Annual Project Progress Report

Project title:	**Energy Efficiency and Renewable Energy for Sustainable Water Management in Turkmenistan**
Award ID:	**00080840**
Project ID:	**00090400**
Implementing partner:	**Ministry of Agriculture and Water Economy of Turkmenistan**
Period covered in this report:	**January – December 2018**
Date of last Annual Report:	**19 January 2018**
Date of the last Project Board meeting:	**13 February 2018**
Date of last Quality Assurance and rating:	**16 March 2018. Overall Project Rating: Satisfactory**

1.Project Performance

a) Please state the expected Output of the Project, set indicators and corresponding CP Outcome (as per project document/AWP):

COMPONENT 1: Technology transfer and knowledge development in support of innovation in EE water management and SLM in agriculture

OUTPUT 1.1: Technology proving site and educational platform for low-water irrigation and SLM in agricultural croplands developed and implemented

Output indicators 1.1.

- Reduction of water used for specific soil types
- Normalised energy consumption reduced compared with average values for similar soil types
- Area of land protected or reclaimed from salinisation as a result of demonstration projects

Output targets 1.1.

- Demonstration project achieves comparable yields with 40-50 percent less irrigation water consumption than specified by norms.

a) Were the indicators and output achieved? Yes ■ No ☐ Partially ☐

b) If no or partially, please explain why?

Initial year of cultivation demonstrated good yield and water consumption figures. Results vary by crop types and low-water irrigation types. Crops harvested with sprinkler irrigation consumed in average around 35% less water than specified by norms while gave about 32% more yield. Drip irrigation results are even better with nearly 40% less water than specified by norms while around 54% more yield than with traditional furrow irrigation.

- Normalized energy consumption reduced by 30 percent relative to similar sites.

a) Were the indicators and output achieved? Yes ■ No ☐ Partially ☐

b) If no or partially, please explain why?

Based on the calculations of International GHG emissions reduction expert, application of low-water irrigation systems reduced by 30 percent normalized energy consumption at Geokdepe research site relative to similar sites with traditional type of irrigation and infrastructure.

- 300 ha of land protected or reclaimed from salinisation as a result of demonstration projects

a) Were the indicators and output achieved? Yes ☐ No ☐ Partially ■

b) If no or partially, please explain why?

Based on the collected soil samples, Geokdepe site soils are classified from slightly and moderately saline (about 5%) to strongly and very strongly saline (remaining 95%). The project took certain measures to combat salinization at Geokdepe 145 ha plot through improvements in drainage canals in 2016, construction of piped irrigation network in 2017, construction of low-water irrigation systems and planting some crops irrigated with efficient irrigation technologies in 2018. The project experts also provide advisory support and trainings to local farmers working at research site and other neighbouring farms on efficient water use and SLM techniques. All these activities will contribute to remediation of lands from salinization. Land rehabilitation and salinity reduction process normally takes several years, so project will be monitoring salinity level throughout the project lifetime.

OUTPUT 1.2: Audits and servicing of pumps of various sizes in both interdistrict water networks and on farms in all velayats of Turkmenistan

Output indicator 1.2. Number of pump audits completed by project (total and diesel pumps) and energy saving achieved by replacement and/or fixing of old pumps

Output targets 1.2:

- At least 100 pump audits completed by project, including audits of 25 diesel pumps

a) Were the indicators and output achieved? Yes ■ No☐ Partially ☐

b) If no or partially, please explain why?

Project experts in close coordination with and assistance of Ministry of Agriculture and Water Economy conducted audit of efficiency and energy consumption of 121 pumps including 46 diesel pumps in 2017. International experts estimated old pumps to be around 30-35% less efficient compared to the nominal design efficiencies.

- 20 percent energy saving achieved by replacement and/or fixing of old pumps

a) Were the indicators and output achieved? Yes ☐ No☐ Partially ■

b) If no or partially, please explain why?

Based on the recommendations of international consultants on energy audit of pumps and in consultation with key national partner, the project will replace 5 physically worn and technologically obsolete pumps by brand new energy efficient ones in 2019. Substituted pumps will go through audit to identify direct energy savings and prepare recommendations for the government for replication via state or private

investments. Based on the average energy specifications of baseline pump-sets (about 100 kW) and new pumps (45 kW), it is expected to achieve approx. 50% energy saving.

OUTPUT 1.3: Renewable-energy applications of water pumping and purification in remote pasture areas

Output indicator 1.3. Number of people directly benefiting from measures on renewable-energy water supply in remote locations

Output target 1.3.: 1100 people directly benefiting from measures on renewable-energy water supply in remote locations

a) Were the indicators and output achieved? Yes ☐ No ☐ Partially ■

b) If no or partially, please explain why?

Project team visited several remote pasture areas in Karakum desert to select the most suitable beneficiaries for installation of renewable-energy applications of water pumping and purification. In 2018 project team collected technical data for tender document and International Expert on Renewables validated technical specifications. The tender is ready now for announcement. Renewable-energy project is expected to be completed by mid-2019.

COMPONENT 2: Scaling-up investment in improved water management infrastructure to reduce water losses, energy use, and land degradation

OUTPUT 2.1: Installation of pipeline and/or channel lining for municipal water supply in Kaakhka, replacing unlined channels and wells, with documentation of results and presentation of recommendations and cost analysis for replication

Output indicators 2.1.

- Reduction in water loss between withdrawal and entrance point of the Kaakhka town Water Treatment facility
- Direct energy savings due to decommissioning of up to 41 wells
- Number of similar projects initiated in in other similar (or mountainous areas) districts of Akhal and Balkan velayats of Turkmenistan

Output targets 2.1.

- Less than 5 percent of water is lost between withdrawal and end use in Kaakhka.

a) Were the indicators and output achieved? Yes ■ No☐ Partially ☐

15km long water supply pipeline for the Kaahkha district successfully launched in 2018. It practically eliminated water loss between withdrawal and water treatment facilities.

