

Project Administration Manual

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Loan Numbers: LXXXX and LXXXX

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Mongolia: Vegetable Production and Irrigated Agriculture Project

ABBREVIATIONS

ADB	–	Asian Development Bank
CPDPCD	–	Crop Production Development Policy and Coordination Department
EMP	–	environmental management plan
FSR	–	feasibility study report
GAP	–	gender action plan
GRM	–	grievance redress mechanism
ha	–	hectare
IEE	–	initial environmental examination
JFPR	–	Japan Fund for Poverty Reduction
MOFALI	–	Ministry of Food, Agriculture, and Light Industry
OCB	–	open competitive bidding
PIU	–	project implementation unit
PMO	–	project management office
PSC	–	project steering committee
PPMS	–	project performance management system
SDAP	–	social development action plan
CGG	–	community grower groups

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Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with the policies and procedures of the government and the Asian Development Bank (ADB). The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Ministry of Food, Agriculture, and Light Industry (MOFALI) is the executing agency and the Crop Production Development Policy and Coordination Department of MOFALI is the implementing agency who are wholly responsible for the implementation of the ADB-financed projects, as agreed jointly between the borrower and ADB, and in accordance with the policies and procedures of the government and ADB. The ADB staff is responsible for supporting implementation, including compliance by the executing agency and the implementing agency of their obligations and responsibilities for project implementation in accordance with ADB policies and procedures.

At loan negotiations, the borrower and ADB shall agree to the PAM; and ensure consistency with the loan and grant agreements. Such agreements shall be reflected in the minutes of the loan negotiations. In the event of any discrepancy or contradiction between the PAM and the loan, project and grant agreements, the provisions of the loan and grant agreements shall prevail.

After ADB Board approval of the project's report and recommendations of the President, changes in implementation arrangements are subject to agreement and approval pursuant to relevant government and ADB administrative procedures (including the project administration instructions) and upon such approval, they will be subsequently incorporated in the PAM.

I. PROJECT DESCRIPTION

A. Rationale

1. The Mongolian agriculture sector has high potential for growth and livelihood opportunities. In line with the Government of Mongolia's focus to accelerate economic diversification and job creation, agriculture has fast become a priority for growth.¹ Mongolia has made strides over the past decade to become self-sufficient in mechanized cereal and potato production, but vegetable farming has been neglected and is not yet very productive. This perpetuates low income for vegetable farmers and high reliance on imported products, which in turn threatens national food security. On average, only about 51% of the country's annual vegetable demand is met by domestic production (2008–2016).² Mongolia's vegetable farming sector is typically characterized by smallholdings of up to 5 hectares (ha), fragmented farmland, lack of reliable access to water, and lack of value chain services and financial resources. There are about 300 cooperatives and 35,000 households across the country, growing vegetables on plots of up to 100 ha, but with a total sown area of only 8,904 ha in 2018.³

2. Irrigation services are supported by the Ministry of Food, Agriculture, and Light Industry (MOFALI), which owns most of the irrigation infrastructure and provides support for maintenance. There are currently more than 380 irrigation schemes in Mongolia, with most found in the Kharaa River Basin and the downstream part of the Selenge and Orkhon river basins. Almost all irrigation systems are recognized as being inefficient in use of water resources, have outdated and unsustainable infrastructure, and with insufficient investment in maintenance. Currently, about 54,000 ha are under irrigation against a potential area of around 400,000 ha, with the government aiming to increase irrigated land to 120,000 ha by 2030. Harmonized with Mongolia's National Programme for Food Security (2009–2016),⁴ the government aims to develop and expand the country's irrigated land and manage its water resources more effectively by improving existing irrigation systems, making CGGs more efficient, building capacity of the water users, and reducing vulnerability of farmers to climate-induced disasters. However, this remains a challenge with many of the irrigation systems being old and requiring substantial maintenance and rehabilitation.

3. Cooperatives and farming households lack access to high-value markets in urban centers due to the absence of value chain services. Only a small fraction of the added value is captured: smallholder farmers only capture about 30%–60% of potato, carrot, cabbage, turnip, and onion retail value.⁵ Cooperative and farmer incomes are low, and opportunities curtailed not only because of lack of market access, but also because of poor agricultural practices with seasonally fluctuating supply and quality of farming outputs. Access to credit is hindered by high interest rates and collateral requirements which are a major obstacle for small farmers' access to financing. Short summers with frequent droughts limit the cropping season, resulting in seasonality of vegetables, price fluctuations, and reliance on imported vegetables. The absence of irrigation systems and water-saving technologies results in high-risk production with frequent yield losses. In the absence of post-harvest and storage facilities, and with little access to wholesale price information and low awareness on value-added opportunities and marketing, farming households mainly sell their vegetables to middlemen.

¹ ADB. 2017. *Country Partnership Strategy: Mongolia, 2017–2020—Sustaining Inclusive Growth in a Period of Economic Difficulty*. Manila.

² Main vegetables that are produced in Mongolia are beet, cabbage, carrot, cucumber, garlic, onion, tomato, and turnip.

³ National Statistics Office of Mongolia. 2019. *Mongolian Statistical Yearbook 2018*. Ulaanbaatar.

⁴ Government of Mongolia. 2009. *National Programme for Food Security (2009–2016)*. Ulaanbaatar.

⁵ ADB. 2018. *Final Report: Market Study and Value Chain Analysis*. Manila (TA 9057-REG) (Draft).

4. Agriculture and its associated facilities are highly vulnerable to climate change. Coping with significant variability in future climatic impacts requires efficient water resource management, increased capacity of agricultural infrastructure, support institutions, and stakeholders, improvement of the support services to farmers, and more resilient production and ecosystems. Some studies have indicated that Mongolia's agriculture sector could benefit from increased crop yields due to longer growing season, earlier rains, higher temperatures, and increased precipitation; however, the increased winds, warmer temperatures, and higher potential evapotranspiration would surely increase water requirements. Other studies have indicated that there could be negative impacts on yield from extreme high- and low-temperature events. Expansion of irrigation and improved cultivation techniques would form an important measure to adapt to climate change.

5. **Government policy.** On the back of its Sustainable Development Vision 2030, Government Action Plan, 2016–2020, and State Policy on Food and Agriculture and Crop Production Law, Mongolia is committed to improve vegetable production.⁶ The State Policy stresses the need to improve agricultural productivity and production management through a value chain approach, adaptation to climate change, and capacity-building for farmers. To support innovative initiatives in agriculture such as on-farm mechanization, climate-resilient greenhouses and water-saving irrigation technology, the government targets for local vegetable production to meet 70% domestic demand by 2020 and 100% by 2025. Policies prioritizing smallholder farming offer an enabling environment for meeting these targets.

6. **Strategic fit.** The project will support ADB's Strategy 2030 through both creating knowledge and promoting rural development and food security.⁷ Supporting inclusive economic growth is a key strategic priority for ADB in its country partnership strategy for Mongolia.⁸ The project supports the improvement of irrigation systems and expansion of vegetable production and value-chain linkages as well as residue testing of food and agro-chemicals, which is consistent with the four priority areas of ADB's Operational Plan for Agriculture and Natural Resources.⁹

7. **Lessons.** The project design incorporates lessons from previous and ongoing projects financed by ADB and others in Mongolia as well as from project preparation. These include: (i) the need for support to government executing and implementing agencies to develop their project implementation capacity; (ii) the limited capacity of domestic design institutes to identify and apply modern water-efficient irrigation methods in their project designs; (iii) the need for careful design of irrigation systems to ensure efficient irrigation water use; (iv) the need to focus on operation and maintenance of the upgraded systems, particularly through CGGs, to promote their long-term sustainability; (v) the limited capacity for production of climate resilient seeds, particularly vegetable seeds, suited to production under Mongolian conditions; and (vi) the need for long-term support for farmer groups to promote adoption of modern production technologies particularly for vegetables.

⁶ Sustainable Development Vision 2030 aims to increase irrigated land by adopting new and efficient irrigation technologies on 65,000 ha by 2020 (100,000 ha by 2015, 120,000 ha by 2030), increase farmland fertility, and decrease soil degradation.

⁷ ADB. 2018. *Strategy 2030. Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila.

⁸ ADB. 2017. *Country Partnership Strategy: Mongolia 2017–2020—Sustaining Inclusive Growth in a Period of Economic Difficulty*. Manila.

⁹ ADB. 2015. *Operational Plan for Agriculture and Natural Resources: Promoting Sustainable Food Security in Asia and the Pacific in 2015–2020*. Manila.

B. Impact and Outcome

8. The project is aligned with the following impact: income generation and enterprise support for smallholder vegetable farmers increased. The project will have the following outcome: efficiency of climate resilient agricultural production and marketing increased.

C. Outputs

9. The outputs of the project will be (i) efficient and climate-resilient irrigation infrastructure and management systems installed; (ii) environmentally sustainable agriculture production systems improved; and (iii) technical Institutional, and management capacity and coordination strengthened. The project design follows the principles of (i) upgrading irrigation systems; (ii) improving the efficiency of resource use in agricultural production through improved seeds and investment in farming equipment; (iii) improving the quality and safety of end-products for consumers; and (iv) ensuring that there is an opportunity to participate in equitable benefit sharing from the project.

10. **Output 1: Efficient and climate-resilient irrigation infrastructure and management systems installed.** This output will focus on (i) upgrading, modernizing, and climate proofing irrigation and drainage infrastructure;¹⁰ (ii) strengthening coordination and management of irrigation services, irrigated land, irrigation infrastructure, including storage ponds to build resilience against prolonged droughts and canals in irrigation systems, ensuring efficient, reliable, and equitable irrigation supplies for agricultural land; and (iii) tree planting for shelter belts around the modernized irrigated areas. The project will upgrade, modernize and climate proof 12 selected schemes along with directly associated infrastructure providing irrigation services for 7,000 ha. The project will finance remodeling and improvement of main, secondary, and tertiary canals or pipes, drainage facilities, field application systems such as high efficiency center pivot sprinkler systems and drip irrigation for 240 ha, and associated structures, and where needed construction of new, access roads and windbreaks. *Soum* governments will be strengthened to conduct operation and maintenance (O&M) of irrigation system and will pilot a modern asset management system. A total of 240 jobs will be created during construction, including 40% women and 10% from female headed households; and all contracts for 3,094 households to be engaged in new vegetable farming plots will be signed or co-signed by women.

11. **Output 2: Environmentally sustainable agriculture production systems improved.** This output aims to improve food safety, environment sustainability and climate resilience of agriculture production systems, focusing specifically on agrochemical residue testing and supporting the implementation of a new law on plant seeds by promoting the introduction of new high yielding and climate resilient vegetable seeds varieties. The project will support the National Institute for Plant Protection (IPP) with testing equipment and reagents for additional testing capacity of 4,000 tests to ensure the safety of imported pesticides and residues in food products. This is expected to reduce use of harmful agrochemicals and to build consumer trust in domestically produced vegetables. The project will support, through the coordination of the national extension center, four regional crop research institutes (CRI) with: (i) provision of equipment and facilities such as climate controlled growth chambers, storage cool rooms, sheds, fencing, mechanization packages, seed cleaning and packaging equipment, conservation farming equipment, and teaching facilities; (ii) small-scale irrigation rehabilitation and modernization; and (iii) greenhouses including low-carbon options for extending cropping seasons, high value

¹⁰ Climate proof irrigation systems increase the seasonal availability of crop water and are resilient against severe weather events such as storms and floods and are well operated with efficient water allocation and monitoring.

vegetable cultivation and quality seedling production. This is expected to increase production capacity for vegetable seeds by 0.65 tons and for seed potatoes by 10 tons.¹¹ A total of 20 women researchers and 192 women from CGGs will be provided technical support and training on best practices.

12. Output 3: Technical, institutional, and management capacity and coordination strengthened. The project will set up 48 CGGs in the 12 irrigation schemes, including 40% women as members and 25% in leadership positions; and provide training on improved vegetable production for 480 CGG participating farmers, including 40% women, in collaboration with CRIs. The two main providers of extension services to vegetable farmers will be crop research centers such as the Institute of Plant and Agriculture Science, and a facilitation partner such as a local non-government organization. Project supported CRIs will provide capacity building in good agricultural practice and integrated pest management for farmers' improved management of natural resources with minimized use of agrochemicals, use of climate smart agriculture practices and the introduction of enhanced vegetable production and processing techniques. To further strengthen CGGs, Output 3 will provide mechanization technology packages, all weather greenhouses with solar powered heating and long-life films, and small cool rooms for product storage. The equipment will be provided through a combination of Asian Development Bank (ADB) loan and the proposed Japan Fund for Poverty Reduction (JFPR) grant to the *soum* government which can then be provided to CGGs based on eligibility criteria.¹²

13. To strengthen institutional and management capacity, Output 3 will (i) raise awareness and improve agricultural extension services for farmers and CGGs; (ii) promote business planning and marketing development skills, including building and maintaining formal supply chain partnerships, to increase income and sustainable livelihoods for farmers; (iii) promote improved management of natural resources, especially water resources and soils through strengthening of farmer capacity on proper use of chemicals and fertilizers (e.g. integrated pest management and other climate-smart agriculture practice); and (iv) provide organizational management training. The two main providers of extension services to vegetable farmers will include crop research centers such as Institute of Plant and Agriculture Sciences (IPAS), and a facilitation partner such as a local NGO financed through the JFPR grant. Capacity development consultants will be engaged to (i) oversee the upgrading of the irrigation schemes, (ii) support the development of CGGs and train them on operation and maintenance of irrigation systems, and (iii) provide technical support to the 4 regional seed centers including seed production and conservation agriculture experts.

14. **Innovations.** The project design contains innovative agriculture features such as (i) adoption of high-efficiency irrigation equipment, (ii) enhanced food safety and reduced environment pollution, (iii) summer and winter greenhouses for production of high value crops, and (iv) promoting the allocation of land within the upgraded irrigation schemes to poor and disadvantaged households and training them in the production of high value crops, including vegetables.

15. **Knowledge sharing.** The lessons learned have been incorporated into the project design by: (i) engaging national consultants to staff the project implementation unit (PIU) and to work with MOFALI to improve its capacity; (ii) supporting the domestic design institutes to be contracted for subproject detailed design by construction supervision consultants in the capacity

¹¹ This will build on achievements of other donor funded interventions for drought-resilient seeds, e.g. CIMMIT and Swiss Agency for Development Cooperation (SDC).

¹² The criteria for determining eligibility will include: (i) community grower group in place with effective government and management arrangements; and (ii) a plan agreed by all members as to how farmers in the group will have equitable access to machinery and facilities.

development team who will ensure design quality (iii) engagement of consultants experienced in CGGs and operation and maintenance to assist the *soums* in establishing the necessary arrangements; and (iv) the focus of the proposed JFPR grant activities on vegetable production in the subproject areas.

16. The list of subprojects and activities is in Table 1. Project selection criteria and guiding principles are in Appendix 3 and details of the major existing and planned activities of the project enterprises are in Appendix 4.

