that the project objectives, outputs and activities in the revised project were '*generally reasonably well specified and structured, with some notable exceptions where the intervention logic appeared to be inadequately specified, making project management unnecessarily difficult'*. In addition to some logical gaps in the revised project document, the new project outputs and activities frequently did not include adequate indicators. The Mid-Term Evaluation recommended reformulating a number of project objectives, outputs and activities in a verifiable and quantifiable format to facilitate project execution, monitoring and evaluation. The time schedule for project implementation was identified as '*very ambitious'*.

The Mid-Term evaluation recommended improvements to project sustainability by securing active participation of the project stakeholders, thus encouraging stewardship and enhancing capacity building. Interviews held during the final evaluation confirmed that the revised project objectives supported the national goals and complemented the Latvian environmental, energy and energy efficiency policies and have since encountered minor difficulties.

Logical Framework

Evaluation: (MS) Marginally Satisfactory

The project logical framework was designed and included in the original project document (March 2001) as Annex II: *'Project Planning Matrix'*. The Final Evaluation confirmed that the framework matrix has not been updated. The Mid-Term evaluation indicated that the project-planning matrix was not further developed as a result of external events that negatively impacted the project and an 'active monitoring approach' had been employed to guide the project. As a result, the project outputs and activities frequently did not include useful indicators. The Mid-Term evaluation recommended that in 'to avoid further implementation and assessment difficulties for the project team, new indicators should reflect the desired quantity, quality and timeframe'.

These findings were confirmed during interviews with stakeholders and through further assessment of the updated project documentation, (outcome evaluation 2004 and the PIR for 2004 and 2005). The final evaluation agreed with the previous evaluation that the original design did not appear to fit logically with the new project

[9] Latvian EE Outcome Evaluation (2004)

design and that some components of the revised project design appeared to have been missing or inadequate. In particular, the flow of activities to outputs and outputs to immediate objectives was not entirely logical and specific quantifiable and time-bound indicators for some activities and outputs are missing. All these assist in project implementation as well as monitoring and evaluation.

Adaptive Management

Evaluation: (HS) Highly Satisfactory

The project team and management arrangements demonstrated excellent adaptive capacity, which constitutes a significant accomplishment for the project. Many elements of the original project were overtaken by unforeseen/ uncontrollable circumstances[10]. These external events have impacted negatively on the implementation strategy but not on the development goals.[11]

For example:

- The proposed investments from the Ludza municipality, the Dutch company ESSENT Baltic that constructed the local heat plant *Ludza Bio-Enerģija* in July 1999, and the Netherlands government (under an Activities Implemented Jointly project) were committed and contracts were signed. However, the UNDP-GEF project consequently had no influence on these decisions.
- Latvia held municipal elections in March 2001 (two weeks after the project document was signed) that changed the political administration of the Ludza city council, including a new mayor. The contract signed between Ludza municipality and *Ludza Bio-Enerģija* sparked a political debate, based on difficulties for low-income groups to pay, technical difficulties (inadequate heat supply in parts of the system) and a disadvantageous purchase agreement that appeared inflexible and provided no incentive for energy efficiency measures.
- Despite efforts by the UNDP and project management to mediate between the two parties, the City of Ludza and *Ludza Bio-Enerģija* sued each other in the middle of 2002. UNDP and "*Vides Projekti*" strongly encouraged both parties to drop the lawsuits and return to the negotiating table. The parties eventually dropped the lawsuits and the summer of 2002 was spent finding a compromise between Ludza City Council and *Ludza Bio-Enerģija* under the guidance of the UNDP-GEF project.
- The constant restructuring of relevant government departments and Ministries complicated efforts to effectively promote the National Energy Strategy developed during this project and retarded efforts to influence policy and planning.

Event/adaptation (source APR 2004)

1. National level: Expectations of and results from national elections (October 2002) had an impact on municipal interest in UNDP/GEF project input. The project therefore received and utilized a different approach by the Ludza municipality before and after the elections, as the political lobbying situation changed.

2. Municipal level: Internal differences of opinion in Ludza regarding the heat supply contract were discussed in the local and national press. In order to avoid public misinformation of the role of the UNDP/GEF project within this dispute, a detailed information letter was disseminated outlining project issues and activities planned.

3. Sectoral factors: a) problems foreseen in the sustainable use of wood waste for district heating due to increased export demand for wood waste and favorable export conditions for suppliers. Project revision "B" Output 2.1 addresses this issue and provides mitigation proposals. b) Support mechanisms needed for low-income residents. As the Project proposal for the Energy TTF was not approved but the low payment rate in Ludza and other municipalities inhibit the creation and development of a cost effective district heating system, project revision "C" Output 1.6 (Public awareness and promotion campaign conducted) provides proposals to mitigate this problem.

Use of Information Technology

Evaluation: (HS) Highly Satisfactory

The project made effective use of Information Technology. For example, the project provided funding to upgrade or install a heat metering and billing system in the municipalities. This intervention enabled the municipalities to convert outdated systems to wood waste as the primary fuel. These systems include computers for data entry. The heat meter system enables users to:

[10] UNDP Latvia, EE Outcome Evaluation 2004

[11] The additional elements added in the revision had in fact enhanced the original development goals in terms of replication and scale up of activities. The project revision added components that focused on the user needs and therefore contributed to the socio-economic component of the strategy.

- collect data from the heating meters monitoring system automatically,
- collect data from heating points using the Internet or telecommunications,
- save data on the actual cost of heat and hot water,
- accumulate data from past periods,
- have debt control possibilities,
- have data analysis modules,
- provide easy administration.

For example, in Jumprava municipality the heat meter measurements are transferred from apartment blockhouses to the boiler house using the internet. The internet connection that was initially planned for heat meter system allows the inhabitants of those apartment blockhouses to get easy internet connections in their apartments. In this way the project clearly gives significant contribution to development of information society in Jumprava by facilitating the use of internet.

3.2. Potential for project replication and knowledge transfer

Evaluation: (HS) Highly Satisfactory

There is excellent potential for project replication, based on the assessment of stakeholder involvement and the visible reaction to the demonstration project results. The new heat meter and billing systems, the successful demonstration of wood waste as a viable energy alternative and a successful PR campaign has increased project momentum during a period when other municipalities are seeking similar solutions for cost efficient heating and electricity. Further replication of the electronic heat metering systems, billing systems and the promotion of innovative financing schemes designed within this project indicate the potential to export the results beyond the scope of the pilot project.

The project created momentum for converting heating systems in Latvia by employing a successful replication strategy within project activities, enabling an additional 14 municipalities to conduct activities that were originally piloted in Ludza municipality. The new communities have been forced to compete for a loan from LEIF, and additional projects were facilitated by a small amount of UNDP seed funding. This new arrangement has enabled eight additional communities to either convert and or improve their existing heating systems.

At the regional scale in Latvia, wood biomass in heat production is predominantly used in Vidzeme, Kurzeme and Latgale. In Riga and Zemgale, wood biomass heating is less prevalent. Wood waste biomass may be used as fuel for centralized heating supply companies' boiler houses, as well as in municipally owned boiler houses and directly in household stoves. The municipalities involved in project activities were primarily from the Latgale region (Preiļi, Pelēči, Aglona, Vabole, Škaune, Dagda, Ludza, Balvi, Viļaka), while two municipalities were from the Vidzeme region (Jumprava, Rauna), two were from the Zemgale region (Lielauce, Lielplatone) and one municipality was from the Kurzeme region (Tukums). The dispersion of actively engaged municipalities provides an opportunity to transfer lessons and experiences through daily contact between municipal representatives.

The potential of knowledge transfer was also secured through the Latvian Municipality training centre (or 'Study Centre of Municipalities', also mentioned earlier in the text) (Latvijas Pašvaldību mācību centers). The project supported the development of a long-term training programme concerning the administration of municipal heating systems.

Use of wood waste in boiler houses in Latvia

Municipalities have displayed a great deal of interest in using wood-based heating systems. This interest predates project initiation and was enhanced during project implementation. As depicted in Figures 1 and 2, the amount of wood biomass (t in Figure 1, PJ in Figure 2) used for heat production and number of boiler rooms increased dramatically in Latvia over the course of a decade and are still increasing.

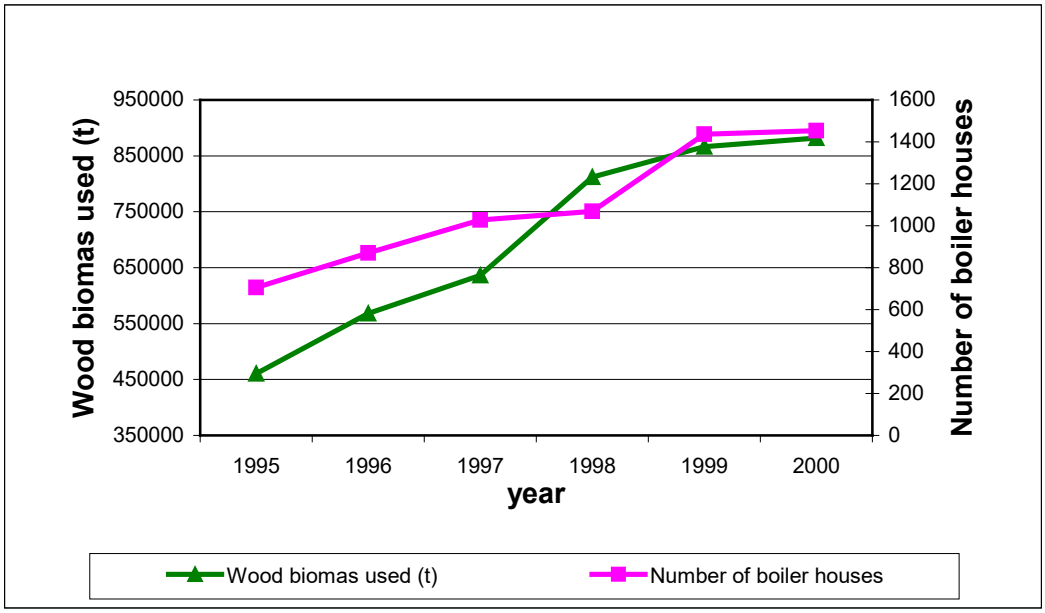

Figure 1.Wood biomass usage in heat supply (1995 - 2000) (Vides Projekti, 2004.).

