Table 1. List of the approved Joint Implementation projects

|  | **I/a** | **I/b** | **I/c** | **II** | **III** | **IV** | **V** | **VI** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Title of project activity (1)** | **Project identification code of project activity (2)** | **Date of letter of approval for the project activity** | **Total quantity of GHG to be reduced or limited (in tons for 2008-2012)** | **% of total reductions that the government issues as ERUs or CERs** | **Description of baseline (3)** | **% of emissions of installations covered by Directive 2003/87/EC in the total emissions included in the baseline (in case of indirect reductions or limitations, an estimate is to be provided) (4)** | **Double counting** |
| **1** | Portfolio of new co-gen. power stations for combined production of heat and electricity in District heating system Pleven and District heating system Veliko Turnovo, Bulgaria |  |  | 925,141 | 100% | AM0014 "Natural gas-based package co-gen., version 04 is applied. Total baseline emissions 1907378 | 100% | 844,556 |
| **2** | Energy efficiency investment program at Svilocell Pulp Mill, Bulgaria |  | 01.11.2006 | 682,143 |  |  | 2,32% emissions of project SVP 06 Shift of production from pulp blocks to pulp sheets covered by Directive 2003/87/EC; Total baseline scenario emissions during the period 2008-2012 is 1,782,267 t CO2; CO2 emissions from diesel consumption during the period 2008-2012 - 41,375 t | 682,143 |
| **3** | Rehabilitation of Dolna Arda hydropower cascade |  | 10.10.2006 | 92,428 |  | Methodology АСМ0002 for electricity generation from alternative energy resources, additional to the grid, is applied. This is the basis for the methodology for base line and monitoring. |  | 89,493 |
| 4 | New co-gen. power station for combined production of heat and electricity in District heating Bourgas, Bulgaria |  | 05.9.2006 | 455,529 | 100% | AM 0014 "Natural gas-based package co-gen., version 04 is applied. Total baseline emissions 814335 t CO2eq | 100% | 348,920 |
| 5 | Cogeneration gas power station AKB Fores PLC Financial Industrial Group |  | 01.4.2005 | 631,000 | 100% | Total baseline emissions - Thermal - for consumption of Heavy Fuel Oil in HHI Kostenets and District heating system Kazanlak, Coals in TPS Deven for Polimeri Electricity - accordantly Baseline EF calculated ex-post for Bulgaria Power Industry by ACM 0002 1,234,070 | 100% | 631,000 |
| 6 | Reduction of greenhouse gas by gasification in Varna Municipality |  | 17.3.2005 | 362,566 | 100% | The project aims at the reduction of GHG by switching to natural gas from liquid and solid fuels, and part of the electricity used by the industry, public and administrative sites and households and by increasing the EE of their combustion installations. The baseline doesn't envisage fuel switch, i.e. the practice of using electricity, heavy fuel oil, wood, gas oil and coal as energy sources will continue. In the period 2008-2012 the baseline envisages the use of: 16 642 tons heavy oil; 57598 tons gas oil; 27 437 tons of coal and briquette ; 9684 tons of LPG; 472 GWh electricity more than with the project implementation. |  | 288,620 |
| 7 | Biomass and EE Project, Paper Factory Stambolijski |  |  |  |  |  |  |  |
| 8 | Rehabilitation of District heating system in Sofia (District heating Sofia) |  | 22.6.2004 | 1,348,896 | 100% | Rehabilitation of the district heating system in the city of Sofia by rehabilitating 60 km of pipes and replacement of pipe insulation (the total length of the DH system is 900 km), replacement of 10,000 substations, frequency control for the electric motors for the hot water supply pumps and installation of valves, compensators, heat exchanger and pumps. The goal of the project is to reduce heat losses and improve energy efficiency of the network. |  | 154006 |
| 9 | Rehabilitation of DH system in Pernik |  |  |  |  |  |  |  |
| 10 | Industrial Energy Efficiency and cogeneration, Nikopol |  |  |  |  |  |  |  |
| 11 | Cogeneration power station Biovet |  | 25.5.2004 | 340,000 | 100% | 922 000 Emissions are formed by Thermal power plant Biovet AD and the National electricity energy system. Base line emissions are formed from the fuel combustion in the boilers of the Thermal power plant and the electrical energy consumed at the site in case the project is not implemented. | 100% | 339,000 |
