

**Annex I****ACTIVITIES IMPLEMENTED JOINTLY  
REVISED UNIFORM REPORTING FORMAT (URF 01)****A. Governmental acceptance, approval or endorsement**

- Date of this report: 15/03/2006
- This report is a (*please underline*):
  - First report
  - Interim report (Seventh report. First report was submitted 1997)
  - Final report
- Please indicate here which sections were modified since the last report (*e.g. B.2, E.2.4, F.2*): Report is newly completed on the Revised Uniform Reporting Format.

**B. Summary of AIJ project****B.1 Title of project**

Mustamäe II, Energy efficiency project in 4 residential cooperatives

**B.2 Participants**

*Please describe briefly the role(s) of the main participating organization(s) and provide detailed contact information in annex 1:*

- The donor country is Sweden, represented by a governmental institution – Swedish Energy Agency (STEM).
- The host country local organisation, which developed the project - Tallinn City Mustamäe District Administration.
- The host country primary institution responsible for the Framework Convention on Climate Change and all other climate related issues is The Ministry of Environment.
- The technical assistance during project implementation and follow-up activities were provided by STEM consultants (ÅF-International).
- Projects performance data collection and reporting activities are carried out by Regional Energy Centres in Estonia.

**B.3 Activity summary****B.3.1 General description**

Mustamäe District of Tallinn was built in the 1960`s and 1970`s. There live about 80 000 persons in 20 000 flats. The actual buildings were built in 1964-65. The framework of the buildings is precast concrete elements (big panels) and walls are of plastered light weight concrete. The roof is flat and has inefficient insulation causing considerable energy losses. The buildings have one-pipe heating systems (Ehitajate tee partly 2-pipe system) connected with district heating. No control possibilities were available for incoming

heating water or for local needs inside the buildings. Ventilation consists of natural draught. This project consists of four units, totally seven buildings, 424 flats and owned by four cooperatives (legal private house ownership status also during the Soviet era).

### B.3.2 Type of activity

Sector	Activity
Energy	Energy efficiency (renovation of four residential cooperatives)

### B.3.3 Location (e.g. city, region, state):

Mustamäe District, Tallinn City, Estonia

### B.3.4 Stage of activity (*Please underline the appropriate option*):

- Pre-feasibility study completed
- Feasibility study completed
- In start-up or construction phase  
(*e.g. ensuring financing, construction of site, purchase of land, installation of new equipment*)

### B.3.4 Stage of activity (continued)

- In operation  
(*e.g. new windmill plant is connected, converted boiler reconnected, etc. and real, measurable and long-term GHG emission reductions or removals by sinks are generated*)

### B.3.5 Lifetime of AIJ project activity:

- Approval date: 08/06/1995 (Letter of Intent)  
(*Date at which the AIJ project activity was mutually approved by designated national authorities of all Parties involved.*)
- Starting date: January 1996 (In operation from)  
(*Date at which real, measurable and long-term GHG reductions or removals by sinks will begin or began to be generated.*)
- Ending date (expected): 31/03/2005 (loan expire date)  
(*Date at which AIJ project activity is expected to no longer generate GHG reductions or removals by sinks.*)
- Ending date (actual): In operation  
(*Date at which AIJ project no longer generated GHG reductions or removals by sinks or was terminated.*)
- Ending of the operational life of the project if different from the ending date of the AIJ project activity: Expected technical lifetime is 15 years which means that the installations are expected to be in operation till 2011.
- Reasons for the choice of lifetime dates (*Describe briefly (up to half a page)*):

The lifetime criteria have been arranged in different groups depending on type of implemented activities. This classification assumes a level of operation and maintenance, which is normal in western countries.

### Heat production plants (bio fuel)

25 years	New installation of all main equipment parts (fuel handling system, firing equipment and boiler) and modernisation of secondary equipment.
15 years	Conversion of existing boiler but new installation fuel handling system and firing equipment. Modernisation of secondary equipment.
10 years	Limited installation of new equipment (only one part of the three main parts, normally the firing equipment). Modernisation of other equipment.

### Heat distribution systems and sub-stations

25 years	Pre-fabricated pipes and installations using certified contractors and supervisor according to EN norms and applicable district heating practise
15 years	Pre-fabricated pipes and installations without using certified contractors and supervisor
10 years	Modernisation of existing pipes.

