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** (second report - 2006)
  - Final report

- Please indicate here which sections were modified since the last report

A, D.1, E.4, E.5, E.5.1, E.5.2, H

B. Summary of AIJ project

B.1 Title of project

Ignalina. Boiler conversion to burn wood waste and improvement of energy efficiency project in Ignalina boiler house.

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 primary institution responsible for the Framework Convention on Climate Change and all other climate related issues is The Ministry of Environment.
- The host country local organisation, which owns and operates the facility, where investments were made, is Joint Stock Company Ignalinos Silumos Tinklai.
- The technical assistance during project implementation and follow-up activities was provided by STEM consultants from Swedish company ÅF-International.
- Projects performance data collection and reporting activities are carried out by Lithuanian Energy Institute.

B.3 Activity summary

B.3.1 General description

Ignalina, located in the north east part of Lithuania, it is a city with 7500 inhabitants. The town is situated in a nature reservation area and subject to strict environmental emission rules. Through this project it has been possible to concentrate the heat production to one new boiler house already built and to close down two old oil-fired boiler houses. The project also comprises improvement of the heat and hot water supply and distribution in the town. The annual energy production before conversion was 36 000 MWh. Heat production was earlier based on 40% light oil and 60 % heavy fuel oil (mazout).

The new boiler is designed for 6 MW. Mazout will still be used in the boiler house for peak load and as reserve capacity. The project includes i.e. firing equipment, basic fuel storage on ground (asphalt), fuel conveyor, flue gas cleaner (cyclone), civil works, buildings, control equipment, commissioning, training etc. A new pre-insulated pipeline has been installed to connect the networks as well as 30 new substations in buildings and block central.

B.3.2 Type of activity

Please use project type descriptors contained in annex 2.

Sector	Activity
Energy	Fuel-switching to renewable (from heavy and light oil to biofuels) and improving energy efficiency

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

Ignalina town, Utena region, Lithuania

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)
- Completed
  (AIJ project activity no longer generates GHG reductions or removals by sinks or has been terminated)
- Suspended
  (Please indicate date when AIJ project activity is expected to resume, and give brief explanation of reasons for suspension (up to half a page)):

B.3.5 Lifetime of AIJ project activity:

- Approval date: January 1998 (Letter of intent)
  (*Date at which the AIJ project activity was mutually approved by designated national authorities of **all** Parties involved.)*
- Starting date: April 1999 (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):-
  (Date at which AIJ project activity is expected to no longer generate GHG reductions or removals by sinks.)
- Ending date (actual): -

(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 25 years which means that the plant is expected to be in operation till 2023.
- 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: 1999 (fifth 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 activity is heat production and this includes emissions from in-site combustion of fossil fuels and bio fuels. The project and baseline heat production activity is assumed to be equal. This means that the emission reduction from the project is based on the difference in fossil fuels consumption before and after the implementation of the project activity. This emission reduction overcomes also part of emission reduction secured through improvement of heat distribution system or implementation energy saving measures.

Additional emission redaction

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 National Energy Strategy (2002), National Energy Efficiency Programme (2001), Law of Energy (2002), Law on Electricity (2000), Law on Biofuel (2000), Forestry and Forest Industry Development Programme (2002), Resolution No. 7 "On renewable and waste energy prices", Law on Pollution Taxes(1999):
- efficient and sustainable use of energy resources;
- to provide favourable conditions for developing the production of biofuels, to make efforts for increasing the share of renewable energy sources in the primary energy balance from present 8% to 12% by 2010;
-to reduce adverse effects of energy on the environment
- to reduce the energy intensity
- to reduce dependence on fuel imports
- to create new working places
- to involve the local companies into production of equipment for new firing technology
- to create and improve energy infrastructure based on indigenous energy resources
- to utilise the existing energy production capacity efficiently
- to reduce of fossil fuel consumption which results in emission reduction and currency saving
- 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 other Central European countries

D. Environmental, economic and social and cultural impacts

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

- Annual emissions reduction:

Projected	2005
8622 ton CO_2	2805 ton CO_2
105 ton SO_2	34 ton SO_2
3 ton NO_x	1 ton NO_x

- Lower pollution in town

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

- Decreased fuel costs.
- Reduction of heat price for heating and hot water preparation.

