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ANNUAL PROJECT REPORT

PROJECT ID: 00077414

AWARD ID: 00061194

PROJECT TITLE: Technology transfer and market development for SHP in Tajikistan

EXECUTING AGENCY: UNDP Tajikistan

PROJECT SITE: Tajikistan

SOURCE OF FUNDS: UNDP/GEF

TOTAL BUDGET: \$ 3,330,000.00

BUDGET for the year 2012: \$ 534,761.00

Delivery 2012: \$ 475,000.00

START DATE: 1 April 2012

ESTIMATED END DATE: 31 December 2015

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1. Project Summary

The UNDP/GEF project “Technology Transfer and Market Development for Small-Hydropower in Tajikistan” (TT project) was approved on 19 January 2012 by the GEF and the project document was signed on 1 April 2012, which represents the official starting date of the project. The duration is four years with a total budget of USD 3,330,000 of which UNDP will provide USD 1,330,000. The implementing partners are the Ministry of Energy and Industry, Ministry of Economic Development and Trade of the Republic of Tajikistan, and the Closed Joint Stock Company “Barki Tojik”, the state monopolist of the electricity sector in Tajikistan.

The project TT is one of the projects within the Energy and Environment Programme that aims to initiate UNDP Tajikistan’s strategy – the scaling up of pilot activities for the acceleration of progress towards the achievement of MDGs with a particular focus on improving access to renewable energy in rural regions for the purpose of poverty reduction and triggering economic development. Its conceptualization falls within the frame of the Poverty Reduction Strategy III and National Development Strategy, which have been recognized to have focus on promoting use of abundant renewable potential for poverty reduction, development and building environmental resilience.

The project will significantly accelerate the development of small-scale hydropower (SHP) generation in Tajikistan by removing barriers through enabling legal and regulatory framework, capacity building and developing sustainable delivery models, thus substantially avoiding the use of conventional biomass and fossil fuels for power and other energy needs through the following components:

- Adapted and enhanced legislative and regulatory framework for small-scale hydropower development in the country;
- Enhanced technical and planning know-how and developed market chain for SHP in Tajikistan;
- Improved confidence on the technical and economic viability of integrated SHP-based rural development model;
- National Scaling-up Programme of Renewable Energy-based Integrated Rural Development.

It incorporates continuing activities of UNDP Renewable Energy (RES) Project that has started in 2009 and is focused on promoting integrated rural development based on energy supply from local RES sources as a driver for development.

In terms of geographic coverage the project is not limited to a specific location, but rather potential areas for expanding the use of hydropower as alternative source of energy are being explored. As the key project target is the transfer of technology to local producers to enable them produce and deliver at least 50% of equipment and services for SHP plants, construction of mHPPs will be carried out upon completion of the technology transfer process that is foreseen for 2013.

At the same time support to establishing favorable legal basis for the development of SHP will be provided through development of the regulations in support to the existing laws and putting them in practice. In this regard, key approach will be close collaboration with the Parliamentarian committee on energy, industry and communications along with the association of “Energy professionals of Tajikistan”.

Finally, to expand the project coverage and to nationalize the achievements and experience, the project will undertake scaling-up measures that include establishing a national RES and EE Trust Fund, increasing government incentives to support investments for new SHP constructions as well as documenting and disseminating lessons learned.

In couple the project aims to considerably contribute to reduction of GHG emissions that will be monitored and reported accordingly.

2. Project Context Update

Access to reliable energy continues to be one of the critical development issues facing Tajikistan. Almost every winter, as a result of Tajikistan's dependence on unreliable electricity imports, the country is faced with an energy crisis, where rural areas have access to only a few hours of electricity per day. LPG (liquefied petroleum gas) stoves and diesel generators serve the energy needs of a tiny minority of the rural rich. It is estimated that over 1 million people, out of Tajikistan's population of 7.1 million, live primarily in rural areas, and have little or no access to an adequate energy supply.

