JOINT IMPLEMENTATION PROJECT DESIGN DOCUMENT FORM
FOR SMALL-SCALE PROJECTS
Version 01.1 - in effect as of: 27 October 2006

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SECTION A. General description of the small-scale project

A.1. Title of the small-scale project:

Jägala-Joa Hydropower Joint Implementation Project in Estonia

Ver. no. 5, Dec.4 2007

A.2. Description of the small-scale project:

The proposed project activity is the restoration of a hydropower plant in Estonia at the municipality of Jõelähtme. The hydropower plant will have a total capacity of ca. 1978 kW and the expected net output is 7,900 MWh per year. The renewable electricity produced by the hydropower plant will displace carbon intensive electricity produced from fossil fuel sources in the Estonian grid.

A.3. Project participants:

Party involved	Legal entity project participant (as applicable)	Please indicate if the Party involved wishes to be considered as project participant (Yes/No)
Republic of Estonia (host Party)	• Jägala Energy OÜ - an Estonian company established for the restoration and operation of the Jägala-Joa hydropower plant	No
Republic of Austria	• Kommunalkredit Public Consulting GmbH	No

The PDD was prepared by an Estonian company LHCarbon OÜ, represented by Hannu Lamp.
Tel: +372 51 41 800
E-mail: Hannu@online.ee

A.4. Technical description of the small-scale project:

A.4.1. Location of the small-scale project:

A.4.1.1. Host Party(ies):

Republic of Estonia

A.4.1.2. Region/State/Province etc.:

Harju County

A.4.1.3. City/Town/Community etc.:

Jõelähtme municipality

A.4.1.4. Detail of physical location, including information allowing the unique identification of the small-scale project:

The object is located in Harjumaa, Jõelähtme Municipality, on the bank of the Jägala River. The building of the hydropower plant, dam of the hydropower plant and the derivation channel, which are located on the property "Powerplant" form one whole in terms of the intended purpose. A tourism object Jägala Waterfall is within 500 m and the reconstructed Linnamäe Hydropower Plant, currently the largest one of its kind in Estonia, is located within 2 km of the object.
The area of the property is 3622 m2. The area occupied by the derivation channel and upstream dam is 6876.15 m2. Jõelähtme Rural Municipality has adopted a resolution to privatise the land occupied by the derivation channel and upstream dam together with the corresponding service land to Jägala Energy OÜ.

Figure 1. Location of the project

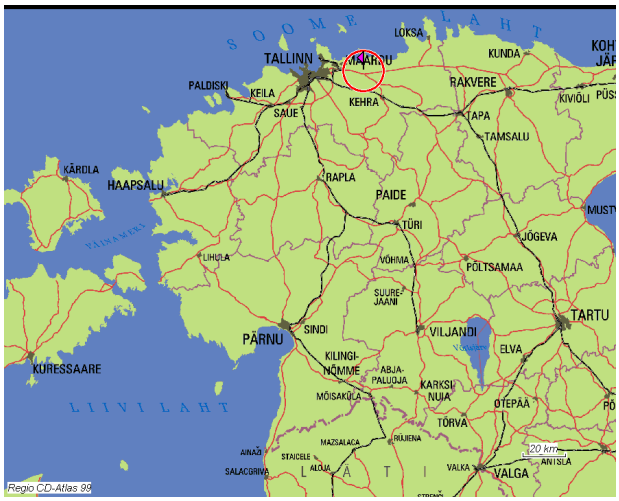

Figure 2. Location of the project (Real estate "Jõujaama" no. 24505:002:0640)

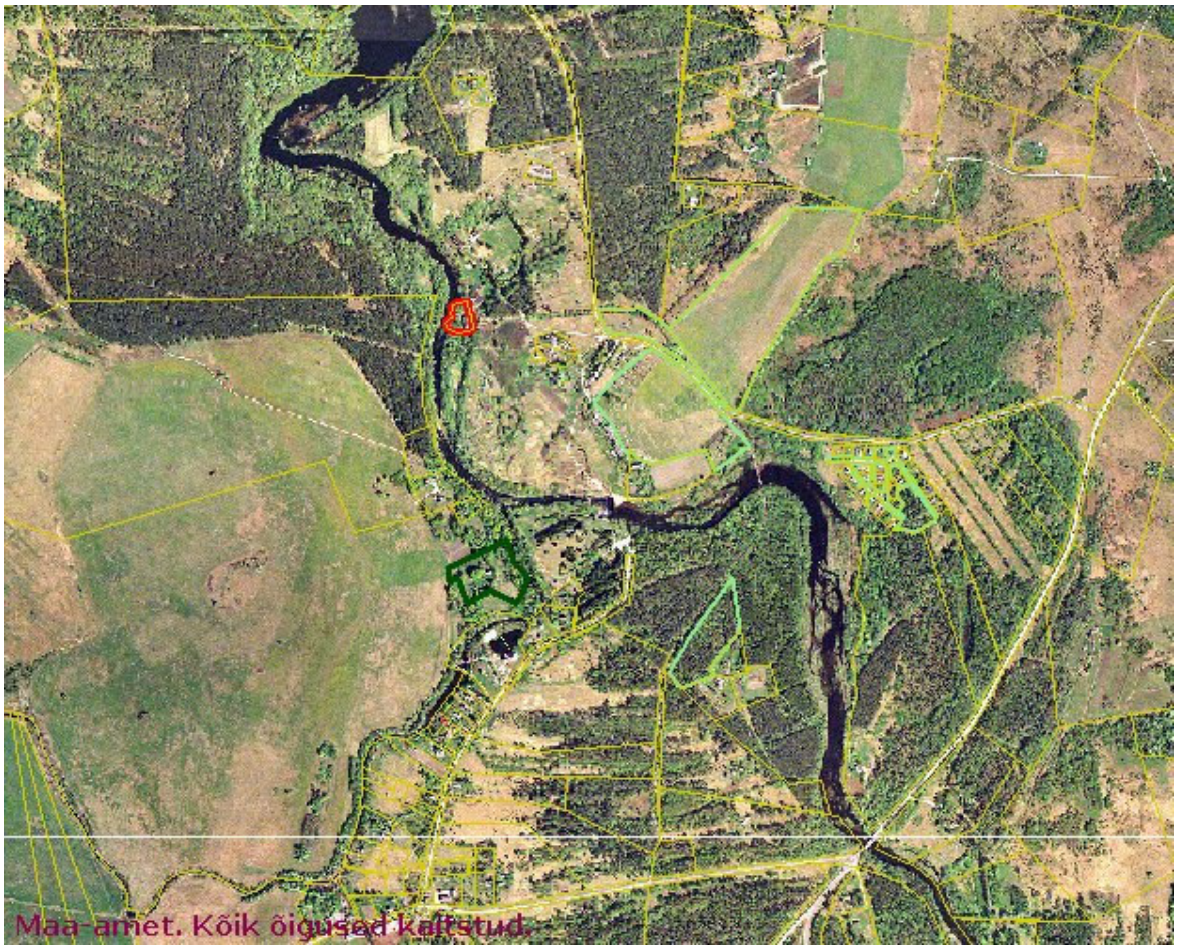

Figure 3. Location of the project

Figure 4. Location of the project (ortho photo)

A.4.2. Small-scale project type(s) and category(ies):

Type I JI SSC project: Renewable energy project with a maximum output capacity of less than 15 MW(e).
Scope 1 (energy industries), category AMS I.D. (SSC, renewable electricity to the grid).

