

## PROJECT IDEA NOTE (PIN)

**Name of Project: Pakistan Domestic Biogas Programme, CDM Program Activity 1, Central Punjab, Pakistan**

**Date submitted: December 2009**

### **Description of size and quality expected of a PIN**

Basically a PIN will consist of approximately 5-10 pages providing indicative information on:

- the type and size of the project
- its location
- the anticipated total amount of greenhouse gas (GHG) reduction compared to the “business-as-usual” scenario (which will be elaborated in the baseline later on at Project Design Document (PDD) level)
- the suggested crediting life time
- the suggested Certified Emission Reductions (CERs)/Emission Reduction Units (ERUs)/Verified Emission Reduction (VERs) price in US\$ or €/ton CO<sub>2</sub>e reduced
- the financial structuring (indicating which parties are expected to provide the project’s financing)
- the project’s other socio-economic or environmental effects/benefits

**While every effort should be made to provide as complete and extensive information as possible, it is recognised that full information on every item listed in the template will not be available at all times for every project.**

**NOTE: For forestry projects, please use the PIN Template for LULUCF projects available at [www.carbonfinance.org](http://www.carbonfinance.org).**

## A. PROJECT DESCRIPTION, TYPE, LOCATION AND SCHEDULE

<p><b>OBJECTIVE OF THE PROJECT</b> <i>Describe in not more than 5 lines</i></p>	<p>Pakistan Domestic Biogas Programme (PDBP) (Central Punjab) aims to construct 18,000 domestic biogas plants at household level. These biogas plants displace the unsustainable biomass being used as domestic energy sources with biogas produced from the biogas plant using animal manure. The biogas can be used as a fuel for cooking.</p>
<p><b>PROJECT DESCRIPTION AND PROPOSED ACTIVITIES</b> <i>About ½ page</i></p>	<p>The proposed CDM program activity is the first CPA of the Pakistan Domestic Biogas Programme CDM Program of activities (PoA). The PoA envisions a period of 10 years to establish a commercially viable biogas sector with the target of installing 300,000 biogas plants in Pakistan.</p> <p>Rural Support Programmes Network (RSPN) is the managing/coordinating entity of the PoA.</p> <p>The program will be implemented through a modular approach. Each module will be carried out to fit within a small-scale CPA activity which generates no more than 45 MWth power. The financing of each module will be achieved through a combination of carbon financing and self financing by users and through the use public sector funding or ODA for meeting technical assistance and investment costs to the extent required.</p> <p>The first CPA is being implemented in the central Punjab (Faisalabad, Tobatek Singh, Sargodha, Jhang, Chiniot, Khushab, Mianwali, Bhakkar) with a target to install 18,000 biogas plants in 4 year time period starting from November 2009. Biogas construction companies (BCCs) promoted by the PDBP, will be responsible for services such as construction, after sales service, and user training. To ensure the quality of the plant a quality ensuring discount of PKR 7,500 (\$90) will be provided to the households channeled through biogas companies. While receiving the quality ensuring discount from the program, the household (owner of the biogas plant), signs an agreement with PDBP/RSPN and transfers the legal rights of carbon credit.</p>
<p><b>TECHNOLOGY TO BE EMPLOYED<sup>1</sup></b> <i>Describe in not more than 5 lines</i></p>	<p>The technologies used in the CPA are domestic biogas digesters of fixed dome type. Proven in several other countries, the technology is robust, reliable and requires minimum maintenance. The concrete – masonry structure can be constructed with locally available materials and skills, and typically has a life of over 20 years. The program covers the biogas plants with capacity ranging from 4-15 m<sup>3</sup>.</p> <p>The biogas plants will provide biogas to meet the thermal energy needs of households which have at least 2 heads of cattle (cows or buffaloes).</p>

<sup>1</sup> Please note that support can only be provided to projects that employ commercially available technology. It would be useful to provide a few examples of where the proposed technology has been employed.