An unreliable electricity supply constrains income-generating activities and has severe environmental consequences. The situation described above has forced the rural population to at least partially substitute for the lack of access to modern electricity by exploiting alternative local energy resources for cooking, lighting, and commercial use (i.e. to meet its basic energy needs, including deriving a livelihood). These energy sources include primarily traditional biomass (fuel wood, dung, cotton-plant seeds, and shrubs) and occasionally - fossil fuels (diesel oil and coal)

From the environmental perspective, this situation has been disastrous since the unsustainable felling of highly valuable mountain forests has contributed to a loss of forest cover, biodiversity and of GHG emissions. According to recent studies in selected location 70 to 80% of the forest cover has been lost during the last 20 years mainly due to the high demand for energy . The deforestation and forest degradation has also resulted in soil erosion leading to a deterioration of natural resources and an increase in vulnerability of the rural population to natural disasters such as landslides during heavy rainfall. The situation has been worsened by the use of primitive and inefficient cook stoves with an efficiency estimated at no more than 10-30%. Moreover, the burning of fuel wood, compressed dung and, when available, hard coal in low-efficiency stoves has contributed to the deterioration of indoor air quality leading to a higher incidence of health risks. The lack of heating in social institutions such as schools and hospitals has created additional health risks for children and other vulnerable groups, especially during winter. Finally, the opportunities for the development of new sources of income (e.g. processing of agricultural products) and the improvement of living conditions have remained practically non-existent in the absence of a reliable and secure energy supply.

The socio-economic and environmental impacts described earlier are most severe for rural communities in Tajikistan, because they are already among the poorest in the world. A pre-condition for lifting these communities out of poverty is therefore the access to a reliable and secure supply of electricity. This context has been recognized by the Government of Tajikistan, which is currently addressing these issues within the framework of the national poverty reduction strategy. Moreover, the government is exerting efforts to mitigate negative local and global environmental impacts arising from the current situation. Consequently, a number of prioritized measures and projects have been proposed for implementation to promote the use of renewable sources of energy, including sustainable use of fuel wood, small-scale hydro power, biogas and solar technologies. In the past, a number of renewable energy projects have been realized in Tajikistan. However, a common feature of all these projects has been the lack a comprehensive approach to remove underlying barriers to sustainable development and utilization of renewable sources of energy. Consequently, to date none of the past initiatives have resulted in any replication on a larger scale.

Within the framework of the UNDP/GEF project, the issues related to access to energy in Tajikistan is being addressed through improving the legislative framework that promote sustainable use of renewables, increasing the knowledge and technological base for localizing production of small hydropower plants and promoting RES based integrated rural development (IRD), as well as fostering national commitment for providing incentives to support investments towards SHP development in the country.

The given report therefore reflects the activities as reflected in the AWP, carried out within the project framework in 2012 towards achieving the objectives described above.

3. Progress towards achieving project objectives

Project Goal, Output, Activity Results, Indicators	Target by the end of the project (December 2015)	Baseline Level	Targets by year	Level at 31 December of 2012
Goal: Reduction of GHG emissions from energy use by rural and remote communities	Avoided GHG emissions from rural communities' energy use by end of project (EOP), 45 ktCO2	Increased GHG emissions from use of conventional biomass and wood fuel on energy inefficient stoves and heaters	End of project implementation period	N/A
	Avoided GHG emissions from rural communities' energy use by end of project influence period, 10 years (EOPIP), 244 ktCO2	Increased GHG emissions from use of conventional biomass and wood fuel on energy inefficient stoves and heaters	10 years from the end of project period	N/A
Objective: Significantly accelerate the development of small-scale hydropower (SHP) by removing barriers through enabling legal and regulatory framework, capacity building and developing sustainable delivery models, thus substantially	10 of new small hydropower projects under implementation by EOP	Lack of SHP projects in the pipeline	By end of project	N/A
	Minimum 5 of fully operational SHPs by EOP	Lack of fully operational SHPs	By year 3 and 4	1 SHP of 200 Kw capacity is installed and is fully operational in Burunov jamoat

avoiding the use of conventional biomass and fossil fuels for power and other energy needs.	Cumulative electricity generation from newly installed SHPs by EOP, 2,430 MWh/yr	Lack of energy produced from SHP plants	By end of project	N/A
	Cumulative electricity generation from newly installed SHPs by EOPIP, 6,500 MWh/yr	Lack of energy produced from SHP plants	By end of project implementation period	N/A
Outcome 1: Adapted and enhanced legislative and regulatory framework for small-scale hydropower development in the country.	Adopted regulation operationalizing RES Law	Lack of regulations operationalizing RES Law	Rules and regulations adopted by end of Year 1	

