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:

Bulgarian Small Hydro Power Plant (SHPP) portfolio

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

The project consists of a portfolio of three run of river SHPPs with a total installed capacity of 6.46 MW. The aggregated annual electrical output of the project is about 41.9 GWh. The portfolio of the three small hydro power projects comprises:

Table 1: Small hydro power plant portfolio

Power plant	Nominal capacity	Electricity generation	Annual operating hours
Loziata SHPP	5,156 kW	34,040 MWh/yr	6,602 hours/yr
Byala Mesta SHPP	650 kW	3,849 MWh/yr	5,922 hours/yr
Cherna Mesta SHPP	650 kW	4,019 MWh/yr	6,182 hours/yr
Total	**6,456 kW**	**41,908 MWh/yr**	

Loziata –The Small Hydro Power Plant Loziata is a greenfield projects and is located between two irrigation Channels, the first one starts from the bottom reservoir (800,000 m^3) of the state owned hydropower plant Krichim. The HPP Krichim is the last bottom-most stage of the Dospat-Vatcha cascade and operates in the peak time-period of the state energy consumption diagram. The water resource includes two components – first, the water volumes already utilized from HPP Krichim and the second – the available water from the four small rivers - Ustinska, Perushtenska, Pastushka and Brestovica.

The catchment areas of the rivers are located on the Northern slopes of the Rodopi Mountain and the minimum river water discharge is assessed at totally 0.024m^3/s. The design water discharge of the HPP Krichim is 61 m^3/s, from which 16 m^3 will be used by the Loziata SHPP and 6,5 m^3 will be used by the two irrigation channels.

The SHPP Loziata is planned capacity of max 5,156 kW for energy production from a renewable energy source. Under the condition of a mean water year SHPP Loziata will generate 34,040 MWh/year.

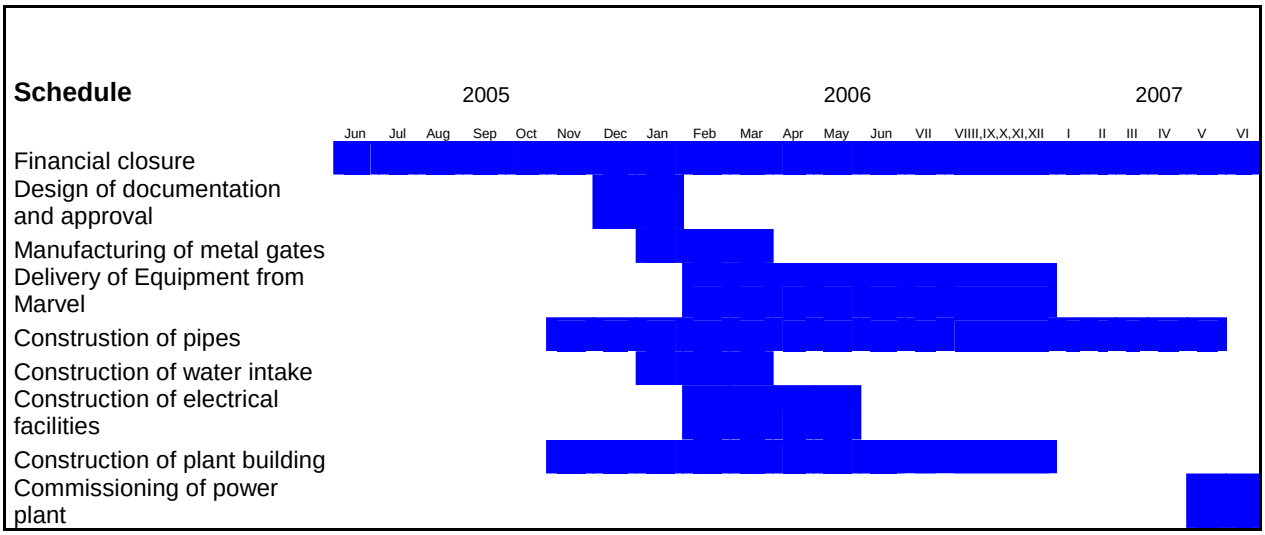
The system of SHPP Loziata consists of the following main facilities:

- Intake facility at the main canal which consists of:
  - Retaining walls on both sides of the canal bottom
  - Intake racks
  - Intake chambers in front of the pipeline inlets and
  - Intake gates
- Two buried GRP (glass reinforced pipe) pipeline
- Powerhouse with the hydro mechanical and electrical equipment
- Horizontal Francis turbine of type FHS 1050F6 (F265)
- Synchronous three-phase horizontal generator

Project implementation schedule for SHPP Loziata

The implementation of the project for the construction of SHPP Loziata is scheduled for the period from June 2005 to June 2007 for implementing of the following basic activities - design, delivery of the necessary equipment, construction works for the hydro technical equipment and installation. In the following figure a detailed time schedule is shown:

Figure 1: Project implementation schedule for SHPP Loziata



The design of the necessary documentation for the project implementation, as well as obtaining of approval from the different municipal and governmental organizations was completed in the end of Jan 2006.

According to the contract for delivery of the turbines and related equipment with the manufacturer Mavel, the delivery of the equipment was completed in October 2006. The delivery includes the turbines, generators, valves and the governing equipment.

The delivery of all remaining facilities, power transformers and facilities for the distribution switchgear 20 kV, and for the construction of a 20 kV line for connection to the national electricity grid and the completion of construction was finished in May 2006.

The construction works related to water intake, as well as the installation of all mechanical structures were completed in March 2006.

The construction works related to the building of the plant were executed from January 2006 till October 2006. The manufacturing of the different hydro technical equipment was accomplished during this period.

The commissioning tests of SHPP Loziata are expected in May 2007. The plant will be in regular operation in June 2007

Byala Mesta - The SHPP Byala Mesta is a Greenfield project and planned with an installed capacity of 650 kW - nominal generator output. The maximum discharge of the power plant according to the water use permit is 0.8m^3/s. Under the condition of a mean water year SHPP Byala Mesta will generate 3,849 MWh/year.

It is foreseen that the planned SHPP Byala Mesta works as a typical run-of river power plant. The possibly best hydropower use of the varying natural river run-off at an almost constant head is planned to be performed by means of equipment of the power plant with one regulated turbine of type Pelton.

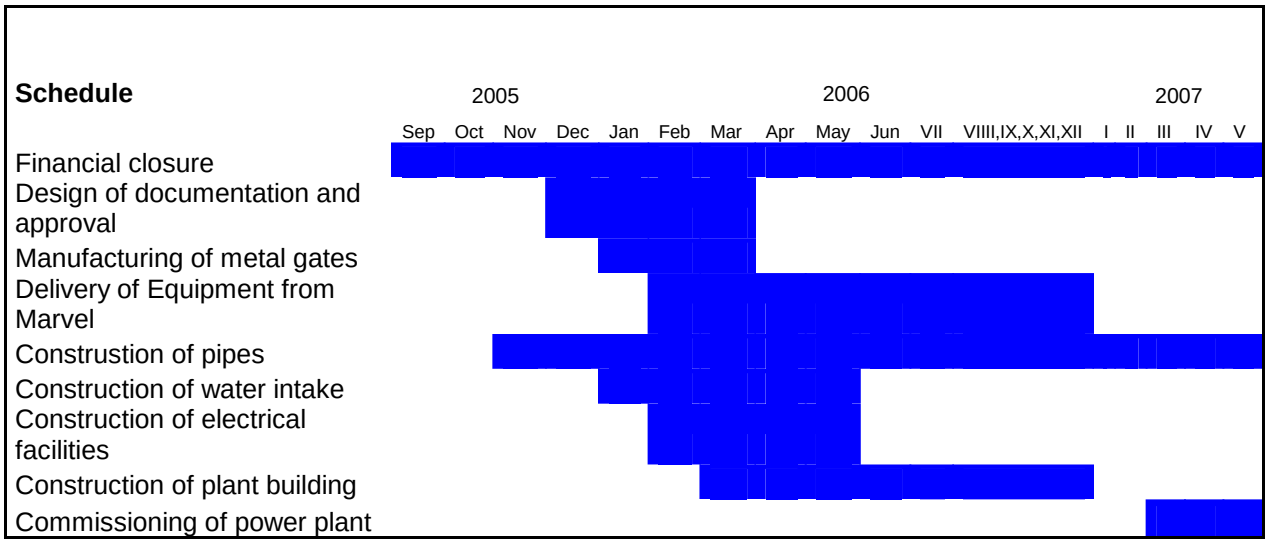
The system of SHPP Byala Mesta consists of the following main facilities:

- Intake facility
- One buried GRP pipeline
- Powerhouse with the hydro-mechanical and electrical equipment
- A short downstream canal after the tailrace
- Vertical 4-nozzle Pelton turbine with maximum output 668.8 kW type PV680 P2, 6 D4
- Asynchronous three-phase vertical generator

Project implementation schedule for SHPP Byala Mesta

The implementation of the project for the construction of SHPP Byala Mesta is scheduled for the period from September 2005 to May 2007 for implementing of the following basic activities - design, delivery of the necessary equipment, construction works for the hydro technical equipment and installation. In the following figure a detailed time schedule is shown:

Figure 2: Project implementation schedule for SHPP Byala Mesta



The design of the necessary documentation for the project implementation, as well as obtaining of approval from the different municipal and governmental organizations, was completed end of March 2006.

According to the contract for delivery of the turbines and related equipment with the manufacturer Mavel, the delivery of the equipment was accomplished in October 2006. The delivery includes the turbines, generators, valves and the governing equipment.

The delivery of all remaining facilities, power transformers and facilities for the distribution switchgear 20 kV, and for the construction of a 20 kV line for connection to the national electricity grid and completion of construction was completed in May 2006.