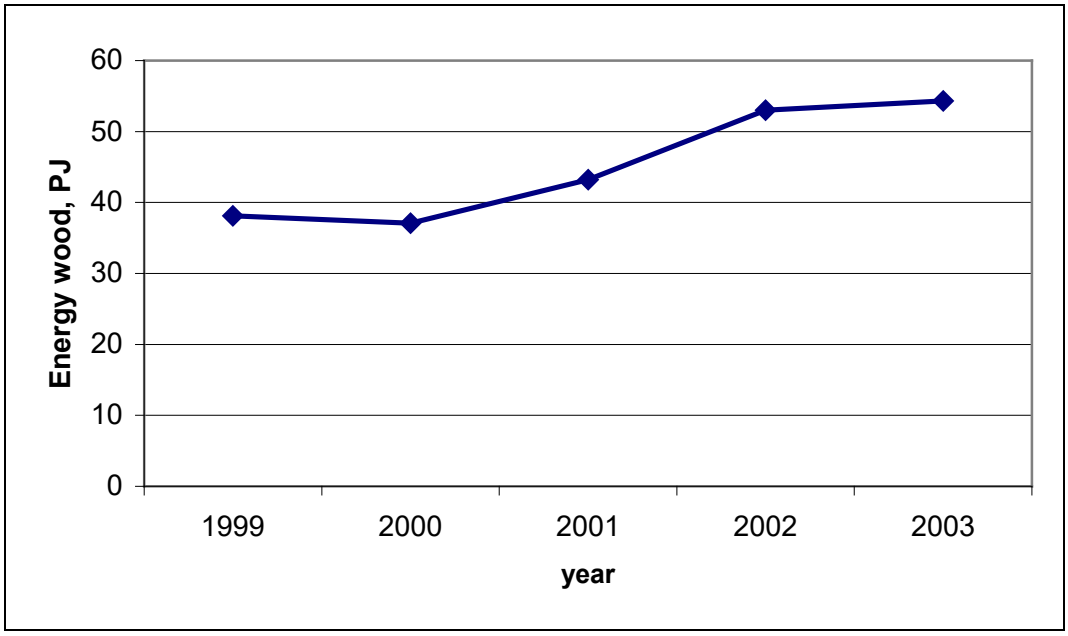

Figure 2. Energy wood biomass usage (PJ) for heat generation (1999 - 2003) (Datacom, 2004).

Cost of heat production and tariffs

Quantitative comparisons of technical parameters for selected boiler-houses participating in project activities and selected boiler houses not participating in project activities are summarized in Appendix 14. The appendix also provides the total number of boiler-houses and those operating on wood biomass, summarized by district. While municipalities and heat producers are eager to use wood in heat production, the production costs and tariffs for end-users can vary significantly between boiler houses. Costs range from 4.30 LVL/MWh in Balvi to 13.67 LVL/MWh in Ludza.

Tariffs for end-users vary from 13.00 LVL/MWh in Ugāle (which did not participate in the project) and 21.65 LVL/MWh in Tukums. It may not be possible to estimate how the project has influenced energy costs and tariffs based on the available data as costs and tariffs vary site-specifically. This conclusion is supported by data obtained from the questionnaires submitted to municipalities and heating enterprises. Some municipalities indicated cost reductions resulting from project activities (cf. Pelēči, Ludza, Viļaka, Aglona, Dagda, and Tukums) while others (cf. Jumprava, Lielauce, Balvi, Preiļi) cited cost increases resulting from project activities.

An evaluation of the cost effectiveness of wood biomass in heat production as compared with alternatives is not possible through most of Latvia because only one season of data has been collected from most municipalities. In

Ludza, where five seasons of data are available, the switch from mazut to wood biomass in 1999 reduced user tariffs from 23.70 LVL/MWh (1999/2000) to 18.05 LVL/MWh (2003/2004).

Appendices 15 and 16 describe similar data obtained from boiler houses in Lithuania and the Czech Republic. The cost of heat production in Latvian boiler houses appears to be lower in general than that of the two largest Lithuanian boiler houses (20.70 and 22.80 LVL/MWh).

Reduction of CO_2 emissions

Appendix 17 of this report illustrates the amount of coal and mazut (t/year) used before the project activities (also see Appendix 22) were carried out in the following municipalities - Aglona, Lielplatone, Pelēči, Katvari, Dagda, Lielauce, Viļaka, Šķaune (supported by co financing of LEIF), Ventspils (applied for co-financing but had been later refused) and Ludza (supported by co financing from Dutch Government and a private company "Essent"). This is shown against the corresponding estimate reduction of CO_2 emissions (t/year) after project activities as well as the costs of CO_2 and carbon equivalent reduction (USD/t of CO_2). The total amount of coal used in 8 municipalities was 754 t/year. Ludza's boiler house used aprox. 3600 t of mazut p.a. The amount of reduced CO_2 emissions in 8 municipalities is 1825 t/year but in Ludza - 11 200 t/year. Corresponding reduction of the carbon equivalent is 562 and 2628 t/year respectively. The estimated costs of CO_2 reduction in average in 8 municipalities are 577 USD/t of CO_2 reduced but in Ludza – 259 USD/t of CO_2 reduced. The estimated costs of carbon equivalent reduction in average in 8 municipalities are 2059 USD/t of carbon equivalent reduced but in Ludza – 1103 USD/t of carbon equivalent reduced. If the project in Ventspils' boiler house would be realized, the costs of CO2 reduction would be only 158 USD/t and the costs of carbon equivalent reduced would be 509 USD/t because this boiler is more high-powered that small boiler houses in other 8 small municipalities. A benchmark approach in climate change projects measures cost-effectiveness using internationally accepted threshold 10 USD/t of carbon equivalent reduced.[12] The evaluation team's view is that to evaluate the cost-effectiveness of this project it is not possible to compare the above-mentioned costs with this threshold. One reason is that the finances disbursed in Ludza and other 8 municipalities were not used only for the reconstruction of boiler houses and new boilers but also for other needs related to heat production, such as dismantling of old boiler houses (in Ludza, Aglona and Lielplatone), connection of the public buildings (schools etc.) to the boiler house (in Aglona and Dagda) and partial reconstruction of heating pipelines (Ludza, Lielplatone, Pelēči, Dagda, Viļaka and Šķaune). Since the project activities carried out in the 8 mentioned municipalities were not completed by the time that the terminal evaluation occurred but is expected to be completed by the end of 2005 it was not possible for the team to obtain more precise information concerning these finances. Also, the reason of so expensive costs of the reduction of carbon equivalent is that all 8 municipalities and their boiler houses reconstructed in the project are comparatively small - total capacity installed in 8 boilers is 6.64 MW. It means that reconstruction of small boiler houses is not so cost-effective like the reconstruction of boilers with higher capacity. The cost-effectiveness in the case of this project is thus considered more in the social aspect, for example,

- project has positively impacted on at least 9 schools and other administrative institutions connected to the heating grids;
- in Ludza municipality five thousand people receive heating services from a new boiler house;
- in other 8 municipalities 50 thousand 'plus' inhabitants will be influenced by improvement of local heating services.

3.2.1. Knowledge transfer

Evaluation: (S) Satisfactory

Knowledge and information was actively shared between 15 project sites through various training and other joint activities. A strong municipal information-sharing network had begun to evolve as a result of joint activities and the PR campaign. Municipal stakeholders indicated that the meetings were especially useful for sharing technical and logistical information concerning the new heat meters and billing system. The enhanced flow of information and learning through this dynamic networking also supports the enhanced sustainability of the post-project activities and the likelihood of project replication in other municipalities.

Daily interactions between municipal stakeholders determined both project sustainability and replication potential. Daily interaction strengthened the knowledge-sharing network that supported learning begun through this project. Participants confirmed this point during stakeholder meetings by participants (Appendices 4 and 5).

A local consultant was hired to support the implementation of a renewed project strategy in 2003. The consultant played a significant role in obtaining inputs from the PSC members through interviews, on-site visits, drafting of

[12] Global Environment Facility Guidelines for Implementing Agencies to conduct terminal Evaluations, 2005

ideas and facilitation during the strategic meeting of the PSC in December 2003[13]. Although not listed in his TOR, he was responsible for important capacity building and knowledge sharing amongst the various municipalities. These duties should be incorporated into the TORs during subsequent projects to provide a discrete mechanism to support project sustainability and knowledge sharing.

3.2.2. Expansion of the project demonstration

Evaluation: (HS) Highly Satisfactory

In this regard, the project has been highly effective. The project was initiated in a single municipality, Ludza. Four new municipalities were selected in 2003 (Tukums, Vabole, Jumprava, Balvi). In 2004, eight additional municipalities were selected (Katvari, Lielauce, Pelēči, Dagda, Šķaune, Lielplatone, Aglona, Viļaka) while an application from Ventspils was refused. By project end, 15 municipalities were involved in project activities.

3.2.3. Reinforcement of local capacities

Evaluation: (HS) Highly Satisfactory

Capacity building has occurred through various activities including:

- Nine people from different municipalities (Ludza, Balvi, Jumprava, Vabole, Preiļi, Rauna) participated in technical training (22 hours) organized by "Rīgas Siltums" in September 2003.
- Municipal capacity development assistant Mareks Šlihta has been employed since August 2003.
- Development consultants working in the Ludza Energy department from August 2003 until December 2003.
- The project sponsored training for technical staff concerning "Sustainable use of wood biomass sources and energy planning in municipalities" in 2003 (planned but not executed).
- Energy departments in 5 municipalities (Ludza, Tukums, Balvi, Vabole, Jumprava) outfitted with office support equipment (11 computers, 6 printers, 1 photocopier, 1 multifunctional device).
- Study trip for 8 persons (project coordinator, municipal representatives and heating supply company representatives) to Central Europe (Lithuania, Poland and Czech Republic), 24/08/03- 29/08/03.
- The training on tender procedure in 2004 organized on an ad hoc basis by project staff and LEIF. A special seminar was organized by LEIF.
- Participation of two project experts in a "Seminar on promoting renewable energy resources in Latvia" during Energy trade fair "Enerģētika 2004", networking with Latvian energy experts.
- Training of the municipal administration, energy departments and technical personnel will occur in June 2005. Approximately 20 participants will be trained. After training, the study program will be included in the study programs of the Study Centre of Municipalities.

3.3. Project Cost Effectiveness

Evaluation: (HS) Highly Satisfactory

The project operated in a highly cost effective manner. Project success can be measured by the expansion to 15 municipalities from the 4-6 planned initially.

3.3.1. Conformity with the GEF incremental cost criteria

Evaluation: (HS) Highly Satisfactory

GEF funds were used to facilitate reconstruction of boiler houses, install or improve heat metering and billing systems and support Energy departments in 15 municipalities. It was necessary to recapture the full cost of the investments made during heat generation, transmission and distribution as well as the operating expenses. The project motivated municipalities to raise administrative system capacities, thereby mitigating incremental costs.

Municipal representatives indicated that small UNDP grants (usually $4,000 US) encouraged municipalities to apply for loans from LEIF to reconstruct/improve heating systems. In this sense, the project fully complied with GEF incremental cost criteria.

[13] Outcome evaluation 2004

3.3.2. Financial realization vs. technical merit

Evaluation: (S) Satisfactory

The financial realization regarding the improvement of the billing and heat meter systems was very cost effective, although direct financial benefits will not be realized for some time. Although some municipal representatives stressed that these activities were like "a new tie for an outworn suit" (i.e. these activities were not the most urgent priorities for the municipal heating systems) the investments increased residential and municipal trust of wood waste heating plants because heating costs could by accurately measured. This should eventually result in higher heating bill payment rates.

The public awareness campaign and associated support mechanism for low-income earners has begun to build trust amongst residents and municipalities. The results indicate that money was spent on the public awareness campaign cost effectively.

The financial support provided by UNDP to the eight municipalities that applied for loans from LEIF was cost effective in that it encouraged those municipalities to reduce their dependence on fossil fuels. For example, as described in Section 3.2 and Appendices 17 and 22, the switch from coal to wood waste heating reduced CO_2 emissions by an estimated 1825 t/yr.

An issue of potential concern relates to the short operating life of the wood waste boilers. Boilers can currently be expected to operate for eight years, while the loan repayment schedule is often 12 years. Not only does the municipality run the risk of paying for the boiler after it ceases operation, but it may also be faced with the additional cost of replacing the boiler, which may require additional loans. This constitutes a serious sustainability challenge.

