

 **Annual Progress Report**

**Demonstration Project for Biomass Energy Development at the Desert Edge of Tarim Basin**

**2014.12.30**

 [Date of report]

**Basic Project Information**

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| Project Title: Demonstration Project for Biomass Energy Development at the Desert Edge of Tarim Basin |
| UNDP Award ID | 00076089 |
| UNDP Project ID | 00087649 |
| Project Duration  | 2013-2016 |
| Reporting Period  | 2013-2016 |
| Total Approved Project Budget |  |
| Participating UN Agencies |  |
| Implementing PartnersNational Collaborating Agencies | CICETEXinjiang Poverty Alleviation Office  |
| International Collaborating Agencies |  |
| Budget Cost-sharing/ third parties |  |
| UNDP PM | Zhang Weidong |
| Project Website |  |

**Executive Summary**

Applied various means including technology demonstration, technology innovation, capacity building and the construction of yellowhorn-based biomass energy material base, the project aimed to demonstrate social and economic sustainable development model pioneered by energy enterprises and supported by local governments in ethnicity areas, as well as produce experience for the development model of China’s biomass energy industry. The established 1-million mu biomass energy forests in Tarim basin has become the production base and industry demonstration of bio jet fuel.

1. **Context**

China’s energy consumption is at the top of world as the result of sustained economic development. While, a series of problems relating to energy supply and utilization has been surfaced. One example is the excessive use of fossil fuel and its inflicted impacts on environment, health, climate change and energy security.

Chinese governments have taken various actions to cope with the challenge. Development of renewable and new energy e.g. biomass energy, wind energy, solar energy is one of the examples. Relevant laws, regulations and supporting policies have also been introduced to strategically influence China’s economic transformation.

Developing biomass energy was of significance to develop circular economy, promote rural development, increase farmers’ income and nurture new industry, as pointed out in National Biomass Development 12th Fiver-year Plan.

In Xinjiang Autonomous region, forestry plays strategic and primary roles in sustainable development, ecological construction, development of the West and responses to climate change. In the process of forestry development, it is imperative to stick to the principles of environmental protection, ecological construction and sustainable exploration of natural resources. Meanwhile, new-type industrialization, modernization of husbandry industry and new-type urbanization should be taken into account when developing modern forestry and improve livelihoods. In order to reinforce ecological civilization, foster an enabling environment and enable the great-leap of Xijiang, it is also required to liberate the minds, remove the setbacks, refine the forestry system and set up a framework for modern forest development.

**Project Objectives and Strategies**

Following the principle of scientific and sustainable development, the project will transfer the technical products and automatic/integrated/ intellectual technologies into every stage of project construction. Responding to the special conditions in Southern Xinjiang, a human and vehicle integrated surveillance system supported by intellectual management model will be built in the project area to monitor and make early warning regarding trees, weather, draughtiness and fire. Solar powered water withdrawal system and automatic and high-efficiency dripping irrigation system will be installed in suitable sites to concretely demonstrate the impacts of sand control by forests.

The project plans to construct a 1-million mu biomass energy forest base in the desert of Tarim, making it the production base and demonstration area for bio jet fuel. UNDP and Chinese governments hope to use their gained experience to research in a triple wins cooperative model for the farmers, local governments and energy companies. The project aims to replace fossil fuel with biomass energy to protect environment, improve farmers ‘income and research a useful solution for solving San Nong Problem and promoting the development of ethnicity living in remote areas. Diversifying the products will be the strategy to resist market risks, and the research focuses will go to biomass chemical products, biomass medicines, bio jet fuel and integrated use of whole raw materials. The healthy proceed of the project will help the enterprises realize sustainable development and raise up farmers’ living standards and productivities.

**2. Major Results**

The project, on the whole, proceeds well by planting 73,000 mu energy forests, paving 150 km roads, drilling 12 wells, establishing a 6300 volt electricity substation and constructing 6500 km2 houses inhabited with 32 households. Ongoing activities under the project are intellectual surveillance equipment, dripping irrigation instalment and solar powered withdrawal facilities. The project has helped protect and rehabilitate the environment. The high-efficiency water-saving technologies and modern agricultural facilities have transformed ethnic farmers to labour worker, and consequently their incomes have been increased. With connection to capacity building, 2000 local farmers were benefited from the trainings and the engagement rate of women is 20%.