The construction works related to water intake, as well as the installation of all mechanical structures was completed in May 2006.

The construction works related to the building of the plant was finished in the period from March - October 2006. The manufacturing of the different hydro technical equipment will be accomplished during this period.

According to the prepared schedule the commissioning tests of SHPP Loziata were done in April 2007. The plant will be in regular operation in May 2007.

Cherna Mesta - The SHPP Cherna Mesta is a Greenfield project, planned with an installed capacity of 650 kW - nominal generator output. The maximum discharge of the power plant according to the water use permit is 0.8m^3/s. Under the condition of a mean water year the SHPP Cherna Mesta will generate 4,019 MWh/year.

It is foreseen that the planned SHPP Cherna Mesta works as a typical run-of river power plant. The possibly best hydropower use of the varying natural river run-off at an almost constant head is planned to be performed by means of equipment of the power plant with one regulated turbine of type Pelton.

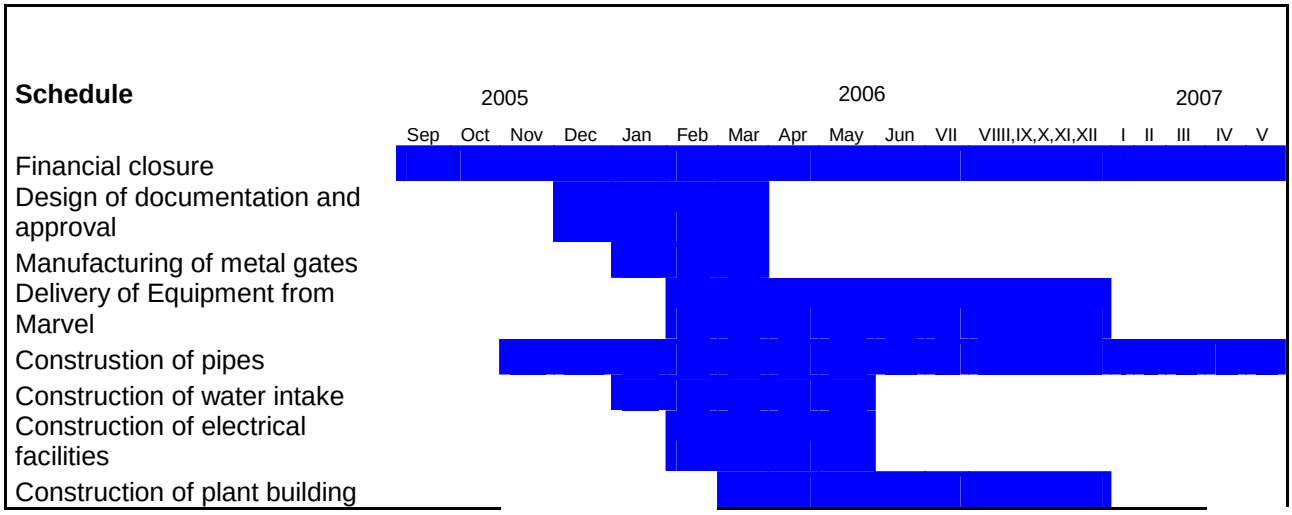
The system of SHPP Cherna Mesta consists of the following main facilities:

- Intake facility
- One buried GRP pipeline
- Powerhouse with the hydro-mechanical and electrical equipment
- Vertical 4-nozzle Pelton turbine with maximum output 668.8kW type PV680 P2, 6 D4
- Asynchronous three-phase vertical generator

Project implementation schedule for SHPP Cherna Mesta

The implementation of the project for the construction of the SHPP Cherna Mesta is scheduled for the period from September 2005 to May 2007 including the following basic activities: design, delivery of the necessary equipment, construction and installation works. In the following figure a detailed time schedule is shown:

Figure 3: Project implementation schedule for SHPP Cherna Mesta



Commissioning of power plant

The design of the necessary documentation for the project implementation, as well as obtaining of approval from the different municipal and governmental organizations, were completed in end of March 2006.

The turbines and related equipment from the manufacturer Mavel, completed the delivery of the equipment in October 2006.The delivery includes the turbines, generators, valves and the governing equipment.

The delivery of all remaining facilities, power transformers and facilities for the distribution switchgear 20 kV, and for the construction of a 20 kV line for connection to the national electricity grid and all other construction was completed in May 2006.

The construction works related to water intake, as well as the installation of all mechanical structures was done in May 2006.

The construction works related to the building of the plant was done in the period from March – October June 2006. The manufacturing of the different hydro technical equipment was accomplished during this period.

According to the prepared schedule the commissioning tests of SHPP Loziata was completed in April 2007. The plant will be in regular operation in May 2007.

Technology supplier / Guarantee / Personal training

All the machinery equipment of the three projects is delivered by the company MAVEL and has a guarantee period of 250 days. Agreements for delivery of spare parts have been signed to ensure maintenance. Instruction and training of the staff will be done by the representatives of MAVEL during the mounting process of valves for the machines.

The electrical part and the control system for each project are delivered by the company DELECTRA. Training of the plant personnel is committed with DELECTRA.

Generated electricity and cost breakdown of the SHPP portfolio

Total annual primary energy production in Bulgaria is 10,761 thousand tons of oil equivalent (2002). It is estimated that SHPP Loziata will generate 0.0272% of the annual primary energy production under the conditions of a mean-water year. Total annual hydro energy production in Bulgaria amounts to 189,000 tons of oil equivalent (2002). SHPP Loziata is going to generate 1.55% of the annual hydro energy production under the conditions of a mean-water year.
SHPP Byala Mesta will approximately generate 0.0031% of the annual primary energy production under the conditions of a mean-water year and is going to generate 0.175% of the annual hydro energy production under the conditions of a mean-water year.
SHPP Cherna Mesta will generate about 0.0032% of the annual primary energy production under the conditions of a mean water year and is going to generate 0.183% of the annual hydro energy production under the conditions of a mean water year.

The following table illustrates the forecast electricity sales from the SHPP portfolio in a mean water year. All projects are scheduled to commence operation in the period May - June 2007.

Table 2: Forecast of electricity sales of the SHPP portfolio

Power plant	Unit	2007	2008	2009	2010	2011	2012
Loziata	MWh/yr	11,347	34,040	34,040	34,040	34,040	34,040
Byala Mesta	MWh/yr	0,962	3,849	3,849	3,849	3,849	3,849
Cherna Mesta	MWh/yr	1,005	4,019	4,019	4,019	4,019	4,019
Total	**MWh/yr**	**13,314**	**41,908**	**41,908**	**41,908**	**41,908**	**41,908**

The current price for the sale of the electricity is about € 40.9/MWh, this price might slightly rise in the next years. Currently (May 2007) under Bulgarian Law, it is only allowed to sell the electricity to the national electricity supplier. In the case of the Brestiom project the power will be sold to Austrian EVN who is the national electric supplier for southern Bulgaria. The power will be sold with one year contracts. No other contracts, like direct selling contracts are allowed.

The total investment costs equal Euro 6.097 million for the implementation of the SHPP portfolio. In the following table a cost breakdown of the three projects is shown:

Table 3: Cost breakdown for the SHPP portfolio

[in Euro]	Loziata	Byala Mesta	Cherna Mesta	Total
Design	38,756	22,271	21,392	**82,419**
Equipment	2,931,687	625,408	548,774	**4,105,869**
Construction	644,000	534,000	502,774	**1,680,774**
Technical Contingency	2,500	3,000	3,000	**8,500**
Interest costs	134,642	43,386	42,276	**220,304**
Total	**3,751,585**	**1,228,065**	**1,118,216**	**6,097,866**

In the following the additional domestic and local environmental and socio-economical benefits of the SHPP portfolio are shown:

Table 4: Domestic and local benefits

"Issue" Area	Explanation
Local environmental benefits	The project will not only result in a reduction in the generation of GHGs sulphur dioxide, nitrogen dioxide and dust are emitted during generation of electricity from fossil fuels. The implementation of the SHPP portfolio will generate renewable electricity and displace conventional thermal electricity production. Therefore, there is also a reduction of the mentioned gases associated.
Socio-economic benefits	The SHPPs implementation brings welcome investment and employment to an economically depressed part of the country. The economic problems faced by Bulgaria in the transitional period have impacted this region with unemployment rates in 2004 reported at 21%. Each of the three projects will generate 6 permanent and qualified local jobs in addition to the employment generated during the construction phase.

"Issue" Area	Explanation
Capacity building	Small hydro power plants are important for Bulgaria to gain incomes on municipal levels and utilise the potential of hydro power in that regions. The financing problems are partly mitigated due to the revenues from JI activities and especially small hydro power plants can successfully developed as JI activities.
Technology transfer	The implemented technical equipment is developed and will be constructed according to the newest state of the art understanding. The technical equipment is proven technology, but small scale and micro hydro power plants have hardly been implemented in Bulgaria, because of the high risk due to the little experience with such project types and the resulting difficulties of financing.
Environmental Impact Assessment (EIA)	The projects are small, will all be run of river and integrated into existing infrastructure e.g. irrigation channels, so each of the three regional administrations have decided that no Environmental Impact Assessment (EIA) is necessary.

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)
Bulgaria – Host Country	Brestiom PLC, 30 – 32 General Totleben Blvd, floor 7 Sofia 1606, Bulgaria	No
Netherlands	Climate Change Investment I S.A. SICAR 5, Rue Jean Monet L-2180 Luxembourg Luxembourg	No

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):

Bulgaria

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

Sofia Region, Blagoevgrad and Plovdiv

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

South-west Bulgaria in the Rodopi Mountain range

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

All three of the projects in the portfolio are located in the Rodopi and Rila Mountain range, in the south-west of Bulgaria.