A.4.3. Technology(ies) to be employed, or measures, operations or actions to be implemented by the small-scale project:

The purpose of the project is the restoration of a hydropower plant in Estonia. Emission reductions will be generated by the operation of the hydropower facility as described in this PDD. The power generation will displace carbon-intensive generation from the Estonian grid.

Background

The project has been under development for several years and it would be the largest hydropower plant in Estonia when realized. As of today ca. 30 hydropower plants have been restored or established in Estonia, with a total capacity of ca. 4,5 MW, that contribute to ca. 0,5% of Estonia's domestic electricity consumption.

The developer has made thorough analyses for restoring the hydropower plant that would be located at the 97 km long Jägala river that has the largest energetic potential in Estonia. The plant was originally established in 1917 and closed for operation in 1970. The developer owns the necessary registered immovable properties, buildings and facilities. Also a license for the special use of water has been issued to the company. The developer has already financed preparatory works towards realization of the project.

The feasibility study has been carried out in cooperation with the Estonian Agricultural University based on water flow measurements carried out since 1942 at Kehra measurement post.. The Kehra data was applied to Keila-Joa at ratio of 1.37 which derives from the different size of the river basin areas. Other characteristics of the basins (forest, lake and swamp areas) are very similar which eased the data modelling. Also production data from the downstream recently restored Linnamäe hydropower plant was utilized to calculate the annual electricity output of the plant which is conservatively estimated to be 7,9 GWh.

The success of the project is based on the following factors:
1. Earlier experience of the management (Mr. Verrev) in restoration of hydropower stations (currently the largest hydropower station of Estonia established on the basis of private capital is on the Purtse River)
2. Consultations with Estonia's largest hydropower plant projects constructed recently (Purtse River – Sillaoru, Keila River – Keila Joa, Jägala River – Linnamäe, Jägala River – Kaunissaare, Rannapungerja – Tudulinna)
3. Construction of similar facilities has been examined in Latvia, h = 17m, water intake pipes, exactly similar. If necessary, owner's supervision can be commissioned from the said builder of the hydropower plant.
4. The construction is facilitated by the existence of initial designs and available geological data.
5. Cooperation with the designers of the technology supplier.

Current status and Key permissions

The developer (OÜ Jägala Energy) has made thorough analyses for restoring the activities of the hydropower plant and owns necessary registered immovable properties (No 45088), buildings and facilities (derivation channel and dam with building register code 220272198), and a corresponding license for the special use of water was issued to the company in July 2005 by Environmental Service of Harju County (No. HR0828 (L.VT.HA-39077).

The developer has already undertaken and funded several preparatory works including purchase of real estate and relevant facilities, design, research and expert assessment, ongoing repair and restoration works of the dam and derivation channel.

Grid connection of the hydropower plant at a 110/20 kV substation have been agreed with Eesti Energia, the national utility which has issued the respective offer in January 2007. According to law Eesti Energia is obliged to provide grid interconnection if adequate capacity exists on the grid. Rights to grid interconnection and sales of electricity will be secured in accordance with legislation and by conclusion of the following additional agreements: Network Agreement and Power Purchase Agreement. It is the responsibility of Jägala Energy OÜ to establish the low voltage grid from the HPP to the grid conneciton point (ca. 2 km). for which also an offer has been obtained which also includes taking care of necessary servitudes for the land..

The local Jõelähtme municipality has agreed to the restoration of the hydropower plant already in its General Plan that was adopted in 2003 and has in April 2007 issued criteria for completion of the technical design of the plant on basis of which the building permit can be issued.

The environmental impact assessment (EIA) was initiated by Jägala Energy OÜ in February 2006 with an aim to increase the allowed capacity of the HPP prescribed in the special water permit. The EIA was carried out by expert company Ecoman OÜ, was finalized in August 2006, has obtained the necessary concords and is waiting for final adoption by the Environmental Service of Harju County. For the time being the EIA has been put to a hold due to discussions related to prolongation of the special water permit of the near-by downstream Linnamäe Hydropower Plant of Eesti Energia which may also set certain conditions to the JI project in question but are expected to have not impact on the project time-schedule and planned capacity of the plant.

It is expected to obtain the building permit for restoring the main facility of the hydropower plant by the end of 2007 (on basis of the final design prepared by GHE) and Jägala Energy OÜ has decided to construct the plant in accordance with the already issued special water use permit, thus it has due to the time-delay with approval of the EIA given up the plan to increase the plant's capacity. Works for repair of the derivation channel and restoration of the upstream dam are already ongoing and Jägala Energy OÜ has in September 2007 executed an agreement with Global Hydro Energy GmbH for turn-key installation of the hydropower plant equipment.

Main hydro-technical works

The dam is located on the Jägala River within 850 metres of the hydropower plant. The dam is 94 m in length, is made of stone, concrete and metal, and has not been renovated as of today. The dam is built on a limestone terrace; it makes the restoration and reconstruction of the present building significantly more simple.

The derivation channel, with a length of 850 m and width of 7 m on average, a height of walls of 2.2 m on average, is a facility of concrete and limestone, whose technical condition is varying (satisfactory,

good and very good). The channel does not need a capital reconstruction and reinforcement, geodetic data also show in which kind of surface the channel has been established.

The main hydro-technical works of Jägala-Joa hydropower plant include:
1. restoration of the upstream dam,
2. repair of the derivation channel,
3. construction of an inflow structure and upstream pressure piping,
4. installation of hydro-energetic equipment and
5. construction of an outflow channel.

1. Restoration of the upstream dam

The upstream dam has been built on a limestone terrace, which significantly simplifies its reuse. The upstream dam is nearly 100 m in length, has 10 columns and 11 spaces, of which one is automated at a high level in order to meet the conditions of a permit for the special use of water. Ten spaces are opened and closed manually or by special mechanisms. It is made possible by low water pressure of the upstream dam, which is 1.5 m. Upon restoration of the concrete part, a new reinforced concrete layer is cast on the major damages. In places eligible for restoration, a gunning method is used.

2. Repair of the derivation channel

On the bottom and side of the preservable part of the derivation channel, an additional concrete layer will be cast. Construction bid is made by OÜ Langeproon Inseneriehitus, a company designing full solutions for hydro-isolations. The derivation channel ends with a slope-bottom pressure pool, within which the water inflow speeds decrease, resulting in deposit of mud into a silt trap. The silt trap is necessary during a spring high water period when water brings along the sediment material from the upstream of the river. The matter is related to a need to prevent abrasive material from getting between the control equipment of the turbine and its moving parts. A flat screen set up in the pressure pool is made of steel and it closes as a result of gravitation. The screen is raised by a hoist or a special winch. The lifting capacity of the hoisting equipment is established after calculation of the mass of the screen on the basis of working drawings. At the end of the pressure pool, in front of the pressure pipe, an inclined-surface grate has been designed. The function of the grate is to prevent the occurrence of items flowing along with water in the pressure pipes.

3. Inflow construction with the building of upstream pressure pipe

Pressure and suction pipes of the turbine have a welded construction of steel and, the quality of welding work must meet the requirements for the welding work of pressure piping, welded seams need to be subjected to standardised inspection by high frequency methods. After inspection of welded joints, pipes are covered with a double paint coat prepared on epoxy base. The supplier of turbines provides drawings according to which the pipes are ordered.