<p>Output 1.1: Formulated, approved and enforced implementing rules and regulations (IRRs) of the new Law for RES that will facilitate actions geared towards the enhancement of the market environment for SHP</p>	<p>Simplified procedures and principles for the licensing and construction of SHP facilities</p>	<p>RES Law includes a number of provisions to facilitate investment in grid-connected RE projects, but they are not operationalized</p>	<p>Procedures adopted by end of year 1</p>	<p>The guidebook for SHP construction that contains information on the procedures for licensing and construction of SHP plants is elaborated. The book is being finalized and will be disseminated in 2013 after its adoption</p> <p>The RES law has a provision of connecting SHP plants to the national grid and selling the electricity to Barki Tojik, but the law is not operationalized. UNDP through its partners is now creating the incentives for operationalizing the law through facilitating the PPA signing process by applying the law provisions.</p>
	<p>National RE/EE Fund</p>	<p>Lack of Government incentives to support investments for development of SHP</p>	<p>National RE/EE Fund set-up and is operational by end of Year 2</p>	<p>Establishment of the National Trust Fund is continued. The draft law on "energy efficiency and energy saving" that includes a provision on the establishment of the National trust fund is submitted to the government for comments. During the parliamentary hearings devoted to energy issues on 25 December 2012, the importance of the Trust Fund was highlighted during the speeches of Mr. Shodi Shabdolov, the deputy head of the parliamentary committee on energy, construction, communication and industry, and Mr. Shearli Gul, minister of energy and industry.</p>

Output 1.2: Central and local government institutions with enhanced capacities to develop and coordinate SHP projects.	30 staff members from relevant central and local government institutions trained in developing and coordinating SHP projects	Weak capacity of the staff members from relevant central and local government institutions in developing and coordinating SHP projects;	30 staff members trained by the end of Year 2	Target for 2013
Outcome 2: Enhanced technical and planning know-how and developed market chain for SHP in Tajikistan	50 % of the total SHP installed cost provided by locally made goods and services	Estimated total SHP installed cost provided by locally made goods and services is 5-10 %	50% by the end of Year 4	
Output 2.1: Guidebook on technical and policy aspects of SHP project development (to be used in all trainings to be delivered by the project)	Guidebook on SHP project development	Lack of a unified Guidebook for SHP project development	Guidebook on SHP project development prepared and disseminated by year 1	Guidebook is developed.

Output 2.2: Local workshops and manufacturers with enhanced capacities to install, construct, manufacture and repair SHP system equipment and components	Technology transfer and capacity development plan prepared for selected local manufacturers	Weak capacity of local manufacturers in producing equipment and goods for SHP	2 technology transfer and capacity development plan prepared by the end of Year 1	Technology transfer process is launched. International mechanical and electric engineering consultant is engaged. Two national manufacturing companies, CJSC "Energoremont" and SUE "Tajiktekstilماش" are identified to be the recipients of the technology transfer that includes needs identification, capacity building, delivery of equipment required to increase and improve the production capacities for producing and servicing SHP tools and equipment.
Output 2.3: Vocational training program for technicians involved in SHP design/construction and O&M	20 technicians annually undertaking vocational training on SHP	No vocational training on SHP and lack of facilities to provide trainings	20 technicians annually undertaking vocational training on SHP starting from Year 2	The training module on SHP design, construction and O&M being developed in partnership with the Association of energy professionals of Tajikistan.
Output 2.4: Local manufacturers capable of producing combined electric and biomass-fired heating and cooking devices for rural households	1 local craft workshops capable of manufacturing and assemblage of simple, efficient and low-cost electric heating and cooking devices	Lack of local workshops capable of manufacturing and assembling simple, efficient and low-cost electric heating and cooking devices	At least 1 local craft workshop by the end of year 3	As part of the technology transfer process the selected national manufacturing companies will receive technologies for production of biomass-fired heating and cooking devices.

Outcome 3: Improved confidence on the technical and economic viability of integrated SHP-based rural development model	5 SHP demos/pilots incorporating aspects of productive uses and livelihood support for host communities	Lack of sustainably operating SHP plants for improved livelihoods support	At least 5 community-owned SHP projects operate on a sustainable basis and at least 5 additional are under construction by the end of Year 4	
Output 3.1: Technical studies, political commitments and institutional framework secured for pilot SHP projects	10 Feasibility studies	Lack of feasibility studies and engineering designs ready for funding	FS for 2 sites by end of Year 1, 3 sites - by end of Year 2, 5 sites - by end of Year 3	16 prefeasibility studies were conducted and 6 recommended for full scale feasibility studies.
	5 integrated district development plans (IDDPs)	Lack of integrated district development plans	IDDP for 2 districts by end of Year 2, 3 districts - by end of Year 3	Target for 2013
	5 SHP projects in the pipe-line	Lack of SHP projects in the pipeline	At least 5 further SHP projects identified and construction started (without direct project support)	N/A
Output 3.2: Operational SHP demos/pilots in selected communities , demonstrating the viability of the technology and O&M&M models	5 operational demo/pilot SHP plants	Lack of operational pilot SHP plants	5 operational SHP plants by EOP	1 SHP plant in Burunov jamoat constructed and is operational