Infrastructure construction has been strengthened to ensure the smooth progress of forest re-planting. As the result, 125 km forest roads were paved, a cement bridge was built on the way to ecological forest base, a 35,000 volt electricity substation was set up, 129 km of 10,000 volt transmission line were bridged, 78 wells were drilled, 65,000 mu dripping irrigation were laid out, 43,600 mu dunes were reclaimed, 20 km water diversion ditches were dug, 34 km saline drainage canals were built,115,50 bags of soil were changed. 450,000 people were voluntarily participating in tree planting.

This project is a big contribution to the achievement of MDGs, particularly on aspects of poverty alleviation and environmental restoration.

**Project Outcome**

The project is progressing well as per the work plan, and the associated tasks were fulfilled in planned time.

Planting area by applying dripping irrigation and modern agricultural technologies has reached 73,000 mu. Led by the enterprises and supported by government recommend community-based capacity building model, capacity building at lower levels were carried out to enhance the abilities of community sustainable development in ethnicity areas. In addition, platform of strategic innovation and industry development model have been established, for providing practical experience and suggests to national biomass energy industry plan.

On top of economic impact, the project has yielded tremendous ecological and social impacts by bettering local ecology and stopping the sprawling of deserts. By engaging in the project, people of different ethnicities were financially benefited and more jobs were created. The participation of local universities and research institutes made big contribution to the trainings of local talents and technicians. Generally speaking, the project has comprehensively increased local social and economic level, as well as advanced the solidarity and stability of local society.

**Outcome 1**:

In Xinjiang Autonomous region, forestry plays strategic and primary roles in sustainable development, ecological construction, development of the West and responses to climate change. In the process of forestry development, it is imperative to stick to the principles of environmental protection, ecological construction and sustainable exploration of natural resources. Meanwhile, new-type industrialization, modernization of husbandry industry and new-type urbanization should be taken into account when developing modern forestry and improve livelihoods. In order to reinforce ecological civilization, foster an enabling environment and enable the great-leap of Xijiang, it is also required to liberate the minds, remove the setbacks, refine the forestry system and set up a framework for modern forest development.

**Outcome 2:**

Long-term cooperation with farmers has been created, as well as farmer cooperatives. The project was participated by big quantity of farmers and also involving large size of land, and the standards on planting technologies were also higher. Therefore, how to effectively organize farmers and cooperatives to manage the farmlands was key to the smooth progress of raw material production. The project should be viewed from different perspectives. On one hand, it is necessary to train and guide farmers on scientific production. On the other hand, it is important to regulate the relationship between farmers and enterprises to protect their rights. The achievements of this outcome highly depended on supports and cooperation of local governments, which was essential to the success of the project.

**Project Activities and Output:**

By means of PPP and integrated system of research, production and education, the project made a score of accomplishments in environmental protection, sustainable use of resources (esp water resources), coordinated development of biomass resources industry and sustainable agriculture, biodiversity protection, rural economic development, development of farmer’s organizations, preservation of ethnic culture, capacity building of rural community, carbon trade and development of low-carbon industry. The established strategic partnership pushed forward the planning, implementation and monitoring of the project. Overall, the project has provided solid policy supports for the comprehensive development of Xinjiang.

**Activity 1.1**

From 19-20 March, 2014, UNDP experts went to the project area for conducting environmental impact assessment. The purpose was helping the IP build monitoring and indicator assessment system by taking into account local conditions, UNDP’s requirement and national standards. The trip also aimed to analyse, evaluate and forecast the environmental impacts of Kashgar energy forest exerted during its lifecycle or in longer terms, which will produce technical consultation and guidance for the progress of the project. Meanwhile, capacity buildings and trainings were provided to all related parties to enhance their analytical capacities and build data base.