3.3.3. The project completed (or not) the planned activities and met expected outcomes in terms of Global Environmental and development objectives according to schedule

Evaluation: (S) Satisfactory

Greater project efficiency may have been achieved if had the pilot site been selected on a competitive basis (i.e. municipalities, investors, and fuel suppliers would have been required to submit competitive bids for project funding and support). As highlighted during the Mid-Term review, GEF attempted to secure co-financing commitments prior to project initiation. Competitive site selection may not have been feasible within the constraints of limited PDF-A Medium Scale Project budgets, particularly since the Dutch and Ludza stakeholders initiated project development.

Due to the conflict that arose after the municipal elections in 2001, project activities implemented between March 2001 and March 2003 were limited to:

- Facilitation of dialogue between *Ludza Bio-Enerģija* and the Ludza municipality;
- Funding of a study by an independent international consultant on the technical and institutional problems in the Ludza pilot project;
- Establishment of the Ludza Energy Department in May 2002
- Commissioning of a comprehensive study to determine the potential for implementation of project activities in other municipalities in September 2002, which resulted in the drafting of the revised project document.

Since little activity occurred during the first two years, many interview respondents felt that project activities could have been revised earlier. During the delay, however, UNDP-GEF project staff helped resolve the conflict. The conflict provided valuable lessons that could potentially benefit other municipalities and GEF projects regarding 'sticking with the process' etc.

Minimal costs were incurred during the first two years of the project due to the conflict, and most of the project budget was available be directed into other project activities. Since the project revision of 2003, there has been a smooth implementation of project activities, closely following the activities specified in revision 'C'. All involved parties (i.e. government and its agencies, UNDP, and municipalities) were interviewed regarding their opinion on the project. The stakeholders, including the Ministry of Environment, have expressed strong support for project implementation and have agreed with the revised focus.

3.3.4. The project used (or not) a benchmark approach

Evaluation: (S) Satisfactory

The project work plan had not been updated since 2001. There is no indication that the project used a structured or logical benchmark approach. The PSC was responsible for project development, implementation and decision-

making. As the project implementation schedule after initial delay was very tight, the related project documentation was not updated properly. However, the project team and the UNDP responded to the evolving socio-political realities proactively, and by using adaptive management techniques, were able to foster a successful result. The key lesson stemming from this experience was that a rigid approach would probably have doomed the project to failure. Without the interest and commitment of the project staff and without UNDP playing the role of mediator during the conflict, the project would have failed. The benchmark approach may not have been successful, given the rapidly changing economic and political situation typical of a country in transition. The project demonstrated that flexibility in management arrangements and design. Enabled to project to come to fruition in Latvia.

3.4. Links/synergies between the programme and the other interventions in the sector

Evaluation: (HS) Highly Satisfactory

The Latvian energy sector in Latvia has offered great potential for improvements in its structure, enhancement of energy efficiency measures, and the growth of renewable energy sources. A number of economically feasible, cost-effective options for mitigating GHG emissions in the energy sector have been identified including: i) energy efficiency enhancement through the reduction of energy transmission and distribution losses, heat energy conservation in buildings and implementation of a system for analysis and control of energy consumption and ii) renewable energy utilization through increased use of biomass in district heating systems, co-generation and increased use of wind and geothermal energy.

The increased use of biomass in district heating (and co-generation) looks promising in terms of cost-effectiveness and reduction of GHG emissions, particularly for municipalities that will not be connected to the gas grid in the foreseeable future.

3.4.1. Strategies of establishment of partnerships within (internal) components of the project

The project began with a clear Private, Public Partnership strategy in Ludza. Co-financing was planned between the Dutch company and UNDP in collaboration with the Ludza municipality. The conflict dictated that the project strategy be changed to focus on building partnership arrangements between municipalities and internal Latvian donors such as the LEIF.

- LALRG assisted in developing contacts with municipalities for investment scheme development.
- Involving the Wood Exporters Union in PSC succeeded in increasing private sector involvement in project implementation (See Section 3.1.3.3. NGOs, CBOs, Community involvement).
- During the development of the Sustainable District Heating Strategy, new stakeholders were invited into the process, including the Ministry of Agriculture, the Latvian Academy of Agriculture (Department of Forestry) and Association of Wood Processors. Partnerships developed were successful in fostering further project development due to the development of a broader information exchange network.
- Energy brigades, which represented a long term collaboration between the Housing Agency and State Employment Agency, were launched.

3.4.2 Partnership strategies and implementation arrangements with other donor programmes with UNDP in Latvia

Evaluation: (HS) Highly Satisfactory

The project successfully established solid partnerships and collaborative relationships with local, national and international entities that have positively impacted project implementation.

A key partnership was built with the Mr. Bebris, Director of the Environment Department of the Ministry of Environment. A review of PSC meetings minutes indicated that Mr. Bebris was most active participant and chaired most of the meetings. Mr. Bebris has indicated that he approves of and is very interested in the project initiative and its results. The efforts of and support provided by Mr. Bebris have been critical to the successful culmination of the project.

Other major partnerships include:

- Cooperation with LIDA, Energy Department, which implemented an inter-ministerial working group to develop a Sustainable District Heating Strategy for Latvia, including the sustainable use of wood waste and other renewable sources.

- Cooperation with LEIF to develop and implement a financing scheme to support the switch to wood biomass activities with nine new project partners (1 later refused). The innovative financing scheme has encouraged municipalities to participate in the project and to collaborate with the LEIF beyond the project termination date, particularly in the wastewater treatment infrastructure sector, etc.
- Cooperation with LALRG to contact municipalities interested in the project.
- Inclusion of the Wood Exporters Union in the PSC has increased private sector involvement in project implementation.

Government Support and Participation

Evaluation: (S) Satisfactory

As described in Section 3.4.2, Mr. Bebris of the Ministry of Environment chaired most of the Steering Committee Meeting and clearly supported the project activities. Greater efforts to promote the involvement of other Ministries could have occurred during the project initiation phase.

The **Latvian Environmental Investment Fund** also involved in the project, providing co-funding in the form of loans to the eight newly selected municipalities that demonstrated interest in the project initiative and activities. The financial scheme to support the switch to wood biomass heating was initiated by the end of 2003. Nine municipalities (one later refused), in cooperation with LEIF, planned investments of more than $1.12 million US during 2004. The UNDP-GEF contribution has been set at 15% of the total.

The project established excellent partnerships among several Latvian stakeholders, including the LIDA Energy Department. As described in Section 3.4.2 this partnership fostered the Sustainable District Heating Strategy for Latvia, which included policy guidance on the sustainable use of wood waste. The Ministry of Agriculture, which directs Forestry sector policy was involved in the inter-ministerial working group, and subsequently became involved with the PSC.

In 2004, the Latvian Government decided to liquidate the LIDA Energy Department, replacing it with an Energy Department within the Ministry of Economics. The new department currently has 15 employees (6 of whom work in the Division of Politics) and possesses limited knowledge of the Sustainable District Heating Strategy developed by the project. However, the Ministry of Economy has indicated an interest in using the lessons learned from this project to advise the State Investment Program of guidelines to be developed concerning the heat supply sector. The lessons learned from this project will be used in the development of new power co-generation rules prepared by the Cabinet of Ministers. The new Climate Change division of the Ministry of Environment may also incorporate project results and activities in new documents.

3.4.3 Implementation of partnership strategies in the project components supported by the GEF /UNDP and other initiatives carried out the country in the same field

Co-operation with LEIF, particularly in terms of providing co-funding to selected municipalities, seemed to have been effective, efficient, and implemented in a timely manner. The Mid-Term Evaluation in September 2003 recommended that attention be focused on ensuring the sustainability of project results. As a result, activities have been designed with a longer-term perspective. Project Revision ‘C’ introduced changes in project activities and duration, as suggested in the Mid-Term Evaluation and subsequent stakeholder meetings prior to the end of 2003.

The Latvian State Housing Agency has begun to facilitate residential loans by providing an energy audit. This was a positive development and offered opportunities to support current project goals related to maximizing support for end-user needs. For example, the State Housing Agency launched a pilot project to provide energy audits for 100 selected apartment blockhouses in 2005, eight of which are located in the Balvi region. The energy audit costs residents 250 LVL per house. A major component of the Energy Audit consists of the support by the Housing Agency of a back-payment scheme and the availability of loans to improve household energy efficiency based upon the needs identified during the audit.

The State Investment Programme also finances heating infrastructure, for which municipalities can apply. Although the amount of money allocated for heating infrastructure has decreased during the last five years (from 28.8 million LVL in 2000 to 1.8 million LVL in 2004), the State Investment Program manages to provide financial support for 7 - 9 projects annually.

Financing from European Regional Development Fund will soon become available as an open call for project bids, administered by the Central Finance and Contract Agency, was issued in 2005. This program is designed to support energy efficiency initiatives, including district heating systems. A total of 6.23 million LVL has been allocated, for which municipalities and other public enterprises are eligible to apply. Municipalities are required to obtain an additional 25% in co-financing, which means that additional financial support and capacity building would be required in order to access these funds.

LEIF has continued its loan-funding program to enable municipalities to develop heating infrastructure. LEIF has initiated a new financial scheme with the Latvian Environmental Protection Fund, which provides grants for municipalities that apply for loans from LEIF. Although this financial scheme has not been broadly exploited, it has supported one project annually since 2004.

3.5. Management provisions

Evaluation: (HS) Highly Satisfactory

It was evident that the UNDP and the project staff were committed to making a sustained effort in order to improve the quality of project activities and overall project effectiveness. This has been demonstrated by relationship building between UNDP and the project-executing agency "Vides Projekti", and by perseverance through the often-tedious process of project adaptation in the face of external pressures.

While adaptive management does not always overcome all project (design) difficulties, UNDP and the project staff are to be commended for the hands-on, flexible but persistent, and dedicated efforts to manage the project to a successful conclusion. Flexibility, dedication and perseverance seem to be typical characteristics exhibited by the Latvian UNDP office. The critical role of UNDP's introducing *soft assistance* and '*memorandum of understanding'* are elaborated in the projects lessons learned (Section 6, p.52-55).

3.5.1. Project execution and implementation modalities (PSC and government counterpart)

Evaluation: (HS) Highly Satisfactory

Project Strategy

Due to the conflict between the Ludza municipality and *Ludza Bio-Enerģija*, the project schedule was extended until June 2005. The project focus broadened over time when external forcing agents triggered a change in project strategy, involving 15 municipalities rather than the original 4 to 6 and immediate project objectives were extended and new activities were introduced. The project then advanced quickly, and a project assistant and a PR specialist, working in collaboration with the newly interested municipalities, were hired as project support staff. Project implementation and activities proceeded smoothly from this point until the project conclusion.

Project Steering Committee (PSC)[14]

The 12 'non paid' members of the PSC and other stakeholder representatives are listed in Appendix 21. A review of the PSC minutes (Appendix 13) and interviews indicated that PSC meetings were attended by representatives from five ministries, the private sector, and NGOs. The UNDP and the MoE emerged as key personnel and played a critical role in adapting to project implementation challenges. The PSC, by making decisions on project implementation strategies, replaced the project-planning matrix as a monitoring and evaluation tool. This transition occurred as a result of the changing external circumstances including the Ludza conflict. The PSC, UNDP and the project team administered 'active and daily monitoring' in response. External forcing agents included: i) The change in administrative personnel and attitudes following municipal elections in Ludza that immediately followed project implementation; ii) The removal of the Energy Department from LIDA due to structural reorganization which negatively impacted the progress of the Strategy developed during the project; iii) A new responsible body, The Department of Climate Change and Renewable Energy, emerged in 2004 and took responsibility for climate change and renewable energy issues within the Department of Environment.