Table 1: List of Subprojects and Activities

No.	Location	Subproject	Activities and construction content
1.	Western Region: Govi-Alтай <i>Aimag</i> , Taishir <i>Soum</i>	Tsakhir Irrigation Scheme	<p>Main characteristics: Main canal by gravity, pump, pipes, command area by sprinkler and drip. Civil works and equipment include:</p> <ul style="list-style-type: none"> (i) Construction of a rockfill river weir (up to 3 m high and about 250 m across) with spillway across the Zhavkhan River channel; (ii) Construction of a new gated intake structure with sediment sluicing channel and protection embankment (iii) Main canal reformation and re-lining/repair up to 3.6 km; (iv) Settlement basin 100 m long by 3 m wide; (v) Distributary low pressure (PN2) pipeline 3.6 km long; (vi) High efficiency sprinkler application equipment – 2 lateral move-pivots; (vii) Reforming or building new U-shaped earth drains (up to 8.5 km) and protection bank; (viii) 4.8 km of windbreaks (4.8 ha) comprising two lines of trees and one of fruit/nut bushes fed by drip irrigation (5 ha); (ix) protection fence 10 km long; and (x) Access roads including revised <i>soum</i> road alignment for up to 8 km (earth roads, suitably elevated as necessary)
2.	Western Region: Govi-Alтай <i>Aimag</i> , Khaliun <i>Soum</i>	Yolton Irrigation Scheme	<p>Main characteristics: Main canal by gravity, balancing storage, pipes, command area by sprinkler and drip. Civil works and equipment include:</p> <ul style="list-style-type: none"> (i) Construction of a rockfill river weir (up to 5 m high and about 250 m across) with spillway across the Ust-Chatsran River channel; (ii) Construction of a new gated intake structure with sediment sluicing channel and protection embankment; (iii) Main canal reformation and re-lining/repair of the main canal to balancing storage about 5.5 km; (iv) Upgrading balancing storage of 14,000 m³; (v) Main pressure pipeline 2.5 km long to feed the 2 main distributary pipes and two drip irrigation systems; (vi) Two distributary pressure pipelines each 3 km long; (vii) Two modern controllable linear move sprinkler irrigation machines for 220 ha of cereals (viii) Low pressure drip systems for potatoes, vegetable and fruits (95 ha) (ix) Reforming or building new U-shaped earth drains (up to 9.2 km) and protection bank (x) 4.7 km of windbreaks comprising two lines of trees and one of fruit/nut bushes fed by drip irrigation (5 ha) (xi) Protection fence 10 km long; and (xii) Access roads including formation of a revised <i>soum</i> road alignment of 10 km
3.	Western Region: Khovд <i>Aimag</i> , Erdeneburen <i>Soum</i>	Erdeneburen Irrigation Scheme	<p>Main characteristics: Main canal by gravity, balancing storage, pump, pipes, command area by sprinkler and drip. Civil works and equipment include:</p> <ul style="list-style-type: none"> (i) Improvement, raising and strengthening of the existing rockfill weir across the Khovд River, with spillway; (ii) Construction of a new gated intake structure with sediment sluicing channel and protection embankment; (iii) Reformation, realignment and lining of the main canal 1.65 km long to discharge into the balancing storage; (iv) Construction of a balancing storage with a storage depth up to 3 m and overall surface water area of 250 x 150 m; (v) Construction of a pump station; (vi) Installation of main and subsidiary pressure pipes; (vii) Four 100-ha center pivot sprinkler sets; (viii) Drip systems for up to 80 ha of upgraded and revitalized orchard; (ix) Reforming and/or new drains for about 10 km and protection bank; (x) 7.5 km of windbreaks (7.5 ha) comprising two lines of trees and one of fruit/nut bushes with drip irrigation (up to 8 ha)

No.	Location	Subproject	Activities and construction content
			(xi) Protection fence 10 km long; and (xii) Construction/formation of up to 10 km of access road.
4.	Western Region: Khovd Aimag, Altai Soum	Boomiin Am Irrigation Scheme	Main characteristics: Main canal by gravity, balancing storage, pump, pipes, command area by sprinkler and drip. Civil works and equipment include: (i) Construction of a rockfill weir with spillway across the Bodonch River; (ii) Construction of a new gated intake structure with sediment sluicing channel and protection embankment; (iii) Reformation and lining of the main canal for 5 km; (iv) Rehabilitation of the existing balancing storage (98 m, width 62 m, depth 3 m) with a volume of 18,230 m ³ ; (v) Construction of a pump station and installation of 2 pumps (1 to provide a reserve); (vi) Installation of main and subsidiary pressure pipes (HDPE) 4.8 km long; (vii) Five center pivot sprinkler sets; (viii) Reforming and/or construction of new drains and protection bank; (ix) 8 km of windbreaks (8.76 ha) comprising two lines of trees and one of fruit/nut bushes with 3 drip systems; (x) Protection fence with length of 13 km; (xiii) Construction/formation of up to 13 km of access road.
5.	Western Region: Bayan-Ulgii Aimag, Bayannuur Soum	Tsul Ulaan Irrigation Scheme	Main characteristics: Main canal by gravity, with distributary and field canals, providing water for sprinklers and drip. Civil works and equipment include: (i) Dredging of river section from main Khovd river channel to existing intake channel on right bank, provisionally 2,000 m ³ comprising 400 m x 1 m x 5 m; (ii) Construction of a rockfill weir with spillway across the Khovd River; (iii) Construction of a new gated intake structure with sediment sluicing channel and protection embankment; (iv) Reformation and lining of the main canal for 5.75 km; (v) Reformation and lining of the header canal (2.55 km) and 19 distributary canals (14.05 km) with flow control gates; (vi) Two lateral move sprinkler sets; (vii) Drip irrigation for 8 ha; (viii) Reforming of about 2.5 km of drains and/or building about 3 km of new drains and protection banks; (ix) Construction of about 3.1 km of windbreaks (3.1 ha); (x) Construction of 6.6 km of protection fence; and (xiv) Construction/formation of up to 6.6 km of access roads.
6.	Western Region: Bayan-Ulgii Aimag, Sagsai Soum	Ulaandel Irrigation Scheme	Main characteristics: Main canal by gravity, balancing storage (settling basin), pump, pipes, command area by sprinkler and drip. Civil works and equipment include: (i) Rockfill weir with spillway across Sagsai River; (ii) Construction of a new gated intake structure with sediment sluicing channel and protection embankment; (iii) Reformation and lining of the main canal for 2 km; (iv) Construction of a settling basin (30 m x 20 m x 3.5 m); (v) Construction of a pump station equipped with 2 pumps (including 1 standby); (vi) Installation of main and subsidiary pressure pipes with a length of 3.5 km; (vii) One 84-ha center pivot sprinkler system; (viii) Six 10-ha water efficient drip irrigation systems;

No.	Location	Subproject	Activities and construction content
			<p>(ix) 1-3 drip systems to irrigate up to 7 ha of windbreak;</p> <p>(x) Reforming existing and/or constructing new drains for about 6 km and construction of associated protection banks;</p> <p>(xi) Establishment of about 7 km of windbreaks (7 ha) together with associated drip irrigation systems; and</p> <p>(xv) Construction of 12 km of protection fence.</p>
7.	Western Region: Zavkhan Aimag, Telmen Soum	Khuren Tal Irrigation Scheme	<p>Main characteristics: Main canal by gravity, balancing storage, pump, pipes, command area by sprinkler and drip plus open lined distribution channels.</p> <p>Civil works and equipment include:</p> <ul style="list-style-type: none"> (i) Rockfill weir with spillway across the Ider River; (ii) Construction of a new gated intake structure with sediment sluicing channel and protection embankment; (iii) Reformation and lining of the main canal with a length of 4.4 km; (iv) Construction of a balancing storage of 150 m³; (v) Lining of distribution canals for 2.3 km; (vi) Construction of a pump station with 2 pumps (vii) Installation of main and subsidiary pressure pipes with a length of 3.4 km; (viii) Two center pivot sprinkler systems, one for 100 ha and one of 22 ha; (ix) Four self-propelled lateral move sprinkler sets for 25 ha each; (x) Two 10-ha water efficient drip systems; (xi) Reforming existing and/or constructing new drains (10 km) and protection banks; (xii) Establishing 8 km of windbreaks (8 ha) including drip irrigation systems; (xiii) Construction of a 10 km protection fence; and (xvi) Construction/formation of up to 10 km of access road.
8.	Western Region: Zavkhan Aimag, Uliastai Soum	Nogoon Khashaa Irrigation Scheme	<p>Main characteristics: Main canal by gravity, with distributary and field canals, providing water for sprinklers and drip.</p> <p>Civil works and equipment include:</p> <ul style="list-style-type: none"> (i) Construction of a rockfill weir with spillway across Chigestei River channel; (ii) Construction of a new gated intake structure with sediment sluicing channel and protection embankment; (iii) Reformation and lining of the main canal for 0.6 km; (iv) Reformation and lining of distributary canal for 4.3 km and 12 field canals with total length of 6.5 km with flow control gates; (v) Four lateral move sprinkler sets; (vi) Drip irrigation for 8ha; (vii) Reforming of drains for about 2.5 km and/or construction of new drains for about 3 km, and construction of protection banks; (viii) Establishing 3.1 km of windbreaks (3.1ha); (ix) Construction of 8.4 km of protection fence; and (xvii) construction/formation of up to 6.9 km of access road.
9.	Central Region: Selenge Aimag, Sant Soum	Iven gol Irrigation Scheme	<p>Main characteristics: Main canal by gravity, with distributary canals, providing water for pipes leading to sprinklers and drip</p> <p>Civil works and equipment include:</p> <ul style="list-style-type: none"> (i) Construction of a rockfill weir up to 40 m, with spillway, across the Iven Gol River channel; (ii) Construction of a new gated intake with sediment sluicing channel and protection embankment;

No.	Location	Subproject	Activities and construction content
			<ul style="list-style-type: none"> (iii) Reformation and lining of the main canal for 0.5 km; (iv) Construction of balancing storage (250 m x 200 m x 2 m); (v) Reformation and lining of distributary canal for 4.8 km providing water to pipes at up to 15 offtakes; (vi) Up to 15 pressure pipes with total length 4.7 km to supply either open canal (sump) for sprinkler systems or to the distributed drip irrigation control stations; (vii) Three lateral move sprinkler sets to irrigate up to 126 ha of mostly potatoes and some vegetables; (viii) Installation of 10-12 drip irrigation sets for up to 80 ha; (ix) Reforming and/or construction of drains for 5.9 km and protection banks; (x) Establishing 5.9 km of windbreaks (5.9 ha); (xi) Construction of 6.9 km of protection fence; and (xviii) Construction/formation of up to 12.7 km of access road.
10.	Central Region: Selenge Aimag, Zuunburen Soum	Okhindiin Tal Irrigation Scheme	<p>Main characteristics: Main canal by gravity taking water from a diversion formed by a weir, balancing storage, pump, pipes, command area by sprinkler and drip.</p> <p>Civil works and equipment include:</p> <ul style="list-style-type: none"> (i) Rockfill weir with spillway across the Selenge River; (ii) Construction of a new gated intake structure with sediment sluicing channel and protection embankment; (iii) Construction of a lined main canal with a length of 7-8 km; (iv) Construction of 12,000 m³ of balancing storage (80 m x 60 m x 2.5 m); (v) Construction of a pump station with 4 pumps; (vi) Installation of a main pressure pipe with a length of 5.9 km and subsidiary pressure pipes with a total length of 16 km; (vii) Provision of 5 100-ha and 4 21-ha center pivot sprinkler systems; (viii) Drip systems for areas that cannot be otherwise irrigated; (ix) Reforming and/or new drains for about 6 km and construction of protection banks; (x) Establishment of windbreaks with drip irrigation (to be confirmed if needed or not during detailed design); (xi) Construction of 23.1 km of protection fence; and (xix) Construction/formation of up to 35 km of (earthen) access road.
11.	Central Region: Tuv Aimag, Batsumber Soum	Sugnugur Irrigation Scheme	<p>Main characteristics: Main canal by gravity, with a distributary canal, providing water for pipes leading to sprinklers and drip.</p> <p>Civil works and equipment include:</p> <ul style="list-style-type: none"> (i) Construction of a rockfill weir about 250 m across, with spillway, across the Sugnugur River channel (ii) Construction of a new gated intake with sediment sluicing channel and protection embankment (iii) Reformation and re-lining/repair of the main canal for 5 km to balancing storage (iv) Construction of a balancing storage with capacity 49,000 m³; (v) Reformation and lining of distributary canal for 4 km providing water to pipes at up to 10 offtakes; (vi) Up to 10 pressure pipes with a total length of 4.6 km to supply either open canal (sump) for sprinkler systems or to the distributed drip irrigation control stations; (vii) One lateral move sprinkler set to irrigate up to 40 ha of mostly cereals; (viii) Eleven drip irrigation sets for up to 105 ha of potatoes and vegetables; (ix) Reforming and/or construction of drains up to 12 km together with protection banks; (x) Establishment of 4.9 km of windbreaks (4.9 ha) with drip irrigation; (xi) Construction of 12 km of protection fence; and

No.	Location	Subproject	Activities and construction content
			(xx) Construction/formation of up to 13 km of access road.
12.	Eastern Region: Khentii Aimag, Kherlen Soum	Dulaanii Tal Irrigation Scheme	<p>Main characteristics: Main canal by gravity, providing water for pipes leading to sprinklers and drip Civil works and equipment include:</p> <ul style="list-style-type: none"> (i) Construction of a rockfill weir with spillway across the Kherlen River; (ii) Construction of a new gated intake with sediment sluicing channel and protection embankment; (iii) Reformation, realignment and lining of the main canal for 0.2 km; (iv) Construction of a pump station with four diesel pumps; (v) Installation of 4.7 km of main and 9 km of subsidiary pressure pipes; (vi) Installation of three 56-ha central pivot sprinklers to irrigate a total of 616 ha of cereals and vegetables; (vii) ten drip systems to irrigate up to 84 ha potatoes. (viii) Reforming and/or construction of new drains for about 6 km together with protection banks; (ix) Establishment of about 12.9 km of windbreaks (12.9 ha) together with drip irrigation; (x) Construction of 12.9 km of protection fence; and (xi) Construction/formation of up to 13 km of access road.
13.	Central, Western, Eastern and Southern Regions	Strengthening of seed research and production capacity	<p>Main Characteristics: Upgrading of civil works including irrigation facilities, and equipment.</p> <p>Civil works and equipment include:</p> <ul style="list-style-type: none"> (i) At IPAS headquarters, <ul style="list-style-type: none"> a) Equipment including (a) climate control growth chambers, (b) seed/vegetative storage cool rooms (2 m x 2 m), (c) small cool rooms, and (d) seed cleaning and packaging (small set including bag sealing); (ii) At Darkhan Elite Farm, <ul style="list-style-type: none"> a) Civil works including (a) irrigation rehabilitation (98 ha) and modernization (250 ha), (b) sheds (large covers for machinery, one with built in lockable space), and fencing of water facilities and sheds, storage and machinery compound, and b) Equipment including (a) seed cleaning and packaging equipment for smaller elite seed and legumes, (b) small storage facilities (20-ton capacity), and (c) one set of conservation farming equipment; (iii) At Orkhon seed farm, <ul style="list-style-type: none"> a) Civil works including (a) irrigation rehabilitation and modernization (14ha), (b) covered space for machinery, enclosed space, and (c) fencing to prevent livestock incursions; b) Equipment including (a) small cool rooms for cane and product storage, (b) mechanisation package comprising tractor, flail mower, ripper, bed former, mulch layer, rotary hoe and sprayer, and (c) seed cleaning and packaging; (iv) At Barynkharaa seed farm, <ul style="list-style-type: none"> a) Civil works including (a) irrigation rehabilitation and modernization (12.5 ha), (b) covered space for machinery, enclosed space, and (c) fencing to prevent livestock incursions, b) Equipment including (a) all-weather greenhouse with benches, (b) small cool rooms for cane and product storage, (c) mechanisation package comprising tractor, flail mower, ripper, bed former, mulch layer, rotary hoe and sprayer, and (d) seed cleaning and packaging; (v) At Western Region Agricultural Research Institute, <ul style="list-style-type: none"> a) Civil works including (a) irrigation rehabilitation and modernization (50 ha), (b) covered space for machinery, enclosed space, and (c) small classroom and amenities with project equipment,

No.	Location	Subproject	Activities and construction content
			<ul style="list-style-type: none"> b) (a) all-weather greenhouse with benches, (b) small cool rooms for cane and product storage, (c) mechanisation package comprising tractor, flail mower, ripper, bed former, mulch layer, rotary hoe and sprayer, and (d) seed cleaning and packaging; (vi) At Eastern Region Agricultural Research Institute, <ul style="list-style-type: none"> a) Civil works including (a) irrigation rehabilitation and modernization (80 ha), (b) covered space for machinery, enclosed space, and (c) small classroom and amenities with project equipment, b) Equipment including (a) mechanisation package comprising tractor, flail mower, ripper, bed former, mulch layer, rotary hoe and sprayer, and (b) seed cleaning and packaging; (vii) At Southern Region Agricultural Research Institute, <ul style="list-style-type: none"> a) Equipment including (a) seed cleaning and packaging, and (b) cool stores; and (xxii) At central level, equipment to improve MOFALI's technical capacity.
14.	Ulaanbaatar	Upgrading of Institute of Plant Protection	<p>Supply of urgently needed equipment and standard chemicals for food safety and pesticide residue laboratory including:</p> <ul style="list-style-type: none"> (i) high performance liquid chromatography – mass spectrometer; (ii) atomic absorption spectrometer; (iii) other minor equipment; and (xxiii) standard substances and reagents. <p>Total Base Cost (including VAT where paid): MNT504.7 million.</p>

ha = hectare; km = kilometer; m = meter, m³ = cubic meter, MOFALI = Ministry of Food, Agriculture, and Light Industry, VAT = value added tax

Sources: Subproject feasibility studies.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Indicative Activities	2019										2020				Responsibility
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep		
LFF mission															ADB
Advance contracting actions															MOF, MOFALI
ADB staff review meeting															ADB
Loan negotiations															ADB, MOF, MOFALI
ADB Board consideration															ADB
Loan and project agreements signed															ADB, MOF, MOFALI
Government legal opinion provided															MOF
Establishment of project implementation arrangements															MOFALI
Loan effectiveness															ADB, MOF

ADB = Asian Development Bank; LFF = loan fact-finding; MOF = Ministry of Finance; MOFALI = Ministry of Food, Agriculture, and Light Industry.

Source: Asian Development Bank.