Output 3.3: Pilot SHP operations sustained	2 PPAs signed for purchase of power from pilot SHP plants	Lack of power purchase agreements signed that allow buying off excess electricity from individual power producers	At least 2 by the end of Year 3	The process of PPA signing between LLC "Dehoti Obod", the SHP "Nurofar" operator, and Barki Tojik is on-going. During the reporting period, the purchasing price of 12,78 dirams was calculated and approved by the antimonopoly committee.
	5 local businesses supported in pilot localities	Lack of business and entrepreneurship development in rural areas due to lack of access to energy	5 by the end of Year 4	N/A
Outcome 4: National Scaling-up Programme of Renewable Energy-based Integrated Rural Development	Adopted and financed National Scaling-up Program	Lack of adopted and financed National Scaling-Up programme for Renewable Energy-based integrated rural development	Adopted and financed National Scaling-up Program by end of year 4	
Output 4.1: Project results assessed, analyzed and compiled into comprehensive national report	Project results and Lessons learnt report prepared and disseminated	Lack of lessons learned on the renewable energy based integrated rural development	Project results and Lessons learnt report by end of year 4	Lessons are being collected and recorded
Output 4.2: Conference on integrated renewable-energy based rural development organized	Conference on integrated renewable-energy based rural development organized	No events at the national level to promote renewable energy based integrated rural development	Conference on integrated renewable-energy based rural development organized by the end of year 4	N/A

<p>Output 4.3 Approved and funded proposal for national scaling up of the SHP demos/pilots</p>	<p>Annual amount of governmental incentives allocated to support investment in new SHP plants under the scale-up plan, US\$ 3,500,000</p>	<p>Lack of Government incentives to support investments for development of SHP</p>	<p>By end of project period</p>	<p>The government investments towards the SHP plants development are not transparent. There is lack of direct government investments, but rather investments of international organizations and private sector is considered. In the coming years, UNDP will assess the total volume of the investments made by the private and international organizations' investments towards construction of SHPs.</p>
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4. Progress in Project implementation

1. Output Level:

It is too early to assess the results at the Output level given that the project was launched in 2012 and the year was remarkable in developing the roadmap to proceed in the project years to come. The project inception was carried out in 2012 that has helped the project team revising and adjusting the targets.

However, a number of targets were achieved at the activities level that will contribute to the achievement of the Output.

2. Activity Result Level:

Activity 1: Adapted and enhanced legislative and regulatory framework for small-scale hydropower development in the country.

In 2012 UNDP continued supporting the Government efforts in creating an enabling environment and improving market conditions for development of renewable energy. Specifically, through the Technology Transfer project support was provided to implementation of the law on the “Use of Renewable Energy Sources” on the basis of the IRD model implemented in Burunov jamoat of Vahdat district, where the concept of mini hydro power plant providing electricity to social and economic infrastructure is put at the core of socio-economic development in the area. Sustainable operation of the mini hydro, as the studies have demonstrated, depends on proper maintenance and operation scheme in place and continuous demand for electricity from the plant year-round. With this in mind a local liability company (LLC) “Dehoti Obod” was established that was capacitated to provide full maintenance and operation of the mini hydropower plant. The LLC being a legal company, registered according to the national laws, is mandated to collect fees, maintain and operate the power plant, make agreements with private and public entities on selling electricity. Referring to the law on the “Use of RES”, UNDP facilitated the process of power purchase agreement (PPA) signing between “Barki Tojik” and the “Dehoti Obod” LLC in December 2012 that legally binds “Barki Tojik” to buy energy from the LLC in the summer time when there is surplus of energy in the country, thereby ensuring uninterrupted operation of the mini hydro.

Furthermore, RES and EE National Trust Fund establishment is on the top of the national and UNDP agendas. The preceding years UNDP had advocated the establishment of the National Trust Fund and this campaign was continued in 2012. During the parliamentary hearings on the 25 December 2012, the Minister of Energy and Industry and the chairperson of the parliamentarian committee on energy, industry, construction and communications have brought up the issue of the establishment of the National Trust Fund underlying its importance in the development of the RES in the country. The new draft of the law on “Energy saving and energy efficiency” that will incorporate the chapter on the RES and EE National Trust Fund is developed by the parliamentary working group supported by UNDP. The law is being discussed by the parliamentarians and to be presented to the higher chamber of the parliament for adoption in late February or early March 2013.