The PSC provided an effective forum for transferring lessons and learning from the project to the various Ministries and agencies. The personnel structure of the PSC was not static (with the exception of MoE and the UNDP) and personnel changes occurred frequently. A negative impact of the PSC structure was that while the PSC became the *'main instrument'* for sharing information amongst the project partners and stakeholders, the personnel flux led to inconsistencies in the knowledge held by sitting PSC members at any one time and inconsistent knowledge dissemination outside of the PSC structure. It should be noted that other partners, including the public and various officials who had not been directly engaged in the work of the PSC, lacked comprehensive information about project implementation activities and its results.

Although the project managers collaborated effectively with the MoE in the PSC, information related to results and outputs, such as the National Strategy developed within the project, was not been transferred effectively to the newly established Department of Climate Change of the MoE.

Some PSC members were not fully involved in the process. One participant, for example, admitted that his work as Managing Director of a private company kept him busy and as a result, he was only able to participate in 3 or

[14] The PSC was established by the State Secretary of the Ministry of Environmental Protection and Development in April 2001, with the goal of performing project consultative and supervisory functions; to make decisions regarding project implementation; and to promote information exchange regarding project implementation.

4 PSC meetings. His initial interest in the PSC was financial in nature, because his company participated in tenders for the Ludza municipality. He recommended that PSC work must be paid rather than voluntary in order to garner more interest and involvement from PSC members.

Project Management

Because the project had been a 'demonstration' and had two development objectives, the project manager worked with Ministerial decision makers and with local stakeholders from 15 municipalities. There were three project managers in total, and inconsistent record keeping complicated the evaluation process. Project success was measured by the ability to adapt to changing conditions because of a flexible management approach.

3.5.2 Operational coordination and management by UNDP CO

Evaluation: (HS) Highly Satisfactory

The project manager was responsible for submitting regular quarterly and annual project reports to UNDP regarding the progress of the project. This was the only formal internal monitoring procedure in place.

The actions of the project staff and the UNDP office in dealing with project difficulties have been exemplary and both parties are to be commended for persisting through the process. In retrospect however, project retuning could have occurred earlier thereby mitigating or even avoiding the two -year delay. According to the UNDP, the delay occurred in part due to the highly participatory and active role of the PSC. For example, when the PSC discussed mechanisms to advance the project and change the project strategy for different activities, the PSC often made the decision to give the conflicting parties 'one more chance'. Minimal budgetary expenditures were incurred over these two years, facilitating available funding for subsequent project activities. The delay may therefore not have been completely negative in light of the allocation of resources for later activities. The principal weakness within the project appeared to lie in project design and the vulnerability to external forcing mechanisms instead of project implementation (See Chapter 4 - Results).

3.5.3 Financial Planning

Evaluation: (S) Satisfactory

The total project budget allocated from the GEF was $750,000 US. Budgetary allocations are listed in Table 2. $325,000 US was earmarked for the Ludza pilot project, $357,000 US was earmarked for project replication and $68,000 US was earmarked for the UNDP/GEF M&E and office and administrative support.

Table 2. Estimated project budget allotments according to the 2001 Project Document.

Project activity	**Estimated project budget allotment ($US)**
1. Ludza pilot project	
Analysis of current situation	20,000
Heat meter control system	100,000
Metering and billing system	45,000
Ludza Energy Department	65,000
Promotion and awareness	70,000
Monitoring and evaluation	25,000
Subtotal	***325,000***
2. Replication of the pilot	
Development of a supportive policy/regulatory framework	75,000
Enhancing in-country project development capacity	62,000
Pipeline of 4-6 investment projects	140,000
Establishment of financial and institutional set-up for future investments	80,000
Subtotal	***357,000***
3. General project activities	
UNDP/GEF monitoring and evaluation	15,000
Office and administrative support	53,000
Subtotal	***68,000***
TOTAL	**750,000**

After project revisions "B" and "C", several budget revisions were approved. The budget revisions were required to respond adequately to the changes in the project activities' schedule.

Until the end of 2003, the project budget was planned per budget position (e.g., personnel, subcontracting, equipment etc.) instead of per budget activity. The UNDP budgetary system changed in 2004 when budgetary allocations corresponded to budgetary activities. This caused some difficulties in the evaluation of actual expenditures per activity from 2001 - 2003.

The project-implementing agency "Vides Projekti" submits annual project budgetary expenditure reports to UNDP. These reports, which comprised the main source of budgetary information by activity, have been summarized in Table 3. There have been some inaccuracies in the project budget balance for year 2004 and the implementing agencies annual budget report for this year. The project budget from 2001 - 2004 plus planned budgetary expenditures for 2005 do not match the total project budget of $750,000 US. There is an apparent discrepancy of approximately $1,000 US.

Table 3. Budgetary allocations (data obtained from the UNDP Combined delivery reports (2001 - 2003) and Project Budget Balance (2004, 2005)).

Project activity	**Actually spent, $US**						
	2001	**2002**	**2003**	**2004**	**2005 / actual 09/06/05**	**2005 / planned**	**Total**
1. Establish energy companies							
Billing system				6,367.96	9,348.93	41,715.40	48,083.36
Energy departments				18,809.73	0.00	0.00	18,809.73
Heat meter systems				47,900.49	6,001.21	6,627.68	54,528.17
Public awareness campaign				58,183.97	1,498.17	24,561.40	82,745.37
Support mechanisms for low-income population				4,003.21	0.00	0.00	4,003.21
Subtotal				***135,265.36***	***16,848.31***	***72,904.48***	***208,169.84***
2. Biomass management							
Administration				52,279.16	12,081.94	18,713.44	70,992.60
Audit				0.00	0.00	0.00	0.00
GEF intervention monitoring				0.00	0.00	1,949.32	1,949.32
Project evaluation				1,602.94	235.11	15,594.54	17,197.48
Subtotal				***53,882.10***	***12,317.05***	***36,257.30***	***90,139.40***
3. Institutional framework support							
Biomass capacity enhancing				-3,543.31	2,074.49	12,947.37	9,404.06
Institutional/financial set-up				128,306.42	0.00	0.00	128,306.42
National strategy development				76,017.20	0.00	0.00	76,017.20
Subtotal				***200,780.31***	***2,074.49***	***12,947.37***	***213,727.68***
Activities conducted in 2001 – 2003[15]							
Project personnel	6,496.02	10,525.24	53,941.77				70,963.03
Subcontracts	6,434.87	15.475.55	55,002.09				76,912.51
Training	0.00	2,757.87	12,157.30				14,915.17
Equipment	0.00	0.00	60,320.60				60,320.60
Miscellaneous	2,967.42	3,763.11	9,854.43				16,584.96
Exchange differential	227.04	-1,735.98	-1,372.99				-2,881.93
Total	**16,125.35**	**30,785.79**	**189,903.20**	**389,927.77 or 390,188.82**[16]	**31,239.85**	**122,109.15**	**748,851.26 or 749,112.31**

[15] The division of personnel costs, subcontracts, training, equipment and miscellaneous per activity was not possible from 2001 - 2003 due to the alteration of the UNDP budgetary system.

Approximately $336,800 US was spent from 2001 - 2003. In 2001, expenditures were related to administrative costs because the Ludza legal conflict. In 2002, expenditures were related to administrative costs and to support the new Ludza Energy Department). In 2003, after the changes in project strategy, most project activities (including surveys and assessments, development of the National Strategy, and equipment for heat meter control system) had been initiated, increasing budgetary expenditures dramatically.

Approximately $208, 000 US was spent to establish or support energy companies and for heat meter systems, with the PR campaign accounting for $82,700 US of the total.

Approximately $213,700 US was spent to support the development of an institutional framework. Expenditures included institutional/financial program establishment in the form of grants for municipalities to enable loans from LEIF ($155,000 US). The development of the National Strategy ($76,000 US in 2004 and $15,000 US in 2003) has been included in this total.

Approximately $90,000 US was spent in project administration during 2004 - 2005.

Although 10% of the project budget was allocated for the implementation of the output "Conditions for implementation of a National Strategy for district heating systems", this phase of the project is incomplete, and an assessment of the cost effectiveness cannot be accurately gauged at this time.

Four annual financial audits were conducted over the life of the project by independent auditors (Arthur Andersen Ltd. in 2001, KPMG Latvia Ltd. in 2002 and 2004, and Ernst &Young Baltic Ltd. in 2003). The audits included assessments of financial operations and controls, management structure, equipment use and control as well as monitoring, evaluation and reporting. As noted in audit reports, the rate of delivery for approved budgetary expenditures was very low from 2001 - 2003 (6% for 2001and 2002, 41% for 2003). In 2004, the rate of delivery for approved budgetary expenditures was 76%. According to officially set standards detailed in the audit reports, the rate of delivery should not have been less than 72%.

The project facilitated a great deal of co-financing activity. The planned co-financing was $2,734 million US, but the actual co-financing at the end of the project was $3,715 million US. For each $1 US contributed by UNDP/ GEF garnered $495 US in co-financing.

Co-financing in US $millions was based on data presented in the Annual Project Report (APR) for UNDP/GEF Projects 2005 and leveraged resources are summarized in Tables 4 and 5 respectively.

Table 4. Co-financing in $millions US (based on the Annual Project Report (APR) for UNDP/GEF Projects 2005).

Co-financing (Type/Source)	IA Financing		Government		Other*		Total		Total Disbursement	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Grants										
Loans/Concessional (compared to market rate)										
Credits			0,000	0,816						
Equity investments					2,714	2,879				
In-kind support					0,020	0,020				
Other (*)										
Totals							2,734	3,715	1,984	3,150

* Other refers to contributions mobilized for the project from bilateral donors (Dutch Government), the private sector (Essent (Netherlands)) and municipal governments (Ludza Municipality).

[16] The sum from Combined Delivery report (prepared by Implementing agency "Vides Projekti" 23/05/2005).

Table 5. Leveraged Resources.

Partner Full Name	Type	Role	$ Value leveraged
Cooperation with LEIF to develop and implement Financing scheme to support switch to wood biomass activities in 9 new project municipalities.	GOV	Financial project cooperation	USD **815 966**
Cooperation with LALRG to assist in contacting municipalities for investment scheme development.	GOV-LOC	Financial project cooperation	USD **117 665**
Involving Wood Exporters Union in PSC has succeeded in increasing private sector involvement in project implementation.	PVT- SEC /CBO	In-kind project cooperation	Information exchange, networking
During the development of Sustainable District Heating Strategy, new actors were invited including Ministry of Agriculture, Latvian Academy of Agriculture (Forestry department) and Association of Wood Processors.	GOV/ACAD	In kind project cooperation	Information exchange, networking

Leveraged Resources

The project has successfully leveraged resources to expand demonstration activities that support the development objectives. Currently, adequate promotion of innovative financing schemes would help sustain the project. For example, the contribution of $890,000 US from LEIF has been critical in terms of expanding project activities and supporting widespread conversion to wood biomass heating in co-operation with nine new project partners.