No	Subproject Name/ Indicative Activities	2020				2021				2022				2023				2024				2025				2026		
		Q1	Q2	Q3	Q4	Q1	Q2																					
3.8	CGGs established and functioning																											
3.8.1	Tsakhir Irrigation Scheme																											
3.8.2	Yolton Irrigation Scheme																											
3.8.3	Erdeneburen Irrigation Scheme																											
3.8.4	Boomiin am Irrigation Scheme																											
3.8.5	Tsul Ulaan Irrigation Scheme																											
3.8.6	Ulaandel Irrigation Scheme																											
3.8.7	Khuren Tal Irrigation Scheme																											
3.8.8	Nogoon khashaa Irrigation Scheme																											
3.8.9	Iven Gol Irrigation Scheme																											
3.8.10	Okhindiin Tal Irrigation Scheme																											
3.8.11	Sugnuger Irrigation Scheme																											
3.8.12	Dulaanii Tal Irrigation Scheme																											
3.9	Reporting																											
3.9.1	Auditing																											
3.9.2	Remote sensing																											
3.9.3	Semi-annual and annual reports																											
3.9.4	Mid-term Report																											
3.9.5	Project Completion Report																											

[Grey box] = procurement, [Black box] = implementation, CD = capacity development, EBA = environmental baseline assessment, EIA = environmental impact assessment, DD = detailed design, PIU = Project Implementation Unit, Q = quarter.

Source: Asian Development Bank estimates.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations: Roles and Responsibilities

17. The Ministry of Food, Agriculture, and Light Industry (MOFALI) is the executing agency responsible for overall project implementation. Crop Production Development Policy and Coordination Department (CPDPCD) will be the implementing agency for the project. Guidance and sector coordination will be through a national project steering committee (PSC). The PSC will be chaired by the State Secretary of MOFALI and will meet at least twice a year during project implementation.

18. A project implementation unit (PIU) will be established at MOFALI in Ulaanbaatar. The PIU will be responsible for daily project management, including accounting, procurement, training, monitoring, and reporting. The PIU will be chaired by the Director General of CDPCD. The executing and implementing agencies lack the personnel and resources needed to fully implement the project, and the PIU staff will be recruited for the administrative and technical tasks.

19. Once the PIU structure is approved by the Ministry of Finance (MOF), MOFALI will finalize and acquire no objection from ADB on the TOR of the PIU staff, and publicly announce the vacancies through local newspapers and MOFALI website. The selections of all PIU staff shall be subject to ADB's prior-review and approval to ensure that qualified candidates are selected. Project implementation arrangements, including the establishment of the PSC, selection and hiring of the PIU staff, reporting, and other relevant arrangements, will comply with Mongolia's Regulation on Utilization of Proceeds of Foreign Loans of the Government; Implementation, Administration, Financing, Monitoring and Evaluation of Projects and Programs Funded by Such Proceeds, approved under the Resolution NO. 196 of the Minister of Finance and other relevant regulations approved and amended from time to time, provided they do not conflict with the provisions of the loan and grant agreements¹³, this project administration manual or ADB policies.

20. MOFALI will assume overall responsibility for the project implementation, including authorization of the PIU staff contracts (with contracting of the PIU procurement and financial specialists to be undertaken by MOF upon request by MOFALI). The Director General of CDPCD will be responsible for the annual review of PIU staff performance, overall project reporting, and/or other management issues, and will coordinate closely throughout project implementation.

21. Roles and responsibilities of the project agencies are summarized in Table 2.

Table 2: Project Implementation Organization

Project Implementation Organizations	Management Roles and Responsibilities
Executing Agency: Ministry of Food, Agriculture, and Light Industry (MOFALI)	<ul style="list-style-type: none"> ➢ Provide the main contact point for the Asian Development Bank (ADB); ➢ Provide overall guidance, coordination, supervision, and management for project preparation, and implementation; ➢ Responsible for coordinating project implementation activities; ➢ Guidance on strategic issues and interagency coordination; ➢ Open and co-manages (with PIU coordinator) the project advance account, and liquidation and replenishment of advances made; ➢ Review, approve, co-sign (with MOF) and submit loan withdrawal applications to ADB;

¹³ One each respectively for the regular loan and concessional loan

Project Implementation Organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> ➢ Release loan proceeds; ➢ Prepare and monitor repayment plan of ADB loan and repayment works; ➢ Responsible for recruitment and coordination of PIU; ➢ Ensures all PIU tasks are completed in a timely and efficient manner; ➢ Reviews PIU progress reports; ➢ Submits progress reports to ADB and MOF; ➢ Ensures PIU uploads project financial statements and progress reports to MOF's ODA MIS ➢ Ensures that procurement is undertaken in accordance with government laws and regulations and ADB policies; ➢ Develop and submit annual project budget to MOF in line with the Budget Law of Mongolia; ➢ Facilitates auditing of project accounts; and ➢ Chair the PSC (chair: MOFALI State Secretary)
Project Steering Committee (PSC): Multisector chaired by MOFALI. Comprises MOFALI, MOF, Ministry of Environment and Tourism, the Director of Agriculture Department of each <i>aimag</i> . Observers: agriculture professional association/CSO, JICA	<ul style="list-style-type: none"> ➢ Provide policy guidance and advice on project implementation; ➢ Facilitate interagency coordination and coordinate with other involved parties at the provincial level; ➢ Resolve institutional problems affecting project preparation and implementation at the concerned level; ➢ Reviews project progress; ➢ Endorses procurement and implementation plans; ➢ Ensures timely inter-ministerial coordination and support for the project, including information exchange and facilitation of meetings and approvals, as needed; and ➢ Meets at least semi-annually
Implementing Agency: CPDPCD of MOFALI	<ul style="list-style-type: none"> ➢ Provide overall coordination of project preparation, and comprehensive supervision of project implementation; ➢ On behalf of MOFALI, responsible for: (i) co-signing (with MOF) of withdrawal applications to ADB; (ii) overall project planning and implementation; (iii) consolidation of the technical and financial project progress reports from both implementing agencies and timely submission to the MOFALI Minister's Office, MOF, and ADB; and (iv) facilitation of project auditing ➢ Supervise implementation of subprojects e.g., civil works, meetings and trainings with soum governments, farmers and other communities.
Project Implementation Unit (PIU)	<ul style="list-style-type: none"> ➢ Comprising a project coordinator, finance specialist, procurement specialist,^a engineering and contract management specialist, monitoring and evaluation specialist, environment safeguards specialist, social and gender specialist, office manager; ➢ Based at MOFALI in Ulaanbaatar; ➢ On behalf of implementing agency, the PIU will be responsible for overall coordination and supervision of project implementation, including the following tasks: <ul style="list-style-type: none"> (iv) Perform direct project management and implementation activities; (v) Prepare annual work programs and budgets; (vi) Guide procurement activities, including the preparation and submission of bidding documents, bid evaluation reports, and other necessary documents to ADB for necessary approval;

Project Implementation Organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> (vii) Consolidate and submit withdrawal applications to ADB through the executing agency; (viii) Prepare annual contract award and disbursement projections; (ix) Consolidate and submit the updated procurement plan to ADB for approval during project implementation; (x) Guide and supervise, together with ADB, the project implementation consultants; (xi) Organize training and monitoring and evaluation, including project performance management system; (xii) Ensure environmental safeguards and EMP are complied with based on National Legislation, standards and ADB's Safeguard Policy Statement (2009); (xiii) Implement, monitor and report on gender action plan (GAP) and social development action plan (SDAP). (xiv) Monitor project progress and impact; and (xv) Consolidate, as agreed, and submit (a) semiannual progress reports, midterm report, and project completion report; (b) semiannual environmental and annual social monitoring reports; (c) annual statement of utilization of project funds; and (d) audited project financial statements to ADB and the government.
Khentii, Tuv, Selenge, Zavkha, Govi-Altai, Khovd and Bayan-Ulgii <i>Aimag</i> governments	<ul style="list-style-type: none"> ➢ Facilitate <i>aimag-</i> and <i>soum</i>-level project support, including arrangement of project workshops and trainings ➢ Assign at least one <i>soum</i> officer per <i>soum</i> in subproject to support the subproject implementation ➢ <i>Soum</i> officers to ensure <i>soum</i> and <i>aimag</i> governments are updated on project progress ➢ <i>aimag</i> governors undertake regular coordination with the PIU ➢ Participate in central- and <i>aimag</i>-level meetings to define operation and maintenance arrangements and financing for the project facilities, including the allocation of government funds for operation and maintenance ➢ Provide timely information and clarification on any local land issues and permits, as needed ➢ Review PIU progress reports
General Agency for Specialized Inspection – environment, health and safety inspectors	<ul style="list-style-type: none"> ➢ Environment, health and safety inspection.
ADB	<ul style="list-style-type: none"> ➢ Support MOFALI to provide training related to ADB's policies, including procurement guidelines, financial management, loan disbursement, safeguards, and preparation of progress reports; ➢ Provide guidance to ensure compliance with loan and project agreements; ➢ Conduct regular loan review missions, a midterm review mission, and a project completion review mission; ➢ Review and/or approve procurement actions for the ADB-financed procurement packages; ➢ Process withdrawal applications and release loan funds; ➢ Monitor project implementation progress; ➢ Review annual audit reports and follow up on audit recommendations;

Project Implementation Organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> ➢ Update regularly the project performance review reports with the assistance of the executing and implementing agencies; ➢ Update regularly the project information documents for public disclosure at ADB website, including safeguard documents; and ➢ Monitor implementation of ADB's anticorruption policies.

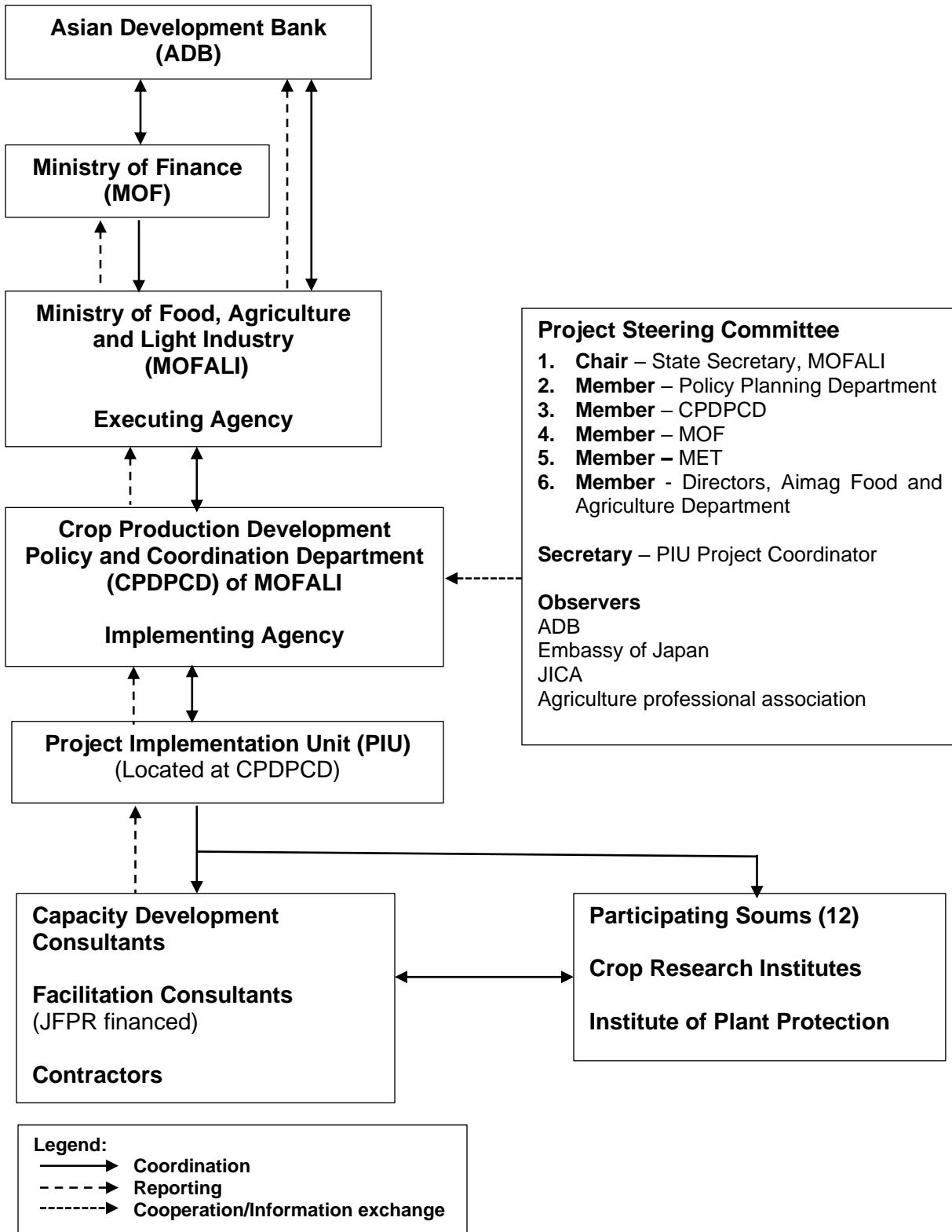
^a In compliance with Regulation 196 of Mongolia's Ministry of Finance, the project procurement will be coordinated by a qualified PIU procurement specialist. Mongolia's Department for Procurement will not be involved in the project procurement as the department's mandate is for state-financed (not donor-funded) projects.

Source: Asian Development Bank.

B. Key Persons Involved in Implementation

Organization	Representative
Executing Agency	
Ministry of Food, Agriculture, and Light Industry	Officer's Name: T. Jambaltsuren Position: State Secretary Telephone: 51-261308 Email: jambaltseren@mofa.gov.mn Address: Government building 9/A, Peace Avenue, Bayanzurkh Duureg, Ulaanbaatar-13381
Implementing Agency	
Crop Production Development Policy and Coordination Department	Officer's Name: Ts. Bolorchuluun Position: Director General Telephone: 51-262713 Email: bolorchuluun@mofa.gov.mn Address: Government building 9/A, Peace Avenue, Bayanzurkh Duureg, Ulaanbaatar-13381
Asian Development Bank	
East Asia Department Environment, Natural Resources, and Agriculture Division	Qingfeng Zhang Director Tel. no.: +63-2-632-6769/4444 Fax no.: +63-2-636-2534/2444 Email: qingfengzhang@adb.org Address: 6 ADB Avenue, Mandaluyong 1550 Manila, Philippines
Mission Leader	Jan Hinrichs Senior Natural Resources Economist Tel. no.: +63 2 632-1582 Fax no.: +63-2-636-2534/2444 Email: jhinrichs@adb.org Address: 6 ADB Avenue, Mandaluyong 1550 Manila, Philippines

C. Project Organization Structure



IV. COSTS AND FINANCING

22. The project is estimated to cost \$46.25 million. The project investment costs include goods, works, and consulting services to support upgrading of 12 irrigation systems; modernization of seed production facilities, pesticide and food quality testing; and modernization of vegetable production; as well as project management.

23. The government has requested \$14.7 million regular loan from ADB's ordinary capital resources to help finance the project. The loan will have a 25-year term, including a grace period of 6 years; an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year; and such other terms and conditions as are set forth in the draft loan and grant agreements. Based on the straight-line repayment method, the average maturity is 15.25 years, and the maturity premium payable to ADB is 0.1%. The government has also requested \$25.3 million concessional loan from ADB's ordinary capital resources to help finance the project. The loan will have a 25-year term, including a grace period of 5 years; an annual interest rate of 2%. The government has also requested a grant of \$2 million from the Japan Fund for Poverty Reduction.

24. The ADB loan will finance 86% of the total project costs through a regular loan (31.8%) and a concessional loan (54.7%), including expenditures relating to civil works, goods, and services. A cofinanced grant will finance 4.3% of the total project costs, including expenditures relating to irrigation equipment for poor households and capacity building.

25. Central and local governments will contribute 9.2% of the total project costs through in-kind contribution of work time by government personnel and exemption of value added taxes and duties for works and goods. The value added tax and custom duties exemptions will be accounted and recorded by the PIU, to properly account for the government counterpart financing for the project. The amounts exempted will be recorded as part of the cost of the assets purchased and/or services contracted. All PIU staff and national consultant salaries are inclusive of personal income taxes; such personnel are responsible for fulfilling their Mongolian tax obligations. Salaries for international consultants and resource persons who are required to pay tax on their income earned in Mongolia are inclusive of relevant taxes, i.e. the project will pay the relevant tax; the treaties for the avoidance of double taxation will need to be checked to determine whether income taxes need to be paid by the international consultants or not. The government has assured ADB that it will provide additional funding for any shortfall of funds or cost overruns to ensure the success of the project.

26. Administrative budget support of 3% of the total grant amount (\$60,000), exclusive from the project grant, will be provided given the wide spread of the project (covering the full end to end value chain for an underexplored sector in Mongolia in four soums) which warrants additional resources beyond those provided by the regular administration budget. This budget will be financed from the JFPR administrative budget, not from the project grant. The administrative budget support will be used to (i) hire a staff consultant to provide overall support to ADB as well as the government's executing agency in project implementation, if and when needed and deemed necessary, by the implementing project officer, to (a) monitor and evaluate activities and project progress beyond the regular progress checks conducted by the ADB staff team and resources, (b) evaluate status and progress of the community growers groups farming action plans, (c) monitor the project's outreach to the intended beneficiaries, (d) conduct periodical community level consultations; and (e) review performances of the project executing agency, PIU, and consultants to ensure intended outputs are delivered on time; (ii) knowledge product development and dissemination, including a written impact report, multi-media story (video or

pictorial), and organization of the final project completion symposium for showcasing success and sharing lessons learned; and (iii) facilitate community participation or civil society organization collaboration in consultations, field activities, or the final project completion symposium planned. Final details will be confirmed during inception phase once project implementation starts.