- Water supply reliability is increased, while 41 wells can be decommissioned. Direct energy savings of 486 MWh per year, and reduction of associated GHG emissions by 240 tonnes.

a) Were the indicators and output achieved? Yes ■ No☐ Partially ☐

Recently built Kaahka water pipeline has several advantages as noted by local authorities attended round table meeting in November 2018 including (i) substantially increased reliability of water supply as previously earthen river course was frequently damaged by mudflows which often happen in

mountainous regions, (ii) larger volumes of high quality "healthier" water of mountainous river as compared to underground water previously pumped from boreholes and (iii) due to water saving effect more water can be used for irrigation agriculture (mainly winter grain crops) and benefit local farmers.

As initial operation of the new gravity-driven water supply system since start of operation in April 2018 has shown, decommissioning of the entire set of 41 well pumps, that had been supplying the town with water, is not possible due to variable water availability in the river that the new system draws water from. During low-water levels in the river, part of the well pumps must to be kept running to ensure that the town gets sufficient water.

Original target set for this activity in the approved project document was 11,250 tCO2, which was to be generated through complete decommissioning of 41 electric pumps with average rated capacity of 1.5 kW during the project lifetime. Since the actual average capacity of the well pumps appears to be substantially larger (9.5 kW) and with just a few pumps remaining in operation on average across the year, the resulting estimated GHG mitigation impact appears to be larger than the originally targeted in the project document. Thus, based on the calculations of International Expert on GHG emission reduction, Kaahka water pipeline result in annual energy savings of about 1000 MWh, and reduction of associated GHG emissions by 785 tCO2/year.

- At least 1 similar project initiated in other similar (or mountainous areas) districts of Akhal and Balkan velayats of Turkmenistan.

a) Were the indicators and output achieved? Yes ☐ No☐ Partially ■

b) If no or partially, please explain why?

Preliminary estimates display up to 50% of water economy, with lifetime direct GHG emission reductions from operation of the combined water supply system in Kaakhka town are anticipated at 15,694 tCO2. Given its high replication potential in the country, a dialogue with the government is now underway to upscale this water-energy nexus effect.

OUTPUT 2.2: Lining of interdistrict canals for reduction of water losses and land salinization, including various technologies

Output indicator 2.2.

- Number of production lines established (from at least 3 potential options) to produce materials for modern canal linings and pipes
- Kilometres of canals newly lined

Output target 2.2:

- Testing of at least three types of materials for canal linings and pipes. Initiation of mass production of new materials and/or cost reduction by 20 percent of mass-producing existing materials, involving at least two types of products.
- Domestic production and installation expanded by 50 percent for at least two types of technologies for canal linings, pipelines, or other materials to reduce losses of water in transit. New lining of at least 400 km of canals. Reduction of water losses from newly lined canals by more than 50 percent.

a) Were the indicators and output achieved? Yes ☐ No ■ Partially ☐

b) If no or partially, please explain why?

National and International Experts in Irrigation Canals are on board, so starting from early 2019 they will be actively engaged in activities on testing various canal lining materials and preparation of recommendations on industrial production of at least two types of products.

<u>COMPONENT 3:</u> Planning and capacity-building at the regional and local levels, plus evaluation and compilation of lessons learned

OUTPUT 3.1: Technology Action Plans, including consideration of SLM, developed and implemented at the regional and local levels

Output indicators 3.1. Number of regional Integrated Water Distribution Plans developed and formally submitted for approval

Output targets 3.1. At least 3 velayat Integrated Water Distribution Plans developed and submitted for approval, recommendations are developed for other 2 velayats (Lebap and Balkan)

a) Were the indicators and output achieved? Yes ☐ No ☐ Partially ■

b) If no or partially, please explain why?

In 2018 the project developed methodology on development of inter-farm water use plans. The project plans to test the methodology on the farms of selected private farmers. The outcome of these activities will be used for further works on development of integrated regional sustainable water management plans with consideration of SLM at the level of etraps (districts). Furthermore, initial results of low-water irrigation demonstrations complemented with land management techniques at Geokdepe green polygon can serve as foundation for development of Water Distribution Plans with proven water and land management practices.

OUTPUT 3.2: Education and direct training provided to water-management system designers, local water management staff and farmers in all regions of Turkmenistan on pump maintenance, irrigation, and other aspects of efficient water management and SLM

Output indicators 3.2.

- Key stakeholders/institutions with relevant mandates involved trained jointly by the MAWE/Project
- 90% positive feedback from training participants

Output target 3.2. Expanded training delivered annually in all five velayats on integrated water management, to a total of 100 specialists and 300 farmers by the end of the project period

a) Were the indicators and output achieved? Yes ■ No ☐ Partially ☐

b) If no or partially, please explain why?

Nearly 150 national specialists representing Ministry of Agriculture and Water, Water Design Institute, Ministry of Nature Protection and farmers have been trained locally and abroad since the beginning of the project in various topics related to rational water management, energy efficient irrigation techniques, pump maintenance and SLM. Positive feedback rate from training participants is around 92%. Series of local and international trainings focused on low-water irrigation technologies, energy efficient pump operation, canal seepage control and various aspects of SLM will be arranged in 2019 for nearly 100 national experts and farmers and project staff.

OUTPUT 3.3: Project evaluation and compilation of lessons learned
No indicators and targets are specified in RRF for the Output 3.3 in the project document.

a) Were the indicators and output achieved? Yes ☐ No☐ Partially ■

b) If no or partially, please explain why?

Mid-Term evaluation took place in mid-2018. The project progress was recognized and delays in project realization were noted with useful recommendations on further project implementation.

The project experts carry out site-specific technical evaluations of energy savings, water savings and land melioration under specific outputs. The project also conducts regular evaluation of GHG emission reduction from the pilot projects. GHG impact will be estimated and reported accordingly.

Lessons learned are continuosly documented by project experts and discussed at meetings with project stakeholders.

<u>COMPONENT 4:</u> National policy and regulatory framework established for integrated water resource management

OUTPUT 4.1: Standards and regulations for pump performance and maintenance adopted and enforced
Output indicator 4.1: Number of regulations, norms, and/or standards developed and adopted in support of the new Water Code

Output target 4.1: At least 3 acts related to pump audits, crop-specific irrigation norms, and water/energy saving practices (incl. irrigation infrastructure) to lead to GHG emission reduction developed and adopted in support of the new Water Code.

a) Were the indicators and output achieved? Yes ☐ No☐ Partially ■

b) If no or partially, please explain why?