Collaboration with the NGO 'Energy Brigades' offers the potential to ensure project sustainability by helping 'end users' 'energize' their homes.

3.6. Monitoring and Evaluation (M&E systems)

Evaluation: (HS) Highly Satisfactory

Effective M&E is a critical component of project success. As early as the first tripartite review held in December 2002, the UNDP-GEF Technical Advisor, Vesa Rutanen, suggested a review of two existing studies (STRASA konsultanti and SIA Tori) in Ludza to draw conclusions regarding the most effective means of: i) implementing the district wood waste heating system concept (including potential solutions to the problems with designed heat supply and heat distribution temperature regimes 95/70 and 120/90 respectively), ii) developing an investment plan if needed, iii) solving payment collection and billing system problems in Ludza, and iv) conducting a review of similar activities elsewhere (experiences, solutions and approaches)[17].

In this case the SCM was advised that more attention should be paid to municipal capacity constraints in order to understand and manage the project and the impact on project results. The project was closely supervised by the PSC (See Appendix 18). The State Secretary of the MoE[18] established the PSC in April 2001 to perform project consultative and supervisory functions, make decisions regarding project implementation, and promote information exchange regarding project implementation and activities. By fulfilling this role, the PSC acted as an effective M&E agent in the project context.

Three tripartite reviews occurred in March 2002, March 2003 and June 2004. The first tripartite review meeting acknowledged that little progress had been accomplished during the first year due to the conflicts between *Ludza Bio-Enerģija* and the Ludza municipality. The decision was made to commission an independent study of technical and other difficulties, which eventually resolved some issues. The second tripartite review meeting recognized that the problems experienced during the first two years had largely been resolved. The last tripartite review meeting was dedicated for the review and approval of the UNDP Project Implementation Review 2004.

The project staff and the UNDP project manager employed an excellent M&E approach that responded very well to the evolving external political and socio-economic realities including the rising cost of wood chips, increases

[17] Tripartite Review Meeting minutes, 12 March 2002.Mission report of Vesa Rutanen, GEF Regional Advisor on Energy and Climate Change, 11.-12.03.2002.

[18] Ministry of Environmental Protection and Regional Development before reorganization in January 2003

wood waste export, and the personnel changes at the municipal and Ministerial levels. This detailed monitoring, such as the ninth SCM (Appendix 13), supported project adaptation and facilitated a final positive result. Appendix 13 summarizes all PSC meetings, tripartite meetings and field visits in chronological order

3.6.1. Quality of the initial plan of follow-up evaluation

Evaluation: (HS) Highly Satisfactory

	Audit	*Mid-term*	*SCM*	*PIR*	*Outcome Evaluation*	*Final Evaluation*	*Evaluated by Whom*	*Revisions*
2001			***x***	***x***			***Internal***	
2002			***x***	***x***			***Internal /External***	***Implementation began in Ludza municipality***
2003		***x***	***x***	***x***			***Internal /External***	***B-Original project strategy revised***
2004			***x***	***x***	***x***		***Internal/ External***	***C- Outcomes revised to address sustainability issues – Recommendations from the Mid- Term review***
2005	***x***		***x***	***x***		***x***	***Internal /External***	***Smooth implementation and replication in nine municipalities***
								Final Evaluation June 2005

3.6.2. Effectiveness of the systematic follow-up evaluation

The project staff, the UNDP programme team and the PSC adhered to the recommendations of the GEF Mid-Term review and the UNDP E/E outcome review in order to adapt the project and 'keep things on track'. For example, the recommendations stemming from the Mid-Term review included a project revision to add two components that would ensure project sustainability:

1. Establishment and further development of financially and environmentally sustainable energy companies, and

2. Support conditions for strengthening the institutional framework to secure sustainability of biomass use in municipal heating systems.

The current project manager noted that this was a 'tough project' and required careful guidance and participation of the PSC as well as a thorough M&E system. The project, because of the adaptive capacity fostered through M&E feedback mechanisms, was ultimately successful.

3.6.3. Quality and use of relevant impact indicators

Evaluation: N/A

Although the project had undergone several major revisions, there were no appropriate performance indicators related to either the new project strategy or the overall activities in the environmental sector in subsequent years (desired outcomes). Although a revised project document had been signed in March 2003 and the revised project objectives, outputs and activities had been generally reasonable, well specified and structured, there was undue pressure to deliver all the activities before April 2004. This was consistent with a previous project evaluation[19] that '*with some notable exceptions, the intervention logic appears to be inadequately specified, making project management unnecessarily difficult'*[20].

In addition to some logical gaps in the revised project document 'C', the new project outputs and activities did not include adequate indicators. This would indicate that the project team would encounter difficulties in project implementation and the assessment of progress, especially if there were changes in the project management structure. A number of project objectives, outputs and activities would probably have benefited from being reformulated in verifiable and quantifiable terms. This would have facilitated project execution and improved monitoring and evaluation procedures. The likelihood of lasting impacts could have been improved through the allotment of more time to foster active participation of the project stakeholders, thus encouraging ownership and enhancing capacity building.

[19] Project Mid-Term evaluation and UNDP 2004 -Outcome EE evaluation.
[20] Project Mid-Term evaluation.

3.6.4. Lessons learned regarding the project design from monitoring and evaluation during project implementation

Effective performance indicators would have been contingent upon the collection of baseline data and an effective M&E program consisting of additional instruments and mechanisms to collect and analyze progress. This should have been the foundation of the project revision so additional funding would not have been required *per se*. Performance indicators at the objective and outcome level will ensure that results-based management approaches are used, as opposed to activity management as is currently practice in many environmental projects (and in the entire UNDP environmental portfolio).

A comprehensive Mid-Term evaluation, which comprised a review of all available project documentation and interviews with 19 key stakeholders, was conducted in September 2003, six months after project revision 'C' was signed.

In addition, in May 2004, UNDP conducted a comprehensive Environment and Energy Programme Outcome Evaluation, which included an evaluation of project outputs. The evaluation agreed that 'Implementation appears to be proceeding well, and receives support and agreement with the approach being followed from all stakeholders. Project monitoring and backstopping appear to be adequate and effective. Good support is being provided by the UNDP, and the Project Steering Committee has been effective.'

It was conceded that the project PR specialist could have been effectively utilized from project initiation to raise public awareness and public support.

4. RESULTS

4.1 Achievement of Project Objectives/Outcomes (R) [21]

Overall Project Evaluation: (S) Satisfactory

The Project has met or exceeded all of the original objectives. A breakdown and assessment of Project immediate objectives and outcomes are described below (See Appendix 12).

4.1.1. Development Objectives

Objective 1- Establishment and development of financially and environmentally sustainable energy companies throughout Latvia to reduce CO_2 emissions.

Evaluation: (HS) Highly Satisfactory

Assessment

Since 2003, the first development objective has been fully met (100% reduction). The indicator was originally designed to measure the results of the demonstration project in Ludza and 4 - 6 other municipalities. As the Project was revised and other municipalities were incorporated, it became increasingly difficult to measure outcome success. The evaluation determined that these changes have contributed to the original goal in terms of total per capita CO_2 reduction but it is not possible to base this assessment on real data because the first set of measurements will only become available appear after the first heating season (2004 /2005). **The Latvian Environmental Investment Fund (LEIF)** will collect this data at the end of 2005.

Indicator 1- CO_2 emissions have been reduced by direct reductions in the use of heavy fuel oil (mazut) by 80% (from 3600 t/y to 720 t/y) by the end of the Ludza municipality pilot project.
Baseline: Year 0: 14,000 tons of CO_2 emissions. **Fully met:** 100% reduction in the use of heavy fuel oil (mazut) in the heating system of Ludza by 2003, resulting in an annual reduction of 11,200 tons of CO_2 emissions in Ludza municipality[22].

Indicator 2 - CO_2 emissions further reduced by an estimated 750 000 tons over a 10-year period after Project replication in other municipalities. The original Project proposed replication in 4 - 6 additional municipalities, reducing CO_2 emissions by more than 100 000 tons during a 10 year period in each municipality. Most of the additional municipalities hosted small populations. The amount of avoided CO_2 emissions in these additional municipalities will be approximately 18 250 tons over a 10 year period.

Objective 2- Support conditions necessary for strengthening the institutional framework to secure sustainability of biomass use in municipal heating systems.

Evaluation: (S) Satisfactory

This evaluation has determined that additional work is required in order to meet the second development objective. Project activities such as public consultations, soft assistance, PR campaigns, media attention, seminars, and study tours have indirectly impacted on the institutional frameworks by facilitating issue awareness. Adaptive project management, as directed by UNDP and the Project Management team, was the appropriate response to the rapidly changing political and economic conditions in Latvia. However, activities developed later in the Project that were intended to drive this process (i.e. PR campaign, the development of a precondition document for a national strategy and action plan concerning wood waste use in district heating, market survey on wood waste, etc) were not effectively integrated into national planning. The action plan was not completed and other activities (market survey and precondition document concerning national strategy concerning renewable energy) had not been adequately promoted within the relevant government departments (Ministry of Economy; MOE, Division of Climate Change; Ministry of Agriculture and Ministry of Regional Development and Local Government, Department of Housing) in order to sufficiently influence policies and regulatory frameworks.

[21] This section includes an assessment of how effective has the project been to contribute to market transformation outcomes in terms of, 1.enabling policy environments, 2. availability of finance, 3. business enterprise support, 4. information dissemination and awareness. It also considers the projects contribution to replication or scaling up of innovative practices or mechanisms that support the project objectives?

[22] APR 2004

Among the reasons for the shortcoming: Ministerial restructuring retarded Project lobbying efforts, certain activities such as promoting government 'subsidies' were never completed, and the issue did not receive a great deal of attention from within Project parameters.

However, there are emerging opportunities for example, in January 2005, the Ministry of Environment introduced a new Climate Change Programme (2005- 2010), designed to conform to the EU Climate Change programme and to share information on capacity issues (resulting from the UNDP/GEF project on National Capacity for Self-Assessment of Global Environmental Management). The programme has proposed several priorities and provisionary solutions to be implemented until 2010. The Latvia Climate Change programme proposes to support the implementation of renewable energy strategies and initiatives concerning the possible expansion of Biofuel, Biogas, Small HES, Wind energy, Cogeneration and energy efficiency projects.

4.1.2. Immediate Goals

At the Project conclusion all of the planned activities have been completed, with the exceptions of:

- A pilot billing system implemented in Balvi (in process, will be completed by June 30,2005);
- Television series focused on alternative energy (June 2005);
- Additional activities: companion DVD (television series summary) and publication on renewable energy and energy efficiency (June 2005);
- Long-term training programme on the administration of Municipal Heating systems (June 2005).

Outcome 1.1 -Analysis of Project status in the Ludza municipality.

Evaluation: (HS) Highly Satisfactory

By 2003, several mediation activities in Ludza supported improvements for technical and administrative development of the district heating system. However, by the end of 2003, the PSC decided to diversify beyond the pilot project in Ludza municipality and develop parallel implementation strategies in other municipalities. The Project is ongoing in Ludza in terms of the capacity development and is beginning to demonstrate a satisfactory result. However, more attention needs to be focused on the 'End user' through activities that demonstrate the tangible impacts of energy efficiency, such as savings incurred through housing insulation and public awareness campaigns that will further educate and satisfy new consumers.