### Energy efficiency in buildings

25 years	Additional insulation roofs walls etc. with Scandinavian technology. New installed heating systems.
15 years	Renovation and balancing of heating systems including thermostat valves.
10 years	Weather stripping windows, doors etc.

\* if a combination of measures is done a reasonable lifetime for the project have to be calculated.

## B.4 Determination of the baseline

B.4.1 Date of completing the baseline determination: 1997 (first report)

B.4.2 Carried out by (name): STEM/ÅF-International  
(Please provide detailed contact information in annex 1)

B.4.3 Type of baseline methodology applied and described in detail in section E.1  
(Please underline the appropriate option(s))

- Project-specific by:
  - I. Simulating a likely situation that would have existed without the project
  - II. Taking an actual reference case project
  - III. Other (Please specify (insert lines as needed)):

- Multi-project by using (please specify briefly):

B.4.4 Describe the scope of the project boundary (Please summarize briefly the related information provided in section E. 2):

The project is district heating end-user project. The project activity is heat consumption in the 4 residential cooperatives and this includes emissions from combustion of fossil fuels in the Mustamäe and Kadaka boiler houses concerning heat supply to the residential building. Heat consumption in the buildings will be reduced after renovation. The emission reduction from the project is based on the

difference in fossil fuels consumption in the boiler houses before and after residential buildings renovation due to achieved energy saving.

B.4.5 Describe the degree of aggregation of the multi-project baseline (*Please summarize briefly the related information provided in section E. 1*):

## **C. General compatibility with and supportiveness of national economic development and socio-economic and environment priorities and strategies**

*Describe briefly, to the extent that information is available (up to one page) and refer to documents, decisions and laws, as appropriate:*

The project meets the following objectives in the Act on Sustainable Development, Estonian National Environmental Strategy, Estonian National Environmental Action Plan, the Long-term Development Plan for the Estonian Fuel and Energy Sector, District Heating Act, Electricity Market Act and Energy Saving Programme:

- efficient and sustainable use of energy resources;
- to provide the sufficient and stable fuel and energy supply in conformity with the required quality and with optimal prices for the consistent regional development;
- to provide the political and economical independence of the state by the fuel and energy supply as a strategic branch of economy;
- to increase the share of renewable energy sources in the primary energy supply from present (2000) 10.5% up to 13% - 15% to the year 2010;
- by 2010 indicative target to produce 5.1% of gross consumption of electricity from renewables (including bio fuels);
- to reduce the environmental damage arising from fuel and energy production, transport, conversion and distribution;
- to create the reliable energy conservation system stimulating the implementation of energy conservation measures by consumers;
- creation and usage of energy efficient technologies, fuel/energy consuming and diagnostic equipment;
- stimulation of environmental awareness and environmentally friendly consumption patterns;
- to attract foreign investments for projects which ensure better use natural resources as well as environmental improvement;
- to develop co-operation between Baltic, Nordic and Central European countries

## **D. Environmental, economic and social and cultural impacts**

### **D.1 Environmental impact (positive and/or negative)**

The environmental impact for the project activity is mainly positive. Reduction on mazout and natural gas consumption will reduce the local pollution of SO<sub>2</sub> and NO<sub>x</sub> and the emission of CO<sub>2</sub> as shown below:

- Annual emission reduction:
 

Projected:	Actual 2005
464 tons CO <sub>2</sub>	424 tons CO <sub>2</sub>
2.6 tons SO <sub>2</sub>	2.4 tons SO <sub>2</sub>
0.75 tons NO <sub>x</sub>	0.68 tons NO <sub>x</sub>

## D.2 Economic impact (positive and/or negative)

- Decreased energy consumption up to 30 % and lower heat energy bills for residents
- The experiences from this project encouraged the actors to go further with new projects.
- The economic impact issues are also including in the following reports:
  - SEI case study, 1998
  - Energy Utilisation Conception for Tallinn, 1998

## D.3 Social and cultural impact (positive and/or negative)

- The inhabitants have become much more aware of environmental aspects.
- Inhabitants and neighbours find that they can see “the light in the tunnel” - they have common positive issues to discuss. This creates of course **unity and identity**. The process gives also as result a form of self-identity and pride to take part in the evolution.
- Looking at the actors in the process from local manager to architects, engineers, suppliers they receive an example how to act **commercially** and at the same time keep the **ethics** in business.
- A much better living comfort is created (2-3<sup>0</sup>C higher inside temperature).
- The social and cultural impact issues are also including in the following reports:
  - SEI case study, 1998
  - Energy Utilisation Conception for Tallinn, 1998

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## E. Calculation of real, measurable and long-term environmental benefits related to the mitigation of climatic change, that would not have occurred otherwise

### E.1 Assumptions and characteristics of the baseline

#### E.1.1 Assumptions of the baseline (Describe (up to 1 page)):

The project based status quo baseline had been assumed to be static for the project. The key parameters for the used baseline are:

- Baseline fuel – heavy fuel oil (mazout) and natural gas;
- DH network total efficiency, including supply heat to the consumers;
- Heat consumption in the selected buildings before renovation of heat substations (degree-day corrected).

