

## Carbon Fund of the community development

### Project Identification Note (PIN)

A. Description of the project, type of the project, area/location and schedule of the project realization.

**Title of the project:** Transition of boiler plants in Dushanbe from mazut and solid fuel into ecologically clean water-coal fuel (ECWCF or ECOWOOT)

A brief description of the project

Project objective	<ul style="list-style-type: none"> <li>- heat and hot water supply for the population of Dushanbe;</li> <li>- improvement of ecologic situation through CO<sub>2</sub> emission reduction in boiler plants;</li> <li>- ash reduction and its effective use;</li> <li>- enhancement of energy power safety;</li> <li>- set-up of new employees' staff;</li> <li>- woods and plants conservation;</li> <li>- decrease of energy power networks loading during autumn and winter period, consideration and solution of energy power deficiency during autumn and winter period.</li> </ul>										
Project description and measures/activities planned, including technical project description	<p>For the time being, due to deficiency of energy power carrier, mazut in particular, the population use energy power for heating their homes during autumn and winter period.</p> <p>It should be pointed out that energy network system in cities and towns of the Republic are not planned for such a load, therefore, energy power systems become unable, causing economy damage.</p> <p>Approximately 6-8% of boiler plants are working in Dushanbe. Transition of boiler plants in Dushanbe from mazut and solid fuel into ecologically clean water-coal fuel ECOWOOT will solve all problems in regard to energy supply and ecologic situation improvement of the republic, Dushanbe in particular.</p> <p>One of the economically motivated and ecologically effective ways of oil and solid fuel types' substitution at Heat Energy Plants and boiler stations is application of composed water-coal fuel. It is so-called disperse system containing micronized coal, water and reagent-plasticizer.</p> <p>ECOWOOT composition:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">Coal</td> <td>(particle size is 50-200 MKM)-59-70%</td> </tr> <tr> <td>Water</td> <td>29-40%</td> </tr> <tr> <td>Reagent-plasticizer</td> <td>1%</td> </tr> <tr> <td>Ignition temperature</td> <td>450-650<sup>0</sup>c</td> </tr> <tr> <td>Combustion temperature</td> <td>950-1050<sup>0</sup>c</td> </tr> </table>	Coal	(particle size is 50-200 MKM)-59-70%	Water	29-40%	Reagent-plasticizer	1%	Ignition temperature	450-650 <sup>0</sup> c	Combustion temperature	950-1050 <sup>0</sup> c
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Technology to be used	Heat energy production is implemented by 7 boiler stations with each 10,8 MWt capacity and 186,2 thous. Gcal total volume of heat energy production. Transition of current boiler stations from liquid/solid fuel into ECOWOOT through their reconstruction. Workshop building for ECOWOOT preparation.										
Additionality	<p><b><u>ECOWOOT additional features:</u></b></p> <ul style="list-style-type: none"> <li>- possess by all technological features of liquid fuel;</li> <li>- transported in auto and railway tanks through pipelines and tankers, kept in closed reservoirs;</li> </ul>										

	<p>- explosive and flammable.</p> <p><b><u>ECOWOOT advantages:</u></b></p> <p><b><i>Ecologic:</i></b></p> <p>- ecologically safe at all phases of its production, transportation and use;  - able to reduce adverse emissions into atmosphere, including dust, nitrous oxide, sulfur dioxide, etc. by 1.5-3,5 times;  - able to use volatile ash as the result of combustion effectively.</p> <p><b><i>Technologic:</i></b></p> <p>- being similar to liquid fuel when transiting heat generated stations into ECOWOOT combustion, the technology doesn't require significant reconstruction of boilers (aggregates); it's possible to apply fire-box combustion of solid fuel-bed firing, chamber furnace combustion for coal-dust and liquid fuel when boiling bed combustion;  - able to mechanize and automatize processes of fuel receipt, appliance, storage and combustion;  - new technology of vortical combustion at 950-1050 °C allows to reach effective fuel use by more than 97 % (if fuel-bed coal firing the volume indicated doesn't exceed 60 %);  - there are 4 systems of ECOWOOT combustion elaborated: a) with plazmotrone application, b) natural gas, c) liquid fuel, d) solid fuel</p> <p><b><i>Economic:</i></b></p> <p>- depreciation of 1ton of standard coal by 2-3 times;  - reduction of operational expenditures when stored, transported and combusted by на 25-30 %;  - reduction of capital expenditures when transited from mazut and other solid fuel types into ECOWOOT of Heat Energy Plants and boiler stations by 3 times;  - payback of expenditures when ECOWOOT integration is 1-2.5 years;  - there is a tendency of prices' fast growing for oil products in comparison with coal.</p> <p><b><i>Barriers for the project realization</i></b></p> <p>- lack of funding;  - providing of coal supply growing needs in the Republic by means of coal production enhancement and improvement.  - republic's needs in coal production may rise up to 600 thou. tons of ECOWOOT per a year by 2015</p>
Mediator	Sobirjon Usmanov, address: 3 Tolstoy Str., Dushanbe, TAJIKISTAN Tel: (992 372)23-01-36. E-mail: cc_center@meteo.tj
Author of the project	State Unitary Enterprise NGO "Gydrotruboprovod", Moscow, RUSSIA and Joint-Stock Company "Khimzavod", Isfara, TAJIKISTAN
Name of the project author	State Unitary Enterprise NGO "Gydrotruboprovod", Moscow, RUSSIA and Joint-Stock Company "Khimzavod", Isfara, TAJIKISTAN
Other functions of the project author	Author control
A brief description of the project author experience in relevant area	State Unitary Enterprise NGO "Gydrotruboprovod", Moscow, RUSSIA. According to Internet information source – the company is experienced in elaboration of project in regard to water-coal integration. Institute was founded in 1996 on the basis of institute's founders – "Sredneazgidroproekt" that was particularized in 1972 for projecting hydro energy power stations in Central Asia
Address	12 Storozhkaya Str., Solomennaya Ave., 125206 Moscow, RUSSIA

