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

Järvakandi, Renovation of Järvakandi district heating system

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 owns or operates the facility, where investment is made is Järvakandi Municipal Government.
- 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

Järvakandi is a small county town with its 1800 inhabitants in Rapla county in north-west Estonia, some 80 km from Tallinn. Järvakandi is situated quite near to the heart of mainland Estonia. Järvakandi has been well-known for its glass industry. This industry has nowadays been reduced to a factory for producing glass package in different size. There is one gas fired boiler plant and 1 district heating network with a total length of about 3500 m. The domestic hot water was supplied to the consumers from

boiler house by separate pipes (4-pipe district heating network). An investment project to increase energy efficiency in the system was started by STEM in October 1966.

B.3.2 Type of activity

Sector	Activity
Energy	Energy efficiency (renovation of DH pipelines and building substations)

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

Järvakandi village, Rapla County, 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: October 1996
  (*Date at which the AIJ project activity was mutually approved by designated national authorities of **all** Parties involved.)*
- Starting date: October 1997 (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): 31/03/2006 (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 2013.

- 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 full district project concerning heat production, distribution and end-user consumption. The project activities are heat production, heat distribution by network and heat consumption in the 15 municipal and residential buildings and this includes emissions from combustion of fossil fuels in the Järvakandi boiler house concerning these activities. Heat distribution losses and heat losses in the boiler

house and heat consumption in the buildings will be reduced after implementation of the project. The emission reduction from the project is based on the difference in fossil fuels consumption in the boiler houses before and after pipelines and residential buildings substations renovation and installation control equipment in the boiler house 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 natural gas consumption will reduce the local pollution of SO_2 and NOx and the emission of CO_2 as shown below:

- Annual emission reduction:

Projected:	Actual 2005
618 tons CO_2	775 tons CO_2
0.7 tons NOx	0.83 tons NOx

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

- Reduced heat losses in the boiler house and network
- Energy use can now be billed based upon measured figures

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

- More stable energy supply
- Improved standard of heating and domestic hot water deliveries

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 (natural gas);
- Baseline efficiency of the fossil fuel boilers;
- DH network total efficiency, including supply heat to the consumers;
- Heat losses in the boiler house and network;
- 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.

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 production, heat distribution by DH network and heat consumption in the buildings heat substations to be renovated and corresponding emissions in the period before implementation of planned activities). The most important factors in calculation baseline emission are the annual efficiency of fossil fuel boilers and DH system total efficiency). Baseline efficiency of the fossil fuel boilers and DH system total efficiency have been derived from available heat production data, boiler house energy balance, technical specifications 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 Järvakandi boiler plant emissions from heat production, heat distribution by DH network and heat consumption in the 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_2 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 CO2 emitted during fuel combustion. There is presented a table in the Regulation to calculate CO_2 emission (M_{CO2}). Instead of the table calculation it is possible to present a formula for this calculation as follows:

- in the case of heat distribution and production:

$(M_{CO2})_{db} = (Q_{fb} \times K_c \times 3{,}6 \times 44 \times q_c)/\eta_b \times 12 \times 1000)$ tons/year,

were,

Q_{fb}– boiler(s) heat production (losses in the boiler house and network are included), MWh/year,
K_c - fraction of carbon oxidised,
q_c - carbon emission factor, tC/TJ,
η_b - annual efficiency of boiler(s), i.e. baseline efficiency of fossil fuel boilers.

- in the case of end-user energy saving:

$(M_{CO2})_{eb} = (Q_{eb} \times K_c \times 3{,}6 \times 44 \times q_c)/\eta_{DHb} \times 12 \times 1000)$ tons/year,

were,

Q_{eb}– heat energy consumption, MWh/year,
K_c - fraction of carbon oxidised,
q_c - carbon emission factor, tC/TJ,
η_{DHb} - annual efficiency of DH system, i.e. baseline efficiency of DH system.

The total CO_2 emission is calculated as:

Total CO_2 emission = CO_2 emission from reduction of heat losses (production and distribution) + CO_2 emission from end-user energy savings.