4. Installation of hydro-energetic equipment

An agreement with the chosen technology supplier Global Hydro Energy GmbH has been concluded for supply of the following equipment:

- Two turbines of nominal capacity of 800 kW and one turbine of capacity 378 kW, of type “GHE Francis-Spiral Turbine”
- Two three-phase synchronous generators with nominal output of 900 kVA
- One three-phase synchronous generators with nominal output of 450 kVA

- Two hydraulic units for the adjustment of the actuators of the three turbines
- One digital turbine control and monitoring system capable of isolated and grid parallel operation of the three turbines
- One low voltage switchboard

The turbines have been designed for the following data:

- Two turbines of nominal capacity of 800 kW of type "GHE Francis-Spiral Turbine"

Rated net head:	H_N	=	17,4	m
Rated discharge:	Q_A	=	5,3	m^3/s
Turbine output:	P_T	=	800	kW
Rated speed:	n_1	=	375	rpm
Runaway speed:	n_D	=	693	rpm
Runner outlet diameter:	D_2	=	991	mm
Permissible suction head:	h_S	=	+ 5,4	m

- One turbine of capacity 378 kW of type "GHE Francis-Spiral Turbine"

Rated net head:	H_N	=	17,4	m
Rated discharge:	Q_A	=	2,5	m^3/s
Turbine output:	P_T	=	378	kW
Rated speed:	n_1	=	600	rpm
Runaway speed:	n_D	=	1110	rpm
Runner outlet diameter:	D_2	=	660	mm
Permissible suction head:	h_S	=	+ 5,0	m

The equipment will meet the "best available technology" criteria as defined in Estonian Estonia's BAT regulation. Further detailed technical description of the equipment as part of the contract with the supplier has been provided to validator for review.

The documentation provided by the supplier will include: maintenance manual, schematic wiring diagrams, general assembly drawings, subassembly drawing and necessary details, manual for operation, maintenance, spare parts, transformer, hydraulic unit, valves and LV switchboard, erection and installation instructions and relevant drawings.

The technology supplier will also take care of supervision of installation and commissioning of the delivered equipment.

5. Construction of an outflow channel

Of the outflow channel, vaults in the ceiling and the right side are well preserved. The second side will be restored exactly in the original form. The existing surface will be used to separate the river from the outflow channel of the hydropower station. The barrier has to be of a sufficient height and water resistance. If necessary, water-resistant auxiliary materials are used. On the right side, a service road will be made downwards for cleaning and concreting work. At the end of the work, the service road will be cleaned, falling back towards the river.

6. Conservation of buildings

The building of the hydropower plant, located on the property in a naturally beautiful place on the bank of the Jägala River, will be put in order only insofar as necessary for ensuring the uninterrupted operation of the hydropower plant. As a result of such renovation, about 30% of the building volume will be put in order. The remaining part of the building will be conserved (made weatherproof by replacing the roof and closing the window and door openings). The pool and unnecessary partition walls will be demolished in the power plant building and the building will be cleaned of loose materials. The windows, doors and roof will also be conserved. The interior finishing methods and colours will become clear after consultations with interior architects. After performance of the demolishing work and installation of the lifting mechanisms, required for installation of the turbine, a partition wall will be built. Possible noise reduction methods will be specified during the construction process. The exterior facade will be cleaned and sanitary repair made.

Technology

Upon acquisition of turbines and related hydro-energetic equipment, a choice can be made among various options. In addition to the cost of the equipment, other important factors that have been analysed include: efficiency, durability, maintenance cost and operation of equipment. A tender has been carried out between five equipment suppliers. Negotiations with the chosen technology supplier - Austrian company Global Hydro Energy GmbH – have been finalized and the contact for delivery and commissioning of the equipment has been concluded in September 2007..

The technology supplier will be contracted to supply and install the turbines on a fixed-price basis. The supplier will also provide a 2-year guarantee to the delivered equipment. Jägala Energy OÜ will directly contract with local civil construction companies for all remaining works. Technical operation and maintenance of the hydropower plant will be taken care of by Jägala Energy OÜ except for technologically more complex matters where the technology supplier will be involved. The expected technical lifetime of the turbines is 20 years.

The plant will be equipped with a fully automatic management system which can be remote monitored and operated either through Internet or GSM connection. The system will enable to regulate the water level at the entrance of the dam with 1 cm accuracy.

Time-schedule

The remaining time-schedule for the realization of the JI project is as following:

- September 2007 – conclusion of project financing, contracting with the technology supplier and local contractors
- October 2007 – preparation of HPP design drawings
- October – December 2007 – Completion of technical design and obtaining of construction permit
- May 2007 - July 2008 – construction works, establishment of infrastructure and substation
- July-Oct 2008 – delivery and installation of turbines and commissioning of the hydropower plant. The first turbine will be installed for electricity generation by August 2008.

Following the above time-schedule the plant will be commissioned for full-scale electricity and thus GHG emission reduction generation by October 31 2008.

Project-specific qualifications and experiences

As OÜ Jägala Energy is a special purpose company established for the implementation of the Jägala-Joa Hydropower JI Project the legal entity itself does not have any earlier references. At the same time the company management possesses the required experiences and qualifications. Under the leadership of the Member of the Management Board and co-owner, Horret Verrev, the currently Estonian largest privately owned hydropower plant on the Purtse River (Sillaoru) was restored and put into operation in 2005 (total investment cost of ca. 10 mil EEK) . Sillaoru hydropower plant was built close to the location of an old watermill, but the dam, derivation channel and hydropower plant building with new equipment have been redesigned.
Among the first works in the field of hydropower, Mr. Verrev also built the Vastseliina watermill dam and reconstructed Sangaste watermill into a hydropower plant (total investment cost of ca. 0,5 EEK). Also a new project Purtse 2 has been prepared on the Purtse River which has obtained all necessary approvals and where the preliminary technical design has been completed.
Mr. Verrev's everyday work as a consultant-adviser includes designing, operation and constructing hydropower plants in Estonia and Latvia.
Beneath the technical aspects related to hydropower the owners and managers of the developer are also very familiar with the financing through international institutions.

Financing

The shareholders have already committed equity capital for the early preparatory activities incl. acquisition of the required buildings and facilities as mentioned above. Negotiations with financial institutions for loan financing have been completed as of September 2007 but also depend on the success in securing carbon financing to the project.

The additional cash-flow from the sale of CO2 emission reductions is of utmost importance for the financial feasibility of the project and for project implementation within the set time-frame. Without the additional income the project would not be interesting for private investors and banks to undertake. During the coming years no financial support is available for hydropower projects from the EU Structural Funds or from the Estonian state budget. It is neither foreseen that the sales conditions for renewable energy in Estonia will improve in the coming years, on the opposite the conditions are expected to worsen as the legal chancellor of Estonia, Ministry of Economy and Communications have considered the recently established support level to renewable electricity producers to be at a non-justified level.

Status of negotiations with the Host Country

Negotiations between the project developer and the host country have started in September and the project has been included in the set-aside reserve of Estonia's NAP2 for 2008-12. In accordance with the National Electricity Sector Development Plan 2005-15 emission trading mechanisms will be used to develop Estonia's renewable energy sector and several JI projects are already under implementation in the country. The JI project is soon expected to receive the LoE and LoA from the Estonian Ministry of Environment.