27. The special administrative budget support will be administered by ADB. The processing and implementing project officer will manage and track the utilization of the administration budget support and will provide the ADB Partner Funds Division (SDPF) on a periodic basis (annual) an update of its utilization. Any deviation from the proposed expenditures should be consulted with, and endorsed by, SDPF.

A. Cost Estimates Preparation and Revisions

28. **Preparation.** The cost estimates were prepared jointly by the implementing agency and ADB with assistance from the transaction technical assistance (TA) consultants. The sources and basis of cost estimates were reviewed during project preparation and confirmed by related parties. The process was facilitated by a model in excel software which enabled easy updating or revision, if necessary. The model is maintained by both the implementing agency (IA) and ADB.

29. **Revision.** Revision of cost estimates will be conducted when deemed necessary during implementation. The PIU will be responsible in proposing and drafting the revisions which will be subject to ADB's approval.

B. Key Assumptions

30. The following key assumptions underpin the cost estimates and financing plan:

- (i) Exchange rate: MNT2,667.5 = \$1.00 (as of 9 October 2019).
- (ii) Price contingencies based on expected cumulative inflation over the implementation period are as follows:

Table 3: Escalation Rates for Price Contingency Calculation

Item	2020	2021	2022	2023	2024	2025	Average
Foreign rate of price inflation (%)	1.50	1.60	1.60	1.60	1.60	1.60	1.58
Domestic rate of price inflation (%)	8.00	8.00	8.00	8.00	8.00	8.00	8.00

Source: Asian Development Bank estimates.

C. Detailed Cost Estimates by Expenditure Category

Table 4: Detailed Cost Estimates by Expenditure Category

Item	In MNT millions			In \$ millions			% of Base Cost
	Foreign Exchange	Local Currency	Total	Foreign Exchange	Local Currency	Total	
A. Investment Costs							
1. ADB Loan							
a. Civil works	28,691.1	43,036.6	71,727.7	10.76	16.13	26.89	68.21%
b. Equipment and Materials	17,207.9	3,036.7	20,244.6	6.45	1.14	7.59	19.25%
c. Subproject Design and Domestic EIAs	352.0	1,056.1	1,408.2	0.13	0.40	0.53	1.34%
d. Consulting Services	1,549.4	1,549.4	3,098.9	0.58	0.58	1.16	2.95%
e. PIU Operation Costs	199.3	1,793.8	1,993.2	0.07	0.67	0.75	1.90%
f. Project Management	0.0	1,482.3	1,482.3	0.00	0.56	0.56	1.41%
Subtotal (A.1)	47,999.8	51,955.0	99,954.8	17.99	19.48	37.47	95.06%
2. JFPR Grant							
a. Equipment and Materials	2,575.6	454.5	3,030.1	0.97	0.17	1.14	2.88%
b. Consulting Services	1,084.9	1,084.9	2,169.7	0.41	0.41	0.81	2.06%
Subtotal (A.2)	3,660.5	1,539.4	5,199.9	1.37	0.58	1.95	4.94%
Subtotal (A)	51,660.3	53,494.4	105,154.6	19.37	20.05	39.42	100.00%
B. Contingencies							
1. ADB Loan							
a. Physical Contingency	3,534.3	3,662.3	7,196.6	1.32	1.37	2.70	6.84%
b. Price Contingency	2,502.4	12,547.8	15,050.3	0.94	1.41	2.34	5.95%
Subtotal (B.1)	6,036.8	16,210.1	22,246.9	2.26	2.78	5.04	12.79%
2. JFPR Grant							
a. Physical Contingency	183.0	77.0	260.0	0.07	0.03	0.10	0.25%
b. Price Contingency	141.1	136.0	277.1	0.05	0.01	0.07	0.17%
Subtotal (B.2)	324.2	212.9	537.1	0.12	0.04	0.17	0.42%
Subtotal (B)	6,360.9	16,423.0	22,783.9	2.38	2.82	5.21	13.21%
C. Financing Charges During Implementation							
	4,770.3	0.0	4,770.3	1.62	0.00	1.62	4.11%
Subtotal ADB Loan (A.1+B.1+C)	58,806.7	68,165.1	126,971.9	21.88	22.26	44.13	111.96%
Subtotal JFPR Grant (A.2+B.2)^a	3,984.6	1,752.3	5,736.9	1.49	0.62	2.11	5.36%
Total Project Cost (A+B+C)	62,791.5	69,917.4	132,708.9	23.37	22.88	46.25	117.32%

ADB = Asian Development Bank, JFPR = Japan Fund for Poverty Reduction.

Note: Numbers may not sum up precisely because of rounding.

^a An additional \$ 0.06 million budget support will be provided by JFPR for grant implementation which is exclusive of the grant amount. This budget will be used for staff consultant for additional implementation support and monitoring and evaluation, knowledge development and information dissemination, and facilitate community participation or civil society organization collaboration.

Source: Asian Development Bank estimates.

D. Allocation and Withdrawal of Loan and Grant Proceeds

Table 5: Allocation and Withdrawal of ADB Ordinary Capital Resources Loan Proceeds

ADB Financing		
Item	Amount Allocated (\$)	Percentage and Basis for Withdrawal from the Loan Account
	Category	
1. Goods and Works ^a	11,391,228	100%* of total expenditures claimed
2. Services ^a	805,084	100% of total expenditures claimed
3. Interest and Commitment Charges	837,395	100% of amounts due
4. Unallocated	1,666,292	
Total	14,700,000	

^a Proceeds of the Concessional Loan Agreement for the corresponding category are to be fully utilized prior to disbursement of this loan for this category.

* Exclusive of taxes and duties within the territory of the borrower.

ADB = Asian Development Bank.

Table 6: Allocation and Withdrawal of ADB Concessional Ordinary Capital Resources Loan Proceeds

ADB Financing		
Item	Amount Allocated (\$)	Percentage and Basis for Withdrawal from the Loan Account
	Category	
1. Goods and Works	19,953,172	100%* of total expenditures claimed
2. Services	1,631,735	100% of total expenditures claimed
3. Interest Charges	783,238	100% of amounts due
4. Unallocated	2,931,854	
Total	25,300,000	

* Exclusive of taxes and duties within the territory of the borrower.

ADB = Asian Development Bank.

Table 7: Allocation and Withdrawal of JFPR Grant Proceeds

Item	ADB Financing		Percentage and Basis for Withdrawal from the Grant Account
	Amount Allocated (\$)	Category	
1. Goods	1,032,668		100%* of total expenditures claimed
2. Services	813400		100% of total expenditures claimed
3. Unallocated ^a	153,932		
Total	2,000,000		

ADB = Asian Development Bank.

^a This amount also serves as a reserve for (i) currency fluctuations; and (ii) payment of ADB's administration fees and bank charges or other charges pursuant to the applicable provisions of Japan Fund for Poverty Reduction.

* Exclusive of taxes and duties within the territory of the borrower.

F. Detailed Cost Estimates by Outputs and/or Components

Table 9: Detailed Cost Estimates by Outputs
(\$ million)

Item	Total Cost	Output 1		Output 2		Output 3	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category
A. Investment Costs							
1. ADB Loan							
a. Civil works	26.89	25.65	95.4%	0.89	3.3%	0.35	1.3%
b. Equipment and Materials	7.59	6.08	80.1%	1.11	14.6%	0.40	5.3%
c. Subproject Design and Domestic EIAs	0.53	0.53	100.0%	0.00	0.0%	0.00	0.0%
d. Consulting Services	1.16	0.04	3.6%	0.00	0.0%	1.12	96.4%
e. PIU Operation Costs	0.75	0.00	0.0%	0.00	0.0%	0.75	100.0%
f. Project Management	0.56	0.00	0.0%	0.00	0.0%	0.56	100.0%
Subtotal (A.1)	37.47	32.29	86.2%	2.01	5.4%	3.17	8.5%
2. JFPR Grant							
a. Equipment and Materials	1.14	0.60	52.6%	0.00	0.0%	0.54	47.4%
b. Consulting Services	0.81	0.00	0.0%	0.00	0.0%	0.81	100.0%
Subtotal (A.2)	1.95	0.60	30.7%	0.00	0.0%	1.35	69.3%
Subtotal (A)	39.42	32.89	83.4%	2.01	5.1%	4.52	11.5%
B. Contingencies							
1. ADB Loan							
a. Physical Contingency	2.70	2.40	88.9%	0.15	5.6%	0.15	5.5%
b. Price Contingency	2.34	2.13	91.0%	0.16	6.7%	0.05	2.2%
Subtotal (B.1)	5.04	4.53	89.9%	0.31	6.1%	0.20	4.0%
2. JFPR Grant							
a. Physical Contingency	0.10	0.03	30.7%	0.00	0.0%	0.07	69.3%
b. Price Contingency	0.07	0.04	52.6%	0.00	0.0%	0.03	47.4%
Subtotal (B.2)	0.17	0.07	39.7%	0.00	0.0%	0.10	60.3%
Subtotal (B)	5.21	4.60	88.3%	0.31	5.9%	0.30	5.8%
C. Financing Charges During Implementation	1.62	1.42	87.9%	0.06	3.6%	0.14	8.5%
Subtotal ADB Loan (A.1+B.1+C)	44.13	38.25	86.7%	2.37	5.4%	3.51	8.0%
Subtotal JFPR Grant (A.2+B.2)	2.11	0.66	31.4%	0.00	0.0%	1.45	68.6%
Total Project Cost (A+B+C)	46.25	38.91	84.1%	2.37	5.1%	4.96	10.7%

ADB = Asian Development Bank, JFPR = Japan Fund for Poverty Reduction.

Note: Numbers may not sum up precisely because of rounding. Works and goods are exempted from value added tax and duties in the territory of the borrower.
Source: Asian Development Bank estimates.

G. Detailed Cost Estimates by Year

Table 10: Detailed Cost Estimates by Year
(\$ million)

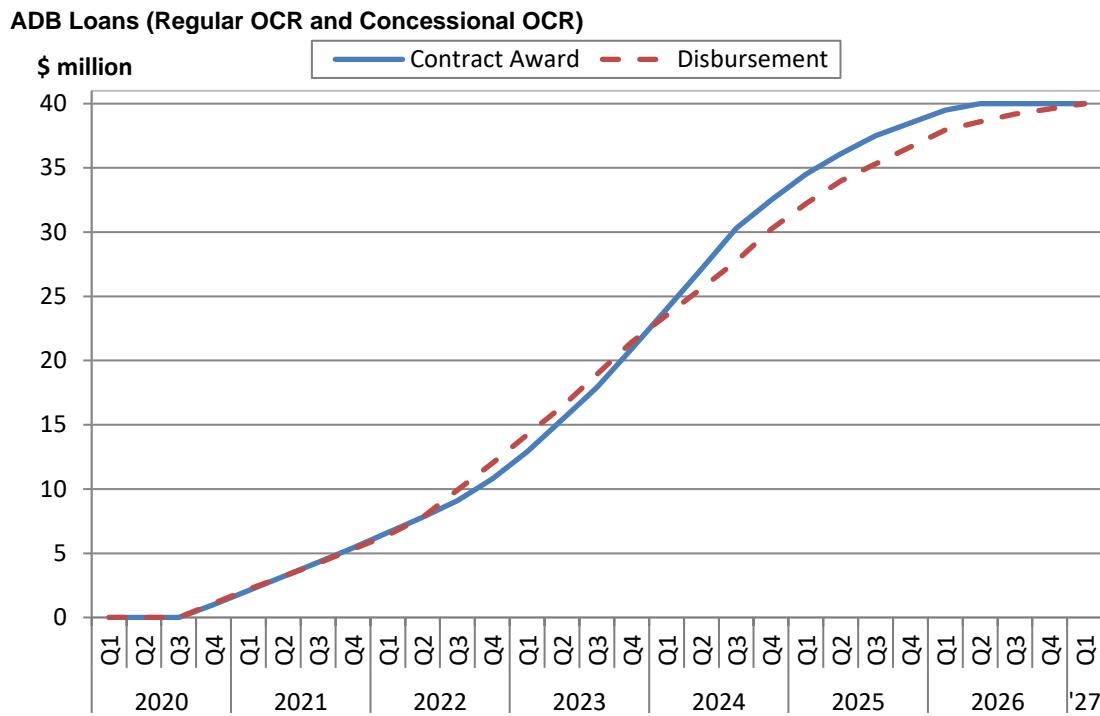
Item	Total Cost	2020	2021	2022	2023	2024	2025
A. Investment Costs							
1. ADB Loan							
a. Civil works	26.89	0.00	1.46	11.08	11.97	2.39	0.00
b. Equipment and Materials	7.59	0.03	0.13	0.53	2.66	4.24	0.00
c. Subproject Design and Domestic EIAs	0.53	0.08	0.23	0.22	0.00	0.00	0.00
d. Consulting Services	1.16	0.18	0.22	0.23	0.22	0.23	0.08
e. PIU Operation Costs	0.75	0.12	0.12	0.12	0.12	0.12	0.12
f. Project Management	0.56	0.09	0.09	0.09	0.09	0.09	0.09
Subtotal (A.1)	37.47	0.51	2.25	12.28	15.06	7.07	0.30
2. JFPR Grant							
a. Equipment and Materials	1.14	0.00	0.00	0.00	1.14	0.00	0.00
b. Consulting Services	0.81	0.00	0.10	0.16	0.19	0.19	0.16
Subtotal (A.2)	1.95	0.00	0.10	0.16	1.33	0.19	0.16
Subtotal (A)	39.42	0.51	2.36	12.44	16.39	7.26	0.46
B. Contingencies							
1. ADB Loan							
a. Physical Contingency	2.70	0.02	0.15	0.90	1.11	0.51	0.01
b. Price Contingency	2.34	0.00	0.06	0.63	1.07	0.58	0.00
Subtotal (B.1)	5.04	0.02	0.21	1.52	2.18	1.10	0.01
2. JFPR Grant							
a. Physical Contingency	0.10	0.00	0.01	0.01	0.07	0.01	0.01
b. Price Contingency	0.07	0.00	0.00	0.00	0.07	0.00	0.00
Subtotal (B.2)	0.17	0.00	0.01	0.01	0.13	0.01	0.01
Subtotal (B)	5.21	0.02	0.21	1.53	2.32	1.11	0.02
C. Financing Charges During Implementation							
Subtotal ADB Loan (A.1+B.1+C)	44.13	0.55	2.51	13.99	17.68	8.82	0.58
Subtotal JFPR Grant (A.2+B.2)	2.11	0.00	0.11	0.17	1.46	0.20	0.17
Total Project Cost (A+B+C)	46.25	0.55	2.62	14.16	19.14	9.02	0.76
% Total Project Cost	100.00%	1.20%	5.66%	30.62%	41.39%	19.5%	1.64%

ADB = Asian Development Bank, JFPR = Japan Fund for Poverty Reduction.

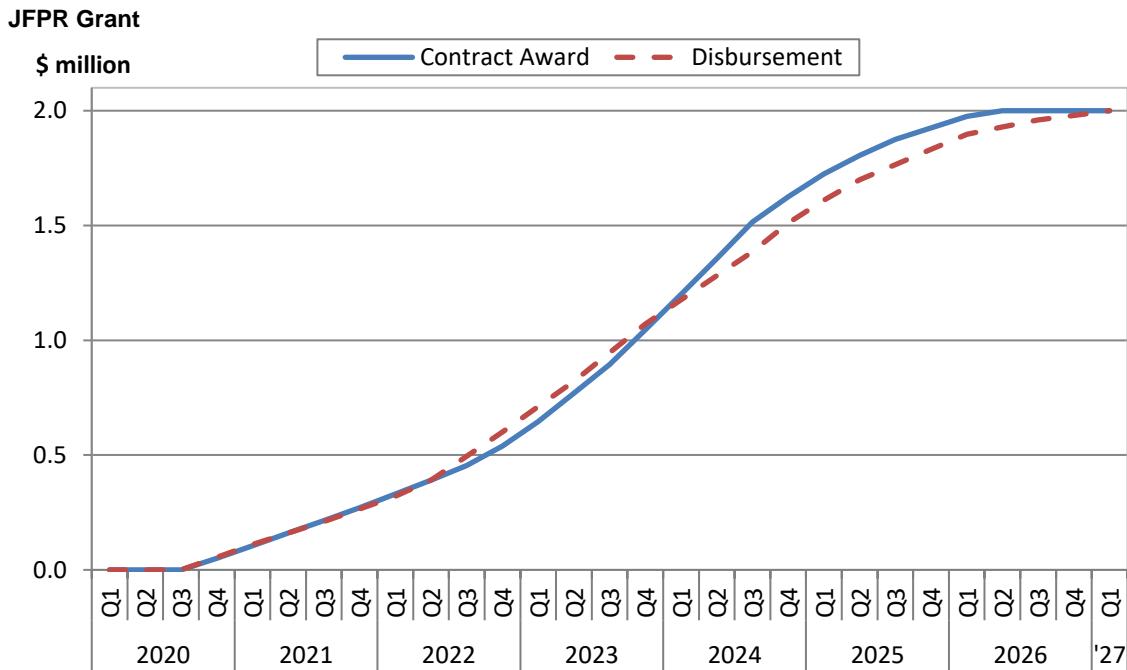
Note: Numbers may not sum up precisely because of rounding. Works and goods are exempted from value added tax and duties in the territory of the borrower.