Loziata SHPP is located between two irrigation Channels, the first starts from the bottom reservoir of the state owned hydropower plant Krichim. The HPP Krichim is the last bottom-most stage of the Dospat-Vatcha cascade. The water resource for the SHPP includes two components – first, the water volumes already utilized from HPP Krichim and the second – the available water from four small rivers - Ustinska, Perushtenska, Pastushka and Brestovica. The catchments of the rivers are located on the Northern slopes of the Rodopi Mountains.
The geographic coordinates of the locations of the projects are as follows:
Loziata water abstraction installations
x = 4 536 806
y = 8 602 800

Byala Mesta SHPP is located in the mountainous part of Mesta River catchment. The River Byala Mesta is the upstream section of Mesta River. The spring is located at the highest area of Rila Mountain. The mountain section of the catchment is crossed from the diversion channel Granchar. The channel Granchar transfers water to the Reservoir Belmeken, which is the main facility of the hydro-energy complex Belmeken-Sestrimo.
The geographic coordinates of the locations of the projects are as follows:
Byala Mesta water abstraction installations
B= 42 degree, 05’ 45”
L= 23 degree, 42’ 58”

Cherna Mesta SHPP is located at the mountain part of Mesta (Nestos) River catchment. The Cherna Mesta river is the main tributary of the Mesta river. The source is located at the highest area of Rila Mountain. The mountain section of the catchment is crossed from two collected channels Granchar and Djaferitca. The water is collected in the two channels and is discharged to the Belmeken reservoir.
Cherna Mesta water abstraction installations
B= 42 degree, 05’ 43”
L= 23 degree, 43’ 34”

In the following picture the locations of the three power plants are shown:

Figure 4: Project location of the SHPP portfolio[1]

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).

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

The **Loziata SHPP** is located between two irrigation channels with a difference in elevation of about 41,7 m, which gives the possibility to use this head for electricity generation. The water is conveyed through two buried pipelines into the powerhouse, where the hydro energy is converted into electrical energy by two horizontal Francis turbines (FHS 1050F6) and two synchronous three-phase horizontal generators. The total discharge per turbine is max 8 m³/s. The maximal output per turbine is 2,670kW at the net head of 37.5m. The generator is dedicated to operate parallel with the national power grid with nominal output 3000 kVA per unit at a nominal power factor of cos(φ)=0.9 and a nominal frequency of 50 Hz. The generator efficiency is 96.5% at full load. Therefore the max electrical capacitiy of the SHPP Loziata is 5,156 kW.

[1] www.ucl.ac.uk

Byala Mesta SHPP is a pure run-off river hydro power plant. In order to guarantee the best hydro power use at an almost constant head of the naturally varying river run-off, a regulated Pelton turbine will be used.

Following equipment will be employed:

- Vertical 4-nozzle Pelton turbine with maximum output 668.8 kW type PV680 P2, 6 D4. The maximum/minimum discharge of the turbine is 0.8 / 0.1 m3/s, respectively, with rated net head 98.0 m (-2 m to turbine axis) and rated speed 606 min-1. The expected efficiency of the turbine in the rated operation mode is 87%;

- The main electrical equipment consists of an asynchronous three-phase vertical generator for parallel operation with common power grid with rated power output 650 kW, nominal power factor cosφ = 0.8, nominal frequency 50 Hz, nominal voltage 0.4 kV and nominal speed 606 min-1;

- Butterfly valve DN 800, PN 16 with hydraulic control, auxiliary counterweight for closing and by-pass with electric motor spherical valve;

- System for turbine control, ensuring parallel operation of the generator with the energy system and technological throttle valve control. The system is designed and developed with an electronic unit for control and tuning, and a hydraulic unit for the mechanisms driving. The system for control includes also control of the upper water level, with an option for aggregate control and maximum efficiency during operation.

Cherna Mesta SHPP is a pure run-off river hydro power plant. In order to guarantee the best hydro power use at an almost constant head of the naturally varying river run-off, a regulated Pelton turbine will be used.

Following equipment will be employed:

- Vertical 4-nozzle Pelton turbine with maximum output 668.8 kW type PV680 P2, 6 D4. The maximum/minimum discharge of the turbine is 0.8 / 0.1 m3/s, respectively, with rated net head 106.56 m (-2 m to turbine axis) and rated speed 606 min-1. The expected efficiency of the turbine in the rated operation mode is 87%;

- The main electrical equipment consists of an asynchronous three-phase vertical generator for parallel operation with common power grid with rated power output 650 kW, nominal power factor cosφ = 0.8, nominal frequency 50 Hz, nominal voltage 0.4 kV and nominal speed 606 min-1;

- Butterfly valve DN 800, PN 16 with hydraulic control, auxiliary counterweight for closing and by-pass with electric motor spherical valve;

- System for turbine control, ensuring parallel operation of the generator with the energy system and technological throttle valve control. The system is designed and developed with an electronic unit for control and tuning, and a hydraulic unit for the mechanisms driving. The system for control includes also control of the upper water level, with an option for aggregate

- control and maximum efficiency during operation.

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:

Hydro power is a renewable zero emission energy source. Due to the negligible operating costs in comparison to construction costs of hydro power plants it would makes usually no sense in economic terms to reduce the energy output in off-peak periods. Hydro power plants are considered as low-cost and must-run power generation sources.

The three SHHPs – Loziata, Byala Mesta and Cherna Mesta - are using hydro energy to generate annually about 41.9GWh of electricity. The electricity produced will be fed to the national power grid and will displace a part of the electricity production of existing national power plants on the margin. The emission reduction of the SHPP power plant portfolio results from this partial displacement of the marginal power plants of the Bulgarian national power

In the "Green Certificates Regulation" a new feed-in tariff model is envisaged. A Tradable Green Certificate (TGC) scheme[2] will be introduced and replaces the currently prevailing preferable price system. After implementation of the TGC scheme the electricity producers have two products – the electricity feed-in to the national grid and the green certificates, which may be sold to power producer with conventional thermal power plants. The market price of the green certificates is very unclear until the quotas are set. These circumstances and the uncertain market for green certificates lead to a high uncertainty and a considerable financial risk for investors. Furthermore, if the time the green certificate system will be introduced the feed in tariff will be reduced. For a detailed additionality analysis please refer to Section B.2.

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

Length of crediting period Length of the crediting period in which ERUs are to be earned	6 years 5 years (2008 – 2012)
Year	Estimate of annual emission reductions in tonnes of CO_2 equivalent
2007	14,579
2008	42.159
2009	37.215
2010	35.622
2011	34.951
2012	33.150
Total estimated emission reductions over the crediting period (tonnes of CO_2 equivalent)	197,676
Annual average of estimated emissions reductions over the first Commitment Period 2008-2012 (tonnes of CO_2 equivalent)	36,619

[2] Ministry of Energy and Energy Resources, http://www.doe.bg/cgi-bin/i.pl?l=2&p=652

Annual average of estimated emissions reductions over the crediting period 5/2007-12/2012 (tonnes of CO_2 equivalent)	32,946

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

The project portfolio and each single project could be categorised as CDM small scale activity. The projects are not a debundled component of a larger project, as there are no other small-scale JI project activities with the same project participants, in the same project category and technology/measure whose project boundary is within 1 km of one of the proposed project activities.

A.5. Project approval by the Parties involved:

The project has received the Letter of Support from the Bulgarian ministry. The project was submitted to the Bulgarian JI Steering Committee aiming to receive the Letter of Approval.

SECTION B. Baseline

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

Methodology AMS-I.D (Version 10) "Renewable electricity generation for a grid" is applied. Applying an approved methodology according to CDM rules minimizes the baseline risk of the proposed JI project significantly.

In order to calculate the baseline emissions (9) option (a) of AMS-I.D is applicable as the National public combined margin factor has been applied that considers future development of the Bulgarian power plants. This also reduces the risks of the estimated emissions reductions. The other important parameter for the estimation of the emission reduction is the estimated amount of electricity production of the projects. As these estimations are based on long term water discharge analyses, these risks seem to be low. However, the electricity production of the projects is part of the monitoring.

The chosen methodology AMS-I.D is designed for grid-connected renewable electricity generation project activities. The conditions for the methodology to be applicable are respected:

- the proposed three SHPP projects generates renewable electricity to an existing grid
- the eligibility criterion of 15 MW/y is respected as the project portfolio will have a total capacity of 6.7 MW.

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:

The baseline scenario for the SHPP Portfolio is the continuing operation of existing and future power plants in the Bulgarian power grid without the Loziata, Byala Mesta and Cherna Mesta SHPP to cover the current and future electricity demand of Bulgaria.
In the project scenario the current and future electricity demand of Bulgaria is provided by the existing and future power plants including the electricity generation of the three SHPPs.

Hydro power is a renewable zero emission energy source. Due to the negligible operating costs of hydro power plants it would make no sense in economic terms to reduce the energy output in off-peak periods. Therefore, hydro power plants are considered as low-cost and must-run power generation.
The electricity produced by the SHPP will partially displace electricity production of existing national power plants on the margin. The emission reduction of the SHPP portfolio results from this partial displacement of marginal power plants.

Additionality
The following categories of barriers shall evidence why the proposed project is additional.
I) investment barrier,
II) technological barrier,
III) prevailing practice and
IV) other barriers such as institutional barriers or limited information

I) Bulgaria is an economy in transition and project developers have both limited security of future income due to the insecurity of electricity prices and limited access to commercial long term financing for renewable energy projects. In Bulgaria the liberalisation process of the electricity sector has commenced. Over 18.9% of the market had been opened by the end of 2003. Further opening steps were envisaged in 2006 and the full liberalisation is expected to be finished in July 2007. New price setting mechanisms became necessary with the liberalisation process. Currently, the electricity price in Bulgaria is determined in two ways - regulated prices by the State Energy Regulation Commission and freely bilaterally negotiated prices under consideration of the electricity trading rules. In the "Green Certificates Regulation" a new feed-in tariff model is envisaged. A Tradable Green Certificate (TGC) scheme will be introduced and replaces the currently prevailing preferable price system. After implementation of the TGC scheme the electricity producers have two products – the electricity fed to the national grid and the green certificates, which may be sold to power producer with conventional thermal power plants. The price for the electricity fed in the national grid will be considerably reduced with the new feed-in tariff.