A.4.4. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed small-scale project, including why the emission reductions would not occur in the absence of the proposed small-scale project, taking into account national and/or sectoral policies and circumstances:

The renewable electricity produced by the hydropower plant will displace carbon intensive electricity produced from fossil fuel sources in the Estonian grid.

The project has been under development for several years and it would be the largest privately owned hydropower plant in Estonia when realized. As of today ca. 30 hydropower plants have been restored or established in Estonia, with a total capacity of ca. 4,5 MW, that contribute to ca. 0,5% of Estonia's domestic electricity consumption.

The project supports Estonia's goals under the Long Term Development Plan for Estonian Fuel and Energy Sector for the promotion of the renewable energy sector. In line with the EU RES directive Estonia's goal is to reach a 5,1% share of renewable electricity in final electricity consumption (RES-E) by year 2010. Furthermore, Estonia's goal under the National Electricity Sector Development Plan 2005-15 is to reach a 7,5% share of RES-E by year 2015. This is assisted by the Electricity Market Act, adopted in early 2003, which sets out the framework for further harmonisation with EU market such as ongoing liberalisation and wider use of renewables incl. an obligatory purchase of electricity generated from renewable sources. However, large financial barriers exist due to the low rate of return due to the inadequate renewable electricity support system. It is therefore not possible to implement the JI project without a financial contribution from the Joint Implementation scheme. Please see B.2 for a more detailed analysis of the project's additionality.

The total estimated greenhouse gas emission reductions to be achieved by the proposed project amounts to 36 945 tonnes of CO2 equivalent over the period 2008-2012.

A.4.4.1. Estimated amount of emission reductions over the crediting period:

Length of the crediting period	4 years, 2 months
Year	**Estimate of annual emission reductions in tonnes of CO2 equivalent**
2008	1 477,8
2009	8 866,7
2010	8 866,7
2011	8 866,7
2012	8 866,7
Total estimated emission reductions over the crediting period (tonnes of CO2 equivalent)	36 945
Annual average of estimated emission reductions over the crediting period (tonnes of CO2 equivalent)	8 866,7

A.4.5 Confirmation that the proposed small-scale project is not a debundled component of a larger project:

The Jägala-Joa Hydropower JI Project is not a debundled component of a larger project. There exists a restored hydropower plant downstream of the Jägala river (Linnamäe, capacity of ca. 1,1 MWe) but:
- The project participants are different (national utility Eesti Energia).
- The project boundary of Jägala-Joa project is at minimum ca. 2 km distance of the project boundary of the closest hydropower plant at the closest point.
- The Linnamäe hydropower plant was not implemented as a JI project.
- The combined total capacity of the two projects would still be below the limits established for small-scale projects (i.e. below 15 MWe)

A.5. Project approval by the Parties involved:

Written approvals by the Parties involved, including the necessary authorisations, will be attached to the final PDD.

Once the draft determination report is available, the necessary request to issue a host country Letter of Approval will be made to the relevant Estonian authorities. The project has been included in the JI set-aside reserve of the National Allocation Plan for 2008-12.

The investor country approval will be issued prior to submission of the PDD and Determination Report to the JI Supervisory Committee.

SECTION B. Baseline

B.1. Description and justification of the baseline chosen:

Approved CDM methodology ACM0002/Version 6 (May 2006) has been applied to the project which is a consolidated baseline methodology for grid-connected electricity generation from renewable sources

The relevant applicability conditions of ACM0002 are as follows:
"Applies to electricity capacity additions from … Run-of-river hydro power plants…
"This methodology is not applicable to project activities that involve switching from fossil fuels to renewable energy at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;"
"The geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available"
All of these conditions are met in the case of the proposed Jägala-Joa hydropower JI project.

More specifically, the Operating and Build Margins have been calculated on the basis of detailed electricity generation and fuel consumption data from years 2003-2005 of 19 Estonia's oil shale, natural gas and other fossil fuels consuming as well as renewable energy plants supplying power to the grid. The below table provides an overview of the aggregate generation and fuel consumption data for these plants.

Table 1. Power Plants' Aggregate Data for Combined Margin

	Capacity	**Generation**			**Fuel consumption for electricity production**		
	(MW)	*Net output (GWh)*			*(TJ)*		
	2006	2003	2004	2005	2003	2004	2005
Total fossil fuel based plants	2 699,2	9 076,4	9 193,6	9 025,8	101 866	101 283	97 682
Total RES plants	54,0	25,0	38,0	88,0	0	0	0
Imports		93,0	347,0	345,0			
Total net output	**2 753,2**	**9 101**	**9 232**	**9 114**	**101 866**	**101 283**	**97 682**
Gross output from plants		**10159**	**10304**	**10205**			
Exports		1989	2141	1953			
Total domestic consumption (incl. PP self consumption)		**8077**	**7816**	**7907**			

The average Operating Margin was calculated to be 1,081 tCO2/MWh and average Build Margin was calculated to be 1,164 tCO2/MWh. Applying default weights of the methodology for hydropower projects of 0, 5 (Operating Margin) and 0, 5 (Build Margin) the Combined Margin was calculated to be 1,122 tCO2/MWh. Please refer to the enclosed Baseline Study for more information.

B.2. Description of how the anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the small-scale project:

Additionality of the project is proven using the ver. 2 of the CDM Tool for the Demonstration and Assessment of Additionality as approved by the CDM Executive Board.

Step 0. Preliminary screening based on the starting date of the project activity

Not applicable as a crediting period starts only after the project registration.

Step 1. Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1a. Define alternatives to the project activity:

A) The proposed project activity not undertaken as a JI project activity;

B) Continuation of the current situation (no project activity or other alternatives undertaken);
Electric power in the Estonian network will be produced mainly in Narva power plants that will be upgraded and partially closed. This baseline scenario is described in detail in the enclosed Baseline Study where it is proven that this is the only credible future scenario as it is the only one that enables to meet environmental targets set out in local and EU accession legislation, is economically viable, and reflects current renovation projects underway.

Sub-step 1b. Enforcement of applicable laws and regulations:

The existing legal and regulatory requirements in Estonia are in favour of alternative B - continuation of the current situation and is not in favour of alternative A - proposed project activity not undertaken as a JI project activity.

The level of obligatory purchase tariff and associated risks do not support commercial development of modern hydropower plants (Sub-step 2c).

Step 2. Investment analysis

Sub-step 2a. Determine appropriate analysis method

Simple cost analysis (option I) is not applicable for the project as the income from sale of 'carbon credits' is not the only source of revenues for the project.

Benchmark analysis (option III) is not applicable either as no investment benchmarks for power sector exist in Estonia.

The *investment comparison analysis (option II)* will be used for this project as it is the only applicable method.

Sub-step 2b. – Option II. Apply investment comparison analysis

NPV (Net Present Value) and IRR (Internal Rate of Return), as the most common financial feasibility indicators will be used for investment comparison analysis. NPV is the difference in the present values of cash outflows and inflows, the higher the NPV, the more attractive the project is for investors; IRR estimates the discount rate used in order to obtain NPV equal to 0. IRR is commonly calculated on total investment (disregarding capital structure and depreciation rate) to compare the project with similar projects or on the equity part of investment, which is relevant indicator for investors.