	The use of biogas plants will displace the domestic energy sources like and unsustainable biomass with biogas produced from the biogas plant using animal manure. The fixed dome design, called GGC 2047 model, which was initially designed and developed in Nepal, will be installed with slight modifications. This model is considered to be reliable, well functioning, simple, durable and with low maintenance cost.
<b>TYPE OF PROJECT</b>	
Greenhouse gases targeted	CO <sub>2</sub>
Type of activities Abatement/CO <sub>2</sub> sequestration	Abatement
Field of activities	1. Renewables - 1b. Biogas
<b>LOCATION OF THE PROJECT</b>	
Country	Islamic Republic of Pakistan
City	Punjab Province
Brief description of the location of the project	The project will be located in Faisalabad, Tobatek Singh, Sargodha, Jhang, Khushab, Chiniot, Mianwali, Bhakkar districts of the Punjab province of Pakistan.
<b>PROJECT PARTICIPANT</b>	
Name of the Project Participant	Rural Support Programmes Network
Role of the Project Participant	Project Implementer
Organizational category	Non Governmental Organization
Contact person	Ms. Shandana Khan, Chief Executive Officer
Address	Street 49, House No.7, F-6/4 Islamabad,
Telephone/Fax	00-92-51-2829115
E-mail and web address, if any	Email: shandana@rspn.org.pk Website: www.rspn.org
Main activities	RSPN will act as the coordinating/managing entity of the Pakistan Domestic Biogas Programme PoA. At the same time the 1 <sup>st</sup> CPA will also be implemented by RSPN. The steering committee formed for the coordination of the PDBP will provide the overall guidelines for the program and help to create the favorable policy environment for the successful implementation of this CPA.
Summary of the financials	In addition to working as the coordinating/managing entity, RSPN is also implementing the first CPA in the central Punjab. RSPN has been mobilizing around 3 million euro for the program in central Punjab.
Summary of the relevant experience of the Project Participant	RSPN has been implementing the first CPA in central Punjab area. It has already trained 90 masons and partnered with several stakeholders for the implementation of this project.
<b>COORDINATING/MANAGING ENTITY OF THE POA</b>	

Name of the Project Participant	Rural Support Programmes Network (RSPN)
Role of the Project Participant	Managing/Coordinating of the PoA
Organizational category	Non Governmental Organization
Contact person	Ms. Shandana Khan, Chief Executive Officer
Address	Street 49, House No.7, F-6/4 Islamabad,
Telephone/Fax	00-92-51-2829115
E-mail and web address, if any	Email: shandana@rspn.org.pk Website: www.rspn.org
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Summary of the relevant experience of the Project Participant <i>Describe in not more than 5 lines</i>	RSPN has been implementing the first CPA in central Punjab area. It has already trained 90 masons and partnered with several stakeholders for the implementation of this project.
<b>GOVERNMENT AGENCY TO FACILITATE THE PROJECT</b>	
Name of the Project Participant	Department of Environment, Ministry of Environment
Role of the Project Participant	Project Facilitator
Organizational category	Government Organization
Contact person	Mr. Jawed Khan, Director General, Environment
Address	Ministry of Environment, G-5/2, Islamabad. Islamabad, Pakistan
Telephone/Fax	+(92-51)9245528 Fax: +(92-51)9245533
E-mail and web address, if any	www.moenv.gov.pk
Main activities <i>Describe in not more than 5 lines</i>	Ministry of Environment, Local Government and Rural Development was bifurcated and an independent Ministry of Environment was established on 22-04-2002. Ministry of Environment is the focal point on the subjects of Environment, Ecology, Human Settlement and Forests in Pakistan.
Summary of the financials <i>Summarize the financials (total assets, revenues, profit, etc.) in not more than 5 lines</i>	
Summary of the relevant experience of the Project Participant <i>Describe in not more than 5 lines</i>	Ministry of Environment hosts the Designated National Authority (DNA).
<i>Please insert information for additional Project Participants as necessary.</i>	
<b>EXPECTED SCHEDULE</b>	
Earliest project start date <i>Year in which the plant/project</i>	November 2009