Outcome 1.2- Heat meter system enhanced and local heating points improved (energy efficiency in apartment buildings)

Evaluation: (HS) Highly Satisfactory

By the end of 2005, the distant heat meter control systems will have been successfully introduced and will be fully operational in four municipalities (Balvi, Jumprava, Tukums and Vabole). Local heating points have also been improved.

Outcome 1.3- Billing system to recapture full cost of investments introduced.

Evaluation: (HS) Highly Satisfactory

The Project developed a billing system strategy and reviewed the preconditions for Project replication. Recommendations for billing system strategy were developed for 3 municipalities (Jumprava, Balvi, Tukums). Pilot project has been successfully introduced in Balvi municpality (Appendix 22).

Outcome 1.4- Ludza Energy Department established and Energy departments in partnering municipalities supported

Evaluation: (S) Satisfactory

The Ludza Energy Department has been established and three personnel trained in accordance with the original Project objectives. A municipal capacity development assistant was also employed later in the Project (March 2003) to increase capacities and facilitate information sharing between municipalities. Eight other municipalities in cooperation with the **Latvian Environmental Investment Fund** have received funding to access credit in order to make similar changes (Appendix 23). A survey was conducted to facilitate the identification of potential partners for further capacity development.

Outcome 1.5 -Creation of support mechanisms for low - income population

Evaluation: (S) Satisfactory

This component was introduced during the Project revision of March 2003. Supporting activities included hiring an international expert to draft a 'user-friendly' handbook for municipalities concerning energy programmes available for low-income residents. A pilot project that focused on providing information on new support schemes for low-income residents (related to facilitating heat payments and heat insulation of buildings) was initiated in Dagda in 2004 (Appendix 23) A similar project was launched in Vabole in 2005.

Outcome 1.6- Public awareness and promotion campaign conducted.

Evaluation: (HS) Highly Satisfactory

This was a very successful group of activities that was initiated late in the Project schedule. The inclusion of a PR specialist and related activities at the beginning of similar projects may achieve a greater impact and also support project implementation. A broad public awareness campaign that targeted residents of partnering municipalities, municipal administrations and technical personnel consisted of the distribution of information brochures and handbooks was conducted in September 2004. The campaign also included developing publications for national and regional newspapers and the implementation of five seminars in strategically located municipalities.
Project experts also participated in an Energy trade fair in May 2004 in order to share lessons and information[23]. The enhancement of learning with a direct focus on the 'end users' was seen as a critical intervention, based on feedback from participants. On-site knowledge and skills concerning 'energy efficiency' issues were ascertained to have been weak during a visit to the municipality of Balvi. Further public awareness work will contribute to the larger development objectives and also ensure sustainability of Project activities.
The PR campaign revealed a significant lack of knowledge within municipal administrations, state institutions and communities concerning renewable energy strategies in general. There is an urgent need to conduct an in-depth analysis of the entire RES situation and potential in Latvia, the institutional and legislative frameworks and also the methods of disseminating this type of information.

Outcome 2.1- Conditions for implementation of National Strategy for District Heating Systems involving biomass combustion and other renewable sources.

Evaluation: (S) Satisfactory

This was a new component introduced in project revision 'C'; March 2003. The National Strategy brief had been developed by the end of 2003. The promotion of the National Strategy and the preparation of an action plan in cooperation with relevant stakeholders had been initiated by early 2004. The action plan has not been completed, due in part to the abrupt structural changes within the involved state institutions (MOPRD, LIDA). Another strategic aspect involved market research of the sustainability of the Latvian wood waste biomass supply in 2004. It concluded that a decrease in barriers to biomass use in district heating systems has been achieved but it also indicated that significant barriers pertaining to the overall use of biomass energy remain in place, particularly within the supply system of wood chips.

A database of wood suppliers and wood consumers was also prepared by the Project. This output is currently hosted by the Project staff in Riga. UNDP should conduct a review of the database and develop a plan for its maintenance.

Outcome 2.2- Capacity of biomass projects enhanced

Evaluation: (HS) Highly Satisfactory

A baseline survey was conducted in 2003 by an independent consultant in order to evaluate municipalities where conversion to wood biomass fuel heating systems could be piloted. By the end of 2004, the Project supported 13 municipalities that wished to either convert or improve heating systems by using wood waste.

[23] The participation in Energy trade fair was given excellent feedback based on respondents of the evaluation questionnaires distributed by evaluation team.

Outcome 2.3- Establishment of institutional/financial support for Project implementation

Evaluation: (HS) Highly Satisfactory

The Project initiated an effective partnership with the **Latvian Environment Investment Fund (LEIF)**. Eight municipalities were able to receive grants and loans to support the conversion to municipal wood waste heating systems. In total twenty-nine municipalities had competed for this support. The award and financing scheme was approved by the Ministry of Finance in April 2004 and is expected to continue until end of 2005. The continuation of this innovative financing scheme is critical to facilitate sustainable Project replication and should be extended indefinitely by the Latvian government.

Outcome 2.4- Impact of UNDP/GEF intervention monitored

Evaluation: (S) Satisfactory

The adaptive monitoring strategy employed by Project Management was appropriate (Appendix 18). However, the original Project design and indicators could not be systematically qualified /quantified against the larger Project goals as there were some logical gaps back to the original Project development and the UNDP outcomes. This unduly complicated the task of monitoring and evaluation.

A positive aspect of adaptive monitoring was related to the ability of Project staff and the PSC to feed the results and lessons learned into relevant Ministries and institutions on a regular basis, through the PSC meetings, regular APR reporting and formal evaluations (Environment and Energy Outcome review 2004 and project Mid-Term review 2003), the PR campaign, several capacity building workshops and the related study tours. The Mid-Term Evaluation provided important feedback concerning adaptation measures that were required to ensure project sustainability. The evaluation recommended structural changes in order to improve the original project strategy (such as financing schemes) and to facilitate a successful project result (Appendix 18).

4.1.3. Sustainability

Evaluation: (S) Satisfactory

The real measure of Project success (i.e. long term sustainability) depends not only on the successful implementation of Project activities, but also on the effective transformation of the Latvian economy in general, and the fostering of greater prosperity in the eastern regions of the country[24]. This pilot project has indicated that energy, environmental protection, and energy efficiency issues must be linked. For example, significant gaps (barriers) remain at the institutional level that hinder the establishment of an effective framework for the sustainable use of wood waste and other alternatives to support a secure market transformation. The Project has demonstrated the technical suitability and cost effectiveness of wood waste, improved horizontal and vertical communication and knowledge sharing between levels of government and other stakeholders, and has emphasized important linkages necessary for energy planning. However, barriers to supportive institutional frameworks, the lack of capacities and the need to further educate the public are issues that need to be addressed in order to sustain the Project development objectives.

Project sustainability does however appear more certain than when the Project was reviewed in 2003. One of the recommendations stemming from the Mid-Term Evaluation was that greater attention be given to enhance public / stakeholder participation into Project activities. According to the current review and the study of the individual outputs, follow-up activities were designed and a revised Project implementation strategy was applied. These activities have been implemented with a satisfactory result. The Project also delegated some responsibilities to the municipalities. For example, municipalities are responsible sustaining wood waste heating at least 2 years beyond the end of Project activities.

In order to sustain the market transformation initiated by Project activities, the Latvian Government should further replicate and promote the outcomes and immediately plan to address the Project shortcomings. An action plan to build on the successes and ensure long-term Project sustainability is described in Appendix 25.

Accomplishments / Impacts

The key changes instigated by the Project which must be maintained include:

1) The Project has facilitated the development of financially and environmentally sustainable energy companies in municipalities of Latvia.
2) The Project has evaluated a viable municipal support mechanism that can be built upon by government.
3) The Project has provided a solid knowledge base for continued work on building public awareness for residents as well as technical and administrative personnel in municipalities.

[24] Also supported finding in the Mid-term review (2003)

4) The Project has developed an excellent municipal training program related to sustainable energy initiatives, from which 70-90 persons have been trained to date.
5) A billing system pilot project has been developed and the information made available.
6) A national strategy on renewable district heating was developed (but needs to be updated and promoted within national administrative institutions).
7) Capacity building and the institutional and financial support frameworks for the implementation of follow-up projects has been established. The knowledge has been made available. Co-operation among partnering municipalities has been strengthened.

Assessment/Shortcomings

The following shortcomings related to Project sustainability have been identified;

Need for a Complementary Programme Focusing on 'Energy Efficiency'

A major concern regarding Project sustainability is related to the implementation of new heating systems and the lack of focus on end-user needs, particularly in terms of 'energy efficiency' and housing insulation (also discussed in Section 3.1.3.). Some residents expressed dissatisfaction in paying for 'inadequate service' by the heating company. The real issue is the lack of effective housing insulation, which raises the real cost of heating. This issue has received some attention from Energy Brigades, but there has been little systematic government action. A possible solution may lie in enhanced public education and awareness regarding the problem and potential solutions. The Government will also need to provide financial incentives to promote energy efficiency measures for individual houses.

Lack of a Competent Institution for Scientific Coordination (actions to support the future use of wood biomass)

The Project had planned to actively engage the scientific community, including the National Academy of Sciences and the Physical Energetics Institute in order to provide support for Project implementation and activities. There is no mechanism in place to institutionalize, enhance, or sustain this relationship beyond the Project life. There is also no formal mechanism in place that will ensure that Project functions are delegated to current Project partners such as the Latvian Environmental Investment Fund, Private Sector associations, Ministry of Environment, etc. A strategic mechanism for Project follow-up should be formalized.

Wood Boilers/Financial

An issue of potential concern relates to the short operating life of the wood waste boilers. Boilers can currently be expected to operate for eight years, while the loan repayment schedule is often 12 years. Not only does the municipality run the risk of paying for the boiler after it ceases operation, but it may also be faced with the additional cost of replacing the boiler, which may require additional loans. This constitutes a serious sustainability challenge for cost efficiency of the system.

Minor Project Impact on changing National Policies and Regulations

UNDP should consider designing a follow-up strategy concerning how it will continue to promote the Project outputs. For example, UNDP is currently preparing a Project proposal to the GEF on renewable energy that may ensure the long term sustainability of this Project through scaling up the learning that has already occurred and addressing gaps related to education and institutional coordination issues.

The government is encouraged to provide incentives such as subsidies and grants to further promote desired market changes. Without supportive policies, frameworks and regulations, the Project will not likely be sustainable over the long term.

Need to Increase Municipal Capacities concerning Renewable Energy Programmes

The PR campaign revealed a significant lack of knowledge by municipal administration, state institutions and communities concerning renewable energy issues and strategies. There is an urgent need to conduct an in-depth assessment of the entire RES situation and potential in Latvia, the institutional and legislative frameworks and information dissemination networks.

4.1.3.1 Financial Resources (Sustainability) (See also Objective 2.3, Section 4.1.2)

LEIF funding facilitated a broader Project target by allowing more municipalities to acquire loans to support conversion to a municipal wood waste heating system. The active promotion of the technical results achieved through the Project, the market survey and the national strategy brief (after update) should be shared with the newly restructured departments (Ministry of Economics and State Investment programme, MOA, MOE, CC), and with institutions responsible for the development of new regulations and strategies in the energy sector.

An issue of potential concern relates to the short operating life of the wood waste boilers. Boilers can currently be expected to operate for eight years, while the loan repayment schedule is often 12 years. Not only does the municipality run the risk of paying for the boiler after it ceases operation, but it may also be faced with the additional cost of replacing the boiler, which may require additional loans. This constitutes a serious sustainability challenge.