Sub-step 2c. Calculation and comparison of financial indicators

Given investor requirements and the risks associated with this project, a higher long-term tariff is required to make the project financially viable if the project is not implemented as a JI project.

The amendments to the Electricity Market Act entered into force on May 1 2007. A renewable electricity operator can either choose to sell its power at a fixed feed-in tariff of 1.15 EEK/kWh or at the free market and obtain a subsidy of 0.84 EEK/kWh. In the first case and if the plant's installed capacity is more than 1 MW the operator is also responsible for the balance i.e. it has to ensure its production in accordance with prognosis at any given point of time. This increases the cost of operation. Under an open delivery contract the term currently offered by the network operator (OÜ Põhivõrk) is only 1 year.

Moreover, Estonia's legal chancellor has undertaken an investigation to substantiate whether the feed-in tariff at its current level is justified and how it affects the final consumers. Also Ministry of Economy and Communications and Estonia's Prime Minister have proposed to lower the feed-in tariff that was

increased to its currrent level on the initiative of the Economic Commission of the Parliament just before the new Parliament elections.
No financing from EU or other multilateral or bilateral sources is available for hydro power projects in Estonia.

Given investor requirements and the risks associated with the renewable electricity support scheme, additional revenue is required to make the project financially viable. Financial modelling proves that the financial income from sale of Emission Reduction Units during 2008-12 improves the IRR of the project by ca. 1,2 percentage points and more than doubles the NPV of equity investment (*exact IRR and NPV figures are confidential and have been made available to Independent Entity*) and will also enable to use the prepayment from the sale of carbon credits as part of the equity capital.

Step 3. Barrier analysis

Sub-step 3a. Identify barriers that would prevent the implementation of type of the proposed project activity:

One of the key barriers listed in the tool for additionality assessment is, "investment barriers…Debt funding is not available for this type of innovative project activities."
This is the case with this hydro power project in Estonia, as no debt as well as equity funding would be available if the project did not have JI status. JI revenue has been considered since the early stages of development of this project and is an integral part of the project financing.

Sub-step 3b. Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity):

Fossile fuel based power does not face the same limitations on availability of finance. More importantly the identified baseline scenario does not require external funding, but can be financed internally by Eesti Energia.

Step 4. Common practice analysis

Sub-step 4a. Analyze other activities similar to the proposed project activity:

No hydropower plants have been constructed in Estonia that are comparable to the propose JI project.

Other hydropower plants have been constructed without carbon financing for the following reasons:

- the costs were lower as the projects mainly concern restoration of former HPP plants
- the projects utilized existing (renovated) turbines or less advanced turbine technology
- construction and operation costs have significantly increased in Estonia over last years due to rapid economic growth
- owners of the plants have implemented the projects for other reasons –
  1) image (Linnamäe, Keila-Joa by state utility Eesti Energia AS)
  2) to establish a reservoir for swimming (Kamari)
- expectations for feed-in tariff development were more optimistic as under former legislation the tariff was linked to consumer tariff at ratio of 90%
- financial grant has been obtained from Estonian Environmental Investment Fund (Sillaoru, Kamari, Kösti) or another source (Swedish bilateral assistance for Räpina project)

- cost of capital has been lower for other projects (e.g in case of Eesti Energia and Linnamäe & Keila-Joa HPP). Eesti Energia could also cross-subsidize hydropower production on the account of its other activities

Table 2. Larger hydropower plants in Estonia

Name	Established	Capacity kW	Owner
Linnamäe	2003	1150	Public (Eesti Energia)
Purtse Sillaoru	2004	500	Private
Keila-Joa	2006	360	Public (Eesti Energia)
Räpina	2004	350	Private
Loobu Joaveski	before 2003	300	Private
Kunda	before 2003	300	Private
Leevi	before 2003	240	Private
Kamari	before 2003	200	Private
Kösti	2005	200	Private
Saessaare	before 2003	190	Private
Leevaku	before 2003	150	Private
Tudulinna	before 2003	150	Private
Vetla	2004	70	Private

Sub-step 4b. Discuss any similar options that are occurring:

No similar options are occurring for the time being or are foreseen to occur in the mid-term future.

Step 5. Impact of approval under JI

As explained in Step 2, given investor requirements and the risks associated with the renewable electricity support scheme, additional revenue is required to make the project utilizing modern hydropower equipment financially viable.

If the project developer is able to sell the emissions reduction credits from the project activity, the additional revenue from these sales (received in hard currency) would improve the financial viability and make the project more attractive compared to other scenarios.

With the JI status the project will be able to attract equity and debt financing, and overcome the barrier described in step 3. Prepayment for the carbon credits will be utilized by the private investors as part of the equity capital.

Further to the financial aspect, the status of the project as an international Joint Implementation project (being also the first JI hydro power project in Estonia) helps to promote the project to Estonian authorities and thus increases the likelihood to secure all permits that have not yet been obtained.

Finally, it is important to point out that following a rapid reorganisation of the Estonian economy, opportunities for short-term profitable business are diminishing in Estonia. Therefore, the investors are

increasingly interested in projects offering lower but at the same time stable income in the longer term, a.o. from hydropower projects.

B.3. Description of how the definition of the project boundary is applied to the small-scale project:

The project boundary is drawn simply around the physical boundary of the hydropower plant, derivation channel, upstream dam and reservoir. The project activity will reduce the equivalent electricity production on the grid.

The spatial extent of the project boundary includes the project site and all power plants connected physically to the electricity system that the project power plant is connected to. The project electricity system is the Estonian National Grid, because the power plants on that system can be dispatched without significant transmission constraints. The plants and their characteristics are presented in Annex A of the Baseline Study. In addition, the electricity system in neighbouring Russia and Latvia are considered connected electricity systems. Imports from connected electricity systems in other countries are taken as having an emission factor of 0 (zero), as per ACM0002 requirements.

Justification of the selected Project Boundary is given in ACM0002.

B.4. Further baseline information, including the date of baseline setting and the name(s) of the person(s)/entity(ies) setting the baseline:

Baseline Study date: November 6 2006
Conducted by: Valdur Lahtvee and Dr Tiit Kallaste, Stockholm Environment Institute Tallinn Centre.
Tel: + 372 6276100
This baseline study has also been applied to recent Virtsu III and Vanaküla Wind Power JI Projects which have already obtained final determinations by TÜV SÜD Group in early 2007.

The person responsible for applying the baseline study to the PDD is Hannu Lamp.

Stockholm Environmental Institute is not considered as a project participant.

SECTION C. Duration of the small-scale project / crediting period

C.1. Starting date of the small-scale project:

The installation of main equipment of the hydropower plant will start on July 1 2008.

C.2. Expected operational lifetime of the small-scale project:

20 years, 0 months

C.3. Length of the crediting period:

Total crediting period: 4 years, 2 months (2008-12)
Starting date: Nov. 1, 2008

Pending decisions on the framework for generation and transfer of emissions reduction credits post 2012, the project developer may seek the right to earn credits for the period 2013 to 2017 in addition to emission reductions units (ERUs) generated under the first commitment period of the Kyoto Protocol (2008 to 2012).