It has been assumed that these parameters used for baseline will not change during whole period. The numerical data are presented in section E.1.4.

For an energy efficiency project (renovation of heat substations) the decrease in emissions reflects the amount of fuel that is saved through the project. In the case that the system uses renewable fuels, the reduction is calculated comparing the amount of fossil fuels that was used before the conversion to renewable fuels.

The status quo fuel use in the boiler houses is included in the baseline construction. The share of mazout has been 28% in the fuel use and the natural gas – 72%.

#### E.1.2 Describe the baseline (Please describe the baseline as well as leakage effects (up to 1 page)):

The project baseline is status quo baseline (heat consumption in the residential building to be renovated and corresponding emissions in the period before implementation of planned activities). The most important factor in calculation baseline emission is the annual DH system total efficiency. DH system total efficiency has been derived from available heat production data, boiler house energy balance or expert judgement.

There was not assumed any indirect effects outside project boundary and leakages in the baseline emission calculation.

The project baseline boundary includes Mustamäe and Kadaka boiler plants emissions from heat production and supply heat to the residential buildings included in the project, i.e. emissions from combustion of fossil fuels. Emissions related e.g. to the transport of fuels to the project site are not included.

### E.1.3 Reasons for selecting a baseline and its methodology (Describe (up to 1 page)):

The project specific baseline as status quo case has been initially selected to start reporting on AIJ with the future plans to re-evaluate chosen baseline at pre-determined intervals in order to account for developments in the heating sector and indirect effects.

### E.1.4 Calculation of values reported in 'Baseline scenario' in table E.5.1 column (A):

CO<sub>2</sub> emissions values are calculated according to the Regulations No. 94 of 16 July 2004 of the Ministry of Environment "The method of determination of the volume of emissions of carbon dioxide". Estonian Regulation is based on the IPCC Guidelines (1996). Carbon Emission Factors (CEF) are used to calculate CO<sub>2</sub> emitted during fuel combustion. There is presented a table in the Regulation to calculate CO<sub>2</sub> emission (M<sub>CO<sub>2</sub></sub>). Instead of the table calculation it is possible to present a formula for this calculation as follows in the case of en-user energy saving:

$$(M_{CO_2})_{eb} = (Q_{eb} \times K_c \times 3,6 \times 44 \times q_c) / \eta_{DHb} \times 12 \times 1000 \text{ tons/year,}$$

were,

Q<sub>eb</sub> – heat energy consumption, MWh/year,

K<sub>c</sub> - fraction of carbon oxidised,

q<sub>c</sub> - carbon emission factor, tC/TJ,

η<sub>DHb</sub> - annual efficiency of DH system, i.e. baseline efficiency of DH system.

The total CO<sub>2</sub> emission is calculated as:

Total CO<sub>2</sub> emission = CO<sub>2</sub> emission from mazout use + CO<sub>2</sub> emission from natural gas use.

Documentation box (Please provide numerical data referred to in this section):

The following data are used for calculation of the baseline scenario CO<sub>2</sub> emission reductions:

Heat consumption of the buildings before renovation – 5139 MWh/y

Baseline efficiency of the DH system – 67%

Carbon emission factor for heavy fuel oil – 21,1 tC/TJ and for natural gas – 15,3 tC/TJ

Fraction of carbon oxidised: heavy fuel oil – 0,99 and natural gas – 0,995

## E.2 Assumptions and characteristics of the project scenario

### E.3.1 Assumptions for the AIJ project activity and its boundary

The project activity is heat consumption in the renovated residential building and this includes emissions from combustion of fossil fuels in the Mustamäe and Kadaka boiler houses from supply heat to these buildings. The emissions from end-user energy savings (renovation of residential building) are depending on behaviour of the consumers and implementation of energy saving measures in the future. These factors are not taking into account in the calculations of the actual reduction of CO<sub>2</sub> emission.