| 12 | TPP Plovdiv South co-generation project |  |  |  |  |  |  |  |
| 13 | Reduction of GHG by gasification of Sofia municipality |  | 04.5.2004 | 728,590 | 68.626% | The project aims at the reduction of GHG by switching to natural gas from liquid and solid fuels, and part of the electricity used by the industry, public and administrative sites and households and by increasing the EE of their combustion installation. The baseline doesn't envisage fuel switch, i.e. the practice of using electricity, heavy fuel oil, wood, gas oil and coal as energy sources will continue. In the period 2008-2012 the baseline envisages the use of : 289047 tons of heavy fuel oil. 159232 tons of gas oil; 188590 tons of coal and briquettes; 11471 tons of LPG; 372 GWh electricity more than with the project implementation | 31.191 (indirect) | 155,960 |
| 14 | Vacha Cascade JI Project |  | 01.3.04 | 670,270 |  | Base line methodology considers the analysis of controlling with minimal expenditure in EES, by which is accounted the decrease in electricity generation of the two marginal blocks – the last working one and the first one in the reserve – which is the result of the JI project. This approach is considered the most precise in the analysis about which energy block will be substituted by the new capacity of the JI project. |  | 670,270 |
| 15 | Reduction of GHG by gasification of the towns of Veliko Turnovo, Gorna Oryahovitsa and Lyaskovets |  | 15.7.2003 | 484,357 | 82.584 | The project aims at the reduction of GHG by switching to natural gas from liquid and solid fuels, and part of the electricity used by the industry, public and administrative sites and households and by increasing the EE of their combustion installations. The baseline doesn't envisage fuel switch, i.e. the practice of using electricity, heavy fuel oil, wood, gas oil and coal as energy sources will continue. In the period 2008-2012 the baseline envisages the use of: 112236 tons of heavy fuel oil; 29 415 tones of gas oil; 308 564 tons of coal and briquettes; 2012 tons of LPG; 164 GWh electricity more than with the project implementation. | 18.191 (indirect) | 77,764 |
| 16 | Biomass Utilization in Svilosa Inc |  |  |  |  |  |  |  |
| 17 | Sreden Iskar cascade HPP portfolio project in Bulgaria |  |  | 329,472 | 100% | The approved consolidated baseline methodology (CBM) ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 06, sectoral scope 01, 19th May, 2006, has been used as reference for this project.  The chosen methodology is applicable to the present project as the following conditions are respected:  § The proposed project activities apply to electricity capacity addition from run-of-river power plants; hydro power projects with existing reservoirs where the volume of the reservoir is not increased;  § The proposed project activities don’t involve switching from fossil fuels to renewable energy at the sites of the project activities;  § The geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available.  As reported in the CBM ACM0002 for project activities that don’t modify or retrofit an existing electricity generation facility, the baseline scenario is the following:  *Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin calculation […].*  The document “Baseline Study of Joint Implementation projects in the Bulgarian energy sector” performed by the NEK and published on May 5th, 2005 has been used for estimation of baseline emissions.  Based on all the above considerations, the annual average emissions expected to occur in absence of the project activity are 329,472 tCO2 / 5 years= 65,894.4 tCO2. | 100% | 329,472 |
| 18 | CH4 capture and electricity production at Kubratovo WwTW, Sofia, Bulgaria |  | 03.8.2007 | 95,700 | 100% | Thermal-from HFO consumed in the plant Electricity - according to Baseline EF calculated ex-post for Bulgarian Power Industry by ACM 0002 | 15.8 | 96,700 |
| 19 | Reduction of N2O at Agropolychim Devnya |  |  |  |  |  |  |  |