Finally, UNDP consolidated and got endorsement of the three strategic documents by the Ministry of Energy and Industry: “Energy efficiency master plan”; “Intermediate strategy for the use of RES”; and “National programme for RES based IRD”. These documents were developed by the team of UNDP specialists based on the analysis carried out in the country in 2011.

Activity 2: Enhanced technical and planning know-how and developed market chain for SHP.

Taking into account that there is lack of unified approach in development of SHP projects, UNDP initiated preparation of the guidebook that unifies the legal, social and economic aspects of development of SHPs in Tajikistan. The draft of the guidebook is ready and is being reviewed by the international mechanical and

electrical engineering consultant who will incorporate the technical specifications for construction of SHP plants adapted to the peculiarities of rural communities in Tajikistan.

In view of limited capacity of local manufacturers in producing equipment and spare parts for small hydropower plants in the country and underdeveloped market for SHP, the project's key target is to create such capacity locally. During the reporting period, two local companies were selected on competitive basis through the expression of interest. The technical capacities of the companies were assessed by the international consultant and the UNDP project team that has revealed a number of needs to be addressed through the technology transfer process. The identified needs suggest that minimal contribution to the equipment and machinery bases for both companies is required, while more inputs to the skills and competence of the personnel, as well as to improving design and manufacturing capacities are required. The process of the technology transfer will mainly be implemented in 2013 by a competent international company selected on competitive basis. The scope of work and the terms of reference defining the competence milestones are being developed.

Also, UNDP is advocating for introducing an education module on Small hydropower plants to the curriculum of the technical universities in Tajikistan. Considering the lack of specialists in the area of small hydropower, introducing the module on SHP to the education system would address multiple issues that country is facing with the SHP construction. First and utmost, it will increase the number of specialists in the area of SHP development and minimize the issues of construction of unreliable SHP plants.

Activity 3: Improved confidence on the technical and economic viability of integrated SHP-based rural development model

The pilot IRD model implemented in the Burunov Jamoat of Vahdat city since 2009, where the rehabilitated mHPP serves as a driver for local socio-economic development, has provided a good grounds for testing the legislative barriers that hamper development.

Since 2009 to date the the mHPP "Nurofar" with 200 kW power output capacity was rehabilitated. A power grid from the mHPP was stretched out to 100 households, hospital, school, kindergarten, water intake and small dairy workshop. Through the UNDP direct funds the hospital was rehabilitated using the energy efficiency technologies and a dairy modular workshop was established.

During the reporting period rehabilitation of the nursery department of a kindergarten and a school using the energy efficiency technologies in B. Burunov jamoat was initiated. Since both, the kindergarten and school are connected to the grid from the mHPP Nurofar, the energy efficient rehabilitation is expected to reduce energy use for heating purposes.

According to the lessons learnt, sustainability of the IRD model is just as much dependent on the ownership, proper administration and maintenance and operation of the small hydropower plant. The Jamoat administration of Burunov jamoat, the owner of the mHPP "Nurofar", established a LLC "Dehoti Obod" to provide communal services in the jamoat and to administer, operate and maintain the mHPP. UNDP supported in building the capacity of the LLC to carry out their mandated duties through organizing series of technical trainings on mHPP maintenance and operation, as well as management trainings on tariff setting, fee collection, bookkeeping, etc. A computer set including furniture for the LLC office was also provided.

Another sustainability factor is uninterrupted operation of the mHPP throughout the year, which is a critical issue in view of absence of customers in the summer period. During the summer when electricity production is abundant in Tajikistan, the need for small hydropower dramatically drops and population tends to switch to the centralized electricity system. Lack of demand for power from mHPP forces the operator to stop power generation due to lack of fee collection and dismiss its staff due to lack of affordability to pay salaries. In such case, due to inconsistent income the staff morale is low and risk of turn-over is high, meaning that the new staffs needs to be trained over again leading to excess expenditures for staff capacity building. Obviously the list of problems with lack of operation in the summer time can go on and if appropriate measures are not taken, the investments in SHP development would be less attractive.

One of the solutions to the issue is seen in achieving an agreement with "Barki Tojik" on procuring the excess energy produced by the mHPP during the summer, as this will ensure consistent income for the mHPP and the electricity will be sold to the consumers at the rates defined by the state. At the legislative level this mechanism

is proposed and adopted in the law on “Energy Efficiency”, however, its implementation is still delayed. UNDP within the project is therefore facilitating the implementation of the law through arranging PPA signing between the Barki Tojik and the independent power producer in Burunov jamoat.