4.1.3.2. Stakeholder Ownership (Sustainability)

The Project has achieved a limited level of social sustainability. For example, Project activities have been integrated into the local economy in Balvi municipality (Appendix 26 - Figure 1). In many municipalities, the project enabled jobs creation, including wood splitting, technical and management related, among others. Although the Latvian situation has changed radically since the Project was designed, municipal employees and other stakeholders interviewed in Balvi (Appendix 4) indicated that the Project has provided them with a cost effective housing solution that is beginning to mature and work efficiently. The biggest threat to Project sustainability is related to the implementation of a new heating system that does not address the concerns of end-users, the issue of 'energy efficiency' and housing insulation (discussed in section 3.1.3.). The residents were clearly unhappy to pay for what they perceived to be an inadequate service provided by the heating company, whereas much of the problem relates to heat loss due to poor insulation.

4.1.3.3. Institutional Framework and Governance (Sustainability)

The responsibility for planning renewable energy strategies and renewable energy sector development in Latvia is divided between the Ministry of Environment (*environmental protection, climate changes, environmental technologies, development issues, etc*), and the Ministry of Economics (*electricity, heat energy, energy efficiency)*. The Ministry for Regional Development and Local Government and the Ministry of Agriculture (Department of Forest Policy and Department of Forest Resources) are responsible for rural development and forestry practices.

The Project has served to improve inter-ministerial cooperation and has highlighted the importance of horizontal inter-ministerial coordination in energy sector planning as a means of addressing the gaps in the energy sector, especially in rural Latvia. However, the National Energy programme has not been updated since 1997, and representatives of the Ministry of Economics indicated that their involvement in this Project has highlighted the need to update this document and to foster inter-Ministerial coordination in the energy sector.

Any update of the national energy programme requires a facilitator for inter-Ministerial coordination. UNDP could potentially continue in this role through integrating the outputs of this Project. The Ministry representative expressed the belief that wood waste can be considered as a viable energy alternative with further growth opportunities in Latvia[25]. Although the price of woodchips is rising, prices are also rising throughout the energy sector.

The Ministry representative also expressed the belief that the Project outputs have demonstrated the need to consider the viability of alternative energy sources such as wood waste, which is in line with current Energy planning. In terms of socio-economic benefits, heating system planning is usually conducted over a ten to twelve year Project period. Thus, they expect that the Project results and impacts in terms of cost efficiency, individual savings and wealth generation for the poor, will manifest in 10-12 years if sustained and properly supported.

4.1.4. National Staff Capacities concerning Environmental and Natural Resources Management (See also Section 3.2.3.)

Evaluation: (S) Satisfactory

Based on stakeholder interviews (see Appendix 9), linkage capacity between energy and related sectors has been enhanced through public awareness campaigns and information dissemination networks related to the successful replication of Project activities in many small municipalities. For example, the links have been forged between energy and national security issues, between energy and environmental concerns, and between energy, rural development and social improvements.

[25] Meeting with Ministry of Economy June 9, 2005

5. RECOMMENDATIONS

The Project strategy was continuously adapted, based upon recommendations stemming from two external evaluations, three Project implementation reports and nine PSC meetings. A concerted effort to ensure Project sustainability and enhance participation of all Project stakeholders since the Mid-Term review has supported a final overall satisfactory Project result. The unique Project Management strategy facilitated sharing of lessons learned between the demonstration pilot in Ludza and interested municipalities. Project management strategies have clearly been effective: the Project has been positively perceived at all levels and the updated list of activities is relevant and realistic.

The Project has provided an excellent demonstration template and promoted the conversion of district heating systems from fossil fuels to biomass fuels in rural Latvia. In 2003, the amount of wood biomass fuel utilized totaled 47.7 PJ, which exceeded the recommended level of 37.9 PJ. Meanwhile, approximately 30% of wood waste biomass is not utilized. Residential and public buildings are not generally energy efficient however, which threatens Project sustainability.

The Project provided the basis for improved sectoral coordination and emphasized linkages among stakeholder groups. In order to ensure long-term Project sustainability and to complement/support many of the ongoing Project activities (municipal capacity building, institutional framework development and public education in particular) further assistance is required from stakeholders to fill institutional gaps that have been identified through this Project. Significant institutional gaps have been maintained through poor comprehension of the relevant issues at many levels and weak information dissemination networks. The results clearly demonstrate that renewable energy, environmental protection and energy efficiency issues must be linked in perception and in decision making goals and strategies. These linkages must be readily available and comprehensible to technical personnel, decision makers, and the general populace in order to establish institutional frameworks for the use of wood biomass heating systems and for RES in general.

Project revisions have had a significant impact on both development objectives. Based on the review of Project outputs and the analysis of compiled data, a number of recommendations have been drafted. A number of recommendations have been highlighted in the evaluation text but have been described in more detail within this Section. Additional recommendations from stakeholders, the UNDP global office and UNDP Latvia office have also been included.

5.1. Corrective Measurements of Project Design, Context, Evaluation, and Follow-up

Project Management and Design

Lack of Appropriate Project Indicators for Measuring Project Relationship to Broader Outcomes

Project indicators were weak, which created difficulties throughout Project implementation. The logical framework/methodology should have been updated after the Mid-Term Evaluation. This would have enhanced Project effectiveness in the later stages of implementation. For example, "*Heat meter system and Local Heating Points Improved (Energy efficiency in apartment blockhouses*)", the heat meter system tracks levels of energy consumption, although it can identify energy inefficiencies, it cannot remedy the problem. Solutions require additional infrastructural and institutional frameworks, which were not included as indicators.

The UNDP PIU should revise Project methodologies to provide quantifiable and/or qualitative indicators that facilitate Monitoring and Evaluation against the broader development goals. The development of a limited number of solid indicators could have maintained a results-based Project focus as opposed to a focus on activity execution.

Additional Focus to Strengthen Project Design

The original Project design clearly did not anticipate (and thus seek to mitigate or avoid) the institutional and political risks and institutional gaps associated with a nation in transition. This point was also highlighted during the UNDP Environment and Energy outcome review conducted in 2004. Ministerial and administrative instability have clearly posed obstacles to this Project. Additional attention should be focused upon potential institutional and political problems, including the associated policy motivations. An important contribution of the Project however, was the demonstration of the effectiveness of a flexible approach, and ability to address emerging unforeseen issues. Adaptive capacity mechanisms should be incorporated into future project designs.

Municipal Level Support

Focus on End-user Requirements for Heat Balancing

The question of 'energy efficiency', as applied to apartment blockhouses, concerns the need to focus on end-user requirements. This involves a greater emphasis on the technical component of heat distribution balancing and

insulation. There has been a demonstrated need for additional capacity building at the municipal level to implement and refine the entire system. For example, the heat-metering and billing system does not currently balance heat distribution within the apartment blockhouses, but merely delivers heat to the buildings. Building design and insulation, which are often of poor quality, are responsible for heat distribution to individual units, often delivering an inequitable heating balance. Further action, including improved building design, heat distribution mechanisms, and insulation, is required to improve heat balancing and mitigate user costs.

Need for 'Financial' instruments and Support Systems for Low-Income Residents

During the stakeholder consultation meeting in Balvi, many municipal representatives requested support to help identify potential funding sources in the future to sustain and improve their activities. It also became clear during these consultations that a serious threat to the sustainability of the system is concerned with the need for demonstration of the long term cost -effectiveness to individuals through improved housing insulation. The project had been slow to focus on the low-income end-users early in the Project and this time challenge dictates **that follow-up** (energy efficiency measures) is essential in this regard for the ultimate success (against the development outcomes) of this project.

The work of energy brigades in Dagda and Vabole municipalities showed that it is possible to insulate the windows with limited amount of finances. This level of support, which improves cost efficiencies, should be broadened to all partnering municipalities and extended by provision of financial support for low-income residents and by development of incentives to paying customers

Need to Strengthen Municipal Information Exchange[26]

An informal municipal co-operation network emerged during the public awareness seminars. Regional Development Agencies have shown interest in involving these networks in establishing economic development priorities and strategies. For example, the experiences from the billing system pilot project are being shared among municipalities (informally and through events organized by the Project). More can be done to facilitate systematic cooperation and information exchange to help municipalities 'help themselves'. A digital summary of the experiences and lessons learned from the Project, including technical aspects, partnering Ministries, municipalities and NGO's, and links to external funding agencies should be compiled and made available to interested municipalities. This will foster project continuity at the municipal level.

Public Awareness Resources Delivered to Government

The output from the public awareness campaign, such as information leaflets, brochures, Television videos and technical handbooks is to be delivered to LEIF and the MoE after the Project concludes. These materials will facilitate project continuity and sustainability. The Latvian Government should consider the continuation expansion of the public awareness campaign, including instructions for accessing district heating and home improvement funding, and the promotion of energy efficiency measures in the community.

Training Materials Made Available to All Interested Parties.

Appropriate facilitators should be identified from within the current Project partnerships. Training materials developed during the Project should be provided to these facilitators in order that the project lessons and ideas can continue to be disseminated and built upon in public, academic, and institutional forums. In addition, more effort should be applied to the inclusion of academic personnel and resources in energy efficiency and renewable/alternative energy issues.

Institutionalized Subsidies and Incentives

The team found that two key Project indicators, 2.3. *Establishment of Institutional/Financial support for Project implementation*, *2.3.1. Government received applications for* ***subsidies and regulatory support*** *for biomass municipal heating systems,* were not addressed within the Project context. While advances in loans and incentives have been made through LEIF and Latvian Environment Development Fund, there is significant room for improvement. Home improvement subsidies and incentives programs should be integrated into national housing, economic development, energy, and environmental policy. UNDP should provide any necessary assistance, support, and advice.

5.2. Actions to Follow-up or Enhance Initial Project Benefits

Public Awareness Campaign

In order to build upon the Project goals and outcomes, continued public and municipal awareness building is required. This will enable municipalities to further refine heating systems and focus on end-user needs. Public

[26] In the project overall project sustainability is assumed as sum of sustainability of different activities as there are many activities where different level institutions have been involved.

awareness building was initiated through the Project but there is a need to follow up the PR campaign by building greater awareness of energy efficiency issues. Greater public awareness will foster the behavioral change required to encourage regular heating bill payments. Municipalities also still require training and technical support to improve services, promote environmental and energy linkages, and build capacity to access new donor funding such as LEIF and LEAF programmes. Public awareness campaigns directed at the government should relate to improving and updating the National Energy Programme, encouraging new policies and regulations such as subsidies and incentive programmes that support the Project goals.

Facilitate Inter-Ministerial Co-operation (Environment, Economy, Agriculture, Rural Development and Local Governments, etc.) to Update the National Energy Programme with Focus on Renewable Energy and District Heating

Project outputs were not sufficiently promoted within Government, which, in addition to Ministerial restructuring, retarded the potential impact on Government policy. Currently, one of the main Project outputs, the National Strategy, has become obsolete. The Project clearly demonstrated however, that energy, environmental protection and energy efficiency issues must be linked in an integrated manner to mitigate pressing energy supply problems. Significant gaps remain at the institutional level that hinder efforts to sustain ably utilize wood biomass as an energy source. UNDP should continue to facilitate this linkages and knowledge sharing, thereby ensuring the sustainability of Project outputs. This will increase pressure to update the National Energy Programme.