Total losses in the boiler house and network = Heat production – Heat supplied to the consumers

Documentation box *(Please provide numerical data referred to in this section):*
The following data are used for calculation of the baseline scenario CO_2 emission reductions:
Total heat production of the boiler plant before implementation of project – 9095 MWh/y Heat consumption of the buildings before renovation of heat substations – 5834 MWh/y

Heat losses in the boiler house and network before implementation of project – 2612 MWh/y
Baseline efficiency of the fossil fuel boilers – 86.5%
Baseline efficiency of the DH system – 65%
Carbon emission factor for heavy fuel oil – 15.3 tC/TJ
Fraction of carbon oxidised – 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 activities are heat production (reduction of heat losses), heat distribution by network and heat consumption in the 15 buildings and this includes emissions from combustion of fossil fuels in the Järvakandi boiler house operated by Järvakandi Soojus Ltd. The emissions from reduction of heat distribution losses of renovated pipeline are not directly under control of the DH company. Only total network heat losses (reduction of losses) can be estimated. The emissions from end-user energy savings (renovation of heat substations) 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_2 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 production, heat distribution by renovated (partly) network and heat consumption in the renovated residential building. The annual reduction of heat losses in the network and boiler house is projected to be 530 MWh and end-user energy saving is projected to be 1600 MWh. 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_2 emission:

- in the case of heat distribution and production:

$(M_{CO2})_{dp} = (Q_{fp} \times K_c \times 3,6 \times 44 \times q_c)/\eta_b \times 12 \times 1000)$ tons/year,

were,

Q_{fp}– boiler(s) heat production (losses in the boiler house and network are included), MWh/year,
K_c - fraction of carbon oxidised,
q_c - carbon emission factor, tC/TJ,
η_b - annual efficiency of boiler(s), i.e. baseline efficiency of fossil fuel boilers.

- in the case of end-user energy saving:

$(M_{CO2})_{ep} = (Q_{ep} \times K_c \times 3,6 \times 44 \times q_c)/\eta_{DHb} \times 12 \times 1000)$ tons/year,

were,

Q_{ep}– heat energy consumption, MWh/year,
K_c - fraction of carbon oxidised,
q_c - carbon emission factor, tC/TJ,
η_{DHb} - annual efficiency of DH system, i.e. baseline efficiency of DH system.

The total CO_2 emission is calculated as:

Total CO_2 emission = CO_2 emission from reduction of heat losses (production and distribution) + CO_2 emission from end-user energy savings.

Boiler(s) heat production Q_{fp} is calculated as:

$Q_{fp} = Q_{fb} – Q_{nw}$ (9095 – 530 = 8565 MWh).

Documentation box *(Please provide numerical data referred to in this section):*
The following data are used for calculation of the baseline scenario CO_2 emission reductions: Projected reduction of heat losses in the DH network and boiler house (Q_{nw}) – 530 MWh/y Projected end-user energy saving – 1600MWh/y Baseline efficiency of the fossil fuel boilers – 86.5% Baseline efficiency of the DH system – 65% Carbon emission factor for heavy fuel oil – 15.3 tC/TJ Fraction of carbon oxidised – 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_2 emission reductions:

Actual reduction of heat losses in the boiler house and network, MWh/y									
Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
Reduction of heat losses	262	855	1047	1711	1538	1378	1560	1407	1591

Actual energy saving on heat substations renovation (degree-day corrected), MWh/y									
Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
Energy saving	343	687	787	665	1114	1132	1162	1301	1310

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_2 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_2 equivalent[a])

Insert rows as needed

Year	Baseline scenario[b] (A)				Project scenario[b] (B)				Projected real, measurable and long-term GHG emission reductions (-) or removals by sinks (+) ((B)-(A))			
	CO_2	CH_4[a]	N_2O[a]	Other[a]	CO_2	CH_4[a]	N_2O[a]	1 Other[a]	CO_2	CH_4	N_2O	Other
1997	3917				3707				-210			
1998	3917				3299				-618			
1999	3917				3299				-618			
2000	3917				3299				-618			
2001	3917				3299				-618			
2002	3917				3299				-618			
2003	3917				3299				-618			
2004	3917				3299				-618			
2005	3917				3299				-618			
2006	3917				3299				-618			
2007	3917				3299				-618			
2008	3917				3299				-618			

2009	3917				3299				-618			
2010	3917				3299				-618			
2011	3917				3299				-618			
2012	3917				3299				-618			
TOTAL	**62666**				**53190**				**-9476**			

[a] *Please convert values into global warming potentials, according to the IPCC (1995) conversion factors.*
[b] *Including effects occurring outside the project boundary (leakage) as described in sections E.1.4, and E.2.4, as applicable*

E.5.2 Actual real, measurable and long-term GHG emission reductions or removals by sinks

Actual real, measurable and long-term GHG emission reductions or removals by sinks of the AIJ activity
(in metric tons of CO_2 equivalent[a])

Please insert values assessed ex post i.e. after measurement. Insert rows as needed.