To increase community involvement in the IRD process through support to the operations of LLC “Dehoti Obod” and raising awareness of the population on energy efficiency, and to mobilize the community for socially meaningful activities, the Jamoat Resource Centre “Burunov” (JRC) was revitalized. The JRC also owns a dairy shop that was established in Burunov jamoat as part of the IRD model and ensures its functionality through leasing it to a private entrepreneur thus fostering local production.

Finally, micro-loans for the population of Burunov jamoat amounting US\$ 30,000 were made available through MLF “Imdodi Rushd”. The loans are mainly made available for energy efficient projects, agriculture and business development.

Activity 4: National Scaling-up Programme of Renewable Energy-based Integrated Rural Development in supporting socio-economic development.

The national scaling-up will be pursued throughout the project implementation. The critical output of this activity is to set up the National RES and EE Trust Fund. The process for establishment of the Trust Fund has begun and is being brought up to the attention of the key government stakeholders.

The achievement of the target under this activity is planned for year four of the project, hence all sub-activities related to this output will be reported based on the progress made that will start from 2013.

5. Budget

The detailed budget breakdown and expenditures for 2012 are attached.

[Financial report 2012.xls](#)

TOTAL POs IN 2012 - USD 476,937.30

ACTUAL EXPENDITURE IN 2012 – USD 402,126.59

UNDP TRAC – USD 397,339.23

GEF – USD 4,787.36

6. Risks

Risk	Risk Rating	Management response
Widespread poverty and lack of sustainable source of income resulting in low ability to pay for energy supply services	Moderate	<ul style="list-style-type: none"> - UNDP co-financed activities (see Output 3.4) supporting establishment of income-generating businesses in the areas where pilot projects are located in order to ensure solid client base for pilot SHPs and maximize consumers' ability to pay - Grant funding to co-finance the implementation of SHP pilot project was provided;
Investors (community-owned, public or private sector) do not get sufficient return on investments, while Government support is not forthcoming	Moderate	<ul style="list-style-type: none"> - Micro-loan activity in support of income generating activities and energy efficiency measures were made available to the population of the pilot project area.
Slower than expected implementation of the pilot SHP projects	Moderate	<ul style="list-style-type: none"> - Suitable experts for design of the pilot project were engaged. - Prefeasibility studies on 16 new locations based on the list of potential SHP areas provided by the Ministry of Energy and Industry were conducted. 6 areas from the list were identified as suitable for further feasibility studies.
Slower than expected development of a national market for SHP systems and thus higher than expected costs of such systems	Substantial	<ul style="list-style-type: none"> - Capacity building and technical assistance to facilitate development of supply chains (all activities under Component 2, the key component of this project, are designed to mitigate this risk)
Slower than expected improvement of the institutional framework for SHP development	Low	<ul style="list-style-type: none"> - The project team closely coordinates with relevant Government institutions supporting timely implementation of the commitments – adoption of the law on “Energy efficiency and energy saving”. - Activities on the establishment of the RES and EE Trust Fund are carried out and support to the Government for accelerating its establishment is provided.
Insufficient quality of locally produced equipment leading to early break-down of the renewable energy systems and dwindling consumer confidence in the technology	Moderate	<ul style="list-style-type: none"> - Local companies that are able to produce spare parts and equipment for SHP were identified and their needs assessed. The next step is to provide capacity building and technical assistance to these companies to facilitate development of supply chains.
Lack of interest in renewable energy systems on the part of local stakeholders (communities, beneficiaries) due to perceived inferiority compared to grid supply	Low	<ul style="list-style-type: none"> - Awareness of the population on the benefits of the renewable energy systems in pilot project areas is increased and the viability of the systems in view of proper management mechanisms in place is demonstrated.

7. Project Management/Implementation

Inception phase:

During the reporting period the project inception phase marks the launch of the implementation of the UNDP/GEF project “Technology transfer and market development for SHP in Tajikistan”. It was led by UNDP in consultation with the Ministry of Energy and Industry, the project Chief Technical Advisor and other partners that allowed elaborating joint approaches, refine implementation strategies in each project component, clearly define roles and coordinate implementation plans.