SECTION D. Monitoring plan

D.1. Description of monitoring plan chosen:

The main requirements, being imposed on the monitoring plan, are pointed out in the Annex B of Chapter 6 of the Kyoto protocol (Decision 9/CMP.1, "Decisions adopted by the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol"). The following points have to be considered in the monitoring plan:

- All the data necessary to the evaluation or the collection and storage of the data from all the sources of anthropogenic emissions and/or leakage. These data are being collected and stored during all the crediting period;
- The collection and storage of all the data necessary for the calculation of the baseline from all the anthropogenic sources and leakage during all the crediting period;
- The determination of all the potential sources, the collection of information about them and storage of it in case of increasing GHG emissions from the anthropogenic sources as well as leakage that have intense and significant impact on the project during its crediting period and that are outside the project boundaries. The project boundaries must involve all the sources and leakage of anthropogenic pollution under the maintenance of the participants of the project;
- The storage of the information about the state of environmental protection according to the requirements of the hosting country;
- The assurance of the quality of the monitoring and the procedures of control;
- The periodic calculation of the saved GHG, according to all the sources and leakage, if such are present.

D.2. Data to be monitored:

Data to be collected in order to monitor emission reductions from the project, and how these data will be archived:

ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
1	EG_y – Net electricity supplied to the grid	Project proponent	kWh	Measurement. Directly measured with electricity meter, and checked with sales data	Monthly	100%	Electronic and in paper form	See below.*.
2	EFy – Emissions factor of the Estonian grid	Grid operator/utility/government department	tCO2/MWh	Calculation. Calculated as the weighted average of the operating and build margins, as indicated in the baseline study and methodology.	Ex ante calculation as part of this PDD	100%	Electronic and in paper form	
3	EFOM,y – Operating margin emissions factor of the Estonian grid	Grid operator/utility/government department	tCO2/MWh	Calculation. Calculated as indicated in the baseline methodology and study.	Ex ante calculation as part of this PDD	100%	Electronic and in paper form	
4	EFBM,y – Emissions factor of the Estonian grid	Grid operator/utility/government department	tCO2/MWh	Calculation Calculated as indicated in the baseline study and methodology.	Ex ante calculation as part of this PDD	100%	Electronic and in paper form	
5	Fi,j,y – consumption of fuel I by each plant j in year y	Grid operator/utility/government department	mass (tonne) or volume (m3)	Measurement Power producers on the grid measure this data.	Ex ante measurement as part of this PDD	100%	Electronic and in paper form	

6	COEFi,j	IPCC and project proponent	tCO2/tonne fuel	Calculation. Calculated as indicated in baseline study and methodology	Ex ante calculation as part of this PDD	100%	Electronic and in paper form	
7	EC_y – Net electricity consumption from separate connection point	Project proponent	kWh	Measurement. Directly measured with electricity meter and checked with consumption data	Monthly	100%	Electronic and in paper form	Concerns (backup) electricity consumption for the project purpose (lights, signalisation, heating) from a separate 40A connection point located at the hydropower plant.
8	"Approval of EIA and prolonged water use permit beyond 2010 available"	Harju County Environmental service	Yes/No	Collection of information	Monthly from 01.07.2010 onwards	100%	Paper form	See below**

* Data will be aggregated monthly and yearly and double checked with receipt of sales, with the SCADA system as a back-up.
** The existing water use permit is valid till 10.07.2010. The project is designed according to existing permit. It is assumed that for a renewed water use permit the EIA and its approval are the pre-requirements. Thus the prolongation of the water permit for Jägala may have relevant impacts at least on the operation conditions of Jägala power plant which may hence influence the generation of emission reductions. As long as no prolonged water use permit exists, no further emission reductions can be generated after 10.07.2010.

D.3. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored:		
Data (Indicate table and ID number)	Uncertainty level of data (high/medium/low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.
1. EG_y	The maximum allowed deviation of the meters is 0,5% (at 110 kV) and their verifications has to be carried out at minimum every eight years.	As explained above data will be directly measured with metering equipment at the connection point of Jägala hydropower plant to the Eesti Energia's grid at the 20 kV side of the transformer. All equipment will be sealed, calibrated and checked periodically for accuracy. In addition, all metered data will be double checked by receipts of electricity sales, with SCADA system as back-up.
2. all other data	Low	This data is all either default data (e.g. IPCC) or from official statistics and publicly available utility and government data that has already been gathered and checked for quality. All data sources are well known and reputable.

Brief description the operational and management structure that the project operator will apply in implementing the monitoring plan:

The basic guidelines of the Monitoring Plan to be established in more detail at a later stage are as following:

The project proponent will measure only the electricity output (MP1) of the plant. All other data has been collected at the beginning of the project, and presented in the Baseline Study and this PDD.

The following management and operational system is proposed for internal audits of GHG project compliance with operational requirements, for project performance and corrective actions.

In order to ensure a successful operation of the project and the credibility and verifiability of the ERs achieved, Jägala Energy OÜ recognises that the project must have a well defined management and operational system. The management and operation of the project is the responsibility of Jägala Energy OÜ i.e. ensuring the environmental credibility of the project through accurate and systematic monitoring of the project's implementation and operation for the purpose of achieving trustworthy ERs. Independent verifiers will audit the operator and his management systems to ensure credibility and transparency of the projects reported ERs and other performance indicators.

Data handling:
The establishment of a transparent system for the collection, computation and storage of data, including adequate record keeping and data monitoring systems.

Data handling and quality assurance:
Data will be entered on a monthly basis to a MS Excel worksheet (see Annex 3) on basis of information provided by the power purchaser (Eesti Energia) on kWh delivered to the grid on basis of the installed bi-directional power meter. Data will be double-checked with information from the hydropower plant's SCADA system which will be calibrated with the meter. The power purchaser will also be asked to report on scheduled repair/replacement of the power meter. Procedures in case of meter failures will be established.

Manager of OÜ Jägala Energy Horret Verrev will be in charge of and accountable for the generation of ERs including monitoring, record keeping, computation of ERs and verification. He will prepare and officially sign-off on all monitoring worksheets on a monthly basis. Regular back-ups of the monitoring and SCADA databases will be made.

Reporting:
Manager of OÜ Jägala Energy (Mr. Verrev) will prepare a brief annual monitoring report which will include: information on overall project performance, emission reductions generated and comparison with targets. The report will be provided to the verifier and to the Estonian JI focal point on an annual basis or more frequently if so decided.

Training:
It is the responsibility of OÜ Jägala Energy manager (Mr. Verrev) to ensure that the required capacity and internal training is made available to its operational staff to enable them to undertake the tasks required by the MP. The manager will also provide initial staff training before the project starts operating and generating ERs.

Corrective Actions:
Manager of OÜ Jägala Energy (Mr. Verrev) will periodically undertake performance reviews as part of its ongoing operation and management. Where corrective actions are required by the Estonian authorities or the verifiers, these will be acted upon within a reasonable timescale as dictated by relevant authorities.

Data collection

ID number	Data variable	Responsible person	
		Name	Position and department
MP1	EGy – Net electricity supplied to the grid (kWh)	Horret Verrev	Member of the Management Board

D.5. Name of person(s)/entity(ies) establishing the monitoring plan:

Horret Verrev, Jägala Energy OÜ.
Jägala Energy OÜ is also a project participant as listed in annex 1.