	Baseline scenario[b c] *(A)*				**Actual project[b c]** *(B)*				**Actual real, measurable and long-term GHG emission reductions (-) or removals by sinks (+)** *((B)-(A))*				**Values indicated are assessed independently (Yes/No)**
Year	CO_2	CH_4[a]	N_2O[a]	Other[a]	CO_2	CH_4[a]	N_2O[a]	Other[a]	CO_2	CH_4	N_2O	Other	
1997	3917				**3750**				**-167**				
1998	3917				**3506**				**-411**				
1999	3917				**3430**				**-487**				
2000	3917				**3314**				**-603**				
2001	3917				**3215**				**-702**				
2002	3917				**3246**				**-670**				

2003	3917				**3195**				**-722**				
2004	3917				**3187**				**-729**				
2005	3917				**3142**				**-775**				
2006	3917												
2007	3917												
2008	3917												
2009	3917												
2010	3917												
2011	3917												
2012	3917												
TOTAL	62666				**29985**				**-5265**				

[a] *Please convert values into global warming potentials, according to the IPCC (1995) conversion factors.*
[b] *Including effects occurring outside the project boundary (leakage) as described in sections E.1.4, E.2.4 , E.3.4 and E.4, as applicable.*
[c] *Values that differ from those in table E.5.1 should be marked in* ***bold****.*

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 ÅF-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;
- ✓ Heat supplied to the network (if available).
- ✓ Heat production on fossil fuels;
- ✓ Total heat production of the boiler house;
- ✓ Fossil fuels consumption.

- 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).

The project has been studied and reported on by international experts and by students at technical universities in Sweden, Germany, Estonia.

- Summarize briefly the key elements of the assessment activities: *(Please describe issues such as criteria used; the project design; project implementation; key project parameters being verified; the frequency of assessment/surveillance; sampling approach applied by the assessing organization) (up to one page)*:

E.6.1.4 Provision of written statement by an independent entity regarding the performance of the project activity

(Please note that such a statement is not a formal requirement under the AIJ pilot phase (see also the note at the beginning of section E.6). If the project has made provision for such a statement, please indicate the name of the independent body and attach a copy of the written statement(s)).

E.6.2 Other form of mutually agreed assessment procedure *(please specify)*:

Ministry of the Environment of Estonia is a central Estonian authority responsible on reporting of JI projects. This authority assigns a local institution, which is involved in to the evaluation of the climate effects of this project and takes the main responsibility to continue measuring, results collecting for JI-reporting.

E. 7 Cost (to the extent possible)

E.7.1 The cost information is *(Please underline)*:

- Provided below
- Not provided because the data are *(Please underline)*:
  - Not yet available
  - Classified as confidential

E.7.2 AIJ project activity costs

Country		Järvakandi (DH)	1997 0	1998 1	1999 2	2000 3	2001 4	2005 8
A. Sweden	Investment	1. Loan/debt to STEM	79900	83600	71654	60358	48243	repaid
		2. Added costs	0	3700	0	650	2205	in 2005
	AIJ/JI costs	3.Technical assistance	35000	0	0	0	0	
		4. Follow up	0	2200	2267	2139	1265	2852
		5. Reporting costs	851	0	744	301	282	810
		6. Administration	47000	0	0	0	0	
		7. Difference in interest	4%	3344	2866	2414	1930	
		8.Accum. costs for AIJ/JI	82851	88395	94272	99127	102604	106266
		9.Total costs	162751	171995	165926	159485	150848	
2. Estonia	Investment	1. Investment/Instalment	0	0	11946	11946	14320	
	AIJ/JI	2. Reporting costs	0	0	0	0	0	

	costs	3. Other costs	0	0	0	0	0	
		4. Accum. costs for AIJ/JI	0	0	0	0	0	
		5. Total costs	0	0	11946	23892	38211	
1 USD=	10	SEK						

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 *Including pre-feasibility phase* *(One line for each source)*	**Amount** *in thousand US$* (in Swedish crone, SEK)
Loan from NUTEK*	106.5 (SEK 799 100)
Grant from NUTEK* for technical assistance	46.7 (SEK 350 000)

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: Alfa Laval Oy (heat substations), KWH Oy (preinsulated DH pipes)

- Place of manufacture *(country)*: Finland

- Model names and numbers of equipment *(where appropriate)*:

The main parts of the delivery have been:

- Prefabricated heat substations;
- Preinsulated DH pipes;
- Frequency converter for DH main pump.