The inception phase was conducted to kick-start the project including an inception workshop held on 26 September, 2012. The main focus of this phase was to:

- Review the project strategy with the project implementation team and key stakeholders;
- Review the implementation partners and co-financers involvement in project implementation;
- Review its performance measurement;
- Review its risks and assumptions;
- Draft the M&E Framework for the project to be submitted to the PSC for approval;
- Identify key methodological elements for the implementation of the project;
- Identify thematic areas (work packages) to be implemented in 2012 and onwards;
- Organize an inception workshop with key stakeholders.

The inception phase has allowed revising the project targets and adjusting them to the realities on the ground thereby providing a realistic approach for achieving the project goal.

Management arrangements and staffing:

In accordance with the project document a Project Manager (PM) for the project was selected on competitive basis. In accordance with the Terms of Reference the PM provides day-to-day input in the project implementation and is responsible for the project coordination and implementation vis-à-vis project partners and stakeholders. Amongst his direct responsibilities are also consolidation of work plans, preparation of reports, coordination and supervision of project support staff and experts.

Also, an international Chief Technical Advisor (CTA) was selected to provide expert advisory services and technical support to the PM and other project experts. The position is part time, so the CTA provides his inputs in distance with limited number of visits to Tajikistan. Communication with the CTA is maintained by phone and e-mail.

In addition a project energy expert and a hydraulic engineer were hired. The existing Energy and Environment Programme support team, like administrative/finance associate, programme assistant and drivers, provide support to the TT team on regular basis.

International Mechanical and Electrical engineering expert was selected to consult the national team and the project beneficiaries on the best technological solutions for the technology transfer. Also, to support the international mechanical and electrical engineering expert, a national electrical engineer was hired who is based in Tajikistan and renders relevant support to the project in Technology transfer.

8. Challenges/Lessons learned

The greatest challenge for the project is the provision of the technology transfer to the selected manufacturers. In view of limited international market/companies interested in sharing their technologies, the challenge that is foreseen is finding a competent company through open competitive bidding process. The possibility of a consortium of companies to provide the technology transfer is also considered.

Another challenge is the establishment of the national RES and EE trust fund. Currently, the team of experts jointly with the parliamentary committee on energy, communication, construction and industry are facilitating the process of establishing the fund; however, its adoption and further promotion depends on the Parliament and President. UNDP is facilitating the process and will involve senior management in the process as required to bring the matter to the presidential level.

Also, it is learnt that the construction of pilot SHPs will not be possible until the technology transfer process is completed, so there is an issue of the funds relocation and budget revision to proceeding years.

Finally, the IRD model implemented and tested in the Burunov jamoat demonstrates its viability. It is learnt that for the IRD model to be effectively running the ownership needs to be in place from the very beginning of the project implementation. The jamoat administration that is the owner of the constructed mHPP Nurofar, requires technical support to operate and maintain the mHPP. With this in view a LLC “Dehoti Obod” was established to operate and maintain the mHPP and has demonstrated to be a good approach in ensuring sustainability of the IRD model.

9. Plans for 2013

Planned Budget: \$1 423 577.10

Targets:

- Simplified procedures and principles for the licensing and construction of SHP facilities adopted by relevant government structures;
- National RE/EE Fund set-up;
- At least 30 staff members from relevant central and local government institutions trained in different aspects of developing and coordinating SHP projects.
- Guidebook on SHP project development prepared and disseminated;
- Capacity of 2 local manufacturers increased and technology transferred. Companies are able to produce equipment for SHP
- Introduced modules for vocational trainings in the TTU and Kurgan-Tyube energy institute.
- At least 1 SHP is constructed/upgraded;
- Feasibility studies prepared for 3 sites;
- At least 1 IDDPs developed in 1 district;
- At least 5 further SHP projects identified;
- At least 1 PPA signed for purchase of power from pilot SHP plant;
- Project results and lessons learnt report prepared
- GHG emissions calculation methodology is elaborated and monitoring system for GHG emissions reduction is in place and data collected;
- Governmental incentives allocated to support investment in new SHP plants under the scale-up plan.

Planned Actions:

Activity Result 1: Adapted and enhanced legislative and regulatory framework for small-scale hydropower development in the country.