Source: Asian Development Bank estimates.

H. Contract and Disbursement S-Curve



Year	Contract Award				Total	Disbursement				Total	(\$ million)
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		
2020	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.1	1.1	1.1
2021	1.1	1.1	1.1	1.1	4.4	1.1	1.0	1.0	1.1	4.2	4.2
2022	1.2	1.2	1.3	1.7	5.4	1.1	1.4	2.1	2.1	6.7	6.7
2023	2.1	2.5	2.5	3.0	10.1	2.2	2.2	2.5	2.5	9.4	9.4
2024	3.1	3.1	3.2	2.2	11.6	2.1	2.1	2.1	2.5	8.8	8.8
2025	2.0	1.6	1.4	1.0	6.0	2.0	1.8	1.3	1.3	6.4	6.4
2026	1.0	0.5	0.0	0.0	1.5	1.3	0.7	0.6	0.4	3.0	3.0
2027	0.0				0.0	0.4				0.4	0.4
Total					40.0					40.0	



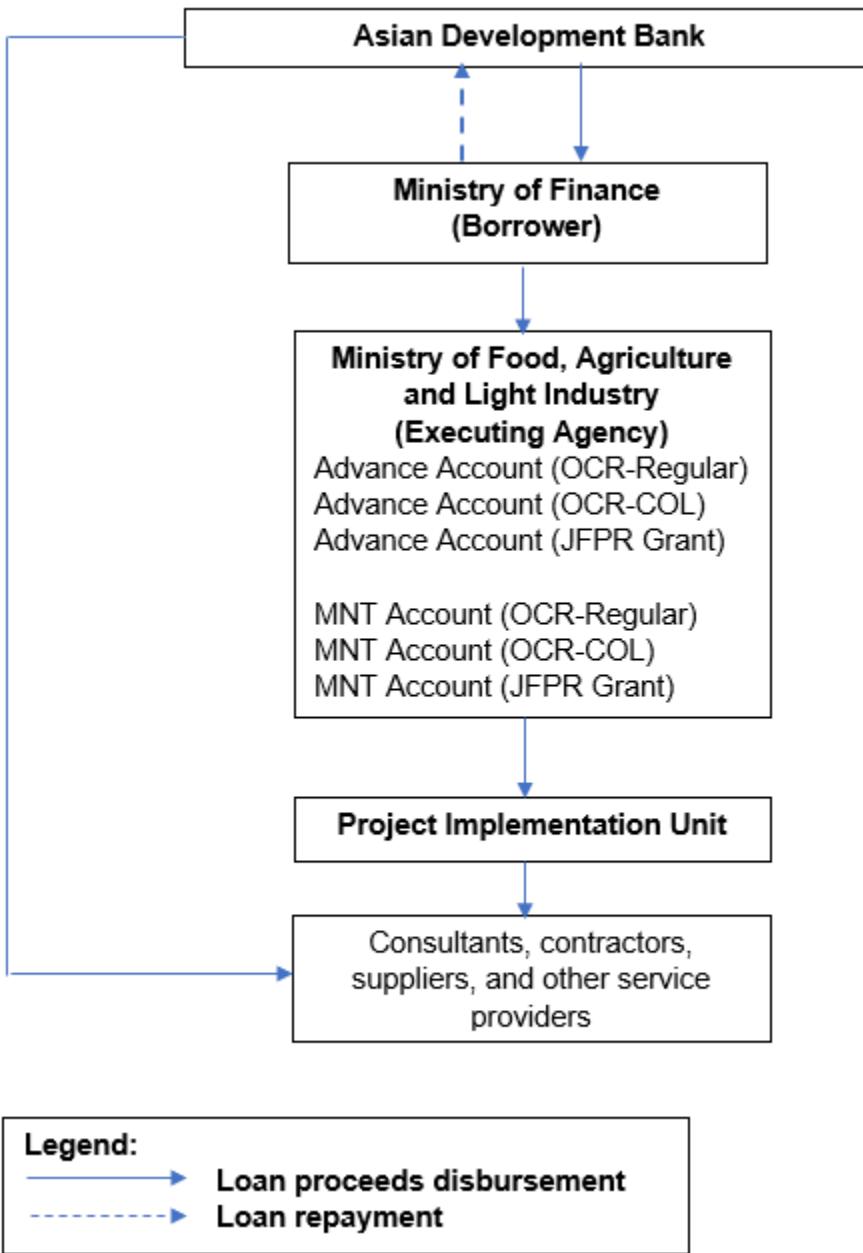
Year	Contract Award				Total	Disbursement				Total
	Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4	
2020	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.06	0.06
2021	0.06	0.06	0.06	0.06	0.22	0.06	0.05	0.05	0.06	0.21
2022	0.06	0.06	0.07	0.09	0.27	0.06	0.07	0.11	0.11	0.34
2023	0.11	0.13	0.13	0.15	0.51	0.11	0.11	0.13	0.13	0.47
2024	0.16	0.16	0.16	0.11	0.58	0.11	0.11	0.11	0.13	0.44
2025	0.10	0.08	0.07	0.05	0.30	0.10	0.09	0.07	0.07	0.32
2026	0.05	0.03	0.00	0.00	0.08	0.07	0.03	0.03	0.02	0.15
2027	0.00				0.00	0.02				0.02
Total					2.00					2.00

Source: Asian Development Bank estimates.

I. Fund Flow Diagram

31. The funds flow mechanism of the project and project fund flow arrangements are shown in Figure 1 with ADB loan proceeds disbursed through an advance account.

Figure 1: Project Funds Flow Arrangements



ADB = Asian Development Bank, COL = concessional, JFPR = Japan Fund for Poverty Reduction, OCR = ordinary capital resources

Source: Asian Development Bank estimates.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

32. The Financial Management Assessment (FMA) was prepared in accordance with Asian Development Bank's (ADB) Guidelines.¹⁴ The purpose of this FMA to determine the robustness of accounting procedures, financial controls, audit arrangements and the capacity of MOFALI. The FMA was conducted with the aid of the ADB Financial Management Assessment Questionnaire (FMAQ) and was undertaken between June-July 2019 by the financial management specialist engaged for the project transaction technical assistance and included the personnel of MOFALI's Accounting Division, MOFALI's Crop Production Development Policy and Coordination Department (CPDPCD). In addition to the FMA conducted for the project, additional information was derived from: (i) a Public Financial Management Performance Report¹⁵ prepared by the World Bank for Mongolia; (ii) a report by the International Monetary Fund (IMF);¹⁶ and (iii) ADB's Country Partnership Strategy (CPS).¹⁷ ADB's CPS finds that efforts to improve public financial management are still needed, though Mongolia has succeeded in recent years to rein in fiscal imbalances.

33. The pre-mitigation risk for financial management of the project was assessed to be moderate. Inherent risks concern the volatility of the national economy based on mineral sector, which causes optimistic macroeconomic parameters and weak fiscal management. However, these are being addressed by the government with coordinated assistance from the donor community, in parallel with efforts to improve the economy through support in agriculture.

34. Project risk comprise of the unavailability of MOFALI staff to be assigned to the Project Implementation Unit (PIU) to perform day to day project management work. Identified control risk in implementation of financial management is limited knowledge of MOF internal audit staff on ADB rules and procedures. These weaknesses will be mitigated by the recruitment of long-term consultants on an individual basis for staffing of the PIU which will be established to assist implementation of the project, including a Finance Specialist who is familiar with accounting and disbursement for ADB projects. This will enable MOFALI, with the support of PIU, to effectively administer the advance accounts for the project. The consultants to be hired will be appropriately qualified and experienced in project management. Additional training will be provided as required to introduce the PIU staff to ADB's and MOFALI's requirements and procedures.

35. The identified financial management risks will be mitigated by the proposed action plan as shown in Table 11 and will be closely monitored during project implementation.

Table 11: Financial Management Action Plan

Risk	Action	Responsibility	Timing
Unavailability of MOFALI staff that can be assigned to the PIU to perform day to day project management.	A fully staffed PIU will be recruited (funded from the project) which will assist MOFALI in the day to day project management.	MOFALI	Immediately after loan effectiveness

¹⁴ ADB. 2015. *Financial Management Assessment Technical Guidance Note*. Manila; and, ADB. 2009. *Financial Due Diligence, A Methodology Note*. Manila.

¹⁵ World Bank. 2015. *Mongolia: Report on Public Expenditure and Financial Accountability*.

¹⁶ International Monetary Fund. Nov 2018. *Staff Report for Mongolia*.

¹⁷ ADB. 2017. *Country Partnership Strategy, Mongolia, 2017–2020—Sustaining Inclusive Growth in a Period of Economic Difficulty*. Manila.

Risk	Action	Responsibility	Timing
The Internal Audit Division of the MOF has limited knowledge on ADB requirements and procedures.	Provide training on ADB policies and procedures.	ADB, MOF, MOFALI	During project implementation

ADB = Asian Development Bank, MOFALI = Ministry of Food, Agriculture and Light Industry; MOF = Ministry of Finance, PIU = project implementation unit.

B. Disbursement

1. Disbursement Arrangements for ADB Funds

36. Loan and grant proceeds will be disbursed in accordance with ADB's Loan Disbursement Handbook (2017, as amended from time to time), and detailed arrangements agreed upon between the government and ADB. MOF will maintain separate accounts and records for the loan. The PIU will be responsible for project implementation, including daily management, accounting, procurement, training, monitoring, and reporting.

37. The project will use a combination of direct payment, reimbursement, statement of expenditures, and advance account procedure of ADB.

38. **Direct payment procedure.** ADB, at the borrower's request, can directly pay a designated beneficiary stipulated in the contract and approved by ADB (e.g., supplier, contractor, or consultant). A signed withdrawal application (WA) must be submitted to ADB together with the supporting documents.

39. **Reimbursement procedure.** ADB can pay from the loan account to the borrower's account for eligible expenditures which have been incurred and paid for by the borrower out of its own resources. A signed withdrawal application must be submitted to ADB together with a summary/statement of expenditures (SOE).

40. **Advance fund procedure.** MOFALI has the capacity to administer advance accounts and statement of expenditure procedure. To facilitate project implementation and timely release of loan proceeds, the Government of Mongolia, through the MOF, after loan effectiveness, will establish three advance accounts, one for each financing source, at a commercial bank acceptable to ADB. MOF is working towards enabling the establishment of USD accounts under the Treasury Single Account (TSA) at the MOF. Once in place, upon consultation with ADB the MOF will transfer projects' USD accounts at the commercial banks to the TSA. The currency of the advance accounts will be in US dollar. The loan and the grant proceeds will be paid into the advance accounts, which will be operated by MOFALI, the executing agency. The advance accounts will be used exclusively for ADB's share of the eligible expenditures. MOFALI, with support of the PIU, will be responsible for the management, monitoring, and reconciliation of the advance accounts. The PIU will process the invoices of contractors and will generate requests for replenishments of the advance accounts and provide detailed reporting of all financial flows. MOF will establish 3 separate accounts in MNT, one for each advance account. These accounts will be held under the TSA at MOF. The MNT accounts will be managed by MOFALI, with the support of the PIU, and will be for daily expenditures including for payment to contractors, suppliers, and consultants. MOFALI's will ensure that every liquidation and replenishment from the project accounts is supported by documentation in accordance with ADB's Loan Disbursement Handbook (2017, as amended from time to time).

41. The total outstanding advance to the advance accounts should not exceed the estimate of ADB's/JPFR's share of expenditures to be paid through the respective advance accounts for the forthcoming 6 months. MOF may request for initial and additional advances to the advance account based on an Estimate of Expenditure Sheet setting out the estimated expenditures to be financed through the accounts for the forthcoming 6 months.¹⁸ Supporting documents should be submitted to ADB or retained by MOF in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time), and other detailed arrangements agreed by ADB and the government. The *Loan Disbursement Handbook* 2017, as amended from time to time), describes which supporting documents should be submitted to ADB and which should be retained by the government for liquidation and replenishment of the advance account.

42. **Statement of expenditure procedure.**¹⁹ The statement of expenditure procedure may be used for reimbursement of eligible expenditures or liquidation of advances to the advance accounts. Supporting documents and records for the expenditures claimed under the statement of expenditure should be maintained and made readily available for review by ADB's disbursement and review missions, upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit.

43. Before the submission of the first withdrawal application, the government should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the government, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is stipulated in ADB's *Loan Disbursement Handbook* (2017, as amended from time to time). Individual payments below such amount should be paid (i) by MOFALI, and subsequently claimed to ADB through reimbursement; or (ii) through the advance fund procedure, unless otherwise accepted by ADB. MOF should ensure sufficient category and contract balances before requesting disbursements. Use of ADB's Client Portal for Disbursements system is encouraged for submission of withdrawal applications to ADB.²⁰

C. Accounting

44. MOFALI will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project following International Public Sector Accounting Standard for accrual-based accounting. MOFALI will prepare project financial statements in accordance with the government's accounting laws and regulations which are consistent with international accounting principles and practices.

D. Auditing and Public Disclosure

45. MOFALI will cause the detailed project financial statements to be audited in accordance with International Standards on Auditing by an independent auditor acceptable to ADB. The audited project financial statements together with the auditor's opinion will be presented in the English language to ADB within 6 months from the end of the fiscal year by MOFALI.

¹⁸ The estimate of expenditure sheet is available in Appendix 8A of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

¹⁹ The statement of expenditure forms are available in Appendixes 7B and 7D of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

²⁰ The Client Portal for Disbursement system facilitates online submission of withdrawal applications to ADB, resulting in faster disbursement. The forms to be completed by the borrower are available online at <https://www.adb.org/documents/client-portal-disbursements-guide>.

46. The audit report for the project financial statements will include a management letter and auditor's opinions, which cover (i) whether the project financial statements present an accurate and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting standards; (ii) whether the proceeds of the loans and grant were used only for the purpose(s) of the project; and (iii) whether the borrower or executing agency was in compliance with the financial covenants contained in the legal agreements (where applicable).

47. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision; and followed up regularly with all concerned, including the external auditor.

48. The government, MOFALI, and the Crop Production Development Policy and Coordination Department have been made aware of ADB's approach to delayed submission; and the requirements for satisfactory and acceptable quality of the audited project financial statements.²¹ ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower); or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB; or if the audits are substantially delayed. ADB reserves the right to verify the project's financial account to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

49. Public disclosure of the audited project financial statements, including the auditor's opinion on the project financial statements, will be guided by ADB's Access to Information Policy²². After the review, ADB will disclose the audited project financial statements and the opinion of the auditors on the project financial statements not later than 14 days of ADB's confirmation of their acceptability by posting them on ADB's website. The management letter and additional auditor's opinions will not be disclosed.

²¹ ADB's approach and procedures regarding delayed submission of audited project financial statements:

- (i) When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (a) the audit documents are overdue; and (b) if they are not received within the next 6 months, requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.
- (ii) When audited project financial statements are not received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will (a) inform the executing agency of ADB's actions; and (b) advise that the loan may be suspended if the audit documents are not received within the next 6 months.
- (iii) When audited project financial statements are not received within 12 months after the due date, ADB may suspend the loan.

²² Available at <https://www.adb.org/documents/access-information-policy>.

VI. PROCUREMENT AND CONSULTING SERVICES

50. A project procurement risk assessment was conducted for the project, in accordance with the ADB's Guidance Note on Strategic Procurement Planning. Overall project procurement risk is assessed as high. The main weaknesses are: (i) the EA and the IA are unfamiliar with the newly adopted ADB's Procurement Policy (2017, as amended from time to time), Procurement Regulations for ADB Borrowers (2017, as amended from time to time); (ii) insufficient number of dedicated procurement units/professionals in government agencies contributes to low capacity and delay in procurement; and (iii) lack of procedures in place for procurement and contract management.

51. Proposed mitigation measures include the trainings for the EA/IA staff and PIU and technical supports by the project procurement professionals. The procurement trainings were delivered by the ADB officials during the project preparation on topics of ADB's Procurement Policy and Regulations to address the EA/IA's non-familiarity with these policy and regulations. The subsequent procurement trainings will be delivered on a well-defined interval by the Project Implementation Start-up Consultant to ensure that procurement activities are in full conformity with ADB Procurement Policy and Regulations.