**Activity 1.2**

During 20-24 March, 2014, meeting on large-scale yellowhorn planting was organized by the Forest Planting Division of State Forestry Administration in Markit County. Led by Deputy Director of Forest Planting Division, 35 representatives from Beijing Forestry University, National RD Centeor of Non-food Biomass, Academy of Forestry Science, Forestry Department of Xinjiang and companies did site investigations in the project area, and 3 meeting were hold to discuss on research, production, management and etc.

**Activity 1.3**

The construction of Yellowhorn energy forest base in Makit County has been fulfilled during 15th March to 15th April 2014, consisting of 12,000 mu Yellow-horn, 7,000 mu Xinjiang and 7,000 mu Populus alba. 25,000 mu newly contracted lands have been cleared by plating 5.9 million trees and vegetation. 1.2 million pieces of Yellowhorn have been planted, and a Yellowhorn nursery garden was built that was able to nurse 4 million new trees. 25,000 mu contracted lands have been reclaimed and constructed including the construction of drip irrigation, ditches, roads, channels. The director and engineer from Chifeng National Forest Farm and professors from Dalian Nationalities University have conducted twice trainings for the technicians and farmers involved in tree planting, in total 120 people participated the trainings. The trainings were designed to increase participants’ capacities, production technology, management skills, understanding on policies and awareness of sustainable development.

**Activity1.4**

A Saline-alkali Soil Seminar was organized during 23rd to 26th May, 2014. 25 people joined the training to learn technical means for improving the survival rate of the trees.

**Activity 1.5**

A Strategic Cooperation Agreement was signed with Zhongke Construction Development Co,ltd in 24th June, 2014. The partnership aimed to introduce Zhongke’s expertise to the formulation and development of energy forests, as well as the assessment of the quality of the produced raw materials.

**Activity 1.6**

During 6th to 10th July, 2014, 16 people took part in the training held in Taiqi County to enhance the survival rate of new trees via technical means.

**Activity 1.7**

In 10th August, 2014, a technical roadmap seminar were jointly hold by Dalian Nationalities University and Guangzhou Energy Institute

**Activity 1.8**

An on-site meeting was convoked in Makit County during 6th to 11th November 2014 to provide technical trainings, which was participated by 120 people. Planting technique trainings was given to farmers, who were engaged in autumn tree planting, by the experts from Academy of Forestry of Ar Horqin Banner and Dalian Nationalities University. The trainings would strengthen the technical capacity to guarantee the survival rate of the trees.

**Activity 1.10**

During 15th to 25th November, autumn planting has reached to 27,000 mu lands. In addition, the project has achieved the construction of 27 km desert roads, 35 km gravel road and 39 wells.

**Activity 1.11**

A Desertification Control Seminar was jointly hosted by the IP, Poverty Alleviation Office of Xinjiang and China Investment Co.,ltd in 29th November, 2014. The seminar shared the experience on promoting energy forests for sand/desert control. Desertification control technologies, application of new methodologies and inter-industry cooperation and communication were also addressed in the seminar. The seminar also did preliminary exploration on carbon reduction and carbon trading.

**Activity 1.12**

Technology Innovation Strategy Platform Cooperation Agreement was signed with Dalian Nationalities University on December 26 to promote Xinjiang action plan of green development projects in China, jointly promote the progress of the construction of forest biomass energy projects, promote economic and social development in southern Xinjiang region, promote women’s employment in ethnic minorities in Xinjiang, create a technological innovation strategy platform together and carry out scientific and technological training activities of different levels and forms to deal with the key technology and related common technical problem in project implementation and accelerate the transformation of project achievements.

**Activity 1.13**

Capacity building training was carried out. PMO carried out cultivation training to local farmers with 2000 people involved, of which 20% are women.

**Activity 1.14**

PMO staff went to Hong Kong to attend seminar on the development of biomass energy, recommended Xinjiang biomass potential and actively sought for the support and introduction of technology and financial aspects.