<i>activity will be operational</i>	
Estimate of time required before becoming operational after approval of the PIN	Time required for financial commitments: 3 months Time required for legal matters: 1 months Time required for construction: 48 months
Expected first year of CER/ERU/VERs delivery	2011
Project lifetime	4 years
<i>Number of years</i>	
For CDM projects: Expected Crediting Period	7 years twice renewable
Current status or phase of the project	The project proposal is prepared and resource mobilization is being done.
Current status of acceptance of the Host Country	Letter of intent for the Pakistan Domestic Biogas Programme, CDM Program of Activities is submitted. Letter of support from DNA has been received. The project has done the Initial Environmental Examination and submitted for no objection letter from Pakistan Environment Protection Agency (PEPA). Once the letter from the PEPA received, RSPN will apply for Host Country Approval.
The position of the Host Country with regard to the Kyoto Protocol	Has the Host Country ratified/acceded to the Kyoto Protocol? <u>YES.</u> <u>YEAR</u> 2005  Has the Host Country established a CDM Designated National Authority / JI Designated Focal Point?  <u>YES.</u> <u>YEAR</u> 2005

**B. METHODOLOGY AND ADDITIONALITY**

<b>ESTIMATE OF GREENHOUSE GASES ABATED/ CO<sub>2</sub> SEQUESTERED</b> <i>In metric tons of CO<sub>2</sub>-equivalent, please attach calculations</i>	Annual (if varies annually, provide schedule): Emission reduction from the first CPA.																																							
	<table border="1"> <thead> <tr> <th>Years</th> <th>New Plants</th> <th>Cumulative Number of Operational Plants</th> <th>Emission Reductions</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1,500</td> <td>1,455</td> <td></td> </tr> <tr> <td>1</td> <td>3,000</td> <td>4,365</td> <td>1,635</td> </tr> <tr> <td>2</td> <td>5,000</td> <td>9,215</td> <td>6,538</td> </tr> <tr> <td>3</td> <td>8,500</td> <td>17,460</td> <td>15,256</td> </tr> <tr> <td>4</td> <td></td> <td>17,460</td> <td>29,966</td> </tr> <tr> <td>5</td> <td></td> <td>17,460</td> <td>39,229</td> </tr> <tr> <td>6</td> <td></td> <td>17,460</td> <td>39,229</td> </tr> <tr> <td>7</td> <td></td> <td></td> <td>39,229</td> </tr> <tr> <td colspan="3">Total for the Crediting Period of 7 years</td> <td>171,081</td> </tr> </tbody> </table> <p>Annual average = 24,440 tCO<sub>2</sub>-equivalent</p> <p>Up to and including 2012: 23,428 tCO<sub>2</sub>-equivalent Up to a period of 7 years: 171,081 tCO<sub>2</sub>-equivalent</p>	Years	New Plants	Cumulative Number of Operational Plants	Emission Reductions	0	1,500	1,455		1	3,000	4,365	1,635	2	5,000	9,215	6,538	3	8,500	17,460	15,256	4		17,460	29,966	5		17,460	39,229	6		17,460	39,229	7			39,229	Total for the Crediting Period of 7 years		
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<p><b>BASELINE SCENARIO</b> CDM/JI projects must result in GHG emissions being lower than “business-as-usual” in the Host Country. At the PIN stage questions to be answered are at least:</p> <ul style="list-style-type: none"> <li>• Which emissions are being reduced by the proposed CDM/JI project?</li> <li>• What would the future look like without the proposed CDM/JI project?</li> </ul> <p><i>About ¼ - ½ page</i></p>	<p>These biogas plants displace the unsustainable biomass being used as domestic energy sources with biogas produced from the biogas plant using animal manure. Recent Survey (Energy Utilization and Demand Baseline Assessment Survey, 2009) in the Punjab shows the households are using around 257 kg of fire wood per month for cooking. In the absence of the project, the households will continue using the unsustainable biomass for cooking.</p> <p>Data from the Forestry Sector Master Plan shows the annual increment of the woody biomass in Punjab is 6,355,000m<sup>3</sup>/year, which is far below of the annual harvest of 31,641,089 m<sup>3</sup>/year. This shows the biomass is being harvested unsustainably. Hence, the share of the non renewable biomass is 80% in the Punjab province. As per the methodology, the share of non renewable biomass will be used for the calculation of baseline emission.</p>
<p><b>ADDITIONALITY</b> Please explain which additionality arguments apply to the project: (i) there is no regulation or incentive scheme in place covering the project (ii) the project is financially weak or not the least cost option (iii) country risk, new technology for country, other barriers (iv) other</p>	<p>Implementation of this project is not mandatory for the project participant and the household. This is a voluntary action of the household and the project participant.</p> <p>The average cost of the biogas plant ranges from US\$406-541 depending upon the size. The proposed project will provide the discount of \$90. The remaining cost need to be covered by the household. Compared to the other options for cooking like using LPG and Kerosene stove, this is not the least cost option. So there is a need for massive awareness and confidence building of the users over this technology through quality control and readily available after sales services.</p> <p>The ability to run a large national biogas program with strict quality control did not exist in the country. The Pakistan Domestic Biogas Program will provide this capability by transferring the expertise from regional countries like Nepal where a similar program has been running for over 15 years.</p> <p>At the program level there is a funding gap which is expected to be fulfilled by the combination of carbon revenue and the loan from the financial institution against the future carbon revenue.</p> <p>Carbon revenue was considered as the source of fund from the feasibility stage of the program.</p>
<p><b>SECTOR BACKGROUND</b> Please describe the laws, regulations, policies and strategies of the Host Country that are of central relevance to the proposed project, as well as any other major trends in the</p>	<p>Although the Government of Pakistan acknowledges the importance of alternative energy, Pakistan does not currently have a program supporting the large scale dissemination of domestic biogas in southern Punjab. Recently RSPN has started the PDBP with the vision of installing 300,000 biogas plants in Pakistan over the next 10 years period.</p>