SECTION E. Estimation of greenhouse gas emission reductions

E.1. Estimated project emissions and formulae used in the estimation:

Hydropower does not create any anthropogenic greenhouse gas emissions in operation, so project emissions are zero.

Project emissions from the reservoir with a size of 10 ha and average height of 2 m are considered negligible.

E.2. Estimated leakage and formulae used in the estimation, if applicable:

No leakage estimate is required in ACM0002 for hydropower.

E.3. The sum of E.1. and E.2.:

Since there are no leakages: E.1 + E.2 = E.1 (0)

E.4. Estimated baseline emissions and formulae used in the estimation:

Baseline emissions (BE) are calculated as following:

BE_y (tCO_2) = EG_y (MWh) x EF_y (tCO_2/MWh)
EG_y – Net electricity supplied to the grid
EF_y – Emission factor of the Estonian grid (1,122 tCO2/MWh)

Please refer to the enclosed Baseline Study of November 6 2006 prepared by Stockholm Environment Institute Tallinn Centre for more details of the baseline calculation.

	2008	2009	2010	2011	2012	∑ 2008-2012
Baseline emissions (in t CO_{2e})	1 477,8	8 866,7	8 866,7	8 866,7	8 866,7	36 945

E.5. Difference between E.4. and E.3. representing the emission reductions of the project:

	2008	2009	2010	2011	2012	∑ 2008-2012
Baseline emissions = Project emissions (in t CO_{2e})	1 477,8	8 866,7	8 866,7	8 866,7	8 866,7	36 945

E.6. Table providing values obtained when applying formulae above:

Year	Estimated project emissions (tonnes of CO2 equivalent)	Estimated leakage (tonnes of CO2 equivalent)	Estimated baseline emissions (tonnes of CO2 equivalent)	Estimated emission reductions (tonnes of CO2 equivalent)
Year 2008	0	0	1 477,8	1 477,8
Year 2009	0	0	8 866,7	8 866,7
Year 2010	0	0	8 866,7	8 866,7
Year 2011	0	0	8 866,7	8 866,7
Year 2012	0	0	8 866,7	8 866,7
Total (tonnes of CO2 equivalent)	0	0	36 945	36 945

SECTION F. Environmental impacts

F.1. Documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party:

The environmental impact assessment (EIA) was initiated by Jägala Energy OÜ in February 2006 with an aim to increase the allowed capacity of the HPP prescribed in the special water permit.

The EIA was carried out by expert company Ecoman OÜ and the report was finalized by August 2006.

Public hearings of the EIA were held on February 21 and on June 21 2006 and separate meetings held with project stakeholders. The EIA programme was approved on March 29 2006. After the public hearing the EIA report was submitted to the Environmental Service of Harju County for approval and for a public display at the homepage of the Municipal Government.

The EIA report has been supplemented with documents addressing all questions raised by the stakeholders at the public hearings and has been submitted to Harju County Environmental Service for final approval. For the time being the approval of the EIA has been put to a hold due to discussions related to prolongation of the special water permit of the near-by downstream Linnamäe Hydropower Plant of Eesti Energia. The main topic for discussion is possible establishment of a fish ladder which may also set certain conditions to the project in question.

The decision related to Linnamäe HPP will not impact the time-schedule nor designed capacity of Jägala-Joa HPP as the plant is located upstream of Linnamäe HPP. It would be very impractical to establish a fish ladder (theoretical worst case for Linnamäe) at Jägala-Joa as the waterfall itself servers as a natural obstacle for fish migration upstream.

The transboundary environmental impacts of the project are not relevant.

F.2. If environmental impacts are considered significant by the project participants or the host Party, provision of conclusions and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

In accordance with the EIA report the planned activity will have a direct impact on the following areas:

- from road bridge of Vana-Narva (Kaberneeme) to Linnamäe reservoir
- Natura 2000 special conservation area of Jägala waterfall and Jägala river
- Area of Jägala-Joa and Koidula villages next to river on both sides of the river bank

The planned activity will have an indirect impact on the areas of Jägala-Joa, Ruu, Koila and Koogi villages, and for some environmental protection aspects also the former Maardu phosphate rock mine, Tallinn landfill, eastern area of Tallinn Port, Rebala heritage protection area and the part of Jägala river starting from Kaunissaare reservoir.

The environmental impact assessment studied in detail the impact of the planned activity on the impacted areas incl. impact on fish resources. The water flows of the river were studied in detail. A temporary water flow measurement post established and the feasibility of the water flow regulation and operation automatics were assessed. The current state of the facilities and buildings and the environmental impact of their renovation were analyzed.

The EIA report concluded that the restoration of the hydropower plant does not have a significant impact on the attractiveness of the Jägala waterfall and on the regime of the Natura 2000 special conservation area. The planned HPP plant does not have an impact on the fish under protection (salmon, river lamprey) as the fish cannot access the impacted area due to the dam of Linnamäe HPP. There is no impact on scorpion fish the resource of which is abundant at all parts of the river.

The EIA report also analyzed the expected social and economic effects. The report concluded that the expected impact will be positive. Restoration of the hydropower plant would form the basis to organize displays at the hydropower plant building related to energy and technical environmental protection, that would be targeted to students and other interested people. The project will have a positive impact on the local economy due to tax income and employment related to the development, construction, operation and maintenance of the hydropower plant.

In the EIA report the following main alleviation measures to reduce the environmental impact were proposed:

1. Establishment of a sanitary minimum water flow after the dam (1,5 m3/s). Analysis of the possible increase of the sanitary minimum flow to level of 1,7 m3/s would be able to achieve on the account of the regulation capacity of Soodla reservoir and in short-term also on the account Jägala reservoir.
2. Establishment of a minimum water flow of 15 m3/s to be let to the Jägala waterfall during summer tourism period of May 1 – August 31 at 12.00-20.00. Here it should be separately pointed out that during the course of EIA an electronic/dynamic model has been established that enables to prognose and to check the water flows passing the waterfall. Thus the model can be used during surveillance.
3. Establishment of a water reservoir (1 km long, 10 ha size and maximum barrage height of 28,85 m (abs) with possibility to reduce the water level by 60 cm) incl. cleaning of the reservoir bottom. In addition a project needs to be prepared for preventive measures reg. moisture regime of surrounding land. Possible damages to landowners will be compensated by the developer.

4. Automatic operation of the power plant and water flows (to derivation channel and to waterfall)
5. Participation of the developer in provision of public services and amenities related to the surrounding area and restoration of a bridge on the dam to enable bicycle and pedestrian traffic.

These measures do not differ much from measures already included in the issued special water permit issued by Harju County Environmental Service in July 2005 (No. HR0828 (L.VT.HA-39077).

EIA report foresees the following conditions for EIA surveillance:

- Constant measurement of sanitary minimum water flows and presentation of respective electronic reports to Environmental Service of Harju County
- Surveillance of the water level of the reservoir and presentation of respective electronic reports to Environmental Service of Harju County
- Surveillance wells will be established at the right side of the river bank. The representative of the housing co-operative will carry out surveillance in accordance with an agreement with OÜ Jägala Energy and will report to the HPP operator in case the water level exceeds the permitted level, who will regulate the water level of the reservoir to overcome the problem.