52. The project implementation start-up consultant will support the EA/IA recruiting the PIU staff and all consulting firms and individuals for the project, including advance procurement contracts, in accordance with ADB Procurement Policy and Regulations and procedural requirements.

53. Detailed engineering design firms will develop Technical Specifications and Bill of Quantities (BoQ) for civil works for irrigation schemes and goods included in the civil works packages for irrigation schemes and prepare the Section 6 of the DBDs. The responsibilities will include but not be limited to: (i) prepare Technical Specifications and BoQ for goods and works to be implemented; (ii) prepare cost estimations (unit rate breakdown by resources and summarized unit rates); (iii) develop detailed and general specifications of bidding documents and Section 6 of Bidding Documents. Technical specifications shall include general instructions and recommendations for the contractor (bidders) as well as detailed specifications (specifying all mandatory standards) for controlling materials used, methods of work performance and quality.

54. Detailed description of the procurement tasks of the PIU will be, but not limited to: (i) prepare, on behalf of the executing and implementing agencies, bidding documents, reports, and other supporting documents and submit these for EA/BEC/CSC's review and use; (ii) ensure all procurement of goods and recruitment of consultants are in compliance with ADB relevant rules and procedures; (iii) manage communications and timely advise the EA/IA on procurement issues that may impact the achievement of project outcomes (including issues of pre-award and post-award); (iv) ensure procurement activities are scheduled in a timely manner, and that the relevant documents are completed on time; (v) provide required technical assistance to the EA/IA/CSC and BEC when necessary; and (vi) facilitate the EA/IA accepting final products/deliverables/outputs.

55. For purposes of evaluating the various bids, proposals, expressions of interest of individual consultants in accordance with ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time), an independent evaluation committee will be formed following Public Procurement Law. Members of the committee must not in any way be involved with any of the bidders that may constitute a conflict of interest.

56. The procurement plan comprises a total of 69 contracts: 1 civil works contract for OCB for international advertisement; 2 goods contracts for OCB for international advertisement; 25 OCB contracts for goods and works for national advertisement; 6 goods contracts for requests for quotation; 24 community participation contracts; 2 consulting services contracts through quality-and cost-based selection; 3 consulting services contracts through consultants' qualification selection; 1 consulting services contract through least-cost selection, 1 consulting service contract through direct contracting, and 4 contracts for individual consultants. The 3 contracts for international advertisement were assessed of high value therefore would require advertising internationally to attract enough qualified bidders.

A. Advance Contracting

57. Advance contracting will apply to the urgent recruitment of consulting services, which will have major impacts on timely and successful start-up of the project. Advance contracting may be applied for hiring of PIU staff to engage consulting firms for design and supervision. Advance actions will include preparation of bidding documents, advertisement, and proposal evaluation, which require ADB prior approval. Consulting firm contracts will be signed after the loan has become effective. All advance contracting will be undertaken in conformity with ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time).²³

B. Procurement of Goods, Works, and Consulting Services

58. All procurement of the ADB-financed works, goods, non-consulting services, and consulting services will be undertaken in accordance with ADB's Procurement Policy (2017, as amended from time to time) and ADB's Procurement Regulations for ADB Borrowers (2017, as amended from time to time).

59. A procurement plan for the initial 18 months period indicating methods and review procedures; works, goods, and consulting service contract packages; and guidelines for open competitive bidding national advertising are in Section C.

1. Open Competitive Bidding

60. Open competitive bidding will used for all goods and works contracts except small value, readily available off-the shelves goods and services. OCB for national advertising will be used for all goods and civil works contracts except one contract for each category. One contract for civil works and two contracts for goods were assessed of high value therefore would require international advertising to attract enough qualified bidder. The procurement assessment examined the potential for attracting enough qualified bidders to ensure the contract would be delivered on time, to requisite quality and exhibit value for money. It was concluded that relevant national markets are matured enough with sufficient number of qualified national bidders and unlikely to attract qualified foreign bidders for most packages.

61. For procurement under OCB to be advertised nationally, the following provisions will be applied: (i) the advertisement will be limited to the national press, an official gazette, or an open-access website; (ii) standard bidding documents developed by MOF and approved by ADB will be used; and (iii) bidding documents will be in Mongolian language (except for contracts which

²³ Available at: <https://www.adb.org/documents/adb-procurement-policy>

require international advertising), and the currency for bidding and payment will be Mongolian Tugrik, unless otherwise agreed between MOF/MOFALI and ADB; and set forth in the procurement plan. Procurement under OCB will use the single-stage, one-envelope procedure. The relevant sections of ADB's Anticorruption Policy (1998, as amended from time to time) will be included in all procurement documents and contracts.²⁴

2. Request for Quotation

62. Request for quotation will be used for ADB-financed simple civil works and non-consulting services of small value and readily available goods and or standard-specification commodities of small-value goods. Request for quotation shall indicate the description and quantity of the goods, a description of the services or specifications of works, as well as desired delivery (or completion) time and place.

3. Community Participation in Procurement

63. Community-driven works, goods and services for planting the windbreaks will be procured using community participation in procurement (CPP) method. This method may be suitable for planting the windbreaks since the nature of the work is labor-intensive; requires permanent maintenance services; the water resource and irrigation equipment will be provided with subprojects that may result into cost saving. The contractors will be local community groups registered with the *soum* governments of the 12 project *soums*; and are expected to be the reforestation community partnerships registered by Ministry of Environment and Tourism and the CGGs with technical members on reforestation. The technical members will be a forest engineer, a soil specialist and an agronomist.

64. PIU, Capacity Development and Vegetable Production Facilitation firms will conduct the workshops for community groups explaining required documents for contracting and provide technical guidance. The procurement will be carried out under OCB procedure to be advertised locally. MOF's standard bidding documents for community participation improvised to the ADB procurement procedures will be used. At least three community groups shall be considered for executing a subject contract and be competitively selected based on community groups' previous experience and qualifications. For each package, the PIU with support of Capacity Development and Vegetable Production Facilitation firms will closely supervise the technical specifications, procurement, financial administration, monitoring, and reporting.

65. Fresh-lifted stock by local tree farms or community planters will be preferred. Planting will be carried out in accordance to the client's specifications, and planters should comply with the following Mongolian quality standards namely, (i) Feasibility Study on Planting Crop Field Windbreak by MOFALI (2018), (ii) Windbreak planting technology, (iii) Technical Standard and Requirements for Plantation of Spruce, Mongolian Standard 6139: 2010, (iv) Technical Standard and Requirements for Plantation of Deciduous Trees, MNS 6141: 2010, and (v) Technical Standard and Requirements for Plantation of Bushes, MNS 6140 : 2010. The regular maintenance for three years to ensure long-term health and safety of the trees will be required. The maintenance services will include watering, mulching, preventing from pests and diseases, prepare the trees for winter.

²⁴ Available at: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/default.asp>

4. Consulting Services

66. All consultants will be recruited according to ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). Appendix 1 contains the indicative terms of references for the individual start-up consultants and capacity development consultants.²⁵ Appendix 2 contains the indicative terms of reference for the proposed JFPR consulting services, including the facilitation consultants. Consulting firms will be engaged using the quality- and cost-based selection with a standard quality: cost ratio of 90:10, consultant's qualifications selection, least-cost selection and direct contracting using full, simple and biodata technical proposal procedures. Individual consultants will be engaged through an individual consultant selection procedure.

5. ADB Review

67. Prior review procedure is required for (i) all the ADB-financed OCB contracts for civil works and goods, (ii) first contracts for each of goods and civil works contract under the RFQ method. Subsequent RFQ contracts will be post review (sampling). (iii) The first two contracts for goods and first two contracts for works under CP method will be prior review. Subsequent CP contracts will be post review (sampling), (iv) all the ADB-financed contracts for consulting services, and (v) ADB-financed contracts under advance contracting arrangement. ADB's prior review and approval of the following procurement documents will be required: invitation for bids, bidding documents, bid evaluation report, signed contract, and contract variations. For all consultant recruitments, ADB's prior review and approval of each step will be required. MOFALI and the PIU will maintain all documents related to the procurement of all the contracts (procurement file) for ADB reviews and other supervision process including complaint handling. Procurement files include, but not limited to, invitation for bids, request for expressions of interests, the issued bidding documents, the issued request for proposals and amendments (if any), bid evaluation reports, technical and financial evaluation reports, proposals/bids submitted by the bidders, minutes/records, contract award letters, and signed contracts etc.

C. Procurement Plan

68. The procurement plan shall be updated as needed throughout the duration of the project.

²⁵ TORs for the PIU staff are also included in Appendix 1 although they are not considered to be consultants.

Basic Data

Project Name: Vegetable Production and Irrigated Agriculture Project	Approval Number:
Project Number: 51423-002	
Country: Mongolia	Executing Agency: Ministry of Food, Agriculture, and Light Industry
Project Procurement Classification: A	Implementing Agency: Crop Production Development Policy and Coordination Department of MOFALI
Procurement Risk: High	
Project Financing Amount: ADB Financing: \$40.00 million Concessional Loan \$25.30 million Regular Loan \$14.70 million Non-ADB Financing: Japan Fund for Poverty Reduction \$2.00 million Government \$4.25 million	Project Closing Date: 31 March 2027
Date of First Procurement Plan: {loan/grant approval date};	Date of this Procurement Plan: {18 December 2019}
Procurement Plan Duration: 18 months	Advance contracting: yes eGP: yes for advertisement

1. Methods, Review and Procurement Plan

69. Except as ADB may otherwise agree, the following process thresholds shall apply to procurement of goods, works, non-consulting services, and consulting services:

Procurement of Goods, Works and Nonconsulting Services	
Method	Comments
Open Competitive Bidding (OCB) for Goods	International advertisement: \$2,000,001 and above; National advertisement: Between \$100,001 and 2,000,000; All contracts for international and national advertising will be reviewed using prior review procedure.
Request for Quotation for Goods	Up to equivalent of \$100,000; First contract will be prior review. The subsequent contracts will be post review (sampling).
Open Competitive Bidding (OCB) for Works	International advertisement: \$5,000,001 and above; National advertisement: Between \$100,001 and \$5,000,000 All contracts for international and national advertising will be reviewed using a prior review procedure.
Request for Quotation for Works	Up to equivalent of \$100,000; First contract will be prior review. The subsequent contracts will be post review (sampling).
Community Participation for Goods and Non-consulting Services, Works	Up to equivalent of \$30,000; First two contracts for works, first two contracts for goods will be prior review. The subsequent contracts will be post review (sampling).

Consulting Services	
Method	Comments
Quality and Cost Based Selection	Prior review
Consultant's Qualification Selection (CQS)	Prior review
Individual Consultant Selection	Prior review
Direct Contracting	Prior review

ADB = Asian Development Bank.

2. Lists of Active Procurement Packages (Contracts)

70. The following table lists goods, works, non-consulting services, and consulting services contracts for which the procurement activity is either ongoing or expected to commence within the procurement plan duration.

Goods, Works, and Nonconsulting Services							
Package Number	General Description	Estimated Value (\$000)	Procurement Method	Review	Bidding Procedure	Advertisement Date	Comments
CW-1	Civil works for upgrading and modernizing irrigation schemes Lot 1: Boomiin am subproject (Altai, Khovd) Lot 2: Khuren tal subproject (Telmen, Zavkhan)	2,162.2 1,292.0 870.2	OCB	Prior	1S1E	Q2/2021	National advertising; Bidding Documents: Small works; Number of lots: 2; tax exempted
CP-1-1	Works for windbreaks Boomiin am subproject (Altai, Khovd)	26.8	CP	Prior	NA	Q2/2022	Local advertising; Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-1-2	Materials for natural windbreaks for Boomiin am subproject (Altai, Khovd)	16.3	CP	Prior	NA	Q2/2022	Local advertising; Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-1-3	Works for windbreaks Khuren tal subproject (Telmen, Zavkhan)	26.8	CP	Prior	NA	Q2/2022	Local advertising; Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-1-4	Materials for natural windbreaks for Khuren tal subproject (Telmen, Zavkhan)	22.0	CP	Prior	NA	Q2/2022	Local advertising; Bidding Documents: Government SBDs in Community Participation; tax exempted
G-01	Irrigation equipment for twelve subprojects Lot 1: Drip irrigation Lot 2: Irrigation Equipment	4,538.0 2,001.0 2,537.0	OCB	Prior	1S1E	Q3/2021	International Advertising; Bidding Documents: Goods; Comments: long term supply contract including after-services, installation, commissioning, and

							training; tax exempted.
G-02	O&M excavators, demonstration packages and facilities Lot 1: Excavators Lot 2: Mechanized equipment package, storage and machinery shed	1,353.0 758.5 594.5	OCB	Prior	1S1E	Q3/2021	National Advertising; Bidding Documents: Goods; Comments: long term supply contract including after-services, installation, commissioning, and training; Civil works included; Tax exempted.
CW-2	Civil works for upgrading and modernizing irrigation scheme Okhindiin tal subproject (Sant, Selenge)	3,718.4	OCB	Prior	1S1E	Q2/2021	National advertising; Bidding Documents: Small works; Comments: tax exempted
CP-2-1	Works for windbreaks Okhindiin tal subproject (Sant, Selenge)	26.8	CP	Post sampling	NA	Q2/2023	Local advertising; Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-2-2	Materials for natural windbreaks for Okhindiin tal subproject (Sant, Selenge)	26.8	CP	Post sampling	NA	Q2/2023	Local advertising; Bidding Documents: Government SBDs in Community Participation; tax exempted
G-03	Office equipment and furniture for PIU	30.0	RFQ	Prior	NA	Q3/2020	Bidding Documents: Goods; Comments: The PIU with at least 8 staff will be established under EA/IA. Current facility and equipment capacity of EA/IA are not sufficient. Therefore, office facility and equipment, operation costs are required.
G-04	Equipment for MOFALI Extension Center	54.5	RFQ	Prior	NA	Q3/2021	Comments: Goods; Training equipment
Consulting Services							
Package Number	General Description	Estimated Value (\$000)	Selection Method	Review	Type of Proposal	Advertisement Date	Comments
CS-01	Legal Support Consultant	31.5	ICS	Prior	NA	Q4/2019	Assignment: National

							Expertise: Legal expert Comments: Advance contracting; 9 person-months
CS-10	Capacity Development Firm	940.0	QCBS	Prior	FTP	Q2/2020	Assignment: International; Advance contracting; Ratio of Quality to Cost: 90:10; Source of funds: ADB Loan Comments: International person-months: 31; National person months: 80;
CS-14	National Biodiversity Specialist	18.2	ICS	Prior	NA	Q2/2020	Assignment: National;
CS-15	EBA for nine subprojects, EIA for twelve subprojects	335.9	CQS	Prior	BTP	Q3/2020	Assignment: National;
CS-16	Detailed engineering design for ten subprojects	191.9	CQS	Prior	BTP	Q3/2020	Assignment: National
CS-19	Water Quality Monitoring	41.4	CQS	Prior	BTP	Q4/2020	Assignment: National

1S1E =single-stage one-envelope, ADB = Asian Development Bank, SBDs = standard bidding documents, EBA = environmental baseline assessment, EIA = environmental impact assessment, FTP = full technical proposal, ICS = individual consultant selection, JFPR = Japan Fund for Poverty Reduction, MOFALI = Ministry of Food, Agriculture and Light Industry, N/A = not applicable, OCB = open competitive bidding, PIU = Project Implementation Unit, Q = quarter, QCBS = quality- and cost- based selection, RFQ = request for quotations, STP = Simplified Technical Proposal, BTP = Biodata Technical Proposal. Note: all procurements will be advertised nationally unless otherwise stated.
Source: Asian Development Bank estimates.

3. Indicative List of Packages (Contracts) Required Under the Project

71. The following table lists goods, works, non-consulting services, and consulting services contracts for which procurement activity is expected to commence beyond the procurement plan duration and over the life of the project (i.e., those expected beyond the current procurement plan's duration).