   The setting of quotas was expected at the earliest in the end of 2006 but until May 2007 the system was still not set up. This circumstance and the uncertain market for green certificates as well as the decrease of feed-in tariff lead to a high uncertainty and a considerable financial risk for investors. The current price for electricity fed to the national power grid is about € 40.9/MWh[3]. By the introduction of green certificates, it is likely that the generation of renewable energy will receive a market price. However the prediction of the market price is unsafe, so any cash flow resulting from the sale of green certificates is uncertain. For development of new renewable energy projects, this is an important barrier as the financial viability and the financing with bank loans gets more insecure.

   Commercial loans are hardly accessible because of high interest rates and short tenures. Additional subsidies are needed to tackle the undercapitalisation of Bulgarian companies and to provide the requested share of security. The selling of Emission Reduction Units enables project developer to provide securities to the bank and improves the feasibility of the project.

   For the three projects REUP (Rational Energy Utilisation Plan) documents (REUP No. 24, 33 and 34) were prepared to present the projects to the local banks to request financial support. The REUP's make a clear case that Carbon revenues will be pursued and are part of the projects to get loans for the project portfolio. The three projects of the portfolio were successfully financed by the local banks based on the prepared REUP's, therefore Carbon revenues contributed to the decision. Furthermore, the investors were aware of the Carbon revenues. This is demonstrated by the inclusion of the Carbon

[3] Ministry of Energy and Energy Rescources, http://www.doe.bg

revenues in the REUPs. We can therefore make a strong statement that Carbon revenues contributed to the project developers decisions to proceed and develop the projects. Therefore they are additional.

II) This step was not applied to show the additionality of the project activity.

III)Thermal power plants are prevailing in the Bulgarian energy supply system due to the most experience in that sector. In the following chart the sources for power generation of the Bulgarian national grid is shown:

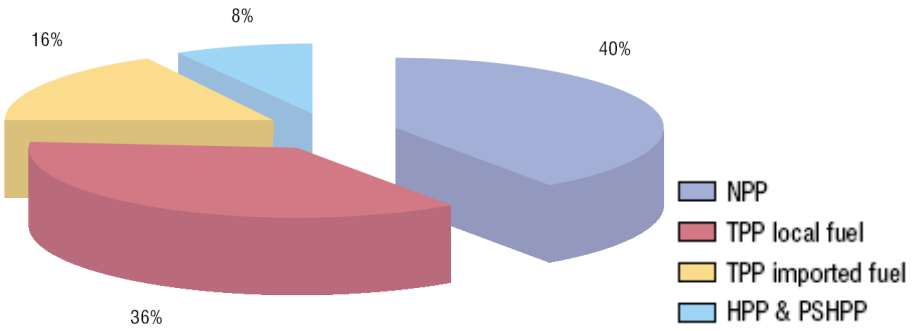


Figure 5: Power generation structure in Bulgaria[4]

In 2004 52% of the Bulgarian electricity demand was generated by conventional thermal power plants. Only 8% of the energy demand was generated by hydro power.

The relatively small number of Small Hydro power plants which had been realized since the liberalisation in Bulgaria (see therefore Table 5, 6 and 7) shows that there is a lack of experience with small hydro power plants. Project developers have little experience in implementing such projects in the Bulgarian national power grid. A study by NEK "Small Hydropower Plants – Investments for the future" has identified about 700 spots, where there is the technical potential for the constructon of small "run of the river HPPs. However only a very limited number of projects are in the planning and construction phase, as small scale hydro power projects are considered risky by the government and the banks, despite the good potential as an energy source. The marginal share of small hydro power energy sources in the national power grid reflects the high risk and unattractiveness for these project types due to large initial investment costs and the relatively long period of return.

In the following tables the hydroelectric generation facilities of Bulgaria are shown. The tables show, that a large amount of recently built SHPP is supported with JI carbon certificates. This demonstrates clearly that carbon certificates are an important contribution both, for necessary bank loans and for the financial income for small scale hydropower projects in Bulgaria.

Table 5: Small Scale Hydroelectric Generating Facilities in Bulgaria

Ogosta	5 MW	2002, with French equity
Tscherna close to Smoljan	0,7 MW	2002
Jagodina	1,1 MW	2003
Gorski dol	0,56 MW	2003
Retischa I	2,2 MW	2003

[4] NEK EAD, Annual Report 2004

Retischa II	0,7 MW	2004
Retischa III	5 MW	2004

Table 6: Small Scale JI Hydroelectric Generating Facilities in Bulgaria

Sreden Iskar Cascade Hydropower Portfolio	Nine SHPP with total volume of 25,65 MW	At determination, DNV
• Lakatnik	2,9 MW	
• Svrazhen	3,9 MW	
• Opletnia	2,6 MW	
• Levishte	2,6 MW	
• Gavrovnitsa	2,5 MW	
• Prokopanik	3,25 MW	
• Tzerovo	2,5 MW	
• Bov-Sud	2,7 MW	
• Bov-Nord	2,7 MW	
HPP Dolna Arda	16 MW	At determination, DNV
Small Hydropower station SHPS Potochnitsa	8,7 MW	At determination, BV Cert
Katuntsi	3,45 MW	VER-Project, developed by Camco
Vacha Cascade Joint Implementation Project (Tsankow Kamak-80 MW + 4 plant rehabilitate)	80 MW	At validation DNV
Lesitschovo	3 MW	Please see further information under www.berecl.com

Table 7 : Hydroelectric Generating Facilities in Bulgaria5

Power Station	River	Capacity (MWe)	Cascade
Belmeken	Cherna Mesta	375	Belmeken-Sestrimo-Chiara
Sestrimo	Cherna Mesta	240	
Momina Klisura	n/a	120	
Chaira (pumped storage *)	Cherna Mesta	720	
Teshel	Vacha	60	Vacha
Devin	Vacha	80	
Tsankov Kamak	Vacha	80	
Anton Ivanovtsi	Vacha	160	
Vacha II	Vacha	14	
Krichim	Vacha	80	
Vacha I	Vacha	7	

[5] Sources: NEK, Bulgarian Energy Agency

Batak	Batak	40	
n/a	Batak	125	Batak
n/a	Batak	66	
n/a	Arda	106	
n/a	Arda	60	Arda
n/a	Arda	108	
Beli Iskar	Beli Iskar	17	
Mala Tsarkva	Levi Iskar	8	
Simeonovo	Iskar	6	Iskar
Pasarel	Iskar	32	
Kokaliane	Iskar	22	
Popina Laka	Sandanska Bistritsa	21	
Lilianovo	Sandanska Bistritsa	20	Sandanska Bistritsa
Sandanski	Sandanska Bistritsa	14	
Pirin	Pirinska Bistritsa	21	Pirinska Bistritsa
Spanchevo	Pirinska Bistritsa	28	
Other hydroelectric	n/a	147	n/a

n/a - not available or not applicable
note: Tsankov Kamak facility still in design/construction phase

IV)The primary barriers within the institutional and regulatory framework are the unclear process, sudden and unsubstantiated changes to the legal process, and timing for completing licenses and permits. The existing feed-in tariff structure will be replaced by a system of green certificates. All of these issues amount to enough (financial) uncertainty to deter many project developers from starting small-scale energy projects and financial institutions from supporting project that choose to do so.
The time frame for the legal documentation required to develop small renewable energy projects has proven to be more than two years for each project, which can be marked as a further barrier.

Other barriers for the realisation of such projects in Bulgaria is lack of awareness on technologies for generation of renewable energy and lack of successful example, projects, demonstrating for both possible investors and business that these types of projects can be implemented successfully in the country.

Conclusion

The predominantly role of thermal and nuclear sources for the production of electricity, as well as the combination of lack of access to finance, institutional and regulatory barriers and the lack of experience in SHPP clearly demonstrate that the proposed SHPP-project is additional and therefore not the baseline scenario.

The Bulgarian economy currently offers poor access to commercial long term financing, high interest rates and short tenures for renewable energy projects.
The approval of the JI project portfolio and the resulting additional revenues in hard currency derived from the project will mitigate financial risk, reduce inflation and exchange rate risk and will considerably shift the potential of the project. Additionally, the total revenue of electricity production is very unsure because of the envisaged introduction of the Tradable Green Certificate scheme. The revenues of the electricity production are the only income for the investors without JI

revenues. Due to the big uncertainties according to the future feed-in tariff a major risk for investors and project developers is associated with the project and therefore, the revenues from JI are taken into account in a very early state of project development.

The PDD had been finalised in spring 2006, hence before the official JI PDD format and the official start of the JI process. The project had been validated by TÜV SÜD and had received the Determination report, the 12th July 2006. After the Determination report, the project had been handed in to the MOEW for obtaining the LOA. In the meantime the JI process started with the official JI regulations on 26th October 2006, which was 3 month after the validation of the Brestiom project. Until April 2007 the project waited for obtaining the LOA and it was not clear how projects which had been sent in before the official start of the JI are handled. In order to accelerate the process the project developer decided to transfer the PDD into the official JI Format and to go through a re-validation process with TÜV- SÜD. Despite the proceeding implementation of the project during the last year there are no changes concerning the above described additionality criteria of the project.