Sustainability

In order to solve the problem of sustainable development of desert afforestation, Russian Thornless sea buckthorn, licorice, apocynum, yams, alfalfa, Cistanche and other crops were planted in the course of the project to achieve the goal of supporting a forest with a forest. After sorbifolia are mature, an aviation bio-oil production base would be constructed to achieve the established goal of an annual output of 300,000 tons bio-aviation fuel.

**Cooperation Effectiveness**

The purpose of the project has prominent features in terms of the project purpose, the scale, ways of cooperation and areas, thus regional leaders attach great importance to the implementation of the project which will has a very good model role in terms of poverty alleviation and sustainable development in Xinjiang. Under the guidance of China International Economic and Technical Exchange Centre and UNDP, multi-party interactions and communications have been carried out among government departments, research institutes, and the majority of farmers, thus enhanced the ability to execute the project, achieved a sustainable and healthy development with an extended cooperation area and improved cooperation efficiency.

IP has won over twelve hundred square kilometres of real plant land, thus guaranteed the sustainable development of IP. UNDP gave effective guidance and supervision in terms of capacity building, biological diversity, the eco-environment and workers’ rights so as to ensure the smooth implementation of the project in harmony.

**Cross-cutting Issues**

Construction of this project will help for improving the ecological environment, reducing greenhouse gas emissions and effectively resist the destruction of the natural disasters on the environment by governing wind and sands. During the project construction process, the protection of biodiversity and soil and water and other resources has been fully considered, thus the construction of the project has become a model for the environment-friendly development.

This project was carried out mainly in the Uighur minority where there are no less than 50% of female employees. Local social harmony and national unity were promoted by guiding the poor minorities to participate in work and training.

**3. Project management and supervision**

During the execution of the project, CICETE, UNDP and Office of Poverty Alleviation and Xinjiang Xinjiang Oil Central Forestry Development Co., Ltd. held regular tripartite review and check the progress of the project and have given meaningful guidance to the construction of the project. The CICETE is responsible for the project management with the resources from UNDP. Implementation of the project activities, like plan implementation, supervision, examination and comment, will be in accordance with the management procedures and laws and regulations in China. The audits by the National Audit Office are received to ensure effective implementation of the project management activities and objectives outputs and the promise of cost-sharing.

**Status of implementation**

The implementation of project activities was basically completed in accordance with the original plan and the schedule was completed during the project period. All kinds of activities under the project have reached the set goal with the joint efforts and careful arrangements of all sides, timely and reasonable use of various types of funds and improvements of the financial system. The construction goal of this project is in line with the governmental industry guide direction and the requirements of laws and regulations. In the implementation of the project, a sufficient communication with UNDP was guaranteed in a smooth channel.

**Human Resource Management**

This project attached great importance to the capacity building of project participants, the perfection of management system, technology system and ladder talent system, thus the participants played a great initiative to ensure the achievement of project objectives. Through the construction of farmers’ cooperatives, the majority of farmers in the project area were effectively organized and the technological system was deepened into the cooperative to guarantee the smooth production.

**Monitoring and Evaluation**

During the execution of the project, CICETE, UNDP and Office of Poverty Alleviation and Xinjiang Xinjiang Oil Central Forestry Development Co., Ltd. held regular tripartite review and check the progress of the project and have given meaningful guidance to the construction of the project. The project implementation office reported the process and problems to exchange centre from time to time to get resource support and coordination from the exchange centre. The resources of regulatory assessments throughout the project cycle were fully in place.

**Crisis Management**

The main risk of this project comes from the influence of natural environment to raw materials. Thus technology means are used to solve the current situation of harsh natural conditions. The weather in Southern Xinjiang is dry with few rain, thus the transpiration is obvious with severe alkalized and deserted land and blowing and as well as sandstorm weather, which requires the emphasis on the basic and pioneer role of science and technology in the course of industrial development. The research outcomes were used to save water and treat alkali, sand and wind. Advanced science and technology achievements both at home and abroad were used according to local conditions to have reached the goal of controlling the risk.

Due to the growing cost of labour and land, development of biomass fuel became the bottleneck constraint to the development of biomass energy. Biomass fuel is the future raw material of environmental chemicals as well as the material basis of producing ecological civilization products. Only through mechanization with large-scale and industrialization of the raw material bases, can we completely change the passive situation of biomass energy development.