Goods, Works and Nonconsulting Services						
Package Number	General Description	Estimated Value (\$,000)	Procurement Method	Review	Bidding Procedure	Comments
CW-3	Civil works for upgrading and modernizing irrigation scheme Erdeneburen subproject (Erdeneburen, Khovd)	6,608.6	OCB	Prior	1S1E	International advertising; Advertisement date: Q1/2022 Bidding Documents: Small works; tax exempted
CP-3-1	Works for planting windbreak Erdeneburen subproject (Erdeneburen, Khovd)	26.8	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2023;

						Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-3-2	Materials for natural windbreaks for Erdeneburen subproject (Erdeneburen, Khovd)	26.8	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2023; Bidding Documents: Government SBDs in Community Participation; tax exempted
CW-4	Civil works for upgrading and modernizing irrigation scheme Dulaanii Tal subproject (Kherlen, Khentii)	2,552.5	OCB	Prior	1S1E	National advertising; Advertisement date: Q1/2022; Bidding Documents: Small works; tax exempted
CP-4-1	Works for planting windbreak Dulaanii Tal subproject (Kherlen, Khentii)	26.8	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2023; Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-4-2	Materials for natural windbreaks for (Kherlen, Khentii) Dulaanii Tal subproject	26.8	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2023; Bidding Documents: Government SBDs in Community Participation; tax exempted
CW-5	Civil works for upgrading and modernizing irrigation schemes Lot 1: Tsakhir subproject (Taishir, Govi-Altai) Lot 2: Yolton subproject (Khaliun, Govi-Altai)	3,087.8 1,232.7 1,855.1	OCB	Prior	1S1E	National advertising; Advertisement date: Q1/2022; Bidding Documents: Small works; Comments: 2 contracts; tax exempted
CP-5-1	Works for planting windbreaks Tsakhir subproject (Taishir, Govi-Altai)	26.8	CP	Post sampling	NA	National advertising; Advertisement date: Q2/2023; Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-5-2	Materials for natural windbreaks for Tsakhir subproject (Taishir, Govi-Altai)	22.5	CP	Post sampling	NA	National advertising;

						Advertisement date: Q2/2023; Bidding Documents: Goods; Government SBDs in Community Participation; tax exempted
CP-5-3	Works for planting windbreaks Yolton subproject (Khaliun, Govi-Alтай)	26.8	CP	Post sampling	NA	National advertising; Advertisement date: Q2/2023; Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-5-4	Materials for natural windbreaks for Yolton subproject (Khaliun, Govi-Alтай)	22.5	CP	Post sampling	NA	National advertising; Advertisement date: Q2/2023; Bidding Documents: Goods; Government SBDs in Community Participation
CW-6	Civil works for upgrading and modernizing irrigation schemes Nogoon khashaa subproject (Uliastai, Zavkhan)	563.9	OCB	Prior	1S1E	National advertising; Advertisement date: Q1/2023; Bidding Documents: Small works; tax exempted
CP-6-1	Works for planting windbreaks Nogoon khashaa subproject (Uliastai, Zavkhan)	26.8	CP	Post sampling	NA	Local advertising; Advertisement date: Q3/2023; Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-6-2	Materials for natural windbreaks for Nogoon khashaa subproject (Uliastai, Zavkhan)	13.9	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2024; Bidding Documents: Government SBDs in Community Participation; tax exempted
CW-7	Civil works for upgrading and modernizing irrigation schemes Lot 1: Tsul-Ulaan subproject (Bayannuur, Bayan-Ulgii) Lot 2: Ulaandel subproject (Sagsai, Bayan-Ulgii)	1,934.8 670.4 1,264.4	OCB	Prior	1S1E	National advertising; Advertisement date: Q1/2023; Bidding Documents: Small works; Comments: 2 contracts; tax exempted
CP-7-1	Works for planting windbreaks	26.8	CP	Post	NA	Local advertising;

	Tsul-Ulaan subproject (Bayannuur, Bayan-Ulgii)			sampling		Advertisement date: Q2/2024; Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-7-2	Materials for natural windbreaks for Tsul-Ulaan subproject (Bayannuur, Bayan-Ulgii)	13.9	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2024; Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-7-3	Works for planting windbreaks Ulaandel subproject (Sagsai, Bayan-Ulgii)	26.8	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2024; Bidding Documents: Government SBDs in Community Participation ; tax exempted
CP-7-4	Materials for natural windbreaks for Ulaandel subproject (Sagsai, Bayan-Ulgii)	26.8	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2024; Bidding Documents: Government SBDs in Community Participation; tax exempted
CW-8	Civil works for upgrading and modernizing irrigation schemes Lot 1: Ivengol subproject (Zuunburen, Selenge) Lot 2: Sugnuger subproject (Batsumber, Tuv)	2,356.1 1,081.8 1,274.3	OCB	Prior	1S1E	National advertising; Advertisement date: Q2/2023 Bidding Documents: Small works; Comments: 2 contracts; tax exempted
CP-8-1	Works for planting windbreaks Ivengol subproject (Zuunburen, Selenge)	26.8	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2024 Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-8-2	Materials for natural windbreaks for Ivengol subproject (Zuunburen, Selenge)	26.5	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2024 Bidding Documents: Government SBDs in

						Community Participation; tax exempted
CP-8-3	Works for planting windbreaks Sugnuger subproject (Batsumber, Tuv)	26.8	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2024 Bidding Documents: Government SBDs in Community Participation; tax exempted
CP-8-4	Works for planting windbreaks Sugnuger subproject (Batsumber, Tuv)	22.0	CP	Post sampling	NA	Local advertising; Advertisement date: Q2/2024 Bidding Documents: Government SBDs in Community Participation; tax exempted
CW-9	Civil works for seed research facilities and rehabilitation and modernization of irrigation schemes Lot 1: Darkhan; Orkhon; Baruunkharaa; Lot 2: Western region; Lot 3: Eastern region;	813.2 576.8 186.4 50.0	OCB	Prior	1S1E	National advertising; Advertisement date: Q1/2023; Bidding Documents: Small Works; tax exempted Comments: 3 contracts; Darkhan 100ha; Orkhon 14ha; Baruun-kharaa 13ha; Western region 50ha;
G-05	Seed research equipment for research laboratory in central region Lot 1: IPAS headquarters Lot 2: Darkhan Elite Farm	528.0 414.0 114.0	OCB	Prior	1S1E	National advertising; Advertisement date: Q4/2023; Bidding Documents: Goods; Comments: 2 contracts; tax exempted
G-06	Mechanization packages for four regions Lot 1: Orkhon seed farm Lot 2: Baruunkharaa seed farm Lot 3: Western Region Agricultural Research Institute Lot 4: Eastern Region Agricultural Research and Southern region	256.0 62.0 72.0 62.0 60.0	OCB	Prior	1S1E	National advertising; Advertisement date: Q4/2023 Bidding Documents: Goods; Comments: 4 contracts; tax exempted
G-07	Food safety testing equipment	172.0	OCB	Prior	1S1E	National advertising; Advertisement date:

						Q3/2022; Bidding Documents: Goods; tax exempted
G-08	4-wheel drive for facilitation team	49.4	RFQ	Post sampling	NA	Advertisement date: Q1/2022 Bidding Documents: Goods;
G-09-01	2 Motorcycles for soum coordinators	2.6	RFQ	Post sampling	NA	Advertisement date: Q3/2021 Bidding Documents: Goods;
G-09-02	5 Motorcycles for soum coordinators	6.5	RFQ	Post sampling	NA	Advertisement date: Q2/2022 Bidding Documents: Goods;
G-09-03	5 Motorcycles for soum coordinators	6.5	RFQ	Post sampling	NA	Advertisement date: Q1/2023 Bidding Documents: Goods;

Consulting Services						
Package Number	General Description	Estimated Value (\$,000)	Selection Method	Review	Type of Proposal	Comments
CS-17	Use of remote sensing technology by the Mongolia National Remote Sensing Center (NRSC)	40.0	Direct contracting	Prior	BTP	Comments: Sole provider; Advertisement date: Q2/2021
CS-18	External audit firm	60.0	LCS	Prior	STP	Assignment: National; Advertisement date: Q3/2020 Comments: 6 contracts

1S1E =single-stage one-envelope, FTP = full technical proposal, ICS = individual consultant selection, N/A = not applicable, OCB = open competitive bidding, Q = quarter, QCBS = quality- and cost- based selection, LCS = Least Cost Selection, RFQ = request for quotations, CP= Community Participation, STP = Simplified Technical Proposal, BTP = Biodata Technical Proposal. Note: all procurements will be advertised nationally unless otherwise stated.

Source: Asian Development Bank estimates.

4. List of Awarded and Completed Contracts

72. The following table lists the awarded and completed contracts for goods, works, nonconsulting, and consulting services.

a. Awarded and Ongoing Contracts

Goods, Works and Non-Consulting Services					
Package Number	General Description	Contract Value	Date of ADB Approval of Contract Award	Date of Completion	Comments

Consulting Services					
Package Number	General Description	Contract Value	Date of ADB Approval of Contract Award	Date of Completion	Comments

5. Non-ADB Financing

73. The following table lists the works, goods, non-consulting, and consulting services contracts over the life of the project, financed by non-ADB sources.

Goods, Works and Nonconsulting Services				
General Description	Estimated Value (cumulative, \$000)	Estimated Number of Contracts	Procurement Method	Comments
Drip and low-pressure micro spray irrigation equipment	733.0	1	OCB with national advertising	Source of funds: JFPR Grant Advertisement date: Q1/2023 Comments: G-10; prior review; long term supply contract including after-services, installation, commissioning, and training; tax exempted
Technology packages for Community Grower Groups	299.69	1	OCB with national advertising	Source of funds: JFPR Grant Advertisement date: Q1/2023 Comments: G-11; All-weather greenhouses with heating; vegetable drying equipment; vegetable seeder; and miscellaneous tools; prior review; long term supply contract including after-services, installation, commissioning, and training; 12 sets; tax exempted.

Consulting Services				
General Description	Estimated Value (cumulative, \$000)	Estimated Number of Contracts	Recruitment Method	Comments
Vegetable Production Facilitation Firm	653.4	1	QCBS	Source of funds: JFPR Grant Advertisement date: Q4/2020 Ratio of Quality to Cost: 90:10;

				Comments: National; CS-13: 422 person-months
Agronomist/agri-business specialist	120.0	1	ICS	Source of funds: JFPR Grant Advertisement date: Q4/2022 Expertise: Agriculture/agri-business; Comments: CS-11: International; 6 person-months; intermittent;
Greenhouse (Technical) Specialist	40.0	1	ICS	Source of funds: JFPR Grant; Advertisement date: Q4/2022 Expertise: Vegetable Production Comments: CS-12: International; 2 person-months; intermittent;

JFPR = Japan Fund for Poverty Reduction, ICS = individual consultant selection, OCB = open competitive bidding,
 Q = quarter, QCBS = quality- and cost- based selection, RFQ = request for proposals.

Source: Asian Development Bank.

VII. SAFEGUARDS

A. Environment

74. **Environment due diligence.** The project is classified as category B for environment according to ADB's Safeguard Policy Statement (2009). The initial environmental examination (IEE), including an environmental management plan (EMP), was prepared and will be disclosed on the ADB website. The IEE concluded that full and effective implementation of the project EMP, together with the training and project assurances, will minimize the environmental risks of the project and achieve compliance with the policy and regulatory standards applied in this project environmental impact assessment.

75. **Environmental management plan.** The project EMP (Appendix 5) is to be implemented in all phases of the project: detailed design, pre-construction, construction, and operation. The EMP is to ensure project compliance with Mongolia's environmental laws and ADB's Safeguard Policy Statement (2009). The EMP describes: the roles and responsibilities of project agencies to implement the EMP; anticipated impacts and mitigation measures; inspection, monitoring, and reporting arrangements; training and institutional strengthening; grievance redress mechanism; and future public consultation. In the engineering design stage, MOFALI, through the PIU, will pass the EMP to the firms contracted to prepare the detailed engineering designs for the project facilities. The EMP will be updated at the end of the detailed design, as needed. To ensure that bidders will respond to the EMP's provisions, MOFALI, through the PIU, will prepare and provide the specification clauses for incorporation into the bidding documents: (i) a list of environmental management requirements to be budgeted by the bidders in their bids; (ii) environmental clauses for contractual terms and conditions; and (iii) the project IEE and updated EMP.

76. **Environmental management plan implementation.** The PIU will be responsible for ensuring that the project will be designed, constructed, commissioned, and operated in accordance with (i) the domestic environmental, health, and safety laws, regulations, procedures, and guidelines; (ii) ADB's Safeguards Policy Statement, and (iii) the project IEE and EMP. MOFALI holds the final responsibility for the implementation and compliance with the EMP. A PIU Environment Safeguards Specialist coordinate and/or implement the EMP. Draft terms of reference are in Appendix 1.

77. Costs of EMP implementation are provided in the EMP. The ADB loan will bear the salary costs for the PIU environment officer and costs for establishment of the grievance redress mechanism. The PIU will bear the cost of assigning a social and environmental focal staff, and, engaging an environmental monitoring agency to undertake the external monitoring specified in the EMP. The costs for mitigation measures to be undertaken by the contractors during construction will be included in the contract documents. The estimated costs for EMP implementation are described in the EMP. During project implementation, cost estimates will be updated as needed.

78. **Climate change.** Climate mitigation is estimated as \$7.1 million and climate adaptation is estimated as \$22.2 million. ADB and the ADB-administered fund will finance 100% of mitigation and adaptation costs.²⁶

²⁶ Details are in the Climate Change Assessment linked document and its attachments.

B. Involuntary Resettlement

79. The project is classified by ADB as category C on involuntary resettlement according to ADB's Safeguard Policy Statement (2009). The project is not expected to involve involuntary resettlement. All civil works will be implemented on state-owned lands and will not involve acquisition of non-state lands, physical or economic displacement, or restriction on land use. No legacy issues have been found in any of the 12 irrigation schemes. In Nogoon Khashaa (Uliastai soum) the existing main canal goes through a built-up area where 8 households and one company have land ownership or possession rights along the canal. The canal will be covered and lined. Gardens and structures (fences and secondary structures) may be affected during construction and will need to be compensated. No household will need to be relocated. No permanent LAR impacts are anticipated. Households were met and support the canal upgrading. A Resettlement Framework has been prepared to cover impacts during construction and any unanticipated impacts that may occur during construction and operation (Appendix 6). The EA/IA/PIU will implement the Resettlement Framework with the help of social focal staff and consultants. MOFALI will be the executing agency; and the Crop Production Development Policy and Coordination Department of MOFALI will be the implementing agency. Local government in relevant project soum will also involve in project implementation. A social and gender specialist to be recruited at PIU will support the EA/IA/PIU to follow the resettlement framework during the project implementation. Appendix 1 includes the TOR of the consultant.

C. Indigenous Peoples

80. The project is classified as category C on indigenous peoples according to ADB's Safeguard Policy Statement (2009). The project is not expected to impact distinct and vulnerable communities of ethnic minorities that would trigger ADB's SPS requirements on indigenous people.

D. Grievance Redress Mechanism

81. A project grievance redress mechanism (GRM) has been developed in compliance with ADB's Safeguard Policy Statement (2009) requirement to address environmental, health, safety, and social concerns associated with project. The GRM is designed to achieve the following objectives: (i) provide channels of communication for local communities to raise concerns about environmental and social-related grievances which might result from the project; (ii) prevent and mitigate adverse environmental and social impacts to communities caused by project construction and operation; and (iii) contribute to cooperation between the project agencies and communities. Public grievances related to the project components to be addressed by the GRM may include damage to public roads, interruption of public services, dust emissions, noise, soil erosion, inappropriate disposal of waste materials, and safety for the general public and construction workers. The GRM is accessible to all members of the communities, including women, elderly, disabled youth, minorities, and poverty-stricken residents. Multiple points of entry are available, including face-to-face meetings, written complaints, telephone conversations, e-mail, and social media. The details of the GRM, including a time-bound flow chart of procedures, are included in the project EMP (Appendix 5).

VIII. POVERTY, SOCIAL AND GENDER DIMENSIONS

82. **Poverty and social.** The project offers opportunities for inclusive development and poverty reduction by enhancing productivity for vegetable production through stable water supply, training and provision of technology packages leading to income generation for farmers. Local

people, including the poor households, are expected to benefit from socio-economic opportunities during the project implementation and operation phases. A total of 3,548 households (12,261 population) including 1,041 poor households (3,599 persons) are expected to benefit from the project. This includes 454 households that currently farm vegetable in old land plots in irrigation areas and 3,094 households that will be engaged in vegetable farming in new land plots. The project will create about 240 local jobs during construction. The project will also provide training to farming households to strengthen vegetable value chains. A social development action plan (SDAP) has been prepared based on the poverty and social analysis, with specific targets for the poor and vulnerable people (Table 12). The SDAP comprises necessary actions and indicators under each output to ensure benefit for smallholder farmers, including the poor. The SDAP also includes measures to mitigate social risks. Consultations were undertaken with stakeholders during project preparation and will be continued during project implementation. The consultation and participation plan for the project implementation stage has been included as Appendix 7.

83. **Gender.** The project is classified as effective gender mainstreaming, following ADB's Guidelines for Gender Mainstreaming Categories of ADB Projects (2012). Women are actively involved in vegetable production and post-harvest value chain activities (vegetable pickling, jams and jellies) and will directly benefit from the project. A gender action plan (GAP) has been prepared based on the gender analysis to ensure that the project contributes to improved gender equality. The GAP includes: (i) 100% of contracts/documents for engagement of households in vegetable production, including allocation of new land plots are co-signed by women; (ii) 40% of jobs for women during construction; (iii) 40% women among participants during consultations, 50% women in awareness raising and 30-50% women in various training activities; iv) 40% of members and 25% of leadership positions in CGGs are women; v) 50% women among farmers receiving improved seeds and technology packages; and vi) specific training for women on vegetable processing and marketing techniques. Key gender targets have also been included in the design and monitoring framework.