Based on detailed inventory of legislation, as well as mandates of relevant governmental institution in the field of energy efficiency, irrigation water use, GHG emission reduction developed in 2016, in 2017 the project developed four regulatory acts to support Water Code, including (i) operational regulations for pump stations; (ii) regulation for scheduled preventive maintenance and repair of water systems and facilities; (iii) technical regulations of irrigation infrastructure; and (iv) technical regulations of drainage infrastructure. The documents are currently under consideration of Ministry of Agriculture and Water Economy and other relevant state agencies.

The project plans to develop crop-specific irrigation norms based on results of field research works started in Geokdepe site in 2018. However, testing should be carried out for at least three years to allow project experts to develop evidence-based recommendations on revision of irrigation norms of certain crops.

OUTPUT 4.2: Policy framework for measuring water consumption, monitoring energy consumption in the water sector, and making the transition to end-use tariffs developed and adopted

No indicators and targets are specified in RRF for the Output 4.2 in the project document.

In 2018 the project initiated discussions among water sector experts on approaches to develop policy framework for metering water consumption, monitoring energy consumption in the water sector, and transition to end-use tariffs. Work on development of regional Integrated Water Distribution Plans (Output 3.1) will also contribute to creation of enabling conditions for transition to end-use tariff system.

Besides, it was agreed to select two demo sites/farms for installation and testing various water metering devices. EERE project reached preliminary agreement with neighbouring farmers of its Geokdepe pilot site and SCRL project which has a pilot site in northern Dashoguz region.

OUTPUT 4.3: Policy and state budget framework for widespread deployment of efficiency improvements to irrigation and water infrastructure adopted and implemented

Output indicator 4.3: There is a formal commitment of the government to allocate resources for demonstrated by the project technologies (e.g. inclusion in state-funded programmes and budgets) (Yes/No).

Output target 4.3: Yes

a) Were the indicators and output achieved? Yes ☐ No ☐ Partially ■

b) If no or partially, please explain why?

Following presidential order on development of the Water Development Program of Turkmenistan for 2018-2030, Ministry of agriculture and water economy and its Water Design Institute started working on the Program from early 2018. Project experts who directly involved in creation of water saving Geokdepe research site shared their experience and provided advisory support with technical and financial justifications to government authorities to promote replication of Geokdepe site activities through inclusion of modern low-water irrigation systems to the Water Program. Currently, the final draft of the Program is under review of the top water sector authorities.

OUTPUT 4.4. Administrative reform for implementation of integrated water resource management and sustainable land management adopted and implemented
Output indicator 4.4: Programme for water measurement is developed and made operational at focus demonstrational sites.

Output target 4.4: Programme for water measurement is developed and made operational at focus demonstrational sites (Yes/No)

a) Were the indicators and output achieved? Yes ■ No ☐ Partially ☐

b) If no or partially, please explain why?

Baseline data collection program for the Kaahka pilot project was prepared and initiated in 2016 through installation of water measuring devices at the source and lower stream of the open-water channel that supply drinking water to the town of Kaahka. These meters enabled the project to accurately measure and calculate the average monthly water flow and supported final decision on pipeline construction. Water metering was further improved with construction of water distribution point as part of the Kaahka water pipeline project completed in April 2018.

Testing of water measurement devices at Geokdepe demonstration site started in 2017 when piped irrigation network was built. Additional water meters were installed along with drip and sprinkler irrigation systems in June 2018. Collection of water consumption figures intensified with planting of various crops irrigated with water saving types.

In 2018 EERE project specialists discussed with national water, agriculture and legal experts potential ways of improvement/revision of agency roles for IWRM. Preliminary agreement was reached about partnership of EERE project with SCRL project and Regional Environmental Center for Central Asia (CAREC) that is planning to work on promotion of IWRM principles within its joint USAID-CAREC project "Water, education and cooperation".

2.Progress Reporting

a) Please summarize the main achievements during the project cycle:

The project has delivered two major strategic milestones. Firstly, in April 2018 a gravity-flow water pipeline was launched for the town of Kaakhka to save water by prevention of ground water losses, shut down the operation of around 40 water pumps and reduce associated GHG emissions. The initiative has both mitigation and adaptation effect. Given that the country has a number of other settlements in similar conditions, potential for replication is high. The currently ongoing monitoring of the new pipe operation will serve as grounds for entering into a dialogue with national counterparts with regard to possible upscale of this measure. Secondly, a 145 ha research site was launched in early June, with various irrigation systems and infrastructure up and running. The project has started the process of research and analysis on how these irrigation systems interact with various crop types. This multi-year process will be documented, with findings to be presented to Government for strategic adjustments of the countries agricultural development, including changes to be proposed in the educational sector.

The project has as well completed an audit of 121 state-owned industrial water pumps, disclosing the current inefficiencies and gaps in terms of water delivery and energy consumption. Based on the audit outcomes, the project will replace five worn pumps with modern water and energy efficient pumps and help the national counterparts align water and energy related norms and standards of procuring, installing and maintaining water pumps in the country. It is expected that this major exercise will further lead into GHG reductions from the water pumps sectors, which currently occupies one of the leading place in emissions.

The project will also promote innovations such as the use of renewable energy for water pumping and treatment in remote areas for household needs. It is envisaged that it will improve water availability in areas with highly limited access to water and reduce associated GHG emissions from diesel fuel used for pumps and household energy supply. It will also contribute to socio-economic growth of targeted communities due to significant money savings from free of charge solar energy versus expenses for diesel fuel and its delivery to remote villages, regular maintenance and replacement of diesel power generators.

The project developed four regulatory acts to support Water Code, including (i) operational regulations for pump stations; (ii) regulation for scheduled preventive maintenance and repair of water systems and facilities; (iii) technical regulations of irrigation infrastructure; and (iv) technical regulations of drainage infrastructure. It is expected that these regulations when approved by the Ministry of Agriculture and Water Economy will improve efficiency of use of water infrastructure and contribute to GHG reduction in water sector.