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

Improved working conditions, increased motivation

- The project has a good demonstration effect
- Improved working conditions, increased motivation
- Higher employment (new fuel and service companies). The boiler plant can use the waste from neighbourhood sawmills. Wood fuel production will start and give more people work locally.
-

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 on status quo baseline. It is assumed that heat production of the renewable power plant installed as AIJ project is the same as using fossil fuel before the project. The factors used for baseline did not change over time. These factors are:

- Baseline fuel – 40% light oil and 60 % heavy fuel oil (mazout);
- Baseline efficiency of the fossil fuel boilers;
- Total heat production of the boiler plant before boiler conversion.

The numerical data are presented in section E.1.4.

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 (total boiler plant heat production and emissions in the period before the conversion to renewable fuel). The most important factor in calculation baseline emission is the annual efficiency of fossil fuel boilers. Baseline efficiency of the fossil fuel boilers has 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 direct on-site (boiler plant) emissions, i.e. emissions from on-site 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 IPCC Guidelines (1996) and EC Commission decision of 29/01/2004 establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council. Carbon Emission Factors (CEF) are used to calculate CO_2 emitted during fuel combustion. CO_2 emissions (M_{CO2}) are calculated according to the formula, as follows:

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

Q_{fb}– boiler(s) heat production, 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.

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 boiler conversion – 36000 MWh/year
Baseline efficiency of the heavy fuel oil boilers – 80%
Baseline efficiency of the light fuel oil boilers – 85%
60 % heavy fuel oil (mazout)
Carbon emission factor for heavy fuel oil (mazout) – 21,16 tC/TJ
Fraction of carbon oxidised for heavy fuel oil (mazout) – 0,99
40% light oil
Carbon emission factor for light fuel oil – 20,2 tC/TJ
Fraction of carbon oxidised for light fuel oil – 0,99

E.2 Assumptions and characteristics of the project scenario

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

The activity is heat production and this includes emissions from on-site combustion of fossil fuels and bio fuels. These emissions are under control of the boiler house staff. The project and baseline heat production activity is assumed to be equal.

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 using new boiler designed for for 6,2 MW on bio fuels and 7 MW boiler on heavy fuel oil (mazout). Mazout is still used in the boiler house for peak load and as reserve capacity. The project includes i.e. firing equipment, a basic fuel storage on ground (asphalt), fuel conveyor, flue gas cleaner (cyclone), civil works, buildings, control equipment, commissioning, training etc. A new pre-insulated pipeline has been installed to connect the networks as well as 30 new substations in buildings and block central. Annual heat after the new project is calculated to be provided through 25 000 MWh based on biofuels and 10 000 MWh on mazout. 1 000 MWh are calculated to be saved by the new substations. The emissions are calculated from the ultimate analysis of the assumed fuels.

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, Lithuania 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 using wood waste from industry and from forest as a fuel in the boiler plants and applying an up to date technology for energy saving. The local technology for the wood fuels firing has largely been missing;
- Lack of wood fuels firing know-how.

During the implementation of the EAES Programme in Lithuania 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:

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

Q_{fp}– boiler(s) energy production, 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.

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

$Q_{fb} = Q_{fp} – (Q_w+Q_{e.s}) = 36000 – (25000+1000) = 10000$ MWh/year

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 heat production on wood fuel boiler (Q_{wb}) and energy saving ($Q_{e.s}$)– 26000 MWh/year
Projected heat production on fossil fuel boiler (Q_{fb})– 10000 MWh/year
Baseline efficiency of the fossil fuel boilers – 82%
60 % heavy fuel oil (mazout)
Carbon emission factor for heavy fuel oil (mazout) – 21,16 tC/TJ
Fraction of carbon oxidised for heavy fuel oil (mazout) – 0,99
40% light oil
Carbon emission factor for light fuel oil – 20,2 tC/TJ
Fraction of carbon oxidised for light fuel oil – 0,99

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. 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 heat production, MWh/y								
Year	1999	2000	2001	2002	2003	2004	2005	
Heat production on bio fuels, MWh/year	9920	24008	25118	25170	22406	6580	7839	
Heat production on mazout and light oil, MWh/year	25119	6523	5847	3670	3612	-	-	
Energy saving, MWh/year	1000	872	885	824	743	701	716	
Total, MWh/year	36039	31403	31850	29664	26761	7281	8555	

Other data used for calculations are presented in sections E.1 and E.2

Note: It was assumed in energy saving evaluation that energy saving directly depends on heat production and decrease proportionally to heat production reduction. The relation was determined, how much actual heat production make from projected and then the same relation was applied to energy saving.