relevant sector.  Please in particular explain if the project is running under a public incentive scheme (e.g. preferential tariffs, grants, Official Development Assistance) or is required by law. If the project is already in operation, please describe if CDM/JI revenues were considered in project planning.	For the first CPA, to be implemented in central Punjab, the Embassy of the Kingdom of Netherlands has provided the partial funding. The funding gap will be fulfilled by the combination of carbon fund and the loan taken against the future carbon revenue.
<b>METHODOLOGY</b> Please choose from the following options:  For CDM projects: (i) project is covered by an existing Approved CDM Methodology or Approved CDM Small-Scale Methodology	AMS-I.E. "Switch from Non-Renewable Biomass for thermal applications by the user"

### C. FINANCE

<b>TOTAL CAPITAL COST ESTIMATE (PRE-OPERATIONAL)</b>	
Development costs	US\$ 2,587,284 (Monitoring, quality control, capacity building of the various stakeholders etc.)
Installed costs	US\$ 4,244,968 (Total cost of the Biogas Plants)
Land	
Other costs (please specify)	
Total project costs	US\$ 6,832,252
<b>SOURCES OF FINANCE TO BE SOUGHT OR ALREADY IDENTIFIED</b>	
Equity Name of the organizations, status of financing agreements and finance (in US\$ million)	Farmers equity - \$ 3,407,146  Donor Funding - \$ 2,754,985
Debt – Long-term Name of the organizations, status of financing agreements and finance (in US\$ million)	US\$ 670,121 (Loan payable against future carbon revenue) Discussion going on with various financial institutions)
Debt – Short term Name of the organizations, status of financing agreements and finance (in US\$ million)	
Carbon finance advance payments <sup>2</sup> sought from the World Bank carbon funds.	

<sup>2</sup> Advance payment subject to appropriate guarantees may be considered.

(US\$ million and a brief clarification, not more than 5 lines)	
<b>SOURCES OF CARBON FINANCE</b> Name of carbon financiers other than any of the World Bank carbon funds that you are contacting (if any)	NA
<b>INDICATIVE CER/ERU/VER PRICE PER tCO<sub>2</sub>e<sup>3</sup></b> <i>Price is subject to negotiation. Please indicate VER or CER preference if known.<sup>4</sup></i>	Indicative CER Price – US\$13
<b>TOTAL EMISSION REDUCTION PURCHASE AGREEMENT (ERPA) VALUE</b>	
A period until 2012 (end of the first commitment period)	304,567 US\$
A period of 10 years	2,900,774 US\$
A period of 7 years	1,370,856 US\$
Please provide a financial analysis for the proposed CDM/JI activity, including the forecast financial internal rate of return for the project with and without the Emission Reduction revenues. Provide the financial rate of return at the Emission Reduction price indicated in section "Indicative CER/ERU/VER Price". DO NOT assume any up-front payment from the Carbon Finance Unit at the World Bank in the financial analysis that includes World Bank carbon revenue stream.	