3. Project Risks and Issues

The project Risk Log is maintained throughout the project implementation to capture potential risks to the project and associated measures to mitigate risk. The Project Manager shall maintain and update the Risk Log and ensure that risks are identified, communicated and managed effectively.

A number of potential risks are listed below.

#	Description of risk	Type and category	Risk management actions	Current situation
1.	Government commits funds to water conservation and energy conservation at a level insufficient to achieve significant scaled-up effects	Political and financial	Government spending is outside the ultimate control of the project itself, as spending decisions are taken by the Cabinet of Ministers. But the project is explicitly designed to be directly consistent with national objectives. One major goal of the project is to provide technical and financial justification to remove doubt and financial risk among decisionmakers. Further countermeasures could include targeted analysis for specific technologies; changes in focus to address matters of highest priority to Government, while still being consistent with project objectives; and intensified communication and outreach.	Risk is increasing due to worsening economic situation in the country.
2.	Farmers and other stakeholders resist change, complicating efforts of project to introduce new technology, practices, and norms for low-water irrigation	Institutional	Farmers already do widely understand the importance of water conservation, and have participated enthusiastically in past projects of international organizations. This project specifically seeks to reduce risk of stakeholder resistance through targeted outreach and training. Incentives or mandates may be included in policy efforts under Component 4.	No change
3.	Demonstration projects need to be significantly changed because of unforeseen local technical or environmental conditions	Technological and Environmental	Water management projects require careful attention to many specific technical and environmental factors, including water sources; end uses; intervening terrain; and other conditions. Each demonstration project will undergo thorough assessment of cost, technical feasibility, expected benefits, and environmental and social	Reducing

			impact. Design of projects will be adjusted as needed to account for conditions identified during these assessments. Timetables for demonstration projects will have some flexibility built into them, to allow for needed adjustments.	
4.	Replication of demonstration project technology and practices lags because of insufficient availability of materials and products	Institutional and economic	Efficient irrigation technology is under development in Turkmenistan, and scaling up domestic production is a priority of the Government. Canal lining technology is likely to be rather simple and not export-dependent. Demonstration projects will emphasize use of technologies and materials that are accessible in Turkmenistan. The project will assess the cost and supply flows of imported products such as pumps before recommending them for wide use.	No change
5.	Reduction in end-use water consumption and increased pump performance does not automatically lead to energy savings and avoided emissions.	Technical	Reduction in end-use water consumption needs to be accurately forecasted, measured, and then coordinated with upstream water management and pumping schedules. This integration is a major emphasis of the project.	No change
6.	Climate change – specifically, increased average temperatures and reduced precipitation – exacerbates problems of water scarcity and land degradation, muting the benefits of the project	Environmental	The Government of Turkmenistan recognizes that as a result of climate change water run-off provided by its major river, Amu-Daria, may further decrease (i.e. 65-75% of the total average amount) and therefore water saving programmes in agricultural sector are among the top of national priorities. The proposed project will help alleviate the risk of water shortage by introducing and promoting improvements in water and energy efficiency and an integrated water-energy management approach in irrigation thus leveraging win-win opportunities for climate change mitigation and adaptation.	No change
7.	Complexity and multi-dimensional nature of the project, which may lead to non or under delivery of	Organisational	Mobilisation of stakeholders and regular engagement with all partners. Frequent engagement of project board and National Project Coordinator	Reducing

	some of the planned objectives and goals			
8.	Delays in implementation of planned activities due to lengthy internal decision-making process resulting non-delivery	Operational and Organisational	Bi-weekly meetings and discussions with the Senior Management	Reducing A number of delays have occurred in the initial years, but probability of reaching delivery target is high
9.	Lack of adequate support from the National Partners	Operational and Strategic	Efforts by the SM in raising the issues during high level meetings and exchange of NVs, and discussions of project team members with the counterparts	Reducing

The project Issue Log is maintained throughout the project implementation to capture potential issues to the project and associated response measures. The Project Manager shall maintain and update the Issue Log and ensure that issues are identified, communicated and managed effectively.

A number of potential issues are listed below.

Description of issue	Type and category	Response / Countermeasures	Current situation
Restrictions in official currency transactions and consequent occurrence of dual/black market exchange rate.	Financial	This is an external factor that neither UNDP nor Project team can have an impact on. The only countermeasure that can be taken is wider distribution of tender announcements among foreign companies. As foreign companies can be paid in hard currency, it will mitigate negative impact of black market exchange rate.	Worsening due to tighter foreign currency restrictions
Project is derailing from its main objective of energy efficiency and too much focus is given to research activities.	Other	Budget allocation to research activities was high in 2017 and 2018. In 2019 and onwards it should be reduced by co-sharing of some activities by the Government followed by transfer of Geokdepe site assets to the Water Design Institute.	No change
Kaahka pipeline handover to the Government is delaying	Regulatory	Senior Management raised the issue on several occasions (the latest was the meeting with Minister of Agriculture and Water Economy in Dec 2018) with the high rank Government	No change, but expected to reduce

		authorities and was promised to get resolution soon	
Project registration extension is overdue	Regulatory	Senior Management raised the issue on several occasions (the latest was the meeting with Minister of Agriculture and Water Economy in Dec 2018) with the high rank Government authorities and was promised to get resolution soon	No change, but expected to reduce
Delay in project registration extension affected some project activities	Regulatory	The process of handover of some major project assets (tractor, irrigation infrastructure in Geokdepe and some others) is suspended due to delay in receiving of project registration certificate. Senior management raised this issue at high level meeting with the Government.	No change, but expected to reduce
Some major project activities can be delayed due to requirements of the National Customs Service.	Regulatory	Customs authorities require project registration certificate for custom clearance of goods and materials purchased for project activities, otherwise cargo can be kept until submission of required document. Senior management raised this issue at high level meeting with the Government.	No change, but expected to reduce
Automatic agro-weather station does not transmit data collected at the field.	Operational	Agro-weather station installed at Geokdepe Green polygon stopped data transmission after several months of proper functioning. Technical solutions to fix the problem did not work. Specialists suggest that problem is not with equipment, but with internet connection, so the UNDP will request assistance of the Ministry of Communication along with the SCRL project that experience the same problem with its weather station.	No change

4.Lessons learned and follow-up steps (if applicable)

a) Please provide the lessons learned and further steps after the project's closure.