### E.3.2 Describe the project scenario

*(Please describe the project scenario as well as effects occurring outside the project boundary (up to 1 page)):*

The project scenario activity is heat consumption in the renovated residential building. The annual end-user energy saving is projected to be 1400 MWh or 27 %. The building energy consumption is depending on the climate conditions and therefore for energy saving calculation the energy consumptions before and after project are corrected with degree-days. Indirect effects are not taken in to account in the emissions calculations. No direct leakage of any significance has been identified.

### E.3.3 Please explain why the AIJ project activity would not have taken place anyway *(Describe (up to 1 page)):*

As a party to the Climate Convention, Estonia has started to facilitate the transformation toward an ecologically sustainable energy system as subject to the conditions of the Convention. Several factors have been restrained implementation AIJ projects:

- Lack of investment capital for renewable energy sources and energy efficiency projects, allowing financing at reasonable costs as long-term loans at reasonable interest rates;
- Lack of sufficient institutional responsibility for implementation AIJ projects;
- A weak local tradition applying an up to date technology for energy saving. The local technology for the energy efficiency improvement has largely been missing;
- Lack of effective energy use know-how.

During the implementation of the EAES Programme in Estonia these barriers have been over-come by transfer reliable wood fuels firing technology and know-how.

### E.3.4 Calculation of values reported in 'Project scenario' in table E.5.1, column (B)

According to the section E.1.4 the following is used to calculate CO<sub>2</sub> emission:

$$(M_{CO_2})_{ep} = (Q_{ep} \times K_c \times 3,6 \times 44 \times q_c) / \eta_{DHb} \times 12 \times 1000) \text{ tons/year,}$$

were,

Q<sub>ep</sub> – heat energy consumption, MWh/year,

K<sub>c</sub> - fraction of carbon oxidised,

q<sub>c</sub> - carbon emission factor, tC/TJ,

η<sub>DHb</sub> - annual efficiency of DH system, i.e. baseline efficiency of DH system.

The total CO<sub>2</sub> emission is calculated as:

Total CO<sub>2</sub> emission = CO<sub>2</sub> emission from mazout use + CO<sub>2</sub> emission from natural gas use.

Documentation box *(Please provide numerical data referred to in this section):*

The following data are used for calculation of the baseline scenario CO<sub>2</sub> emission reductions:  
Projected end-user energy saving – 1400 MWh/y

Baseline efficiency of the DH system – 67%  
 Carbon emission factor for heavy fuel oil – 21,1 tC/TJ and for natural gas – 15,3 tC/TJ  
 Fraction of carbon oxidised: heavy fuel oil – 0,99 and natural gas – 0,995

### E.3 Revision of the baseline for the project

E.3.1 Baseline revisions are planned (please underline): Yes/ No  
*If yes, please complete the remainder of section E.3.*

- E.3.2 Revisions are planned at regular intervals (please underline): Yes/ No
- If yes, please specify date of first planned revision and the length of the intervals:
  - If no, please explain revision schedule (*up to half a page*):

The new data are planned to introduce in the baseline scenario, using international rules and guidelines for how such revision should be made. The time schedule is not yet specified.

#### E.3.3 Information on revisions

- If a baseline (and/or the project scenario) revision is covered by this report, describe briefly the nature of this revision, including parameters changed in the revision as well as the calculation of the new set of values in the column 'Baseline scenario' in a revision of table E.5.1, column (A): (*up to one page*)
- Date of last baseline revision: (*DD/MM/YYYY*)
- Date of next baseline revision: (*DD/MM/YYYY*)

Documentation box (*Please provide numerical data referred to in this section*):

### E.4 Scope and performance of the actual project

*Provide actual project data (E.5.2. Column B) and the calculations of the actual real, measurable and long-term emission reductions and/or removals as measured against the relevant (original/revised) baseline scenario values*

Documentation box (*Please provide numerical data referred to in this section*):

*The following data are used for calculation of the actual CO<sub>2</sub> emission reductions:*

Actual energy saving (degree-day corrected), MWh/y										
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Energy saving	650	611	1141	1509	923	940	1362	1029	1214	1282

*Energy saving = Baseline energy consumption – actual energy consumption*  
*Other data used for calculations are presented in sections E.1 and E.2*

**E.5 Tables on real, measurable and long-term GHG emission reductions or removals by sinks (in CO<sub>2</sub> equivalent)**