Contact person	A.P.Petrakov
Tel.:	(007 495) 979-93-12
Project sponsors	Power engineering specialists' Association of Tajikistan and Khukumat of Dushanbe
Name of the first project sponsor	Power engineering specialists' Association of Tajikistan and Khukumat of Dushanbe
Organization category	State and public organizations
Address	31 Akademik Rajabov Str., appt. 14, Dushanbe, TAJIKISTAN
Contact person	Rafika G. Musoeva – Chairwoman
Tel./fax	(992 372) 21-43-25.
E-mail	<a href="mailto:musaevarafika@rambler.ru">musaevarafika@rambler.ru</a>
Key activity types	1. Elaboration of investment projects for energy power objects. 2. Construction and re-construction of energy power objects
A brief description of fund indicators	Association was founded in 2005 for consideration and solution problems in regard to energy power supply of the republic, normative and legal base improvement for struggle against poverty and achievement of the UN millennium goals achievement in the country.
Project stakeholder	Climate Change Centre of the Agency on hydrometeorology of the State Committee for environmental protection and forestry of the Republic of Tajikistan.
Address	47 Shevchenko Str., 734025 Dushanbe, TAJIKISTAN
Contact person	ILHOM Rajabov
Tel.:	(992 372) 276181
II. Expected sponsors	CDM – Clean Development Mechanism Asian Development Bank (ADB) ODA Programme World Bank Carbon Market prototype Power engineering specialists' Association of Tajikistan Khukumat of Dushanbe Global Environment Facility (GEF)
4.Project type	Type II- energy efficiency projects II.D- fuel transition CO <sub>2</sub> emission reduction
Greenhouse Activity type	
Aiming at greenhouse gas emission reduction	CO <sub>2</sub> – formed as the result of coal solid fuel use. 24000 CO <sub>2</sub>
Area of the project implementation	Activities will enable to provide the population and hospitals, child institutions and enterprises of Dushanbe with heat and hot water
Area of the project implementation	
Region	Central Asia
Country	Republic of Tajikistan
City/town	Dushanbe
A brief description of the project area implementation	The project preparation and implementation is expected to be in Dushanbe (to all Republic's cities and towns consequently) – transition of boiler plants from mazut and other solid fuel into ECOWOOT.