№	Lessons Learned	Follow-Up Steps
1.	Local authorities of Kaahka very grateful to UNDP for building of Hivaabad-Kaahka pipeline as it brings several important benefits including safer and healthier drinking water availability, economic benefits of reducing energy consumption and lower pump maintenance costs by decommissioning of water pumps.	Power of local authorities will be used to resolve pipeline handover issue. Also, good relations with local municipality is already being used to monitor pipeline impact to Kaahka residents and collect water and energy consumption data.

2.	Since Kaahka pipeline reduced infiltration loss nearly to zero, water saved can be used to irrigation of around 100 ha of agricultural fields and create additional 5-7 workplaces.	In addition to water and energy consumption figures monitored in Kaahka, the project will look at the improvement of living conditions of local residents.
3.	Key implementing partners, Ministry of Agriculture and Water Economy and its Water Design and Research Institute, most likely will not be able to do significant contributions to project activities that entail financial implications due to their weak financial standings.	The project will try to get key implementing partners involved in project activities with in-kind contributions, for instance mobilize their workers for tree planting or other field works at Geokdepe site or use their vehicles/tracks for delivery of needed products, etc.
4.	Local Canal Lining Consultant hired in 2018, while possessing solid knowledge of national irrigation system, needs support of foreign expert with multi-country experience and international perspective to apply technical know-how in designing, construction and testing of several lining materials.	The project hired International Consultant on Canal Lining with hands-on international experience
5.	Uniform moistening of the soil layer (up to 120 cm in depth) throughout the irrigated area immediately after sowing agricultural crops on strongly saline soils and close bedding (1.9 - 2.2 m) of highly mineralized (about 10 g / l) soil under drip irrigation and sprinkling allows to obtain uniform seedlings and favorable conditions for the growth and development of plants throughout the growing season of the plants. It also prevents the entry of salt-saturated moisture fluxes from deeper soil horizons to the surface of the earth, which makes it possible to completely abandon soil washing practices which is highly water intensive (about 2000 - 2500 m3 / ha for highly saline soils) and prevent secondary soil salinization by the end of the growing season, which normally takes place with traditional furrow/surface irrigation methods.	These observations were already shared with local experts and practitioners at the latest training at Geokdepe site. They will be also added to separate publication on Geokdepe research site to be prepared in 2019.
6.	Installation of drip irrigation pipes along the ridges of the furrows that took place in Geokdepe site significantly complicates the operation of such systems due to the daily slipping of the pipes from the ridges of the furrows to their slopes or bottom (due to the significant difference in day and night temperatures), which negatively affects the moisturizing of soil root zone of crops, especially in the period of emergence of shoots.	These observations were already shared with local experts and practitioners at the latest training at Geokdepe site. They will be also added to separate publication on Geokdepe research site to be prepared in 2019.
7.	The project conducted two-day training in Ashgabat on irrigation water use and metering methods for around 25 water specialists from all regions of the country. It was estimated that cost one training in Ashgabat equals to cumulative budget of five regional trainings (one in each region) mainly because of the travel expenses of 25 participants versus travel costs of a few project experts. Besides, number of training attendees may	The project will try to conduct trainings in the regions rather than gathering participants in Ashgabat.

	increase by 4-5 times as more people can be delegated if trainings take place in neighbouring district within 1-2 hours of vehicle's driving distance.	

5. Transfer of Assets or other related matter

a) Please state on any past or future transfer of assets made within the project cycle (Attach list of equipment, cooperation frameworks with beneficiaries, etc.)

See attachment 1

6. Financial management

Budget item	Total approved in 2018 (in USD)	Expenses + commitments	Budget utilization in % to planned
Component 1	782,050.00	679,855.00	86.93
Component 2	563,244.00	634,380.00	112.63
Component 3	162,581.00	129,388.00	79.58
Component 4	105,470.00	88,739.00	84.14
Project management	71,060.00	87,370.00	122.95
Total delivery in 2018	**1,684,405.00**	**1,619,732.00**	**96.16**
In % to total project budget	**27.23**	**26.19**	