#### D. EXPECTED ENVIRONMENTAL AND SOCIAL BENEFITS

<b>LOCAL BENEFITS</b> E.g. impacts on local air, water and other pollution.	<p>Biogas project contributes towards reduced air pollution, associated respiratory diseases and accidents from open fire, improved sanitation and hygiene education, reduced parasitic infections, diarrhoea and other water and vector-borne diseases.</p> <p>At the Household levels, biogas provides energy source for cooking and lighting, improves health through better indoor air quality and reduce the workload of women.</p> <p>At the national level- It replaces the use of non renewable biomass and contributes towards forest conservation. The biogas sector creates</p>
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<sup>3</sup> Please also use this figure as the carbon price in the PIN Financial Analysis Model (cell C94).

<sup>4</sup> The World Bank Carbon Finance Unit encourages the seller to make an informed decision based on sufficient understanding of the relative risks and price trade-offs of selling VERs vs. CERs. In VER contracts, buyers assume all carbon-specific risks described above, and payment is made once the ERs are verified by the UN-accredited verifier. In CER/ERU contracts, the seller usually assumes a larger component - if not all – of the carbon risks. In such contracts, payment is typically being made upon delivery of the CER/ERU. For more information about Pricing and Risk, see ["Risk and Pricing in CDM/JI Market, and Implications on Bank Pricing Guidelines for Emission Reductions"](#).

	employment at local level and contributes towards the development of responsible private sector.
<p><b>GLOBAL BENEFITS</b> Describe if other global benefits than greenhouse gas emission reductions can be attributed to the project.</p>	At the global level- it reduces the greenhouse gas emission and contributes towards the climate change mitigation.
<p><b>SOCIO-ECONOMIC ASPECTS</b></p>	
<p>What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project? Indicate the communities and the number of people that will benefit from this project. <i>About ¼ page</i></p>	<p>Biogas plant reduces the expenses on cooking fuel. The slurry that comes out as the by-product of the biogas plant is very good organic fertilizer. This significantly reduces the use of chemical fertilizer and also increases the agriculture production.</p> <p>The households who are still deprived from using the natural gas connection will have access to another form of clean energy for cooking. Hence it also contributes to promote social equity in the community.</p>
<p>What are the possible direct effects (e.g. employment creation, provision of capital required, foreign exchange effects)? <i>About ¼ page</i></p>	This proposed CPA will generate the employment opportunity of 980 person years. As most of the materials used in biogas plant construction can be available locally so it helps increasing the economic activities at local level.
<p>What are the possible other effects (e.g. training/education associated with the introduction of new processes, technologies and products and/or the effects of a project on other industries)? <i>About ¼ page</i></p>	The biogas is a proven technology in number of Asian countries including Nepal, Vietnam, Bangladesh, Cambodia and Laos. The technical and the business model is being replicated from the successful programmes from other countries. So it will result into technology and know-how transfer.
<p><b>ENVIRONMENTAL STRATEGY/ PRIORITIES OF THE HOST COUNTRY</b> A brief description of the project's consistency with the environmental strategy and priorities of the Host Country <i>About ¼ page</i></p>	<p>The proposed project is in consistent with the various policies of the Government of Pakistan.</p> <p>The National Energy Conservation Policy and strategy aims to promote renewable energy technologies such as biogas plant among others.</p> <p>The National Forest Policy of Pakistan aims to promote alternative energy sources for cooking purpose so that the pressure on forest could be reduced. Biogas is a good alternate for fire wood. In an average a biogas plant saves 257kg of fire wood per month.</p> <p>Biogas in one of the renewable energy technology and also contributes to reduce the Green House Gas emission. In an average a biogas plant reduces around 2.25 tCO<sub>2</sub>e per year. As PDBP envisions installing the 300,000 biogas plants in next 10 years period, these plants may contributes to reduce the GHG emission of 674,031 t CO<sub>2</sub>e per year.</p> <p>Under the section 4.2 of the National Environment Policy it is mentioned that The Government of Pakistan shall “Promote renewable forms of</p>

	energy (wind, solar, bio-gas etc.) at a wider scale” This proposed programme is promoting biogas plants in a wider scale with a target to install 18000 plants in Central Punjab in next 4 years period.
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