|  | **I/a** | **VI** | **VII/a** | **VII/b** | **VIII/a** | **VIII/b** | **VIII/c** | **VIII/d** | **VIII/e** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Title of project activity (1)** | **Planned trading sector project-reduction quantity (II\*III\*V)** | **For direct reductions and limitations, the name of the installation where the trading sector project-reduction will occur (5)** | **For direct reductions and limitations, the installation ID of the installation where the trading sector project-reduction will occur (5)** | **Quantity of ERUs or CERs that represent trading sector projectreductions issued for 2008** | **Quantity of ERUs or CERs that represent trading sector projectreductions issued for 2009** | **Quantity of ERUs or CERs that represent trading sector projectreductions issued for 2010** | **Quantity of ERUs or CERs that represent trading sector projectreductions issued for 2011** | **Quantity of ERUs or CERs that represent trading sector projectreductions issued for 2012** |
| **1** | Portfolio of new co-gen. power stations for combined production of heat and electricity in DHC Pleven and DHC Veliko Tarnovo, Bulgaria | 925,141 |  |  | 199,839 | 194,564 | 185,003 | 179,119 | 166,616 |
| **2** | Energy Efficiency investment program at Svilocell Pulp Mill, Bulgaria |  |  |  | 143,608 | 137,200 | 135,136 | 134,267 | 131,932 |
| **3** | Rehabilitation of Dolna Arda hydropower cascade |  |  |  |  |  |  |  |  |
| 4 | New cogeneration power station for combined production of heat and electricity in District heating Bourgas, Bulgaria | 455,529 |  |  | 107,190 | 86,130 | 91,734 | 88,508 | 81,967 |
| 5 | Co-gen. gas power station AKB Fores PLC Financial Industrial Group | 631,000 |  |  | 15,000 | 115,500 | 182,500 | 179,000 | 139,000 |
| 6 | Reduction of greenhouse gas by gasification of Varna Municipality |  |  |  | 28,085 | 40,102 | 55,102 | 74,332 | 90,999 |
| 7 | Biomass and Energy efficiency pulp paper factory Stambolijski |  |  |  |  |  |  |  |  |
| 8 | Rehabilitation of DH system in Sofia |  | City of Sofia  District heating system |  | 278471 | 267274 | 267205 | 267965 | 267981 |
| 9 | Rehabilitation of DH system in Toploficatsia Pernik |  |  |  |  |  |  |  |  |
| 10 | Industrial EE and cogeneration, Nikopol |  |  |  |  |  |  |  |  |
| 11 | Co-gen. power station Biovet | 340,000 | Thermal power plant Biovet AD, National Electrical energy system | 85 | 74,000 | 71,000 | 68,000 | 65,000 | 62,000 |
| 12 | TPP Plovdiv South co-gen. project |  |  |  |  |  |  |  |  |
| 13 | Reduction GHG by gasification of the municipality of Sofia | 155,960 | The installations THP Suhata reka , THP Hadji Dimitar and THP Levski-G, which are covered by Directive 2003/87/EC used natural gas during the NAP specific base year so no direct double counting could occur |  | 23,426 | 27,884 | 32,032 | 35,364 | 37,250 |
| 14 | Vacha Cascade JI Project |  |  |  | 23,450 | 23,450 | 207,790 | 207,790 | 207,790 |
| 15 | Reduction of GHG by gasification of the towns of Veliko Turnovo, Gorna Oryahovitsa and Lyaskovets | 72764 (indirect) | The instalations in District heating system in Veliko Tarnovo and Kronoshpan Bulgaria, which are covered by the Directive 2003/87/EC used natural gas during the NAP specific base year so no direct double counting could occur |  | 10,474 | 12,202 | 15,658 | 15,868 | 18,560 |
| 16 | Biomass Utilization in Svilosa Inc |  |  |  |  |  |  |  |  |
| 17 | Sreden Iskar cascade HPP portfolio project in Bulgaria |  |  |  | 20,868 | 37,321 | 46,099 | 102,566 | 122,618 |
| 18 | CH4 capture and electricity production at Kubratovo WwTW, Sofia, Bulgaria |  |  |  |  | 12,477 | 27,166 | 28,077 | 28,980 |
| 19 | Reduction of N2O at Agropolychim Devnya |  |  |  |  |  |  |  |  |

Table 2. JI projects with Letter of Endorsement and submitted full Project Design Document (PDD) in MOEW before 31.06.2008

|  | **I/a** | **I/b** | **I/c** | **Id** | **II** | **III** | **IV** | **V** | **VVI** | **VII/a** | **VII/b** | **VII/c** | **VIII** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Title of planned project activity (1)** | **Project identification code of project activity (1)(2)** | **Date or project date of letter of endorsement for the planned project activity** | **Project date of letter of approval for the planned project activity** | **Planned total quantity of GHG to be reduced or limited (in tons for 2008-2012) by planned project activity** | **% of total reductions that the government issues as ERUs or CERs planned project activity** | **Description of baseline (1) (3)** | **Estimate of the % of emissions of installations covered by Directive 2003/87/EC within the total emissions included in the baseline (4)** | **Planned trading sector project-reduction quantity (II\*III\*V)** | **For direct reductions and limitations, the name of the installation where the planned trading sector project-reduction is to occur (5)** | **For direct reductions and limitations, the installation ID of the installation(s) where the trading sector project-reduction will occur (5)** | **For indirect reductions and limitations, the activity category where the planned trading sector project - reduction is to occur (6)** | **Quantity of allowances deducted from the alloaction of the installations/activity category indicated under rows VII/a-VII/c to fill the set-asside (5) (6)** |