Prepared by: _____**Geldi Myradov, EERE Project Manager**

Date: 28.12.2018

ASSET INFORMATION - PROJECT 00090400

PROJECT CODE	ASSET ID	PROFILE	DESCRIPTION	TAG NUMBER	SERIAL NUMBER	MODEL	LOCATION	CUSTODIAN	ACQUISITION DATE	COST	CURRENCY	Voucher ID	PO ID	FUND	DONOR
90400	000000000001	ITC	HP EliteBook 820 G2 with HPeCarePack 3Y Trv NBD NB Only HW	ITC/TKM/90400/001	5CG5352N6X	elitebook 820 G2	WDI	G. Myradov	18.08.2015	1,233.00	USD	48370	8443	62000	10003
90400	000000000002	ITC	HP EliteBook 820 G2	ITC/TKM/90400/002	5CG5352N7C	elitebook 820 G2	WDI	A. Yazhanow	18.08.2015	1,177.00	USD	48370	8443	62000	10003
90400	000000000003	ITC	HP EliteBook 820 G2	ITC/TKM/90400/003	5CG5352N75	elitebook 820 G2	WDI	M.Artykow	18.08.2015	1,177.00	USD	48370	8443	62000	10003
90400	000000000004	ITC	HP UltraSlim Docking Station 2013-Euro	ITC/TKM/90400/004	5CG521ZNB3	cs1552	WDI	G. Myradov	18.08.2015	125.00	USD	48370	8443	62000	10003
90400	000000000005	ITC	HP UltraSlim Docking Station 2013-Euro	ITC/TKM/90400/005	5CG521XZTL	cs1552	WDI	A. Yazhanow	18.08.2015	125.00	USD	48370	8443	62000	10003
90400	000000000006	ITC	HP UltraSlim Docking Station 2013-Euro	ITC/TKM/90400/006	5CG522XSHV	cs1552	WDI	M.Artykow	18.08.2015	125.00	USD	48370	8443	62000	10003
90400	000000000007	ITC	HP Business Top Load Case	ITC/TKM/90400/007	N/A	N/A	WDI	G. Myradov	18.08.2015	18.00	USD	48370	8443	62000	10003
90400	000000000008	ITC	HP Business Top Load Case	ITC/TKM/90400/008	N/A	N/A	WDI	A. Yazhanow	18.08.2015	18.00	USD	48370	8443	62000	10003
90400	000000000009	ITC	HP Business Top Load Case	ITC/TKM/90400/009	N/A	N/A	WDI	M.Artykow	18.08.2015	18.00	USD	48370	8443	62000	10003
90400	000000000010	ITC	HP EliteDisplay E241i 24-in LED IPS Monitor	ITC/TKM/90400/010	CN45230T0S	E241i	WDI	G. Myradov	18.08.2015	285.00	USD	48370	8443	62000	10003
90400	000000000011	ITC	HP EliteDisplay E241i 24-in LED IPS Monitor	ITC/TKM/90400/011	CN45230SZR	E241i	WDI	A. Yazhanow	18.08.2015	285.00	USD	48370	8443	62000	10003
90400	000000000012	ITC	HP EliteDisplay E241i 24-in LED IPS Monitor	ITC/TKM/90400/012	CN45230SZW	E241i	WDI	M.Artykow	18.08.2015	285.00	USD	48370	8443	62000	10003
90400	000000000013	ITC	HP LASERJET PRO 400MFP printer + COPIER + FAX	ITC/TKM/90400/013	CNF8H7449F	laserjet M425DN	WDI	project office	18.08.2015	408.00	USD	48370	8443	62000	10003
90400	000000000014	ITC	Meraki CISCO Security Appliance+ 3yr advanced security license) Meraki MS220-8 Switch+3YR Support	ITC/TKM/90400/014	S/N:Q2MN-KZDP-8K6F S/N:Q2GP+YQCV+TCU7	MX64W-HW MS220-8-HW	WDI	project office	18.08.2015	1,291.20	USD	48370	8443	62000	10003
90400	000000000015	ITC	Digital camera Nikon D90 + 18-55 lens	ITC/TKM/90400/015	BODY:8494146 LENS:39238291	NKR-D90(B)	WDI	project office	20/11/2015	4,945.00	TMT	48336	8492	62000	10003
90400	000000000016	ITC	Projector InFocus IN124STa (1924x768)	ITC/TKM/90400/016	BNGB43600039	IN124STa	WDI	project office	20/11/2015	3,325.00	TMT	48336	8492	62000	10003
90400	000000000017	ITC	Case for digital camera Nikon	ITC/TKM/90400/017	N/A	7303(PS)	WDI	project office	20/11/2015	150.00	TMT	48336	8492	62000	10003
90400	000000000018	ITC	SD card 8 GB for digital camera	ITC/TKM/90400/018	JM94731-901.A00LF	SDA10/16GB	WDI	project office	20/11/2015	80.00	TMT	48336	8492	62000	10003
90400	000000000019	ITC	Projector screen Anchor tripod	ITC/TKM/90400/019	YM1352363	ANTRS200	WDI	project office	20/11/2015	420.00	TMT	48336	8492	62000	10003
90400	000000000020	ITC	Mobile Phone Nokia 6303	ITC/TKM/90400/020	IMEI: 359333036578799	Nokia 6303c	WDI	M.Artykow	20/11/2015	280.00	TMT	48336	8492	62000	10003
90400	000000000021	ITC	Mobile Phone Nokia 6303	ITC/TKM/90400/021		Nokia 6303c	WDI	A. Yazhanow	20/11/2015	280.00	TMT	48336	8492	62000	10003
90400	000000000022	ITC	Mobile Phone HuaweiG630	ITC/TKM/90400/022	IMEI: 867256027769595 S/N:H3L7S15902003484	G630-U10	WDI	M. Shaharov	20/11/2015	560.00	TMT	48336	8492	62000	10003