**E.5.1** Projected real, measurable and long-term GHG emission reductions or removals by sinks

Projected real, measurable and long-term GHG emission reductions or removals by sinks over the lifetime of the AIJ activity  
(Please underline and fill, as appropriate: **This is the initial table** or this is revision \_\_ of this table)  
(in metric tons of CO<sub>2</sub> equivalent<sup>a</sup>)

*Insert rows as needed*

Year	Baseline scenario <sup>b</sup> (A)				Project scenario <sup>b</sup> (B)				Projected real, measurable and long-term GHG emission reductions (-) or removals by sinks (+) (B)-(A)			
	CO <sub>2</sub>	CH <sub>4</sub> <sup>a</sup>	N <sub>2</sub> O <sup>a</sup>	Other <sup>a</sup>	CO <sub>2</sub>	CH <sub>4</sub> <sup>a</sup>	N <sub>2</sub> O <sup>a</sup>	Other <sup>a</sup>	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Other
1996	1702				1238				-464			
1997	1702				1238				-464			
1998	1702				1238				-464			
1999	1702				1238				-464			
2000	1702				1238				-464			
2001	1702				1238				-464			
2002	1702				1238				-464			
2003	1702				1238				-464			
2004	1702				1238				-464			
2005	1702				1238				-464			
2006	1702				1238				-464			
2007	1702				1238				-464			





## E.6 Mutually agreed assessment procedures

*If the AIJ activity provides for mutually agreed assessment procedures, please fill subsections E.6.1 or E.6.2, as applicable.*

E.6.1 Assessment procedures that use all or one of the following steps:

E.6.1.1 Initial independent assessment of the project activity:

- Has the project design been subject to such an assessment?  
*(Please underline): Yes/**No***
- If yes, what organization(s) is/are involved: *(Please indicate the type of organization(s) (consultancy, accredited certification body, government body, university, etc.) and provide their detailed contact information in annex 1 to this report).*

Only a set of principles for the selection and verification of projects was worked out by the experts of the implementing agency STEM in Sweden. The host country governmental representatives have had a rather modest role in launching the projects.

E.6.1.2 Monitoring

- Does the project have a monitoring plan? *(Please underline): **Yes** / No*
- Summarize briefly the key elements of the monitoring plan *(i.e. which parameters are being monitored, with what frequency, providing sampling intensities if appropriate, methods and equipment; associated uncertainties, etc.) (not more than 1 page):*

STEM has continued its assistance in monitoring and reporting the projects in the host countries. Experts from STEM, as well as the Swedish consultancy company ÁF-International provided guidance in methodology. For the regular follow-up activities a special format has been developed to collect performance data from each plant for each heating season. The monitoring activities have continued by local experts for preparing Swedish AIJ reports.

The following monthly data are collected and monitored:

- ✓ Heat consumption in the buildings;
- ✓ Monthly average outdoor temperatures.
- Is the monitoring conducted by project proponents? *(Please underline): **Yes** / No*
- If no, which organization(s) is/are involved: *(Kindly indicate the type of organization(s) (consultancy, accredited certification body, government body, university, etc.) and provide their detailed contact information in annex 1 to this report).*

E.6.1.3 Independent assessment of the project performance

- Is the activity subject to such an assessment? *(Please underline): **Yes** / No*
- If no, is such an assessment intended? *(Please underline): Yes / No*
- If yes, what organization(s) is/are involved: *(Please indicate the type of organization(s) (consultancy, accredited certification body, government body, university, etc.), and provide their detailed contact information in annex 1 to this report. Indicate the frequency of the assessments, how many assessments have taken place to date, and whether the assessment report(s) is/are publicly available if requested).*



**F. Financial additionality**

Bearing in mind that the financing of AIJ shall be **additional** to financial obligations of Parties included in Annex II to the Convention within the framework of the financial mechanism, as well as to current official development assistance (ODA) flows (decision 5/CP.1):

Please list sources and the purpose:

Source and purpose of the AIJ project activity funding <i>Including pre-feasibility phase (One line for each source)</i>	Amount <i>in thousand US\$ (in Swedish crone, SEK)</i>
Loan from NUTEK*	580.9 (SEK 4 356 450)
Grant from NUTEK* for technical assistance	94.7 (SEK 710 000)

1 USD = 7,5 SEK

\* From 1 January, 1998, the new Swedish National Energy Administration was established – from 1 January 2002 the name in English has been changed to the Swedish Energy Agency - has taken over the responsibility for the Programme for an Environmentally Adapted Energy System in the Baltic region and Eastern Europe (EAES Programme) from NUTEK (Swedish National Board for Industrial and Technical Development).