| 1 1 | Small Hydropower Station SHPS Potochnitsa |  | Letter of support dated 10 April 2006 | no | 71,118 tones CO2 reductions |  | Approved consolidated methodology АСМ0002 for electricity production from alternative energy resources, added to the grid as basis for the methodology of the base line and the monitoring. | 100% |  | х | х | Energy activities. Combustion power plant with nominal thermal capacity above 20 MW (with the exception of the installations for hazardous or hard public waste) | 71,118 |
| 2 2 | Reduction of greenhouse gases by gasification of Burgas Municipality |  | 20.6.2006 |  | 315,904 |  | The poject aims at the reduction of greenhouse gases by switching to natural gas from liquid and solid fuels, and part of the electricity used by the industry, public and administrative sites and households and by increasing the energy efficiency of their combustion installations. The baseline doesn't envisage fuel switch, i.e. the practice of using electricity, heavy fuel oil, wood, gas oil and coal as energy sources will continue. In the period 2008-2012 the baseline envisages the use of: 33265 tons of heavy fuel oil; 25544 tones of gas oil; 23050 tons of coal and briquettes; 3391 tons of LPG; 304 GWh electricity more than with the project implementation | 77.801 (indirect) | 245,777 tCO2e (indirect) | There aren't any installations covered by Directive 2003/87/EC in the project boundaries |  | Electricity production | 315,904 |
| 3 | KALIAKRA Wind Power Plant | Number 48-00-392 UNFCCC | 14.09.2005 |  | 375,200 tones CO2 reductions |  | Baseline scenario is continuation of current practice – the grid of Bulgaria would supply electricity generated by KWPP, by using power plant connected to the grid. Methodology used is ACM0002. Baseline emissions are identical to Emissions reduced by the project per year (ER(t), and are expressed as the product of electricity generated by the project and supplied to the grid in year (t) multiplied by the CO2 emissions factor of the marginal power plant connected to the grid available in a year (t) |  |  |  |  |  |  |
| 4 | Sunflower and rape seed - bio diesel fuel production and use for  transportation in Bulgaria, city of Slivo Pole, Rousse region, Astra Bioplant Ltd | Project reference number: 0006  http://ji.unfccc.int/JI\_Projects/ | Number:26-00-587 from May 2006 |  | 677.216 CO2e |  | Production of bio-diesel derived from sunflower and rape crops for substituting petroleum diesel in transportation. The reduction of the greenhouse gas (GHG) emissions will be achieved by partially or fully substituting petroleum diesel in transportation. The plant has a capacity of 60,000 tons of Bio-diesel per year and was commissioned in December 2008. The project will contribute significantly to the sustainable environmental-socio-economic development of the whole region of Rousse. |  |  |  |  |  |  |
| 55 | Bulgarian Small Hydro Power (SHPP) portfolio, BRESTIOM AD |  | 16.12.2005 |  | 183,097 |  | 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 | 100% |  |  |  | Energy | 183,097 |
| 35.1. | Lozyata |  | 16.12.2005 |  | 148,721 |  | 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 | 100% |  |  |  | Energy | 148,721 |
| 35.2. | Byala Mesta |  | 16.12.2005 |  | 16,817 |  | 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 | 100% |  |  |  | Energy | 16,817 |
| 35.3. | Cherna Mesta |  | 16.12.2005 |  | 17,559 |  | 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 | 100% |  |  |  | Energy | 17,559 |
| 66 | Bulgarian Energy Efficiency and Renewable Energy Portfolio Project |  | 14.7.2005 |  | 351,513 |  |  |  |  |  |  |  | 276,344 |