90400	000000000023	ITC	Mobile Phone HuaweiG630	ITC/TKM/90400/023	S/N:H3L7S15818001815	G630-U10	WDI	K.Bayliev	20/11/2015	560.00	TMT	48336	8492	62000	10003	DISCARD
90400	000000000024	ITC	SD card 8 GB for mobile phone	ITC/TKM/90400/024			WDI	M. Shaharov	20/11/2015	45.00	TMT	48336	8492	62000	10003	
90400	000000000025	ITC	SD card 8 GB for mobile phone	ITC/TKM/90400/025			WDI	K.Bayliev	20/11/2015	45.00	TMT	48336	8492	62000	10003	
90400	000000000026	ITC	Charger used in vehicle	ITC/TKM/90400/026			WDI	Project vehicle	20/11/2015	50.00	TMT	48336	8492	62000	10003	
90400	000000000027	ITC	Charger used in vehicle	ITC/TKM/90400/027			WDI	Project vehicle	20/11/2015	50.00	TMT	48336	8492	62000	10003	
90400	000000000028	FURN	Filing cabinet semi-open	FURN/TKM/90400/001	FCM 8053	FILE CABINET	WDI	G. Myradov	10/11/2015	749.00	TMT	48355	8489	62000	10003	
90400	000000000029	FURN	Filing cabinet semi-open	FURN/TKM/90400/002	FCM 8053	FILE CABINET	WDI	M.Artykow	10/11/2015	749.00	TMT	48355	8489	62000	10003	
90400	000000000030	FURN	Filing cabinet semi-open	FURN/TKM/90400/003	FCM 8053	FILE CABINET	WDI	M. Shaharov	10/11/2015	749.00	TMT	48355	8489	62000	10003	
90400	000000000031	FURN	Filing cabinet semi-open	FURN/TKM/90400/004	FCM 8053	FILE CABINET	WDI	A. Yazhanow	10/11/2015	749.00	TMT	48355	8489	62000	10003	
90400	000000000032	FURN	Rolling chair	FURN/TKM/90400/005	ROMD 40801	ROMA MANAGER	WDI	G. Myradov	10/11/2015	1,915.00	TMT	48355	8489	62000	10003	
90400	000000000033	FURN	Rolling chair	FURN/TKM/90400/006	ROMD 40801	ROMA MANAGER	WDI	M.Artykow	10/11/2015	1,915.00	TMT	48355	8489	62000	10003	
90400	000000000034	FURN	Rolling chair	FURN/TKM/90400/007	ROMD 40801	ROMA MANAGER	WDI	M. Shaharov	10/11/2015	1,915.00	TMT	48355	8489	62000	10003	
90400	000000000035	FURN	Rolling chair	FURN/TKM/90400/008	ROMD 40801	ROMA MANAGER	WDI	A. Yazhanow	10/11/2015	1,915.00	TMT	48355	8489	62000	10003	
90400	000000000036	FURN	Office table	FURN/TKM/90400/009	BTML 130160	BETA DESK	WDI	G. Myradov	10/11/2015	1,036.00	TMT	48355	8489	62000	10003	
90400	000000000037	FURN	Office table	FURN/TKM/90400/010	BTML 130160	BETA DESK	WDI	M.Artykow	10/11/2015	1,036.00	TMT	48355	8489	62000	10003	
90400	000000000038	FURN	Office table	FURN/TKM/90400/011	BTML 130160	BETA DESK	WDI	M. Shaharov	10/11/2015	1,036.00	TMT	48355	8489	62000	10003	
90400	000000000039	FURN	Office table	FURN/TKM/90400/012	BTML 130160	BETA DESK	WDI	A. Yazhanow	10/11/2015	1,036.00	TMT	48355	8489	62000	10003	
90400	000000000040	FURN	Chest of drawers	FURN/TKM/90400/013	PEM 703-E	PEDESTAL	WDI	G. Myradov	10/11/2015	424.00	TMT	48355	8489	62000	10003	
90400	000000000041	FURN	Chest of drawers	FURN/TKM/90400/014	PEM 703-E	PEDESTAL	WDI	M.Artykow	10/11/2015	424.00	TMT	48355	8489	62000	10003	
90400	000000000042	FURN	Chest of drawers	FURN/TKM/90400/015	PEM 703-E	PEDESTAL	WDI	M. Shaharov	10/11/2015	424.00	TMT	48355	8489	62000	10003	
90400	000000000043	FURN	Chest of drawers	FURN/TKM/90400/016	PEM 703-E	PEDESTAL	WDI	A. Yazhanow	10/11/2015	424.00	TMT	48355	8489	62000	10003	
90400	000000000044	FURN	File cabinet	FURN/TKM/90400/017	FCM 8045	FCM 8045	WDI	project office	10/11/2015	991.00	TMT	48355	8489	62000	10003	
90400	000000000045	FURN	Office bookcase	FURN/TKM/90400/018	FCM 8021	FILE CABINET	WDI	project office	10/11/2015	448.00	TMT	48662		62000	10003	
90400	000000000046	FURN	COFFEE TABLE	FURN/TKM/90400/019	EEPS 60100	EPSILON	WDI	project office	10/11/2015	616.00	TMT	48662		62000	10003	
90400	000000000047	FURN	Office chair	FURN/TKM/90400/020	EKF 30515	EKOFORM VISITOR	WDI	project office	10/11/2015	235.00	TMT	48662		62000	10003	
90400	000000000048	FURN	Office chair	FURN/TKM/90400/021	EKF 30515	EKOFORM VISITOR	WDI	project office	10/11/2015	235.00	TMT	48662		62000	10003	
90400	000000000049	FURN	Office chair	FURN/TKM/90400/022	EKF 30515	EKOFORM VISITOR	WDI	project office	10/11/2015	235.00	TMT	48662		62000	10003	
90400	000000000050	FURN	Office chair	FURN/TKM/90400/023	EKF 30515	EKOFORM VISITOR	WDI	project office	10/11/2015	235.00	TMT	48662		62000	10003	
90400	000000000051	FURN	Table for meeting	FURN/TKM/90400/024				project office		739.00	TMT	48662		62000	10003	
90400	000000000052	FURN	Metalic coat rack	FURN/TKM/90400/025	CST.175	COAT STAND	WDI	project office	09/12/2015	400.00	TMT	48662		62000	10003	
90400	000000000053	ITC	Notebook HP/17-K250CA CPU CI-7(5500U)/RAM 8GB/HDD 1TB/VGA N-VIDIA 2GB/17.3" silver	ITC/TKM/90400/028	5CD5113VHV	ENVY 17 K250CA	WDI	M. Shaharov	24/12/2015	3,931.00	TMT	48864	N/A	62000	10003	