**G. Contribution to capacity building, transfer of environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties**

**G.1 Identification of environmentally sound technology and know-how**

- Name of manufacturer: Several manufacturers and Estonian Contractors
- Place of manufacture (*country*): Nordic Countries
- Model names and numbers of equipment (*where appropriate*):

The main parts of the delivery have been:

- o Heat substations components (circulation pumps, regulation valves, controllers, shut-off valves, strainers, heat exchangers, control devices, expansion tank and other necessary components);
- o Balancing valves;
- o Thermostatic valves;
- o Entry doors.
- Any other relevant key specific technology characteristics:

Renovation and insulation of the roofs, weather-stripping of windows, renovation of wall element joints, insulation of gable sections (Sütiste tee) new entrances new substations including heat exchangers, domestic hot water circulation, expansion tanks, main pipe control valves and balancing the heating system, radiator reduction valves in rooms next to insulated parts, thermostatic radiator valves installed in 2-pipe system (Ehitajate tee) exchange of old and leaking pipes including new insulation, finally chemical cleaning the house heating.

- Where applicable, name and location of provider and nature of training:

The operation and maintenance manuals were handed over to the local personal according to the Contracts

## G.2 Characteristics of environmentally sound technology

The technology is (underline the option):

- At a research and development stage
- Being tested or demonstrated in similar conditions outside the host country
- At the initial stage of introduction into the world market
- At the initial stage of introduction into the host market
- Commercially available and deployed in the world market
- Commercially available and deployed in the host market
- Not characterized by the above options. *Please describe:*

## G.3 Impact of the AIJ project on capacity-building and transfer of environmentally sound technology and know-how (up to two pages):

Systematically, the capacity building and transfer of know-how have involved the following activities over time and have taken place through:

### i) Technology transfer through STEM technical specialist and co-operation between foreign supplier and local partner during the implementation of the project:

- Technical support of STEM specialist to the local project leader and municipality;
- Knowledge in negotiations to foreign companies;
- Knowledge in managing and planning of projects;
- Transferring of environmental issues to the local parties;
- Transferring of knowledge in operation and maintenance issue;
- Co-operation between foreign consultants, suppliers and local consultants and building constructors.

### ii) Conferences, seminars, documentation and training:

- Personal from boiler plant has been invited to different seminars and workshops and several presentations about company experience have made, documentation for training has been handed over;
- There were arranged seminars through close cooperation between STEM and Estonian partners:
  - o Environmentally Friendly Energy Systems in the Baltic Region and Eastern Europe - seminar in Tallinn , 14-15 April, 1994;
  - o Environmentally Friendly Energy Systems in the Baltic Region and Eastern Europe - seminar and workshops in Tartu , 25 November, 1994 (prepared information by topics in Estonian over than 150 pages);
  - o EAES Programme District Heating Day in Vändra, 27 July, 1995;

- o Environmentally Adapted Local Energy Systems - seminar and presentation of translated into Estonian booklet "Environmentally Adapted Local Energy Planning" in Rakvere, 11 November, 1998 and in Tartu, 12 November, 1998;
- o Energy efficiency projects in Mustamäe residential buildings - seminar in Tallinn, 16 September, 1996.
- o Information exchange and meetings with personal involved in the project and the tenants.

**iii) Stimulate "net-working" for the exchange of experience between plant owners with similar problems:**

- Activities have been supported by STEM to stimulate cooperation with local experts, consultants, project owners to achieve two-way communication and to find respect for chosen solutions from both sides.
- The projects have been visited by specialists of other areas (incl. From Russia, Baltic Countries) to exchange of experience
- Involving professional groups besides energy experts i.e. architects, construction engineers, fire security experts and so on to achieve optimal solutions and to secure other aspects such as aesthetic view.

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## **H. Additional comments**

*Complete as appropriate:*

### **1) Any practical experience gained:**

- The experiences gained at this project are once again underling the importance of adjusting and adapting the measures in a building to what is required in that particular building rather than using standard applications which might well result in the desired energy savings but at necessary high costs.
- One of the lessons learnt is that it is important to have persons responsible for the adjustment of the equipment for each building and that they have good understanding of the consequences of their actions.
- A comparison of the data for the municipally owned and cooperatively owned residential buildings shows that the latter have managed energy consumption more efficiently than the former.
- Renovation work and used material quality check is important as there was necessary in one building heating system to change bad quality pipes.
- The local project leader has been an important person who continues the energy efficiency projects in larger scale and informs other interested.
- The representatives for the cooperatives have become important references for others.