- Any other relevant key specific technology characteristics:

The existing 4-pipe system has been replaced with a 2 pipe-system. 4-pipe system means that there are two water pipes for heating purposes and two pipes for domestic hot water, while the 2-pipe system provides both heating water domestic hot water in two pipes only. This is done by installation heat substations with heat exchangers for domestic hot water and also control equipment for the heating in the 13 houses. The project also contained installation of a frequency converter for DH circulation pump as well as modernisation of control equipment in the boiler house. Some of the pipeline in the network have been exchanged to preinsulated type (100 m DN100 and 24 m DN65).

- 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
In-site training of local staff on operation and maintenance of the installed equipment provided by main supplier according to the Contract

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 industrial projects;
- Transferring of environmental issues to the local parties;
- Transferring of knowledge in operation and maintenance issue;

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:
    - Environmentally Friendly Energy Systems in the Baltic Region and Eastern Europe – seminar in Tallinn, 14-15 April, 1994;

- 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);
- EAES Programme District Heating Day in Vändra, 27 July, 1995;
- 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;
- Energy efficiency projects in Mustamäe residential buildings - seminar in Tallinn, 16 September, 1996.

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 project site has been visited by specialists of other areas for exchange of experience

H. Additional comments

Complete as appropriate:

1) Any practical experience gained:

- 0ne 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
- More reliable heat supply after rehabilitation of the networks
- Maintenance service of heat substations is necessary to develop.
- The local project manager has got experience in managing of energy efficiency projects.
- The municipality specialists have got experience how to implement energy efficiency projects and are gained to continue district heating system renovation

2) Technical difficulties:

3) Effects encountered:

- Several local companies have participated in the project (design, ground and constructions works).
- In some building too much emphasis was put on reduction of heat consumption and limiting the heat bill. The persons adjusting the equipment concentrated more on limiting the metered heat consumption than an maintaining an acceptable indoor temperature.
- In one residential building (Staadioni str. 10) inhabitants have closed central domestic hot water system and they have installed individual electrical boilers.

4) Impacts encountered:

- Better indoor climate in the most of the buildings and improved domestic hot water supply
- The value of the flats, when sold has been higher in the buildings with good energy management.
- The results of this project have initiated the Järvakandi Municipality to pay great attention to the issues concerning efficient heat production and consumption.
- More stable heat price for consumers.

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:

- 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.

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

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

Name	Address [a]	Voice/Fax/E-mail
Organization(s) [b]: Ministry of the Environment of the Republic of Estonia **Function(s) within activity[c]:** *Designated national authority/reporter*		
Officer responsible:	Department of Environment Management and Technology Narva mnt. 7A 15172 Tallinn ESTONIA http://www.envir.ee	**Tel: +372 62 62 802** **Fax:+372 62 62 801** **E-mail: min@envir.ee**
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Name	Address [a]	Voice/Fax/E-mail
Organization(s) [b]: Järvakandi Municipal Government **Function(s) within activity[c]:** *Project owner/borrower*		
Officer responsible:	Tallinna str. 17 79910 Järvakandi ESTONIA http://www.jarvakandiov.ee	**Tel:+372 489 4711** **Fax:+372 489 4710** **E-mail: jav@jarvakandiov.ee**
Contact person, if different from above: Mart Järvik	Head of the Municipality	**Tel:+372 489 4711** **Fax:+372 489 4710** **E-mail:**

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

[a] *Address should include: department; street; postal code; city; country and the Internet address of the organization (if available).*

[b] *Organization includes: institutions, ministries, government agency closely following the activity, companies, non-governmental organizations, etc. involved in the activity.*

[c] *Function within activity: please use the following categories:*

Function	*Description of function*

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