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

As referred to in Appendix B for small-scale project activities, the project boundary for a small scale hydropower project that provides electricity to a grid encompasses the physical, geographical site of the renewable generation source. For the proposed projects this includes emissions from activities that occur at the project locations. The system boundary for the proposed projects is defined as the national grid in Bulgaria. The project boundary for the baseline will include all the direct emissions, being the emissions related to the electricity produced by the facilities and power plants to be replaced. This involves emissions from displaced fossil fuel use at power plants. Conforming to the guidance and rules for small scale project activities, the emissions related to production, transport and distribution of the fuel used for the power plants in the baseline are not included in the project boundary as these do not occur at the physical and geographical site of the project. For the same reason the emissions related to the transport are also excluded from the project boundary.

Furthermore the boundary is applied to the project activity by considering:

- reduction of emissions from thermal plants supplying the national electric grid
- methane emissions from flooding to create the reservoir.

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

The PDD was prepared by KWI Managegment Consultants GmbH and CAMCO International

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The Bulgarian baseline study of Joint Implementation projects in the Bulgarian energy sector (Link: http://www.moew.government.bg/recent_doc/international/climate/carbon_emission_joint.pdf) was elaborated by NEK EAD and published by the Bulgarian Ministry of Environment and Water. http://www.moew.government.bg/.

The methodology has been applied in context of the project activity by calculating the baseline emissions by multiplying the renewable generated electricity with an emission coefficient (measured in tCO_2e/MWh) calculated in a transparent and conservative manner. The emission coefficient (emission factor) was determined in the "BASELINE STUDY OF JOINT IMPLEMENTATION PROJECTS IN THE BULGARIAN ENERGY SECTOR. CARBON EMISSION FACTOR" (http://www.moew.government.bg/recent_doc/international/climate/carbon_emission_joint.pdf) published by Bulgarian Ministry of Environment and Water (http://www.moew.government.bg/international/conventions/climate/joint_e_main.html).

In order to apply conservative emission factors the lower emission factors of the "Maximum Demand Forecast" with "included HPP" have been applied.

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

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

The start of the project activity is expected in June 2007 for Loziata and May 2007 for Byala Mesta and Cherna Mesta.

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

The operational lifetime of run-of-river hydropower plants is expected to be 20 years.

C.3. Length of the crediting period:

The crediting period for JI is from 01/01/2008 to 31/12/2012. Prior to this date the project (with Government Approval) seek to generate and sell Assigned Amount Units from the date of commissioning (expected to be May 2007 and June 2007).

ERU´s	from 01/01/2008 to 31/12/2012
AAU´s	from 01/05/2007 to 31/12/2007

SECTION D. Monitoring plan

D.1. Description of monitoring plan chosen:

The Monitoring Plan (MP) provides a practical framework for the collection and management of project performance data, which will be used for the verification of actual emission reductions generated. Verification is the periodic auditing of monitoring results by a third party, the assessment of achieved emission reductions. This MP does not contain specific guidelines on emission reduction auditing and verification, but it provides sufficient detail on the project structure, the proposed data to be monitored

and relevant operational issues, to allow an independent verifier to develop suitable auditing and verification procedures for the SHPP portfolio JI project.

Determining the baseline the new emission factors of the Bulgarian Ministry of Environment and Water had been taken as all project developer of JI projects are obliged to use the new factors for their calculation of emission reductions. The project uses the approved monitoring methodology AMS-I.D "Renewable electricity generation for a grid". The chosen methodology ASM-I.D is designed for grid-connected renewable power generation project activities and applies to all proposed HP Projects. Monitoring consists of metering the electricity generated by the renewable technology.

D.2. Data to be monitored:

Table No. 8

Data to be collected in order to monitor emissions from the project , and how this data will be archived:							
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
GENLy,	*Measuring device of the power plant*	*MWh*	*(m)*	*monthly*	*100%*	*Electronic*	The read-off intervals are defined by the public supplier but for the calculation of emission reductions the data have to be read-off at least once a month. The measurement device meters the net electricity production.
GENBy,	*Measuring device of the power plant*	*MWh*	*(m)*	*monthly*	*100%*	*Electronic*	The read-off intervals are defined by the public supplier but for the calculation of emission reductions the data have to be read-off at least once a month. The measurement device meters the net electricity production.
GENCy	*Measuring device of the power plant*	*MWh*	*(m)*	*monthly*	*100%*	*Electronic*	The read-off intervals are defined by the public supplier but for the calculation of emission reductions the data have to be read-off at least once a month. The measurement device meters the net electricity production.

Table No. 9

General Data	Name	Telephone	Emailadress
Prepared by			
Approved by			

	input data
	calculation
	default value

	A	B	C	D	E	F	G	H	I
1					first commitment period				
2	**Electricity generation**		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
3	January	[MWh]							
4	February	[MWh]							
5	March	[MWh]							
6	April	[MWh]							
7	May	[MWh]							
8	June	[MWh]							
9	July	[MWh]							
10	August	[MWh]							
11	September	[MWh]							
12	October	[MWh]							
13	November	[MWh]							
14	December	[MWh]							
15	**Total**	[MWh/a]	=Sum(C3:C14)	=Sum(D3:D14)	=Sum(E3:E14)	=Sum(F3:F14)	=Sum(G3:G14)	=Sum(H3:H14)	=Sum(I3:I14)
16	**Emission factor**	[$tCOB_{2B}$ / MWh]	1,091	1,095	1,006	0,888	0,850	0,834	0,791
17	**Total emission reduction**	[$tCOB_{2B}$]	=C15*C16	=D15*D16	=E15*E16	=F15*F16	=G15*G16	=H15*H16	=I15*I16

D.3. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored:

In order to establish and assure the necessary Quality assurance and Quality control procedures the following management structures and procedures will be introduced:

The measuring devices have to be implemented in accordance with the official "Electricity Metering Rules" and have to comply with the technical and metrological requirements, defined by the "Regulation for Metering Devices. The devices have to undergo regular inspection and supervision under the "Metering Law" and the "Regulation for Metering Devices".

The measuring instruments are regularly read off by an employee of the Brestiom Plc, the Byala Mesta Ltd and the Cherna Mesta Ltd. The read-off intervals are defined by the public supplier but to avoid data losses the data will be read-off every month. The recorded data have to be archived until 2014 for JI project purposes. On the basis of the read off data the Brestiom Plc, the Byala Mesta Ltd and the Cherna Mesta Ltd will prepare regularly invoices for the public provider - the purchaser of the generated electricity.

Public providers of the electricity system are obliged by law to purchase the electricity produced by renewable energy sources (Article 159 of the energy law). The public provider as a party with opposing interests to the Brestiom Plc, the Byala Mesta Ltd and the Cherna Mesta Ltd will pay close attention to the correct operation of the measurement devices and the correct measuring values. In the following the monthly read off process and control procedure is shown:

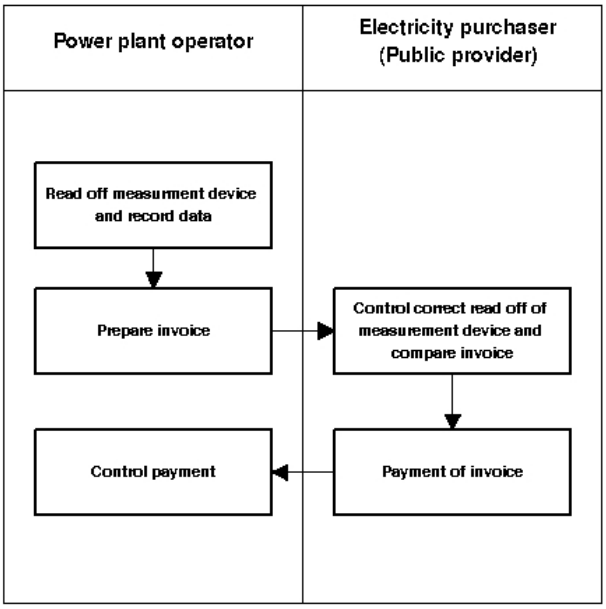

Figure 6: Control procedure of the parties

The installed metering devices will meter the net electricity production of the SHPPs. In the case that a measurement device drops out, it will be replaced as soon as possible by a new one. The replacement of the measurement device will be performed under the supervision of the local purchase and in accordance with the official "Electricity Metering Rules".

D.4. Brief description of the operational and management structure that will be applied in implementing the monitoring plan:

In January of each year in the period 2006 to 2012 the 3 operators of the three power plants shall start with their preparation for the verification of the projects. They shall compare and control invoices and payment documents. Afterwards they shall calculate the emission reductions by entering the generated electricity into the workbook. A monitoring report including the workbook and copies of the invoices and payment documents shall be sent to the verifier. The verifier will do a pre-check of the documents and arrange an audit. The operators shall facilitate the audit through providing auditors with all the required information, before, during and, in the event of queries, after the audit. Therefore they shall fully co-operate with the auditors and instruct his staff and management to be available for interviews and respond honestly to all audit questions.