The finalization of the EIA for Jägala HPP depends on the outcome of the discussion related to prolongation of the special water permit of the downstream Linnamäe Hydropower Plant of Eesti Energia. As one option a fish ladder has to be established at Linnamäe HPP which will most probable turn out to be an impractical solution as Jägala waterfall would serve as the next natural obstacle for further migration of the fish. A more practical solution would be to undertake regular inhabitation of the river with fish which has already been initiated by Eesti Energia which in April 2007 ordered inhabitation of river between HPP and sea with 5400 young salmon. During past 5 years the river has been inhabited with in total ca. 30,000 salmon.
Also management of OÜ Jägala Energy considers regular inhabitation activities as the most practical solution for fish resource development. Thus the outcome of the EIA discussion may only have a modest financial impact on the JI project in question and does not endanger the implementation of the JI project in its planned capacity and time-schedule.

Estonian Maritime Biology Institute has in August 2007 carried out control fish catching related to both Jägala-Joa and Linnamäe HPP with a positive outcome for the continued operation of Linnamäe HPP and implementation of Jägala-Joa HPP project.

Hydropower as a renewable energy is one of today's major technologies for sustainable development and would contribute to achieving Estonia's objective of reaching a 5,1% share of renewable electricity in final electricity consumption by year 2010 (In line with the EU RES directive) and a 7,5% share as set in the National Electricity Sector Development Plan 2005-15.

The JI project would enable to come closer to using the large energetic potential of the Jägala river where six water power plants and three watermills with a total capacity of 4115 horsepower were located in 1928, and to turn the hydropower plant into an attraction for both domestic and foreign tourists. The natural conditions and state of the Jõelähtme municipality from one side and intensive human activity from the other side would enable to develop a sustainable development area, that would set a good example to other municipalities in Estonia and most likely also to other countries.

Hydropower is regarded as one of the most cost-effective renewable energy worldwide. Further development of hydropower in Estonia an important step is made away from the massive usage of oil shale that today contributes to over 95% of Estonia's domestic electricity supply.

SECTION G. Stakeholders' comments

G.1. Information on stakeholders' comments on the project, as appropriate:

Stakeholder comments have been invited in accordance with the Estonian legislation while carrying out the Environmental Impact Assessment.

The first public meeting to discuss the programme for the EIA for the project was held on February 21 2006 and attended by 35 people representing local people, municipal government, project developer, environmental organisations and the Environmental Service of Harju County Government.
The purpose of the meeting was to present and to discuss the programme for the EIA. On the basis of the questions raised at the meeting the Environmental Service of Harju County Government formulated proposals to amend the EIA programme which have been taken into account by the developer. The meeting protocol has been made available to the validator.

On April 22 a meeting was arranged at Jägala village for inhabitants of the right side of the river bank. The meeting was attended by 12 people. At the meeting:

- possible impact of the project on the water regime of the inhabited area was presented,
- results of the geodetical measurements and preventive measures to reduce the negative impact of the water regime was presented and
- area plan from year 1987 was reviewed.

It was decided:

- to consider it expedient to establish the reservoir if the negative impacts of the water regime are prevented,
- if after establishment of the reservoir damage is caused to landowners, the developer will liquidate these damages or provide compensation for real loss.

The second meeting to discuss the EIA of the project was held on June 21 and attended by 27 people representing local people, municipal government, project developer, environmental organisations and the Environmental Service of Harju County Government. On the basis of the questions raised at the meeting the Environmental Service of Harju County Government formulated further proposals to take into account in the EIA. As of today all proposals have been addressed and respective documents enclosed to the EIA report. The meeting protocol has been made available to the validator.

It is also important to point out that written agreements have been concluded with the following stakeholders:

- notarial agreements with all landowners affected by the planned reservoir
- entrepreneurs organising rafting events downstream of the Jägala waterfall
- co-operative representing 27 real estates regarding preservation of the beach at the reservoir

Annex 1

CONTACT INFORMATION ON PROJECT PARTICIPANTS

Organisation:	Jägala Energy OÜ
Street/P.O.Box:	Pärnu mnt.
Building:	76-22
City:	Tallinn
State/Region:	
Postal code:	10131
Country:	ESTONIA
Phone:	+372 50 67 172
Fax:	+372 6 81 99 31
E-mail:	jenergy@hot.ee
URL:	
Represented by:	Horret Verrev
Title:	Member of the Management Board
Salutation:	Mr.
Last name:	Verrev
Middle name:	
First name:	Horret
Department:	
Phone (direct):	+372 50 67 172
Fax (direct):	+372 6 81 99 31
Mobile:	+372 50 67 172
Personal e-mail:	kairi.kargu@mail.ee

Organisation:	Kommunalkredit Public Consulting GmbH
Street/P.O.Box:	Türkenstrasse
Building:	9
City:	Vienna
State/Region:	
Postal code:	A1090
Country:	Austria
Phone:	+43 1 31631 - 212
Fax:	+43 1 31631 - 104
E-mail:	kpc@kommunalkredit.at
URL:	www.publicconsulting.at
Represented by:	Mr. Wolfgang Diernhofer
Title:	JI/CDM Team Leader
Salutation:	Mr.
Last name:	Diernhofer
Middle name:	
First name:	Wolfgang
Department:	
Phone (direct):	+43 1 31631 - 380
Fax (direct):	+43 1 31631 - 104
Mobile:	
Personal e-mail:	w.diernhofer@kommunalkredit.at

Annex 2

BASELINE STUDY

Please see enclosed document "Estonian JI Project Development Baseline Study", Stockholm Environment Institute Tallinn Centre, Tallinn, November 2006.

Annex 3

Emission reduction worksheets

Proposed monthly worksheet:

		Energy Export MeterNr.: Factor of Meter in kWh:				Energy Import MeterNr.: Factor of Meter in kWh:				Energy consumption at separate connection point Meter Nr.: Factor of Meter in kWh:				
Year	Billing Month	Initial Reading	Final Reading	Total Export	kWh	Initial Reading	Final Reading	Total Import	kWh	Initial Reading	Final Reading	Total consumption	kWh	Net-Electricity kWh
	November			0	0			0	0			0	0	0
	December			0	0			0	0			0	0	0
2008	Total 2008				0				0				0	0
	January			0	0			0	0			0	0	0
	February			0	0			0	0			0	0	0
	March			0	0			0	0			0	0	0
	April			0	0			0	0			0	0	0
	May			0	0			0	0			0	0	0
	June			0	0			0	0			0	0	0
2009	July			0	0			0	0			0	0	0
	August			0	0			0	0			0	0	0
	September			0	0			0	0			0	0	0
	October			0	0			0	0			0	0	0
	November			0	0			0	0			0	0	0
	December			0	0			0	0			0	0	0
	Total 2009				0				0				0	0
2010-12	....													
	Total				0				0				0	0

Proposed annual worksheet:

Date	Responsible person
	Horret Verrev

PROJECT CONSTANTS	Unit						
		2008	2009	2010	2011	2012	Note
Baseline emission factor	$tCO_{2\ eq.}$ / GWh	1122.37	1122.37	1122.37	1122.37	1122.37	Fixed during the contract period

ACTUAL DATA	Unit	2008	2009	2010	2011	2012	Note
Power production (net), Total	MWh						to be monitored
Emissions reductions	tCO_2eq						to be calculated
Cumulative emissions reductions 2008-12	tCO_2eq						to be calculated