Develop an Energy Efficiency Strategy with a Focus on End-users

Further municipal capacity building should include demonstrations of how energy efficient houses cut costs. Project sustainability depends on a system which functions to ultimately reduce costs for individuals. In the absence of tangible results, the likelihood of utility payment, and ultimately cost recapture, diminishes. Efforts should also be made to encourage the use of more efficient and durable boilers that will function effectively beyond the timeframe of Government loans.

Develop a Strategy which Includes Ideas for Promoting Activities, Capacity Building, and Innovative Financing Schemes for Renewable District Heating

The State Housing Agency policy of funding the insulation of private houses should be expanded.

5.3. Recommendations for Future Actions to Support Project Objectives

(Also see Appendix - 25)

In Latvia, UNDP assistance is scaling down after years of close co-operation. This decision was prompted because Latvia is a member of the European Union. Nevertheless, Latvia remains the poorest member of the EU and requires external support, particularly with respect to Environmental compliance with MEAs. Assistance is also clearly required to facilitate capacity building that will enable equitable access to EU funding for related initiatives. The government recognizes the importance of the UNDP Environmental and Energy portfolio and its critical links to sustainable development, especially in the poorest municipalities of Latvia.

Recommendation 1: Facilitate the revision of the National Energy Programme/ Strategy by emphasizing that strategic documents (National Programme on Energy) include a plan for the comparative use of all forms of renewable energy (geothermal, wind, etc.) and non-renewable energy (natural gas, fossil fuels etc.).

Recommendation 2: Emphasize tangible social outputs generated by the Project, including enhanced environmental awareness, improved environmental quality, and reduced CO_2 emissions. Actively support the institutionalization of the newly established Climate and Renewable Energy Department (the Ministry of Environment) by providing technical guidance and further resources. Assess the renewable energy sources available by region and conduct a technical analysis of the viability of wood waste and other renewable energy use in Latvia.

Recommendation 3: Facilitate inter-Ministerial co-operation that ultimately produces a new ‘Strategy for District Heating’ in collaboration with the Ministry of Economy and the Ministry of Environment.

Recommendation 4: Facilitate discussions concerning Single Programming document for the use of EU structural funds for the new programming period (years 2007 – 2013), which focus upon the improvement of infrastructure (pipelines, insulation, etc.) to facilitate energy efficiency, particularly in the small municipalities.

6. LESSONS LEARNED

6.1. Best and Worst Practices to Address Issues Related to Project Relevance, Performance and Success[27]

The Project provided a number of valuable lessons, which may guide future GEF Project implementation in Latvia and abroad. The Project also provided examples of good practice, which may be applicable to other GEF and UNDP offices. The Project has provided valuable insights concerning project monitoring, replication, flexibility of implementation, and the strategic timing of initiatives. The revised Project strategy focused on end-user needs and improving energy efficiency.

The main value of the Project was its ability to facilitate co-operation among stakeholders from a wide variety of backgrounds and mandates to solve difficult energy-related problems. The Project stakeholders and staff displayed ingenuity in devising practical solutions to complex problems that were often external in nature. The solution frameworks may be applicable over a broader context.

This reasoning implies that if technical ingenuity consists of methodologies to reconfigure matter to technology like computers, cars and furniture, then social ingenuity consists of methodologies to organize people into organizations and institutions such as courts, markets and parliamentary democracies. Although new technology can often get our attention, social ingenuity is more significant. In fact, social ingenuity is a prerequisite for technical ingenuity[28]. This Project demonstrated this point extremely well. Had the Project focused solely on the technical aspects of installing heating systems, then the desired changes would only have emerged when social and institutional barriers surrounding the new technologies were overcome. In Ludza for example, the system, although operating as per specifications, cannot work without the full support of the municipality and the contingent conversion to wood waste heating. Residents depend on their municipality for leadership and therefore, the Private Public Partnership arrangement is dependent on the full support of the municipality. The Project invariably found that Project success was contingent upon a supportive municipal structure.

Sound Project Design

This evaluation has highlighted the value of a sound project design and the inherent risks involved with implementing a poor design. A sound project design fits together logically (identifying the links to UNDP overall outcomes, as well as relationships/links between objectives, outputs and activities), identifies risks including the limitations of relevant institutional capacities, applies sound implementation strategies, and includes objectively measurable performance indicators. The contribution of these parameters towards successful Project execution cannot be underestimated.

As described by the Mid-Term Evaluation, the weak Project design in this case, is characterized by the dependence of all outputs and activities upon a single condition that is external to the Project. It should be noted however, that while it is easy to theorize about the ideal Project design after the fact, there are inherent difficulties associated with designing a Project that requires significant levels of confirmed co-financing, operates independently of external forcing mechanisms, and is sufficiently flexible outside of a controlled laboratory setting. In this case, available co-financing from the Netherlands depended on the construction of the heating system in Ludza. GEF has become increasingly open to commercial co-financing partnerships, at times on a competitive basis during Project execution. This type of issue is likely to become more prevalent over time, and may require a fundamental solution from within the GEF framework rather than being addressed on an *ad-hoc* basis.[29]

The Utilization of a Public Relations Specialist

A PR specialist hired early in the project schedule may have been able to mediate some if not most problems encountered during the Project by launching a public awareness campaign prior to the formalizing of relations between the municipality of Ludza and *Ludza Bio-Enerģija*. Each Project activity could have been strategically supported by PR activities. The Project did, however manage to support environmental awareness through its activities prior to the retention of a PR specialist.

Soft Assistance

The Project actively encouraged a soft assistance element early in the implementation phase. Soft assistance included the involvement of UNDP, PSC, and MoE representatives in dialogues with Ludza municipality to

[27] Compilation based on three external project evaluations including Mid-term Review, Energy and Environment Outcome Evaluation, and Current Terminal Evaluation

[28] Fueling the Future, '*Bring Ingenuity to Energy*', Thomas Dixon Homer, House of Anansi press, Inc., Toronto, 2005, P. 17

[29] UNDP EE outcome review -2004

address technical, institutional, and political issues. Soft assistance also included multidisciplinary discussions sponsored by UNDP and MoE, lobbying for sustainable energy use during seminars, etc. This influenced Project development and provided the basis for improving the Project strategy. Soft assistance helped facilitate Project sustainability in all elements of the revised Project strategy and has provided a solid communication base for further activities. The Project has also provided soft assistance to support economic sustainability issues and capacity increase as well as limiting "brain-drain" from the Latgale region.

Market Fluctuations

The original project design did not anticipate rapid sector development and the impact of the market changes on sustainability. Project flexibility to adapt to these changes was paramount in providing successful results.

Networking

Project replication activities facilitated the development of an effective capacity building network among stakeholders to learn and share experiences regarding district heating initiatives. Networking is an important mechanism that can facilitate sustainable activities that aim to change social behavior patterns.

Project Steering Committee

UNDP involved a wide variety of stakeholders in this Project. The resultant PSC hosted a diverse membership that facilitated an effective multi-disciplinary dialogue. The PSC mechanism had a profound influence on this Project's implementation and ultimate success, however notable for future initiatives, was that Project delays did occur when the PSC repeatedly gave the conflicting parties in Ludza 'one more chance' to resolve the situation[30]. While UNDP should encourage steering committees to make difficult decisions in a timely manner, delays (except in exceptional circumstances) should not be used as an excuse to cut back on participatory approaches. In the long run, UNDP perseverance appears to have paid dividends. The use of a local consultant to develop/redesign project strategies in a participatory manner that included frequent group and individual interaction with PSC members appears to be an approach that could be replicated in other projects/countries. [31]

Targeting Capacity Needs

The lack of local capacity (available experts with sufficient experience) appears to have constrained successful Project execution. In retrospect, more Project elements and activities that directly addressed capacity constraints over the long-term may eventually have reaped beneficial impacts for subsequent projects. This is a manifestation of a somewhat unclear long-term Project vision.

Innovative Financing Schemes Demonstrated through Project

The financial scheme designed to support the switch to wood biomass heating was developed and initiated by the end of 2003. Eight municipalities in cooperation with LEIF implemented wood biomass heating projects, with total planned investments in 2004 of more than $1.12 million US. The UNDP GEF contributed 15% of the total.

Project Implementation Lessons

The timing of the GEF Intervention was a critical component of the pilot investment project. Initially, there was a significant time delay between the co-financing investment and approval for funding from GEF. As a result, key negotiations over service and institutional structures between the Ludza municipality and *Ludza Bio-Enerģija* (co-financed by the Dutch Government) were conducted in isolation from the UNDP-GEF project team. The municipality lacked experience in the energy sector and the resulting pilot investment has faced criticism due to local perceptions of poor quality of service and high tariffs. The Project team resolved the crisis by serving as a "neutral broker", developing an agreement between Ludza municipality, *Ludza Bio-Enerģija*, and UNDP to stabilize relations between parties and secure a base for sound Project implementation. [32].

The UNDP project schedule allowed for full supervision from the projects beginning to end, the lessons learned from the initial failure of negotiations between the municipality and the private investor can be disseminated to other municipalities that are considering similar investments. The development and continued sharing of related materials will provide municipalities with full understanding of energy service provision agreements and associated issues.

Use of Memorandum of Understanding

It can be difficult to isolate project activities from political influences and manipulations and therefore, the incorporation of a Memorandum of Understanding within the Project structure helped buffer external forces,

[30] EE Outcome review 2004
[31] Annual project report for UNDP/GEF projects 2004
[32] Annual project report for UNDP/GEF projects 2002

facilitated regular follow-up with relevant agencies and stakeholders, and structured clear and concise statement regarding Project activities and outcomes.

To improve situation with Ludza municipality a two-step approach was used:

1) Convincing the parties to negotiate. This was accomplished through the use of a) regular meetings and discussions organized for the municipality and the private investor with the participation of the PSC, UNDP and MoE representatives, b) drafting agreements on co-operation that were agreeable to the 3 parties, and c) the application of international expertise to resolve potential problems.

2) Changing the Project strategy to avoid political risks. The Project was expanded to include an additional five municipalities and a mechanism was put in place to facilitate further expansion, which eventually attracted a total of 15 partnering municipalities.

Recognizing the Influence on Institutional Capacity at all Levels of Project Implementation

It was evident from the experiences of this Project that institutional capacity and implementation arrangements can be particularly challenging.

While many factors that influence institutional capacity are virtually impossible to predict while designing a proposal, additional analysis of relevant factors may mitigate or even avoid at least some of the risks. In general, a flexible design, which for example may incorporate a competitive phase or the selection of alternative project sites (as characterized by the revised project document), can minimize these risks significantly. In addition, a project design characterized by outputs and activities that are contingent upon a single parameter that lies outside of the Project mandate is inherently weak. However, in situations where confirmed co-financing is required, such as Ludza, it may not always be possible to either anticipate or accommodate all external forcing mechanism, particularly when being dealt with on a case-by-case basis. GEF has become increasingly open to commercial co-financing partnerships, at times on a competitive basis during Project execution. This issue is likely to become more prevalent over time, and may require a fundamental solution from within the GEF framework.

Exchange of Experience within UNDP/GEF

The UNDP Project Manager participated in a regional GEF information-sharing meeting at the UNDP regional office in Bratislava. The different regional and global project representatives provided useful contacts and exchange of information on related issues. This proved to be a useful mechanism from which to obtain support and advice, which could be applied to guide decisions concerning Project implementation.

APPENDIXES