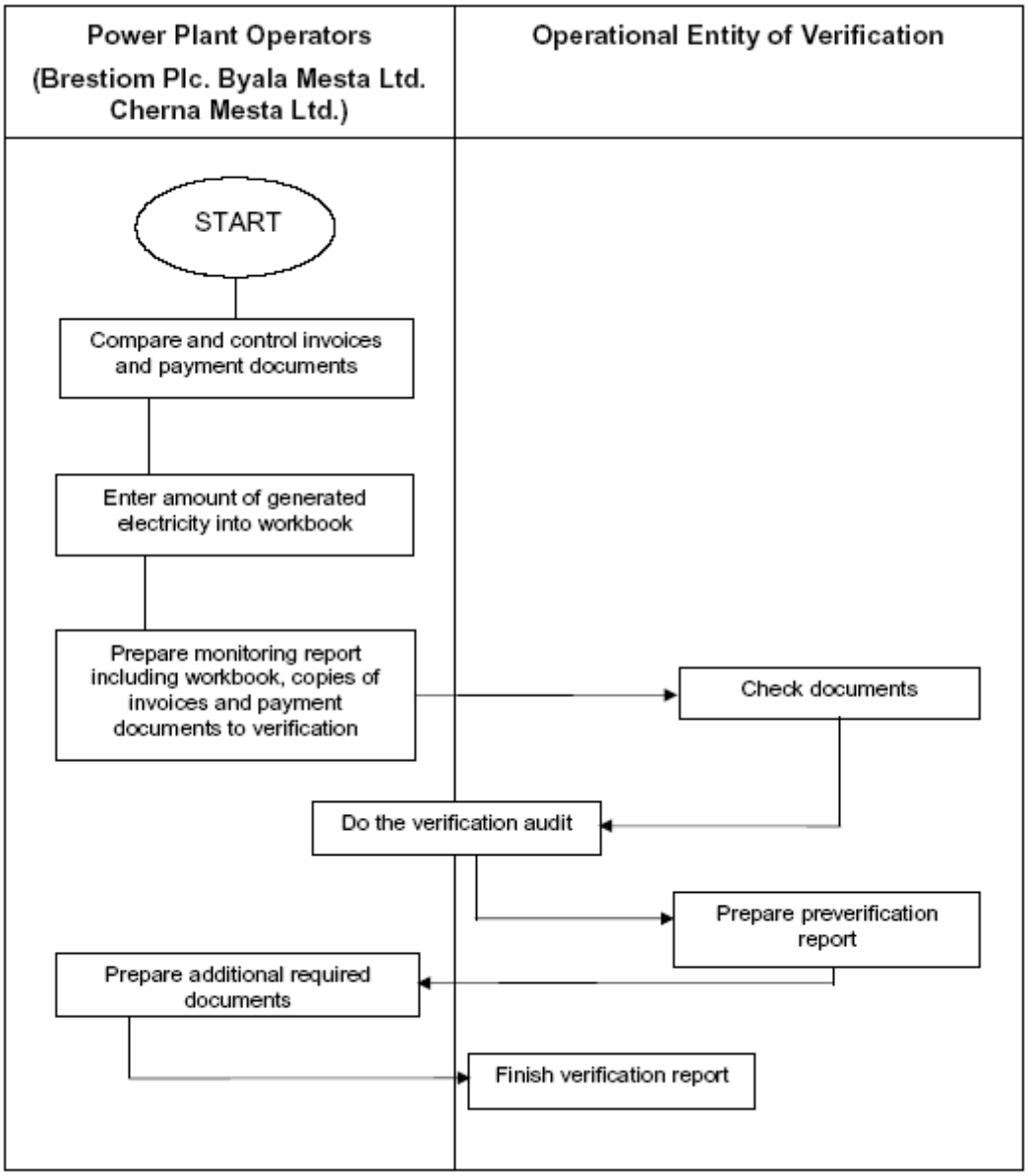

Figure 7: Verification procedure

The daily operation of the SHPPs is done by local staff. At each of the project sites one plant manager and additional 2 to 4 persons will be employed at each site. The plant manager is responsible for daily operating and also monitoring the power plant. The staff will do shift work. This ensures a rapid reaction by disturbances.

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

The PDD was prepared by KWI Managegment Consultants GmbH and CAMCO International

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SECTION E. Estimation of greenhouse gas emission reductions

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

Since, the proposed project activities are run-of-the river hydroelectric projects that will not expand existing reservoirs; no anthropogenic emissions by sources of greenhouse gases within the project boundary were identified. In all SHPP the electrical Energy will be measured with a multiple source electrometer. The energy needed for the internal use, will be deducted from the total produced electrical energy

Table 10: Estimated direct project emissions

	Unit	2006	2007	2008	2009	2010	2011	2012
Loziata	tCO_2/yr	0	0	0	0	0	0	0
Byala Mesta	tCO_2/yr	0	0	0	0	0	0	0
Cherna Mesta	tCO_2/yr	0	0	0	0	0	0	0
Project emissions	**tCO_2/yr**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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

The project proponents identified no anthropogenic greenhouse gases by sources outside the project boundary that are significant, measurable and attributable to the project activity. Hence, no leakage is considered from the project activity. In addition the equipment used is not transferred from another project activity. Hence, no leakage calculation is required.

Table 11: Estimated project emission leakages

	Unit	2006	2007	2008	2009	2010	2011	2012
Loziata	tCO_2/yr	0	0	0	0	0	0	0

Byala Mesta	tCO_2/yr	0	0	0	0	0	0	0
Cherna Mesta	tCO_2/yr	0	0	0	0	0	0	0
Leakages	**tCO_2/yr**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

E.3. Sum of E.1. and E.2.:

Zero

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

The baseline emissions were calculated in accordance with methodology AMS-I.D for small scale CDM projects. Thus, the baseline emissions by multiplying the renewable generated electricity with an emission coefficient (measured in tCO_2e/MWh) calculated in a transparent and conservative manner. The Bulgarian emission factors where calculated in a National Baseline study that is published by the Bulgarian ministry of Environment and Water, for further information see Section B.4. In order to apply a conservative bias the emission factors of the "Maximum demand Forecast" including HPP are used to calculate the baseline emissions.

Table No. 12

	UoM	2006	2007	2008	2009	2010	2011	2012
Scenario Prosperity Maximum Demand	tC02/MWh	**1,091**	**1,095**	**1,006**	**0,888**	**0,850**	**0,834**	**0,791**

1) The Operating Margin (OM) is calculated ex-ante, using the Dispatch Data Analysis OM Method of the approved Methodology;
2) The Build Margin (BM) is calculated ex-ante, using the Algorithm described in the approved methodology;
3) The Combined Margin (CM) is made equal to the average of the OM and the BM, as indicated in the approved methodology;

Therefore the baseline emissions of the three power stations are as follows:

$$BE_y = (EG_{yL} \times EF_{yL}) + (EG_{yB} \times EF_{yB}) + (EG_{yC} \times EF_{yC})$$

Where:
BEy= Annual baseline emissions during the crediting period [tCO2/y];
EGy= Project annual Electricity dispatched to the grid [MWh/y];
EFy= Annual emission factor [tCO2/MWh];
L = Loziata SHPP
B = Byala Mesta SHPP
C = Cherna Mesta SHPP

Table 13: Estimated baseline emissions

	Unit	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Electricity generation							
Loziata	MWh/yr	11,347	34,040	34,040	34,040	34,040	34,040
Byala Mesta	MWh/yr	0,962	3,849	3,849	3,849	3,849	3,849

Cherna Mesta	MWh/yr	1,005	4,019	4,019	4,019	4,019	4,019
Electricity generation total	**MWh/yr**	**13,314**	**41,908**	**41,908**	**41,908**	**41,908**	**41,908**
Emission Factors	**tCO_2/MWh**	**1,095**	**1,006**	**0,888**	**0,850**	**0,834**	**0,791**
Baseline emissions							
Loziata	tCO_2/yr	12,425	34,244	30,228	28,934	28,389	26,926
Byala Mesta	tCO_2/yr	1,053	3,872	3,418	3,272	3,210	3,045
Cherna Mesta	tCO_2/yr	1,100	4,043	3,569	3,416	3,352	3,179
Baseline emissions total	**tCO_2/yr**	**14,579**	**42.159**	**37.215**	**35.622**	**34.951**	**33.150**

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

Total emission reductions:

Overall (2006 – 2012): 197,676 tCO_2
Pre-Kyoto period (2006 – 2007): 14,579 tCO_2
Kyoto period (2008 – 2012): 183,097 tCO_2

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

The emission reductions for 2007 are predicted in a conservative bias considering delays for regular operation of the 3 power plants.

Year	Estimated project emissions (tonnes of CO_2 equivalent)	Estimated leakage emissions (tonnes of CO_2 equivalent)	Estimated baseline emissions (tonnes of CO_2 equivalent)	Estimated emission reductions (tonnes of CO_2 equivalent)
2007	0	0	14,579	14,579
2008	0	0	42,159	42,159
2009	0	0	37,215	37,215
2010	0	0	35,622	35,622
2011	0	0	34,951	34,951
2012	0	0	33,150	33,150
Total (tonnes of CO_2 equivalent)	0	0	197,676	197,676

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:

There is no Environmental Impact Assessment necessary due to the small scale of the three projects and the negligible environmental impacts of power plants because of the usage of already built infrastructure e.g. irrigation channels.

Positive environmental impacts result from the partially displacement of common thermal power stations and the related reduction of sulphur dioxide, nitrogen dioxide and dust emissions of fossil fuels. The amount of released emissions in terms of generated electricity equals about 0.012tSO_2/MWh, 0.001tNO_2/MWh and 0.0007t$_{Dust}$/MWh[6].

Table 14: Additional emission reductions of the SHPP portfolio

	Unit	2007	2008	2009	2010	2011	2012	Total
Specific emissions of power plants								
Sulphur dioxide	t/MWh	0.012	0.012	0.012	0.012	0.012	0.012	
Nitrogen dioxide	t/MWh	0.001	0.001	0.001	0.001	0.001	0.001	
Dust	t/MWh	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	
Generated electricity of the portfolio	MWh/yr	13,314	41,908	41,908	41,908	41,908	41,908	**222,854**
Total emission reduction								
Sulphur dioxide	t/yr	159.77	502.90	502.90	502.90	502.90	502.90	**2,674,24**
Nitrogen dioxide	t/yr	13.31	41.91	41.91	41.91	41.91	41.91	**222,87**
Dust	t/yr	9.32	29.34	29.34	29.34	29.34	29.34	**156,02**

On the basis of these figures the three small hydro power plants will reduce emissions of electricity production by about 502.9 tons sulphur dioxide, 41.91 tons nitrogen dioxide and 29.34 tons dust annually. The total emission reduction of the power plant portfolio equals 2,674,24 tons sulphur dioxide, 222,87 tons nitrogen dioxide and 156,02 tons dust for the period 2007 to 2012.