90400	000000000054	ITC	Bag for laptop Targus 15,4-16'', black	ITC/TKM/90400/029	N/A	CN600-61	WDI	M. Shaharov	24/12/2015	192.00	TMT	48864	N/A	62000	10003	
90400	000000000055	ITC	Printer Canon I-Sensys MF216N Laser A4 4/1B/W cart 737 + Fax + Lan	ITC/TKM/90400/030	RWB39119	MF216N	WDI	G. Myradov	24/12/2015	1,359.00	TMT	48864	N/A	62000	10003	
90400	000000000056	ITC	LCD AOC I2276VWM21.5" IPS/1920x1080/D-Sub/HDMI, black	ITC/TKM/90400/031	D23E9BA002500	I2276VWM	WDI	Geokdepe	24/12/2015	571.00	TMT	48864	N/A	62000	10003	
90400	000000000057	ITC	Keyboard Gigabyte KM-7580 + Mouse Wireless	ITC/TKM/90400/032	SN144825004220	GK-KM7580	WDI	M. Shaharov	24/12/2015	241.00	TMT	48864	N/A	62000	10003	
90400	000000000058	HYME	AKIRA air conditioner	HYME/TKM/90400/001	54936-S19HEGN1	AC-S 19HEGN1	WDI	project office	17/11/2015	1,850.00	TMT	48272	N/A	62000	10003	
90400	000000000059	ITC	GPS Field controller Sokkia + Software	ITC/TKM/90400/033	RF815P0074	SHC336 + "Magnet Field GPS+" (software)	WDI	project office	14/12/2015	17,110.00	TMT	48744	8512	62000	10003	
90400	000000000060	ITC	Megafon 4G modem	ITC/TKM/90400/034	G4PDW15701010173	M150-2	WDI	project office	16/02/2016	114.00	TMT	49176	N/A	62000	10003	
90400	000000000061	MRTV	NISSAN PATROL 4WD MOTOR TYPE: ZD30CR (2953CC DIESEL) GL 5MT LHD	MRTV/TKM/90400/001	CHASSIS № 573298, Engine № 007302N	TWSSLEFY61 UR7-HAJE	UN Building	K.Bayliev	23/02/2016	22607.54	USD	49279	8448	62000	10003	
90400	000000000062	FURN	Office Table	FURN/TKM/90400/026	EEPS60100	EPSILON	WDI	project office	03/03/2016	700.00	TMT	49287	N/A	62000	10003	
90400	000000000063	FURN	File cabinet semi-open	FURN/TKM/90400/027	SCM 8021	FILE CABINET	WDI	project office	03/03/2016	500.00	TMT	49287	N/A	62000	10003	
90400	000000000064	FURN	Metalic coat rack	FURN/TKM/90400/028	N/A	COAT STAND	WDI	project office	03/03/2016	400.00	TMT	49287	N/A	62000	10003	
90400	000000000065	FURN	Office chair	FURN/TKM/90400/029	EKF 30515	EKOFORM VISITOR	WDI	project office	03/03/2016	250.00	TMT	49287	N/A	62000	10003	
90400	000000000066	FURN	Office chair	FURN/TKM/90400/030	EKF 30515	EKOFORM VISITOR	WDI	project office	03/03/2016	250.00	TMT	49287	N/A	62000	10003	
90400	000000000067	Electric	Geodetic satellite receiver (GNSS) Sokkia GRX-2	EL/TKM/90400/001	1169-12237	GRX-2	WDI	project office	21/09/2016	14,889.00	USD	51733	8678	62000	10003	
90400	000000000069	Electric	Geodetic satellite receiver (GNSS) Sokkia GRX-2	EL/TKM/90400/002	1169-12249	GRX-2	WDI	project office	22/09/2017	14,889.00	USD	51733	8678	6200	10003	Acquired from AF
90400	000000000070	Electric	GPS Field controller Sokkia + Software	EL/TKM/90400/003	REC15POO46	SHC336	WDI	project office	22/09/2017	4,497.14	USD	according to T-i/T-o rep	N/A	62000	10003	Acquired from AF
90400	000000000071	ITC	Mobile Phone Samsung	ITC/TKM/90400/035	S/N: SM-J510FN/DS IMEI: 358786085550442	Galaxy J5 2016y	WDI	K.Bayliev	26/09/2017	2,300.00	TMT	53662	e-req 3323	62000	10003	
90400	000000000072	ITC	Notebook, E-Port Plus, 14"Case, Dell USB Optial mouse, Dell USB keyboard	ITC/TKM/90400/36	Dell Latitude E6430 3KL38W1	Dell Latitude E6430	UN Office	Olga Babayeva	28.12.2012	1,495.00	USD	38093	7764	62040	11602	Acquired from AF
90400	000000000073	ITC	Notebook, E-Port Plus, 14"Case, Dell USB Optial mouse, Dell USB keyboard	ITC/TKM/90400/37	Dell Latitude E6430 2xG38W1	Dell Latitude E6430	UN Office	PIU, Kira Satarova	28.12.2012	1,495.00	USD	38093	7764	62040	11602	Acquired from AF

90400	000000000074	ITC	Notebook, E-Port Plus, 14"Case, Dell USB Optial mouse, Dell USB keyboard	ITC/TKM/90400/38	Dell Latitude E6430 36G8JV1	Dell Latitude E6430	UN Office	PIU, Islam Saparbayev	22.11.2012	1,495.00	USD	37399	7729	62040	11602	Acquired from AF
90400	000000000075	ITC	Monitor Dell 22 P2213 black LCD monitor widescreen	ITC/TKM/90400/39	CNOY57VF7444528BB3FS	Dell 22" P2213	UN Office	PIU, Gulnar Muradova	22.11.2012	164.00	USD	37399	7729	62040	11602	Acquired from AF
90400	000000000076	ITC	APC Power-Saving Back UPS 230V, 540W	ITC/TKM/90400/40	3B129X00669	Pro 900, 230V, 540W	UN Office	PIU, Gulnar Muradova	22.11.2012	225.00	USD	37399	7729	62040	11602	Acquired from AF
90400	000000000077	ITC	Samsung A5 mobile phone	ITC/TKM/90400/41	R58J155XJTM	SM-A510F/DS	WDI	PM	08/06/2017	2,083.00	TMT	52936	8924	62000	10003	

A	Projcet Code
B	This is the Internal Reference used for the project - ex. 000000000001
C	This is the general category e.g. Furniture, Vehicles etc in words - ITC for ITC equipment, MRTV - for vehicles, HYME for heavy Machinery, FURN for furniture
D	This is the detailed description of the asset
E	This is the asset tag as per laid down tagging convention e.g. ITC/TKM/90400/001 for a ITC item
F	This is the serial number, normally available for electrical equipment and registration number for vehicles
G	This is the asset Model as indicated in Invoice
H	This is the Place where the asset is based and can be physically located - TKM/ASB/xxxxxxxx
I	Person who is responsible for assets
J	The date asset is received
K	The cost as per Invoice and payment details
L	This is the Currency used in the cost detail, if various currencies used try to standardize the register into one currency by conversions
M	Voucher ID
N	PO ID
O	This is the funds used to purchase the asset e.g. UNDP, etc
P	This is the donor used to purchase the asset e.g. UNDP, ECHO etc.