$$Q_{e.s(actual)} = (Q_{wb(actual)} + Q_{fb(actual)}) / (Q_{wb(projected)} + Q_{fb(projected)}) \times Q_{e.s(projected)}$$

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]	Other[a]	CO_2	CH_4	N_2O	Other
1999	11938				3316				-8622			
2000	11938				3316				-8622			
2001	11938				3316				-8622			
2002	11938				3316				-8622			
2003	11938				3316				-8622			
2004	11938				3316				-8622			
2005	11938				3316				-8622			
…												
2023	11938				3316				-8622			
TOTAL	298450				82900				-215550			

[a] *Please convert values into global warming potentials, referring to annex 3 for 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.

Year	**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)**
	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	
1999	**11951**				**8329**				**-3622**				Yes
2000	**10414**				**2163**				**-8251**				
2001	**10561**				**1938**				**-8623**				
2002	**9837**				**1217**				**-8620**				
2003	**8874**				**1197**				**-7677**				
2004	**2414**				**0**				**-2414**				
2005	**2837**				**0**				**-2837**				
…Σ	**56888**				**14844**				**-42044**				
2026 $\overline{\Sigma}$	**8127**				**2121**				**-6006**				
TOTAL Predictable $\Sigma+\overline{\Sigma}\times t_{l.t}$	**203174**				**53022**				**-150152**				

[a] *Please convert values into global warming potentials, referring to annex 3 for 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****.*

$t_{l.t}$ – leftover time to the end of AIJ project activity, in years
The bio-fuel fired boilers started to operate on the end of 1999 and produced only 9920 MWh on biofuel instead of predicted. Therefore CO_2 reduction from bio-fuel fired boiler was lower. Taking into account that fact the CO_2 reduction from this year wasn't evaluated in $\overline{\sum}$ calculation.

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 production on bio fuels;
- ✓ Heat production on fossil fuels;
- ✓ Total heat production of the boiler house;
- ✓ Bio fuels consumption;
- ✓ 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).

Projects are followed and evaluated from technical and economic points of view by local and Swedish experts.

- 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)*:

Key elements of the assessment activities of performance tests and environmental measurements carried out by Swedish specialists (ÅF-International):

- ✓ Performance tests (heat output, input losses and efficiency of the converted boiler);
- ✓ Environmental measurements (instantaneous and annual emissions (dust, NO_x, S, CO, CO_2);
- ✓ Analysis of the operational problems;

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 Environment is a central Lithuanian authority responsible on reporting of JI-projects. This authority assigns a local organisation Lithuanian Energy Institute, 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 AIJ-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		Ignalina BC & EE	1998	1999	2000	2001	2005
			0	0	1	2	6
	Investment	1. Loan/debt to STEM	1277329	1469699	1544927	1603834	12194781
		2. Added costs	162661	29709	75228	58907	0
		3.Technical assistance	110000	0	0	0	0
	AIJ/JI	4. Follow up	0	0	2139	1265	2852
A. Sweden	costs	5. Reporting costs	2000	0	301	282	810

		6. Administration	26600	0	0	0	0
		7. Difference in interest	4%	58788	61797,1	64153,4	487791
		8.Accum. costs for AIJ/JI	138600	197388	261626	327326	330988
		9.Total costs	1578590	1667087	1806553	1931160	
2. Lithuania	Investment	1. Investment/Instalment	400000	0	0	0	0
	AIJ/JI costs	2. Reporting costs	0	0	0	0	0
		3. Other costs	0	0	0	0	0
		4. Accum. costs for AIJ/JI	0	0	0	0	0
		5. Total costs	400000	400000	400000	400000	
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 USD)*
Loan from STEM* for technical assistance	2134,00
Local financing	894,00

1 USD = 7,50 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: Swedish company HOTAB Eldningsteknik Halmstad and Lithuanian partner AB “Kazlu Rudos Metalas” (main contractor of the combustion equipment).

- Place of manufacture *(country)*: Sweden, Lithuania

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

The main parts of the delivery have been:

- Fuel storage 200 m^3 above the ground complete with hydraulic discharge scrapers;
- Fuel conveyor from storage to furnace;
- Bio-fuel boiler (6 MW);
- Flue gas cleaning of multyicyclone type;
- Flue gas fan, air fans;
- Frequency control of the fans;
- Ash and slag removable system;
- Control and supervision system;
- Stairs walkways and railings for operation and maintenance;
- Heavy oil boiler (7 MW);
- 30 heat substations with heat exchangers OTTO Plattenw and pumps WILO
- Pipeline renovation ABB;
- Boiler house building.