The project activity is not associated with transboundary environmental impacts.

The projects comply with National Bulgarian Environmental Standards. According to the current Bulgarian legislation, the construction, operation and location of the SHPP should conform to the environmental protection law and standards. The laws and ordinances to which it should correspond are:

1. Environment Protection Act (State Gazette, No. 91/25.09.2002.);
2. The Waters Act (State Gazette, No. 67/27.07.1999);
3. Forest Act (State Gazette No. 125/1997);
4. Protected Territories Act (State Gazette No. 133/1996 supplemented in No. 78/2000);
5. Biodiversity Act (State Gazette, No. 77/09.08.2002)
6. Waste Management Act (State Gazette, No. 86/30.09.2003);
7. Air Purity Act (State Gazette, No. 45/28.05.1996);
8. Soil Protection From Pollution Act (State Gazette, No. 84/1963 revised and supplemented State Gazette, No. 113/99);
9. Ordinance No. 26 for re-cultivation of damaged terrains, improvement of low productivity land, take away and utilisation of the humus layer.
10. Ordinance No. 9 for technical exploitation of electric power plants and networks (State Gazette, No. 72 from 19.08.2004).

ad 1) Environment Protection Act (State Gazette, No. 91/25.09.2002.)

[6] REUP No. 24,33 and 34

Losziata
The Ministry of Environmental Protection and Water (MoEW) - the Regional Inspection of Environment Protection and Water (RIEPW) - Plovdiv with Ruling No. II-208-PR/2004 has decided, that there are motives, according to which the SHPP Loziata is not subject to an EIA. According to the same Ruling, "the impacts upon the soil, flora, fauna and surface water during the site construction will be minimum". Besides, the investment project does not affect protected territories, habitats, wetlands and monuments of culture by law. The construction and the operation of the hydro plant will not affect the nearby agricultural lands.

Byala Mesta
The investment project for the SHPP Byala Mesta construction is activity, within the scope of the requirements of Appendix Nº. 2, p. 3 of the EPA. The procedure for assessment of the necessity for implementation of an EIA of the SHPP Byala Mesta project is carried out in accordance with the requirements of the EPA.

Cherna Mesta
The investment project for the SHPP Cherna Mesta construction is activity, within the scope of the requirements of Appendix Nº. 2, p. 3 of the EPA. The procedure for assessment of the necessity for implementation of an EIA of the SHPP Cherna Mesta project is carried out in accordance with the requirements of the EPA.

ad 2) The Waters Act (State Gazette, No. 67/27.07.1999)
Losziata
The MoEW - Basin Division East Aegian Sea Region, the city of Plovdiv, has issued a permission for water usage No 003601/31.03.2005 has been issued (in conformity with article 42 & 50 of the Water Act) for 10 years, with maximum discharge 16 m3/sec, water limit 330 million m3/year (for average humid year). The borrower will assure an annual discharge for ecological needs of 1.8 m3/sec for the normal operation of the eco-systems around the Vidima river bed, thus meeting the requirements of Art. 116 and Art. 117 of this law.

Byala Mesta
The MEPW - Basin Division Zapadnobelomorski Region, the city of Blagoevfrad, permission for water usage Nº 400207-1/20.05.2005 has been issued (in conformity with article 42 & 50 of the Water Act) for 7 years, with Qbuilt= 0,8 m3/sec, water limit V= 18.31 million m3/year (for average humid year). The borrower will assure an annual discharge of Qeco= 52 1/sec for the normal operation of the eco-systems around the Byala Mesta riverbed, thus meeting the requirements of Art. 116 and Art. 117 of this law.

Cherna Mesta
The MEPW - Basin Division Zapadnobelomorski Region, the city of Blagoevfrad, permission for water usage Nº 400208-1/20.05.2005 has been issued (in conformity with article 42 & 50 of the Water Act) for 7 years, with Qbuilt= 0,8 m3/sec, water limit V= 20,20 million m3/year (for average humid year). The borrower will assure an annual discharge of Qeco= 80 1/sec for the normal operation of the eco-systems around the Cherna Mesta riverbed, thus meeting the requirements of Art. 116 and Art. 117 of this law.
ad 3) Forest Act (State Gazette No. 125/1997)

Losziata
The SHPP Loziata will be constructed outside the forest fund. Hence it does not come under the articles of the Forest Act.

Byala Mesta

The SHPP Byala Mesta will be constructed outside the forest fund. Hence it does not come under the articles of the Forest Act.

Cherna Mesta
The SHPP Cherna Mesta will be constructed outside the forest fund. Hence it does not come under the articles of the Forest Act.

ad 4) Protected Territories Act (State Gazette No. 133/1996 supplemented in No. 78/2000)
Losziata
The RIEPW - Plovdiv with Ruling No. II-208-PR/2004 has decided, that there are motives, according to which the SHPP Loziata does not affect protected by law territories and habitats.

Byala Mesta
The RIEPW - Blagoevgrad with Minutes Nº 32-PR 2004 has decided, that there are motives, according to which the SHPP Byala Mesta does not affect protected by law territories and habitats.

Cherna Mesta
The RIEPW - Blagoevgrad with Minutes Nº 35-PR 2004 has decided, that there are motives, according to which the SHPP Cherna Mesta does not affect protected by law territories and habitats

ad 5) Biodiversity Act (State Gazette, No. 77/09.08.2002)
Losziata
According to RIEPW - Plovdiv resolution (Ruling No. II-208-PR/2004):

a) The impacts upon flora and fauna during the SHPP Loziata construction and operation will be minimal.
b) The SHPP Loziata investment project does not affect protected wetlands and monuments of culture.

Byala Mesta
According to RIEPW - Plovdiv resolution (Ruling No. II-208-PR/2004):

a) The impacts upon flora and fauna during the SHPP Byala Mesta construction and operation will be minimal.
b) The SHPP Byala Mesta investment project does not affect protected wetlands and monuments of culture.

Cherna Mesta
According to RIEPW – Blagoevgrad resolution (No. 35-PR 2004):

a) The impacts upon flora and fauna during the SHPP Cherna Mesta construction and operation will be minimum.
b) The SHPP Cherna Mesta investment project does not affect protected wetlands and monuments of culture.

ad 6) Waste Management Act (State Gazette, No. 86/30.09.2003)
Losziata
According to the same decision of RIEPW - Plovdiv “Usage or generation of either construction waste or hazardous waste is not expected during the hydro plant construction”.

Byala Mesta

According to the same decision of RIEPW - Blagoevgrad "Usage or generation of either construction waste or hazardous waste is not expected during the hydro plant construction..

Cherna Mesta
According to the same decision of RIEPW – Blagoevgrad "Usage" or generation of either construction waste or hazardous waste is not expected during the hydro plant construction".

ad 7) Air Purity Act (State Gazette, No. 45/28.05.1996)
Losziata
There want be any harmful gasses emitted to the atmosphere, during the SHPP Loziata construction and operation. Moreover, emissions of harmful gasses such as CO2 and others described above will be saved during the plant operation. Therefore, the construction and operation of SHPP Loziata does not come under the influence/impact of this act, but contributes to the decrease of ozone depletion gases.

Byala Mesta
There want be any harmful gasses emitted to the atmosphere, during the SHPP Byala Mesta construction and operation. Moreover, emissions of harmful gasses such as CO2 and others described above will be saved during the plant operation. Therefore, the construction and operation of SHPP Byala Mesta does not come under the influence/impact of this act, but contributes to the decrease of ozone depletion gases.

Cherna Mesta
There will be no harmful gasses emitted to the atmosphere, during the SHPP Cherna Mesta construction and operation. Moreover, emissions of harmful gasses such as CO2 and others described in chapter 6 of the present report will be saved during the plant operation. Therefore, the construction and operation of SHPP Cherna Mesta does not come under the influence/impact of this act, but contributes to the decrease of ozone depletion gases.

ad 8) Soil Protection From Pollution Act (State Gazette, No. 84/1963 revised and supplemented State Gazette, No. 113/99)
Losziata
According to RIEPW - Plovdiv resolution (Minutes No. II-208-PR/2004) the impacts upon the soil during the SHPP Loziata construction will be minimal.

Byala Mesta
According to RIEPW - Blagoevgrad resolution (Minutes No 32-PR 2004) the impacts upon the soil during the SHPP Byala Mesta construction will be minimal.

Cherna Mesta
According to RIEPW - Blagoevgrad resolution (Minutes No 35-PR 2004) the impacts upon the soil during the SHPP Cherna Mesta construction will be minimum.

ad 9) Ordinance No. 26 for re-cultivation of damaged terrains, improvement of low productivity land, take away and utilisation of the humus layer
Losziata
Art.11 of this ordinance, which refers to the environmental protection and concerns the SHPP Loziata construction, states that routes of derelict channel, routes, etc. are subject to rehabilitation.
During the construction activities, roads from the National Road Infrastructure will be used. Hence there is no need of construction of temporary roads for the equipment transportation. The pressure pipeline will be built and buried in a trench along the riverbank up till the water intake of the SHPP. Thereafter,

the land will be re-cultivated and the requirements of this ordinance met. More small –size construction equipment will be used which is even more beneficial for the environment.