| 46.1.1 | Bulgarian Energy Efficiency Project Portfolio - Sugar Plants Sub-project |  | 14.7.2005 |  | 41,998 | 32.86% | The baseline is calculated based on steam output and fuel input. In the baseline situation the boiler PK-35-39 is fuelled by coal and heavy fuel oil (HFO). The produced steam is delivered to generators, to produce electricity. The oil burners will be modified to switch to natural gas. The steam production will remain the same. Gas will replace heavy fuel oil consumption completely. For the baseline calculation the amount of steam produced by the boiler will determine the baseline coal consumption, by using the ratio of ton coal consumption per ton steam of 16,87%. To calculate the HFO consumption, the baseline ratio of HFO to steam is used of 0,42%. The turbine TG1 will be replaced by a new turbine TG2, generating electricity more efficiently. The steam production remains the same, so more electricity is self produced, leading to less electricity consumption from the grid. To calculate the baseline consumption of electricity from the grid, the amount of steam produced will be multiplied by 0,32 to calculate the total own production. The total own production will be multiplied by 0,26 to calculate the net amount of electricity purchased from the grid. ECO2, the baseline remains the same, since the amount of steam produced is assumed to be constant. | 44% | 66,070 | - | - | Energy activities | 41,998 |
| 46.1.2. | Bulgarian Energy Efficiency Project Portfolio - Zebra Sub-project |  | 14.7.2005 |  | 41,745 | 29.85% | For ECO1, the baseline is calculated using the gas consumption (in Nm3) per ton steam, used by the boiler. This ratio is 96, meaning that total steam production multiplied by 96 will lead to the gas use in Nm3 . In addition, the baseline for ECO1 for electricity purchased from the grid will be calculated also using the ratio of measured total electricity consumption per ton steam. This ratio is 28% MWh per ton steam per year. The baseline also includes the net electricity produced by the CHP in the project scenario, as this amount need to be taken into account here, as the project emissions only concern the emissions from gas consumption of the CHP. ECO2 (use of waste heat) is not taken into the baseline, since this does not affect baseline emissions. The baseline includes also the operation of the Calendar engine (ECO3). The electricity consumption is adjusted for the working hours, if the working hours of the engine would be different from the assumed total of 2600 working hours per year. | 44% | 55,420 | - | - | Energy activities | 33,396 |
| 6.1.3. | Bulgarian Energy Efficiency Project Portfolio - Pirinplast Sub-project |  | 14.7.2005 |  | 11,660 | 88.13% | The relation between product output and electricity consumption of the moulding machines needs to be set to calculate the base line. Given the number of data for only 3 years, a best estimate is made using the relative deviation of the “produced products” and “electricity consumed” ratio. Having used this method, the best estimate is to use the average of “Total Production” and “Corrugated materials from PP” (the main product) divided by 5.84, to estimate the annual electricity consumption. Using this calculation, the calculated electricity consumption in 2002 would be 1636 MWh (measured 1703 MWh), in 2003 1595 MWh (1535 MWh) and in 2004 2005 MWh (2011 MWh). In lower production years the method would lead to some overestimation: in high production years to some underestimation. Since economic growth is Bulgaria is growing, the expectation is that the production of plastic products will also increase. As a result, the used method to calculate the baseline will give conservative results. The baseline is calculated from 2005 onwards, using the production data of 2004. | 80% | 88,220 | - | - | Energy activities | 11,660 |
| 6.2.1. | Bulgarian Renewable Energy Portfolio Project - Trakija Gas Sub-project |  | 14.7.2005 |  | 90,610 | 21.48% | In the absence of the project activity, electricity would have been produced by more polluting fossil fuels. | 100% | 19,463 | - | - | Energy activities | 90,610 |
| 46.2.2. | Bulgarian Renewable Energy Portfolio Project - Delektra Hydro Sub-project |  | 14.7.2005 |  | 98,680 | 29.00% | In the absence of the project activity, electricity would have been produced by more polluting fossil fuels. | 100% | 28,617 | - | - | Energy activities | 98,680 |

|  |  |
| --- | --- |
| **Allowances for cancellation at the transfer of ERUs from JI projects with double counting – including direct, as well as indirect double counting, for the period 2008-2012** | **5,929,567** |