The project scenario activity is heat production using new boiler designed for for 6,2 MW on bio fuels and 7 MW boiler on heavy fuel oil (mazout). Mazout is still used in the boiler house for peak load and as reserve capacity. The project includes i.e. firing equipment, a basic fuel storage on ground (asphalt), fuel conveyor, flue gas cleaner (cyclone), civil works, buildings, control equipment, commissioning, training etc. A new pre-insulated pipeline has been installed to connect the networks as well as 30 new substations in buildings and block central. Annual heat after the new project is calculated to be provided through 25 000 MWh based on biofuels and 10 000 MWh on mazout. 1 000 MWh are calculated to be saved by the new substations. The emissions are calculated from the ultimate analysis of the assumed fuels.

- Any other relevant key specific technology characteristics:

The main components of the project are the following:
- Biofuel boiler of 6 MW with: automatic fuel feeding system from storage to furnace, including automatic bio fuel storage, flue gas handling system, automatic ash removal system.
- 7 MW heavy oil fired boiler all including auxiliary systems.
- 30 heat substations.
- Pipeline renovation.
- New boiler house

Boilers type: -
Biofuel boiler output: 6 MW
Two heavy oil boilers output: 7 MW
Flue gas cleaning: Multicyclone <300 mg/Nm3
Fuel type: Wood chips, sawdust, bark, 35-55% RH

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

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;
- The following up group for testing and adjustment of converted boilers has been formed in Lithuanian Energy Institute. Personnel of Heat-Equipment Research and Testing Laboratory is carrying out following up procedures keeping a close relation with and ÅF International AB company as the main supervisor of conversion projects supported by STEM.
- The local company "Kazlu Rudos Metalas" with participation of Swedish company "Hotab" mainly performed the execution of these biofuel conversion projects.
- Knowledge in managing and planning of industrial projects;
- Transferring of environmental issues to the local parties;
- Transferring of knowledge in operation and maintenance issue;
- Operation and maintenance software was introduced to the plant-owners.

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 Lithuanian partners:
  - ✓ Environmentally Friendly Energy Systems in the Baltic and Eastern Europe Countries/ (Seminar), Kaunas, 21-22 March, 1995 (prepared information by topics in Lithuanian over than 150 pages);
  - ✓ Environmentally Adapted Energy Systems in the Baltic Region and Eastern Europe/ (Seminar), Birzai, 19-20 November, 1998;
  - ✓ Environmentally-Adapted Local Energy Systems /(Seminar and book presentation), Druskininkai, 21 November, 1998.
  - ✓ Translation and preparation of safe operation regulations for wood waste burning boiler houses. This job was supported by STEM.

iii) Stimulate "net-working" for the exchange of experience between plant owners with similar problems, e g "bio-clubs":

- Association "Bioenergy and energy saving" has been founded at the end of 1997 to co-ordinate the attempts of wood firing equipment producers, wood wastes suppliers and owners of boiler plants;

- The boiler plant has been visited by specialist from another boiler plants (incl. Russia, Baltic Countries). The local staff has an exchange of experience with the staff from another boiler plants and has been active in "bio-club";

Endogenous capacity supported or enhanced:

Endogenous capacity Name of organisation 1)	**Development (DEV) / enhancement (ENH)**	**Describe briefly**
AB "Kazlu Rudos Metalas"	DEV	New biofuel firing technology was developed. Experience in installation and maintenance of modern western technology.
AB "Kazlu Rudos Metalas"	DEV	The new modern equipment for production pellets from wood dust were developed as demand for other wood fuel kinds increased
AB "Umega"	DEV	The straw burning technology was started to spread as continuation of successfully realized biofuel conversion projects.
AB "Kazlu Rudos Metalas" AB "Singaras" AB "Menranga" AB "Germeta"	ENH	Many smaller boiler conversion projects were successfully finished in Lithuania by local companies AB "Kazlu Rudos Metalas", AB "Singaras", AB "Elhamers" during past five years. The implementation of these projects was initiated by the successfully realized STEM projects.