Byala Mesta
Art.11 of this ordinance, which refers to the environmental protection and concerns the SHPP Byala Mesta construction, states that routes of derelict channel, routes, etc. are subject to rehabilitation.
During the construction activities, roads from the National Road Infrastructure will be used. Hence there is no need of construction of temporary roads for the equipment transportation. The pressure pipeline will be built and buried in a trench along the riverbank up till the water intake of the SHPP. Thereafter, the land will be re-cultivated and the requirements of this ordinance met. More small –size construction equipment will be used which is even more beneficial for the environment.

Cherna Mesta
Art.11 of this ordinance, which refers to the environmental protection and concerns the SHPP Cherna Mesta construction, states that routes of derelict channel, routes, etc. are subject to rehabilitation.
During the construction activities, roads from the National Road Infrastructure will be used. Hence there is no need of construction of temporary roads for the equipment transportation. The pressure pipeline will be built and buried in a trench along the riverbank up till the water intake of the SHPP. Thereafter, the land will be re-cultivated and the requirements of this ordinance met. More small –size construction equipment will be used which is even more beneficial for the environment.

ad 10) Ordinance No. 9 for technical exploitation of electric power plants and networks (State Gazette, No. 72 from 19.08.2004)
Losziata
On the basis of resolution about the necessity of implementing an EIA, the obtained license and permits from the respective authorities, and presented to EnCon Services Ltd by SHPP Loziata, the investment project conforms to the requirements of the above mentioned laws and ordinance.

Byala Mesta
On the basis of resolution about the necessity of implementing an EIA, the obtained license and permits from the respective authorities, and presented to EnCon Services by SHPP Byala Mesta, the investment project conforms to the requirements of the above mentioned laws and ordinance.

Cherna Mesta
On the basis of resolution about the necessity of implementing an EIA, the obtained license and permits from the respective authorities, and presented to EnCon Services by SHPP Cherna Mesta, the investment project conforms to the requirements of the above mentioned laws and ordinance.

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:

There has been no environmental impact considered as significant by the host party. There is no need for additional monitoring (e.g. environmental effects) by the authorities.

SECTION G. Stakeholders' comments

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

Local stakeholders have been invited to comment the project during the procedure for permit issue for water use and surface water project use.

Description of of procedure for permit issue for water use and surface water project use for SHPP Cherna Mesta and SHPP Byala

Due to the location of SHPP Cherna Mesta and SHPP Byala Mesta in the territory of Blagoevgrad Municipality, all procedures described below have been performed at the same time by the companies Cherna Mesta Ltd and Byala Mesta Ltd. The procedures have one objective – issuing of a document – permit for water use and use of surface water project. The permit regulates the purpose for the water use and use of the surface water project and is issued by the Director of the Basin Department (BD) in accordance with Art. 52, para (1), point 3 of the Water Act.
The procedure for permit issue for water use and surface water project use of SHPP Cherna Mesta and SHPP Byala Mesta includes three stages:

Stage 1: Application acceptance
Cherna Mesta Ltd and Byala Mesta Ltd have submitted an application to the Director of the Basin Department – Art. 61 with the required data as per Art. 56 of the Water Act.

Stage 2: Request assessment, starting of the procedure for permit issue for water use and water project use and public announcement in Yakoruda Municipality.

1. Within one month from the date of the application acceptance and the respective correction of defects, the Director of the Basin Department estimates the request according to Art. 62, paragraph (1) of the Water Act.
2. Within 7 days, after the expiry of the one month period regarding the request assessment according to Art. 62, paragraph (2) of the Water Act and at given positive statement on the EIA (Environmental Impact Assessment), and in case there are no reasons for refusal according to Art. 62, paragraph (4) of the Water Act, the Director of the Basin Department sends to the Municipal Administration of Yakoruda town, Blagoevgrad region - the location of the water use and use of water projects, a copy of the accepted application and data for the place for submission of requests and objections of persons concerned, for public announcing through display in the defined for these purposes places in the town-hall.
3. According to Art. 64, paragraph (1) of the Water Act, within one month from the date of the announcement according to Art. 64, paragraph (1) of the Water Act, the persons concerned:
    - Have not required the same or analogy to the declared permit
    - Have not objected to the issue of the permit
    - Have not offered terms for issue of the permit in regards to guaranteeing personal and public interests

Cherna Mesta Ltd and Byala Mesta Ltd have received the approval of Yakoruda Municipality and of the public of Yakoruda town for water use and use of water projects after the expiry of the one-month period.

Stage 3: Water use and water project use announcement, application for the issue of a permit, documents revision and decision taking.

1. After the expiry of the one-month period according to Art. 64, para. (1) of the Water Act, within 7-day period, according to Art. 65, para (2) of the Water Act, the Director of the Basin Department announces the water use and the water project use.

2. According to Art. 66, para (1) of the Water Act, Cherna Mesta Ltd and Byala Mesta Ltd submit an applications with the necessary data in compliance to Art. 56, para. (1), point 1-2 of the Water Act and a feasibility study, in which are defined: purpose of the water use and water projects use; the requested water amount; water use regime; scheme and boundaries of the water project or its sections, which are requested for water use, including the necessary maps and sketches; basic technical parameters of the project facilities; land area, needed for the construction and list of lands, which are going to be influenced by the facilities construction; and others, within two-month period from the date of the announcement according to Art. 65, para .(2) of the Water Act.

   The contents of the feasibility study have to comply with the requirements of Art. 66, para (1), point 1 of the Water Act and Ordinance No. 4/21.05.2001, SG - issue 51/05.06.2001 "Regarding the range and contents of the investment projects".

3. Within one-month period from the date of the feasibility study submission, the Director of the Basin Department rules, and issues in accordance with Art. 67, para (1) of the Water Act a permit for water use and water project use.

4. During the one-month period of the announcement in the respective Municipality, no proposals for terms for issuing of the permit in regards to guaranteeing personal or public interests, according to Art. 64, para (1), point 3 of the Water Act, were placed.

After the implementation of the above-described procedure, Cherna Mesta Ltd and Byala Mesta Ltd acquired permits for water use.

Description of of procedure for permit issue for water use and surface water project use for SHPP Loziata

SHPP Loziata is situated in Plovdiv region, Rhodope Municipality and all described procedures below have been performed by Brestiom Jsc. The procedures require issue of a document - permit for water use and surface water project use. The permit regulates the purpose for the water use and use of surface water project and is issued by the Director of the Basin Department according to Art. 52, paragraph (1), section 3 of the Water Act.

The procedure for permit issue for water use and surface water project use of SHPP Loziata includes three stages:

Stage 1: Application acceptance
Brestiom Jsc has submitted an application to the Director of the Basin Department – Art. 61, and Art. 56 of the Water Act.

Stage 2: Request assessment, starting of the procedure for permit issue for water use and water project use and public announcement in Brestovitza Municipality.

1. Within one month from the date of the application acceptance and the respective correction of defects, the Director of the Basin Department estimates the request according to Art. 62, paragraph (1) of the Water Act.
2. Within 7 days, after the expiry of the one month period regarding the request assessment according to Art. 62, paragraph (2) of the Water Act and at given positive statement on the EIA (Environmental Impact Assessment), and in case there are no reasons for refusal according to Art. 62, paragraph (4) of the Water Act, the Director of the Basin Department sends to the Municipal Administration of Brestovitza village, Plovdiv region - the location of the water use and use of water projects, a copy of the accepted application and data for the place for submission of requests and objections of persons concerned, for public announcing through display in the defined for these purposes places in the town-hall.
3. According to Art. 64, paragraph (1) of the Water Act, within one month from the date of the announcement according to Art. 64, paragraph (1) of the Water Act, the persons concerned:
    - Have not required the same or analogy to the declared permit
    - Have not objected to the issue of the permit
    - Have not offered terms for issue of the permit in regards to guaranteeing personal and public interests

Brestiom Jsc has received the approval of Rhodope Municipality and of the public of village Brestovitza for water use and use of water projects after the expiry of the one-month period.

Stage 3: Water use and water project use announcement, application for the issue of a permit, documents revision and decision taking.

1. After the expiry of the one-month period according to Art 64 , para. (1) of the Water Act, within 7-day period, according to Art. 65, para (2) of the Water Act, the Director of the Basin Department announces the water use and the water project use.
2. According to Art.66, para (1) of the Water Act, Brestiom Jsc submits an application with the necessary data in compliance to Art. 56, para. (1), point 1-2 of the Water Act and a feasibility study, in which are defined: purpose of the water use and water project use; the requested water amount; water use regime; scheme and boundaries of the water project or its sections, which are requested for water use, including the necessary maps and sketches; basic technical parameters of the project facilities; land area, needed for the construction and list of lands, which are going to be influenced by the facilities construction; and others, within two-month period from the date of the announcement according to Art. 65, para .(2) of the Water Act.

   The contents of the feasibility study have to comply with the requirements of Art. 66, para (1), point 1 of the Water Act and Ordinance No. 4/21.05.2001, SG- issue 51/05.06.2001 “Regarding the range and contents of the investment projects”.
3. Within one-month period from the date of the feasibility study submission, the Director of the Basin Department rules, and issues in accordance with Art. 67, para (1) of the Water Act a permit for water use and water project use.
4. During the one-month period of the announcement in the respective Municipality, no proposals for terms for issuing of the permit in regards to guaranteeing of personal or public interests, according to Art. 64, para (1), point 3 of the Water Act, were placed.

After the implementation of the above-described procedure, Brestiom Jsc acquired a permit for water use.

Summary of the comments received:

Cherna Mesta Ltd and Byala Mesta Ltd have received the approval of Yakoruda Municipality and of the public of Yakoruda town for water use and use of water projects.
Brestiom Jsc has received the approval of Rhodope Municipality and of the public of village Brestovitza for water use and use of water projects.

Annex 1

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