### **2) Technical difficulties:**

### **3) Effects encountered:**

- The value of the flats, when sold, are about 3 times higher than flats where no measures have yet been undertaken.
- The project has inspired other house owners to undertake measures.
- Several local companies have participated in the project (design, ground and constructions works).

### **4) Impacts encountered:**

- The experiences from the project in the houses in Mustamäe have formed the basis for a renovation plan for the entire building stock in the district, presented by the municipal authorities of Mustamäe for the years 1995 – 2005 and have used in framing Development Plan of Housing Sector for Tallinn to the year 2010 and in framing Development Plan of Estonia Housing Sector to the year 2010 ( Tallinn, 1999).

**5) Other obstacles encountered:**

- Overcoming of psychological obstacles to change a lot of inhabitants mind to start implementation of energy efficiency improvement measures. One thing is to state the need for energy saving, but another - to implement measures.

**6) Other:**

- Based on the experiences from projects, the Mustamäe District Council has elaborated guidelines for measuring energy efficiency in 12 different types of residential buildings common in Estonia and the other Baltic states.
- Due to the conditions of the buildings there are also measures carried out that are not directly of energy conservation type. The renovation measures seemed however necessary for good result from the energy measures.
- Calculations of the volume of emissions of sulphur dioxide and nitrogen oxide in the section D are calculated according to the Regulation No. 99 of 02 August 2004 of the Ministry of the Environment “The procedure and methods of determination of the volume of pollutants from combustion plants to the air”.
- On 2002 by the Ministry of Environment there was prepared draft National Programme for Reduction of Greenhouse Gases 2003-2012, which has been adopted by the Government on 2004.
- The experience of renovation of the apartment building has been gained. To support the further renovation of the apartment building the Estonian Credit and Export Guarantee Fund KredEx has started from 2004 to provide the following services for apartment associations:
  - Loan guarantee for apartment associations what will help an apartment association to take a loan for the renovation of an apartment building;
  - Grants for the renovation of apartment buildings, including grant for reconstruction of apartment buildings and grant for technical inspection of apartment building.

**Annex 1 to the revised uniform reporting format (URF 01)****PARTICIPANTS' CONTACT INFORMATION**

Please provide contact information for each organization. Add rows as required (by copying and pasting)

Name	Address <sup>a</sup>	Voice/Fax/E-mail
<b>Organization(s) <sup>b</sup>: Swedish Energy Agency<sup>*</sup></b> <b>Function(s) within activity<sup>c</sup>: Financing/Project development</b>		
<b>Officer responsible:</b>	The System Analysis Department, Climate Change Division Kungsgatan 43 BOX 310 S-63104 Eskilstuna SWEDEN <a href="http://www.stem.se">http://www.stem.se</a>	<b>Tel: +46 16 544 20 81</b> <b>Fax: +46 16 544 22 64</b> <b>E-mail:</b> <a href="mailto:bengt.bostrom@stem.se">bengt.bostrom@stem.se</a>
<b>Contact person, if different from above:</b> Gudrun Knutsson	Head of Section, Climate Investment Programme	<b>Tel: +46 16 544 20 72</b> <b>Fax: +46 16 544 22 54</b> <b>E-mail:</b> <a href="mailto:Gudrun.Knutsson@stem.se">Gudrun.Knutsson@stem.se</a>

<sup>\*</sup> From 1 January, 1998, the new Swedish National Energy Administration – from 1 January 2002 the name in English has been changed to the Swedish Energy Agency - has taken over the responsibility for the Programme for an Environmentally Adapted Energy System in the Baltic region and Eastern Europe (EAES Programme) from NUTEK (Swedish National Board for Industrial and Technical Development).