H. Additional comments

Complete as appropriate:

1) Any practical experience gained: The project has a good demonstration effect. The boiler house staff actively participated in wood fired boiler rebuilding.

2) Technical difficulties: There were quite many long duration stops in boiler operation during the first year (1999) due to the defects in design of the prefurnace. For this reason it was not achieved supposed energy production in 1999. After reconstruction prefurnace in 2000 no serious problems occurred.

3) Effects encountered: Execution of biofuel conversion projects according to STEM JI programme caused the activity in the following fields:
- production of pre-furnaces and small wood fired boilers by local companies;
- new policy formation in respect of cleaning the forests and using the wood wastes or preparing of wood fuel by the forestry industry;
- research and testing of new equipment, training the local personnel and etc.

The experiences from EAES Programme projects have formed the basis for a new policy as respect to increasing renewable energy sources in the total energy balance of Lithuania.

4) Impacts encountered

The heat produced by 6 MW boiler reconstructed according to EAES program decreased in 2004-2005. The main reason is installation of two new wood –fired boilers with capacity 4 and 2,5 MW at the end of 2003. So now the main load is covered by this two new boilers and the 6 MW wood-fired boiler is put into use in winter time, when the average weather temperature decreased lower than -10ºC.
The total heat production in the boiler house was 30767 MWh, however, 6 MW wood-fired boiler produced only 7839MWh in 2005
In 2004 the heat production of this boiler was even lower as the sloping grate was fully reconstructed.
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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**

Name	Address [a]	Voice/Fax/E-mail
Organization(s) [b]: Ministry of Environment of the Republic of Lithuania **Function(s) within activity[c]:** *Designated national authority/reporter*		
Officer responsible:	Environmental Quality Department Jaksto 4 LT-01105 Vilnius Lithuania http://www.am.lt	**Tel:** +370-52 66 36 61 **Fax:** +370-52-66 36 63 **E-mail:** kanceliarija@am.lt
Contact person, if different from above: Arunas Cepele	Director of Environmental Quality Dept.	**Tel:** +370-52-66 35 09 **Fax:** + 370-52-66 36 63 **E-mail:** a.cepele@am.lt

Name	Address [a]	Voice/Fax/E-mail

Organization(s) [b]: Joint Stock Company Ignalinos Silumos Tinklai **Function(s) within activity[c]:** *Project owner/borrower*		
Officer responsible:	Vasario 16-osios 41 LT-30123 Ignalina Lithuania	**Tel:** +370 (386) 54 191 **Fax:** +370 (386) 52 917 **E-mail:** - ist@takas.lt
Contact person, if different from above: Leonas Cijunelis	Director	**Tel:** +370 (386) 52 701 **Fax:** +370 (386) 52 917 **E-mail:** - ist@takas.lt

Name	Address [a]	Voice/Fax/E-mail
Organization(s) [b]: ÅF-International AB (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]: Lithuanian Energy Institute **Function(s) within activity[c]:** *Local reporter*		
Officer responsible:	Heat-Equipment Research and Testing Laboratory Breslaujos 3 LT-44403 Kaunas Lithuania http://www.lei.lt	**Tel:** +370 37 40 18 63 **Fax:** +370 37 35 12 71 **E-mail:** testlab@isag.lei.lt
Contact person, if different from above: Nerijus Pedisius	Consultant	**Tel:** +370 37 40 18 63 **Fax:** +370 37 35 12 71 **E-mail:** nerijus@isag.lei.lt

Name	Address [a]	Voice/Fax/E-mail
Organization(s) [b]: Det Norske Veritas AS **Function(s) within activity[c]:** *Independent assessment of project performance*		
Officer responsible:	DNV development section Veritasveien 13 N-1322 Hovik Norway http://www.dnv.com	**Tel:** +47 67 57 99 00 **Fax:** +47 67 57 74 74 **E-mail:** -
Contact person, if different from above: Jesse B. Uzzell	Expert	**Tel:** +47 67 57 95 10 **Fax:** +47 67 57 99 11 **E-mail:** Jesse.Uzzell@dnv.com

[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)	

(* During the years 1993-1997 NUTEK (Swedish National Board for Industrial and Technical Development) has been responsible for the Programme for an Environmentally Adapted Energy System in the Baltic region and Eastern Europe (EAES Programme). Since 1 January 1998 the EAES Programme was managed by the Swedish National Energy Administration, which was renamed to the Swedish Energy Agency on 1 January 2002.)