- 1.1 Formulated, approved and enforced Implementing Rules and Regulations (IRRs) of the Law for RES that will facilitate actions geared towards the enhancement of the market environment for SHP
 - Reviewing the existing procedures for SHP licensing and construction, their analysis and development of actions towards simplifying the procedures.
 - Facilitating enforcement of technical regulation to enable connection of SHP plants to the electric power grid with all relevant technical conditions for their integration in the electric power system
 - Facilitating the adoption of the law on “Energy Efficiency and Energy Saving” and other regulations in support to the law on RES through rendering support to the Parliamentarian Committee on Energy and working groups;
 - Continued advocacy on establishment of a dedicated National Fund for RES and EE.
 - Support in the development of standard methodology for economic-financial evaluation of SHPs and tariffs to be paid to IPPs and charged to consumers by IPP; as well as a standard PPA format/template.
- 1.2 Institutional capacities in place at central and local level to implement and coordinate RES policies.
 - Needs identification of the central and local government officials in implementation of the RES policy.
 - Development of the training programme for central and local government officials on RES policy implementation

Activity Result 2: Enhanced technical and planning know-how and developed market chain for SHP.

- 2.1 Guidebook on technical and policy aspects of SHP project development (to be used in all trainings to be delivered by the project)
- Preparing, disseminating a Guidebook on SHP project development summarizing regulatory framework, and providing guidelines, methodologies and description of recommended standardized technical solutions (i.e. 3 designs of common SHPs in the rated capacities range of 33 - 500 kW adopted based on available international standards and designs for application in Tajik rural communities)
 - Getting the endorsement of the Ministry of Energy and Industry for the use and dissemination of the Guidebook.
- 2.2 Local workshops and manufacturers with enhanced capacities to install, construct, manufacture and repair SHP system equipment and components
- On-the-job capacity building program for selected manufacturers to be delivered by international SHP design/manufacturing company and include: joint SHP design, construction and O&M for pilot projects (under Component 3), quality assurance, personnel training, other business and technical advisory services
 - Improving the technological base of the selected companies via provision of required soft- and hard-ware (on cost-sharing basis)
- 2.3 Vocational training program for technicians involved in SHP design/construction and O&M
- Introducing in partnerships with TTU and Kurgan-Tyube institute vocational trainings for SHP specialists on design, construction and O&M.

Activity Result 3: Demonstrated technical and economic viability of SHP technology in supporting socio-economic development.

- 3.1 Technical studies, political commitments and institutional framework secured for pilot SHP projects
- Conducting pre-feasibility studies on at least 10 new sites (that includes cost-effectiveness, disaster risks, hydrology, etc.).
 - Conducting of feasibility analyses of at least three potential SHP sites
 - Preparing and/or updating of district development plans in pilot communities to a) prioritize investment in SHP as a viable alternative to centralized power provision and b) link local development with sustainable power supply in Sughd, Khatlon and DDR.
 - Raising awareness including trainings of local beneficiaries in selected localities on RE applications (SHP) and EE (e.g., efficient use of lighting, heating and proper building insulation) covering the population of target districts. Developing and adapting at least 5 types of brochures and information materials on RE and EE.
 - Updating of engineering design and securing required permissions and approvals for at least 2 SHP site.
 - Supporting identification and preparation of additional 2 SHP projects (site identification, community mobilization, technical feasibility, permissions and approvals, quality assurance, etc.)
- 3.2 Operational SHP demos/pilots in selected communities, demonstrating the viability of the technology and O&M&M models
- Starting the construction/upgrade/installation of at least 1 SHP pilot.
 - Operation and maintenance of SHP pilots (via on-the job training for SHP staff) and monitoring of SHPs operational performance in Burunov and Yazghulam

- Constructing the sHPP for the border outpost in Dashti-Yazghulam

3.3 Pilot SHP operations sustained

- Facilitating signature of Power Purchase Agreement with Barqi Tajik and local consumers in Burunov jamoat.
- Providing grants and micro-loans to support creation of income-generating activities and energy efficiency measures in local SMEs and public buildings to minimize their power demand in Burunov jamoat.

Activity Result 4: National Scaling-up Programme of Renewable Energy-based Integrated Rural Development in supporting socio-economic development.

4.2 Project results assessed, analysed and compiled into comprehensive national report

- Preparing a knowledge product on the IRD model in Burunov and presenting it to the national stakeholders and partners;
- Developing and approving the GHG emissions reduction calculation methodology and putting the monitoring system in place.
- Collecting data on the GHG emissions reduction and compiling reports.

4.3 National Scaling-up Action plan adopted

- Facilitating the implementation of National Scaling-Up action plan with specific activities and budget to be supported by National Trust Fund.
- Conducting initial discussion on funding the SHP development programme and baselines identified and placed.
- Developing and approving the templates for monitoring allocated funds in support to the investment in new SHP plants under the scaling-up plan.
- Collecting data on the allocated funds in support to the investment in new SHP plants.