Name	Address <sup>a</sup>	Voice/Fax/E-mail
<b>Organization(s) <sup>b</sup>: ÅF-International (Malmö)</b> <b>Function(s) within activity<sup>c</sup>: Technical assistance</b>		
<b>Officer responsible:</b>	Stensjögatan 3 S-21765 Malmö SWEDEN <a href="http://www.af.se">http://www.af.se</a>	<b>Tel: +46 40 37 50 00</b> <b>Fax: +46 40 13 03 69</b> <b>E-mail:</b>
<b>Contact person, if different from above:</b> Ulf Lindgren	Project leader	<b>Tel: +46 40 37 50 97</b> <b>Fax: +46 40 13 03 69</b> <b>E-mail: <a href="mailto:Ulf.lindgren@af.se">Ulf.lindgren@af.se</a></b>

Name	Address <sup>a</sup>	Voice/Fax/E-mail
<b>Organization(s) <sup>b</sup>: Ministry of the Environment of the Republic of Estonia</b>		
<b>Function(s) within activity<sup>c</sup>: Designated national authority/reporter</b>		
<b>Officer responsible:</b>	Department of Environment Management and Technology Narva mnt. 7A 15172 Tallinn ESTONIA <a href="http://www.envir.ee">http://www.envir.ee</a>	<b>Tel: +372 62 62 802</b> <b>Fax: +372 62 62 801</b> <b>E-mail: <a href="mailto:min@envir.ee">min@envir.ee</a></b>
<b>Contact person, if different from above:</b> Karin Radiko	Specialist	<b>Tel: +372 62 62 977</b> <b>Fax:</b> <b>E-mail: <a href="mailto:karin.radiko@envir.ee">karin.radiko@envir.ee</a></b>

Name	Address <sup>a</sup>	Voice/Fax/E-mail
<b>Organization(s) <sup>b</sup>: Tallinn City Mustamäe District Administration</b>		
<b>Function(s) within activity<sup>c</sup>: Project owner/borrower</b>		
<b>Officer responsible:</b>	Tammsaare tee 135 12915 Tallinn ESTONIA <a href="http://www.tallinn.ee">http://www.tallinn.ee</a>	<b>Tel: +372 645 7500</b> <b>Fax: +372 645 7577</b> <b>E-mail: <a href="mailto:mustamae@tallinnlv.ee">mustamae@tallinnlv.ee</a></b>
<b>Contact person, if different from above:</b> Viktor Vask	Chief specialist	<b>Tel: +372 645 7553</b> <b>Fax: +372 645 7577</b> <b>E-mail: <a href="mailto:viktor.vask@tallinnlv.ee">viktor.vask@tallinnlv.ee</a></b>

Name	Address <sup>a</sup>	Voice/Fax/E-mail
<b>Organization(s) <sup>b</sup>: Regional Energy Centres in Estonia</b>		
<b>Function(s) within activity<sup>c</sup>: Local reporter</b>		
<b>Officer responsible:</b>	Võru P.O., BOX 43 65602 Võru ESTONIA	<b>Tel: +372 78 282 30</b> <b>Fax: +372 78 282 30</b> <b>E-mail:</b>
<b>Contact person, if different from above:</b> Elmu Potter	Consultant	<b>Tel: +372 78 282 30</b> <b>Fax: +372 78 282 30</b> <b>E-mail: <a href="mailto:elmupotter@hotmail.ee">elmupotter@hotmail.ee</a></b>

<sup>a</sup> Address should include: department; street; postal code; city; country and the Internet address of the organization (if available).

<sup>b</sup> Organization includes: institutions, ministries, government agency closely following the activity, companies, non-governmental organizations, etc. involved in the activity.

<sup>c</sup> Function within activity: please use the following categories:

Function	Description of function
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<i>Project development</i>	<i>Designing/developing the AIJ project and/or submitting the AIJ project proposal</i>
<i>Project operator</i>	<i>Implementing and administering the AIJ project activities</i>
<i>Government regulation/oversight</i>	<i>Ensuring compliance of the project with laws and regulations</i>
<i>Technical assistance</i>	<i>Providing scientific or other technical guidance or support for the purposes of project development and/or project administration, implementation, training and education activities</i>
<i>Financing</i>	<i>Serving as a source of funding for the AIJ project</i>
<i>Initial independent assessment of project activity</i>	<i>Assessing whether the project activity meets a given set of criteria</i>
<i>Monitoring</i>	<i>Monitoring the environmental and/or socio-economic results of the project in accordance with a monitoring protocol</i>
<i>Independent assessment of project performance</i>	<i>Assessing the performance (environmental and/or socio-economic) achieved by a project against pre-set criteria</i>
<i>Providing independent written statement on performance</i>	<i>Providing written assurance that a performance is achieved and/or a set of criteria is met by an activity</i>
<i>Designated national authority</i>	<i>Entity authorized to officially accept, approve or endorse the AIJ project</i>
<i>Other (please specify)</i>	