Perspective graph													
The earliest date of works	Start of water-coal fuel factory building ECOWOOT, its productivity 50 thousand tons in a year and boiler plant rebuilding on receiving the first trench												
Computation of time need for the project preparation after project certificate ratification	Time for negotiations – one month Time for financial obligation conclusion – two months Time for regulating legal issues – two months Time for building – 18 months												
Expected certified emissions reduction in atmosphere (CER) during the first year	CER – CO <sub>2</sub> – 24000 tons  For manufacturing 186.2 thousands Гкал heat energy boiler plant need: Black oil – 25,1 thousands tons Solid coal – 66,5 thousands tons ECOWOOT – 50 thousands tons  From 1 ton black oil pick out 3.254 tons of CO <sub>2</sub> ; From 1 ton black oil pick out 1.451 tons of CO <sub>2</sub> From 1 ton ECOWOOT pick out 1.451 tons CO <sub>2</sub>												
Project exploitation date	50 years												
Project current phase	The industrial tests realized. Pilot plant is working now.												
B. Expected positive influence on environment and social advantage.													
Greenhouse gas emission reduction preliminary assessment CO <sub>2</sub> (in equivalent converting to metric ton of carbonic gas)	Approximately emissions reduction : In first year CO <sub>2</sub> 24000 tons From 2007 year till 2012 year CO <sub>2</sub> – 120000 tons Over a period of 10 years CO <sub>2</sub> - 240000 tons Over a period of 7 years CO <sub>2</sub> - 168000 tons Over a period of 14 years CO <sub>2</sub> - 336000 tons  Over a period of 21 years CO <sub>2</sub> - 504000 tons												
Basic script	At present time only 6-8 of 100 boiler plants are working in Dushanbe because of fuel lack and its expensiveness. The population need heat energy power and hot water and that's why use of electric power in cold seasons is urgent. In private sector firewood and coal are used for this purpose. There is a deforestation tendency to use it as a fuel. Transfer boiler plant to ECOWOOT is a problem-solving.  <table border="1" data-bbox="518 1668 1423 2069"> <thead> <tr> <th></th> <th>Black oil</th> <th>Coal</th> <th>ECOWOOT</th> </tr> </thead> <tbody> <tr> <td>Common necessity in heat energy power in Dushanbe is (thousand Gcal./in a year)</td> <td colspan="3">39001</td> </tr> <tr> <td>Actual heat energy power manufacture (thousand Gcal./per year)</td> <td colspan="3">312,9</td> </tr> </tbody> </table>		Black oil	Coal	ECOWOOT	Common necessity in heat energy power in Dushanbe is (thousand Gcal./in a year)	39001			Actual heat energy power manufacture (thousand Gcal./per year)	312,9		
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	Proposal heat energy power production (thousand Gcal./per year)	186,2				
	Greenhouse gas emission from heat energy power production (thousand tons)	81,6	96.5	72.5		
Economical version analysis						
	Energy carrier's name	1 Gcal. of heat production			186,2 thousand Gcal. of heat production	
		Volume (tons)	Value in USA \$	The sum of US \$	Volume (thousand tons)	The sum of thousand US \$
	Black oil	0,13	260	33,8	25,1	848,4
	Solid coal	0,36	31,3	11,3	66,5	749
	ECOWOOT	0,27	27,8	7,5	50	375,3
Concrete advantages for environment in global and local scale	<ol style="list-style-type: none"> <li>1. The project directed to improve population life and ecological situation in Dushanbe. Next introduction will be in other cities of republic.</li> <li>2. Keep consuming heat energy power and hot water-supply deficit in Dushanbe.</li> <li>3. A forestation keeping safe and greenhouse gas emissions reduction.</li> <li>4. Heat energy power rising through using heating and hot water-supply centralized system</li> </ol>					
Social and economic aspects. What social and economic aspects will accompany project implementation? What results shouldn't be achieved without project realization in analogical situation?	<ol style="list-style-type: none"> <li>1. Heat energy power and hot water-supply deficit is eliminating in household and industrial sectors, hospitals and schools.</li> <li>2. Republic coal branch development.</li> <li>3. Extra work places/employees' involvement set-up.</li> <li>4. Electro-energy consumption reduction and electrical net keeping in winter and autumn period.</li> <li>5. Rising of energy-independence.</li> </ol>					
C. Funding						
	The project investment sum is 1 071 191 US dollars totally.					
		In national currency (000\$)	In hard currency (000\$)	Sum total (000\$)		
	-ADB		0.803	0.803		

	-WB, credit to state )		0.182	0.182
	Incomes from CER selling			
	Incomes refunding	69		69
	IDF grant (Great Britain)	17		17
	Sum total	86	0.985	1.071
Charge project general estimate	General requirement in financing (plus necessity in circulating and means credit payment during construction period) is 1071191 US dollars.			
Enlargement estimate in national currency 1.12.2005. – somoni.				
Equipment cost				1420800, 0 c.
Total investment for equipment taking into account assembling, auxiliary materials and unaccounted expends				2131200, 0c.
Civil works cost				1276167, 7 c.
Follow-on (0, 6 %)				20444, 2 c.
Total capital investments				3427811, 5 c.
Circulating and credit percentage during construction.				
Total necessity in funding				
Enlargement estimate investments in US dollars for December 1, 2005				
Equipment cost				444000 \$
Total capital investment for equipment taking into account assembling, auxiliary materials and unaccounted expends				666000 \$
Civil works cost				398802,4 \$
Follow-on (0,6 %)				6388,8 \$
Total capital investments				1071191 \$c.

The project identification note was prepared by Sobirjon Usmanov, phone: +992 372 276181  
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