Uighur farmers in project implementation regions accounted for about 95% of all farmers, thus the national characteristics is obvious, the level of education is not balanced and there are large differences in terms of social and economical status compared with other regions. Thus we need to learn from the local folk cultures and the successful experience, sum up the scientific organization and management methods through pilot demonstration exploration to ensure the smooth implementation of the project.

It is of great importance and challenge of achieving a leapfrog development to adjust the economic development model, change economic structure, protect and construct ecological environment, make use of efficient water-saving technology and develop modern agriculture so that minority farmers can become industrial farmer workers to increase their income and solve the contradiction between the urgent requirement of social and economic rapid development and the behindhand productivity and pressured ecological environment.

**Communication and advocacy**

Through the convening of “UNDP - China Tarim Basin Biomass Energy Development Demonstration Project Cooperation Initiating Meeting” in Markit County, Kashi Prefecture, local governments has a further understanding and deepened attention of the project. The successful trial flight of the first biofuel-powered aircraft in China effectively advocated the significance and prospects of the project.

An effective project propaganda mechanism was established to make videos, print project brochures to promote information exchange and industry cooperation.

**4. Financial Management**

The construction of this project was carried out in strict accordance to the budget. Implementation payment was in place on time and expended according to the plan. The expected outcome showed up after the capital was invested. A reasonable input-output ratio was achieved.

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| Budget Table (USD) |
| **Approved Total Project Budget** | UNDP | 1,000,000 |
| Other UN Agencies |  |
| Partner Sharing |  |
| Co-sharing third party | 6,000,000 |
| **Subtotal** | 7,000,000 |
| **Estimated Commitment** | UNDP |  |
| others |  |
| **others** |  |
| **Estimated Realized Expenditure** | UNDP | 705,952 |
| Others |  |
| **Subtotal** | 705952 |

按项目活动支出的费用清单（美元）

按项目活动支出的费用清单（美元）

**Expenditure by activities**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Output** | **Activities** |  | **Cost item** | **Expenditure (USD)** |
| **Output 1** | **1.1**Establish a bioenergy farming demonstration base in the desertification area of Kashgar, Xinjiang  |  | 71205 | 70,000 |
| 72105 | 3,000,000 |
|  | 74510 | 174 |
| **Subtotal**  |  |  | 3,070,174 |
|  |  |  |
| **Output 2** | **2.1** Improve community capacity building with leading roles by enterprises and support from government. Through collaborating with academic institutions, improve the capacity building in energy crop research |  | 75700 | 2,451 |
|  |  |  |
| 2.2 Build the capacity of participating farmers; conduct relevant training on planting techniques  |  |  |  |
| **Subtotal**  |  |  | **2,451** |
| **Output 3** | 3.1 Construction of national strategic industry innovation platform, and establishment of new bioenergy industrial development mode |  | 71600 | 9,432 |
|  |  |  |
| **Subtotal** |  |  | 9,432 |
| **Output 4** | **4.1**An effective management, communication and supervision system for the demonstration project in biomass energy exploitation |  | 71305 | 31,743 |
| 71600 | 3,086 |
| 74525 | 17,125 |
| **4.2**Promotion of the experiences and knowledge derived from the bio energy development demonstration. |  |  |  |
|  |  |  |
|  | **Subtotal** |  |  | **51,954** |
| **Project Support and Management****GMS** |  | 74500 | 59,476 |
|  | 75100 |  |
|  |  |
|  | **Total** | 3,193,487 |

**5. Suggestions on Management**

1. Strengthen the protection of intellectual property rights. Introduce a legal partner in the course of the project thus legal interventions can be introduced in the early period of cooperation projects to avoid the contradictions that would influence the process of the project in the course of cooperation.
2. Carry out a broad sense of international cooperation with the impact of UNDP to extend the production organization mode of research achievements into developing countries.
3. Conduct broader international division of labour and cooperation of the whole industry chain, shorten the time of industrial development and expand the industrial layout.

**6. Attachment**