84. Capacity for Implementation and Monitoring of Social and Gender Measures. MOFALI has experience in implementation of ADB projects, including an ongoing ADB-financed vegetable production project. A PIU will be established under MOFALI to implement the project including social and gender issues. To implement social and gender measures properly, (i) the MOFALI and project *soums* will appoint social and gender focal staff; and (ii) the PIU will include a social and gender consultant with an input of 12 person-months to provide training and capacity building to the focal staff for implementation, monitoring, and reporting of social and gender measures included in the SDAP and the GAP. The terms of reference for the position are in Appendix 1.

Table 12: Social Development Action Plan

Key Objectives	Main Tasks/ Actions	Targets/Indicators	Agencies Responsible	Time-frame	Funding source
A. OUTPUT 1: EFFICIENT AND CLIMATE-RESILIENT IRRIGATION INFRASTRUCTURE AND MANAGEMENT SYSTEMS INSTALLED					
1.1 Upgrading, modernizing, and climate-proofing irrigation and drainage infrastructure (new and existing schemes)					
Income generation for farmers through improved irrigation	- Engage farmer households (HHs) currently having possession rights to farmlands in vegetable farming in irrigation schemes (IS) - MOFALI issues a letter to project soums advising them not to reclaim land plots from farming HHs in the proposed IS, if the land is not currently cultivated due to lack of irrigation water.	Target: --About 454 HHs having possession rights in IS continue farming -MOFALI issued a letter to all project soums advising them not to reclaim land plots from farming HHs in IS. Baseline: 454 HHs	- Soum government - Monitored by PIU	- 2020-2026	- Soum budget
	- Engage farmer HHs in vegetable farming in IS; and prioritize allocation of new plots to them; - Ensure area of viable plots for vegetable production is about 2 ha/HH; - Issue certificates/contracts to farmers for new land plots;	Target: - About 3,094 farmer HHs engaged in vegetable farming in new plots with certificates/contracts; - Baseline: 0	- Soum government - Monitored by PIU	- 2020-2022	- Soum budget
Income generation for poor and vulnerable HHs through improved irrigation	- Engage poor and vulnerable HHs in vegetable farming in each IS; and give priority for allocation of available new plots ; - Issue certificates/contracts to poor & vulnerable HHs for new land plots;	Target: - About 869 poor and vulnerable HHs engaged in vegetable farming in new plots with certificates/contracts - Baseline: 0	- Soum government - Monitored by PIU	- 2020-2022	- Soum budget
Employment and income generation to local unskilled laborers	- Facilitate interested persons to register at soum level; - Employ local people during project implementation	Target: - 240 of workers (20 in each IS) hired locally - Baseline: 0	- PIU to include local employment targets in contracts - Contractors to employ local people	- 2021-2025	- project budget
Reduce risks of conflicts between	- Install fences around the command area;	Target:	- PIU - Soum government	- 2021-2025	- project budget

Key Objectives	Main Tasks/ Actions	Targets/Indicators	Agencies Responsible	Time-frame	Funding source
herders and farmers		<ul style="list-style-type: none"> - 12 IS with fences around the command areas; - Baseline 0. 	- Monitored by consultant		
Compliance with labor laws and standards for workers	<ul style="list-style-type: none"> - The contractors will (i) comply with labor laws and core labor standards, including no child labor, minimum wages, equal pay to equal work, and occupational health and safety; (ii) provide training to workers on job-related skills and relevant health and safety practices 	Target: <ul style="list-style-type: none"> - All contractors comply with labor standards and all workers get trainings; - Baseline: N/A 	<ul style="list-style-type: none"> - Contractors - Monitored by PIU 	- 2021-2025	- project budget
Prevention of HIV/AIDS, STIs, sexual harassment for workers, residents and mobile population	<ul style="list-style-type: none"> - Provide awareness and prevention training on HIV/AIDS/STIs for construction workers, local community and groups at risks in the project areas 	Target: <ul style="list-style-type: none"> - About 1,175 participants with at least 20% from poor and vulnerable HHs - Baseline: 0 	<ul style="list-style-type: none"> - PIU to coordinate - Contractors to provide training and preventive measures; - PIU consultant to monitor. 	- 2021-2025	- Project budget.
1.2 Strengthening coordination and management of irrigation schemes					
Employment and income generation to farmers	<ul style="list-style-type: none"> - Soums government will hire Community Grower Groups (CGGs) for construction of simple works (i.e. simple tertiary canals etc.) and for O&M activities. - Prepare contracts with CGGs 	Target: <ul style="list-style-type: none"> - About 48 CGGs (480 persons) have contracts with soum government (20% from poor & vulnerable HH); - Baseline: 0 	<ul style="list-style-type: none"> - Soums government; - Monitored by PIU consultant 	- 2020-2025	- project budget
Employment and income generation to farmers	<ul style="list-style-type: none"> - Contract CGGs for planting the windbreaks (tree/bushes). - Prepare community procurement contract. 	Target: <ul style="list-style-type: none"> - About 48 CGGs (480 persons) have contracts with soum government 20% from poor & vulnerable HH; - Baseline: 0 	<ul style="list-style-type: none"> - PIU; - Monitored by PIU consultant 	- 2020-2025	- project budget
B. OUTPUT 2: CLIMATE SMART AGRICULTURE PRODUCTION SYSTEMS IMPROVED					
2.1 Provision of equipment and facilities to improve the production of high-yielding and climate-resilient vegetable seeds					
Providing farmers with high-yielding and climate-	<ul style="list-style-type: none"> - Equip four regional research centers with equipment and facilities such as climate-controlled growth chambers, storage cool 	Target:	<ul style="list-style-type: none"> - PIU - Monitored by PIU consultant 	- 2022-2026	project budget

Key Objectives	Main Tasks/ Actions	Targets/Indicators	Agencies Responsible	Time-frame	Funding source
resilient vegetable seeds to improve productivity.	<ul style="list-style-type: none"> rooms, sheds, fencing, mechanization packages, seed cleaning and packaging equipment, conservation farming equipment, and teaching facilities. - Provide farmers with high-yielding and climate-resilient vegetable seeds to improve productivity. 	<ul style="list-style-type: none"> - About 3,548 farmer HHs (including 1,041 poor & vulnerable HHs) used high-yielding and climate-resilient vegetable seeds; - Baseline: 0 			
2.2 Support to the National Institute of Plant Protection for improved pest management and control, and pesticide testing					
Providing farmers with technical skills and safer products for pest management & control and food safety.	<ul style="list-style-type: none"> - Support the National Plant Protection Institute (NPPI) for improved pest management and control, and pesticide testing to improve food safety. - Provide farmers with technical skills and safer products for pest control and to improve food safety. 	Target: <ul style="list-style-type: none"> - About 3,548 households (including 1,041 poor & vulnerable HHs) supported in pest control and food safety - Baseline: 0 	<ul style="list-style-type: none"> - PIU - Monitored by PIU consultant 	- 2022-2026	- project budget
C. OUTPUT 3: TECHNICAL INSTITUTIONAL AND MANAGEMENT CAPACITY AND COORDINATION STRENGTHENED					
3.1 Setting-up and strengthening community grower groups in improved production and marketing					
Empowerment of farmers, including poor and vulnerable	- Establish and train CGGs	Target: <ul style="list-style-type: none"> - About 48 CGGs (4 in each of 12 IS) mobilized with 20% members from poor & vulnerable HH. - Baseline: 0 	<ul style="list-style-type: none"> - PIU - Soum government; - Monitored by PIU Consultant; 	- 2020-2025	- project budget
Providing farmers with technical & financial skills to improve livelihood & productivity.	- Train farmers on good agricultural practice, integrated pest management, optimized use of fertilizers and pesticides, use of improved technologies (such as greenhouses and storage) and marketing.	Target: <ul style="list-style-type: none"> - About 3,548 (1 member from each beneficiary HH) with 20% poor & vulnerable. - Baseline: 0 	<ul style="list-style-type: none"> - PIU - Soum government; - Monitored by PIU consultant; 	- 2020-2025	- project budget
3.2 Improving access for farmers to improved technology					
Generate additional income to farmers	- Provide each soum with a technology package (i.e. mechanization technologies such as tractors, rotary hoe and spraying	Target: <ul style="list-style-type: none"> - About 480 households including 20% poor & 	<ul style="list-style-type: none"> - PIU - Soum government; 	- 2020-2025	project budget

Key Objectives	Main Tasks/ Actions	Targets/Indicators	Agencies Responsible	Time-frame	Funding source
	equipment, all-weather greenhouses, and small cool rooms for product storage. - All CGGs members will have equitable access to machinery and facilities.	vulnerable households have access to technology package. Baseline: 0	- PIU Consultant to monitor		
D. PROJECT MANAGEMENT SUPPORT					
Ensure implementation of SDAP	- Appoint a social and gender specialist at PIU to ensure the effective implementation of the SDAP - MOFALI and soums will appoint their staff as focal persons (officers) for social tasks	Target: - A social and gender specialist hired at PIU. - MOFALI/soum staffs as focal persons appointed - Baseline: 0	- PIU - MOFALI/soums governments	- 2020-2025	- project budget
Conduct monitoring & evaluation on the SDAP	- Monitoring on the SDAP will be reported semi-annually.	Target: - M& E reports submitted semi-annually. Baseline: N/A	- PIU; - Consultant	- 2020-2025	- project budget

CGGs = Community Grower Groups; IS = Irrigation Scheme; HHs = Households; JFPR = Japanese Fund for Poverty Reduction; PIU = Project implementation unit; HIV/AIDS/STIs = Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome/Sexually Transmitted Infections; MOFALI = Ministry of Food, Agriculture and Light Industry; SDAP = Social Development Action Plan; GRM = Grievance Redress Mechanism.

Source: Asian Development Bank.

Table 13: Gender Action Plan

Actions	Indicators/Targets	Responsible Agency	Timeframe	Funding source
OUTPUT 1: EFFICIENT AND CLIMATE-RESILIENT IRRIGATION INFRASTRUCTURE AND MANAGEMENT SYSTEMS INSTALLED				
1.1. Upgrading, modernizing, and climate-proofing irrigation and drainage infrastructure (new and existing schemes)				
Engage farmer HHs in vegetable farming in IS, and prioritize allocating new plots with land lease contracts/documents signed by both husband and wife.	Target: About 3,094 HHs engaged in vegetable farming in new plots with 100% of contracts/documents signed by women as well. Baseline: 0	soum government and PIU	2020–2022	soum budget
Employ local people including women during project construction.	Target: 240 locals including 40% women and 10% from FHHs hired during construction. Baseline: 0.	PIU and contractors	2021–2025	project budget
Conduct awareness raising to prevent potential health risks for women such as HIV, AIDS, and STIs during construction.	Target: 1,175 participants with 50 % women attended awareness raising events during construction. Baseline: 0	PIU and contractors	2021–2025	project budget
1.2: Strengthening coordination and management of irrigation schemes				
Actively engage CGGs including women members for construction of simple works and O&M activities.	Targets: 480 CGGs members including 40% women and 10% from FHHs involved in construction of simple works and O&M activities. Baseline: 0	PIU and soum government	2020–2025	project budget
Actively engage CGGs including women members for planting the windbreaks.	Target: 480 CGGs members including 40% women and 10% from FHHs involved in planting windbreaks. Baseline: 0	MOFALI and PIU	2020–2025	project budget
Train soum/bagh staff including women on technical and management issues	Target: 144 soum staff including 30% women trained in technical and management issues. Baseline: 0	PIU and consultant	2020–2025	project budget
OUTPUT 2: CLIMATE SMART AGRICULTURE PRODUCTION SYSTEMS IMPROVED				
2.1 Provision of equipment and facilities to improve the production of high-yielding and climate-resilient vegetable seeds				
- Provide farmers including women with high-yielding and climate-resilient vegetable seeds to improve productivity; and - Provide women researchers with technical support in seed production, bulking and certification of high-quality seed.	Targets - 3,548 farmers including 50% women receive high-yielding and climate-resilient vegetable seeds; and - 20 women researchers (5 in each research center) received technical support. Baseline: 0	consultant and PIU	2022–2026	- project budget

Actions	Indicators/Targets	Responsible Agency	Timeframe	Funding source
2.2 Support to the National Institute of Plant Protection for improved pest management and control, and pesticide testing				
Train women CGGs members on best practices for food safety.	Target: 192 women CGGs members (48 from FHHs) trained on best practices for food safety. Baseline: 0	PIU and consultant	2021–2025	project budget
OUTPUT 3: TECHNICAL INSTITUTIONAL, AND MANAGEMENT CAPACITY AND COORDINATION STRENGTHENED				
Output 3.1 Setting-up and strengthening community grower groups in improved production and marketing				
<ul style="list-style-type: none"> - Actively engage women in CGGs; and - Encourage women leadership in CGGs. 	Target: 48 CGGs engaged with 40% women as members and 25% in leadership positions Baseline: 0	PIU and consultant	2020–2025	project budget
3.2. Improving access for farmers to improved technology				
Train CGGs including women members on on-farm mechanization, climate-resilient greenhouses and water-saving irrigation technology	Target: 480 CGGs members including 40% women and 10% from FHHs trained on on-farm mechanization, climate-resilient greenhouses and water-saving irrigation technology. Baseline: 0	PIU and consultant	2021–2025	project budget
Consult women on: i) type & location of greenhouses/storage facilities; and ii) production inputs & technologies.	Targets <ul style="list-style-type: none"> - Women comprised at least 40% of participants in meetings to consult on type & location of greenhouses, storage and production inputs & technologies; and - Decisions on use of new technology/inputs signed by spouses from each beneficiary HH. Baseline: N/A	PIU, soum government, and consultant	2021–2025	project budget
Train farmers including women on Good Agriculture Practice, integrated pest management, optimized use of fertilizers and pesticides, use of improved technologies & marketing.	Targets <ul style="list-style-type: none"> - 3,548 farmers including 50% women trained on relevant skills; and - Handbooks and guidance on use of fertilizers and pesticides are prepared and disclosed to farmers including women. Baseline: 0	PIU and consultant	2021–2025	project budget
Develop & deliver specific trainings for women CGGs members on packaging, branding & home processing of vegetable, organic farming and on leadership.	Target: 192 women CGGs members (48 from FHHs) trained in vegetable grading and quality, food processing techniques, organic farming, packaging of produce and on leadership. Baseline: 0	PIU and consultant	2021–2025	project budget

Actions	Indicators/Targets	Responsible Agency	Timeframe	Funding source
PROJECT MANAGEMENT GENDER RELATED ACTIVITIES				
Appoint a social and gender specialist at PIU.	Targets <ul style="list-style-type: none"> - A social & gender specialist is engaged at PIU; - The gender focal point (soum officer) is appointed to assist PIU on social tasks; - All PIU staff, soums staff involved in the project are trained on gender-specific needs and priorities, and sex disaggregated data collection and reporting; - Annual plans on GAP implementation prepared; - Report on GAP implementation and monitoring prepared semi-annually; and - Sex-disaggregated data collected and integrated into the PPMS. Baselines: 0	MOFALI	2020	project budget
Appoint the soum gender focal point to support PIU for social tasks.		soum government	2021–2025	soum budget
Conduct capacity building on gender mainstreaming.		PIU and consultant	2021–2025	project budget
Prepare annual work plans to implement the activities of the GAP.		PIU and consultant	2021–2025	project budget
Ensure regular monitoring\reporting on progress of GAP implementation.		PIU and consultant	2021–2025	project budget
Collect/analyze data disaggregated by sex and integrate gender sensitive indicators (from DMF and GAP) in the PPMS.		PIU consultant	2021–2025	project budget

AIDS = Acquired Immune Deficiency Syndrome, CGG = community grower groups; DMF = design and monitoring framework, FHH = female head of household, GAP = gender action plan, HH = head of household, HIV = human immunodeficiency virus, IS = irrigation scheme, MOFALI = Ministry of Food, Agriculture, and Light Industry, N/A = not applicable, O&M = operation and maintenance, PIU = project implementation unit, PPMS= project performance management system, STI= sexually transmitted infection.

Source: Asian Development Bank.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION

A. Project Design and Monitoring Framework

Impact the Project is Aligned with: Income generation and enterprise support for smallholder vegetable farmers increased ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Efficiency of climate resilient agricultural production and marketing increased	<p>By 2028:</p> <ul style="list-style-type: none"> a. Crop income of project farmers increased by 30% (2019 baseline: 0) (baseline and target from social survey) b. Number of vegetable farmers benefitting from access to climate-smart production support increased to 3,548 (2019 baseline: 454) (baseline and target from social survey) (RFI A) c. Vegetable and potato crop yields for project farmers increased by about 30% and 15%, respectively (2019 baseline: 0) (baseline and target from economic analysis) d. Land with higher productivity increased to 7,000 ha (2019 baseline: 0) (RFI B) 	Sample household survey, agriculture survey and statistical yearbook.	Changes in local or national political leadership disrupting implementation of vegetable farming actions Out-migration of farmers from project areas Allocation of new plots to companies and not to individual farmers
Outputs 1. Efficient and climate-resilient irrigation infrastructure and management systems installed	<p>By 2026:</p> <ul style="list-style-type: none"> 1a. Irrigation and drainage infrastructure upgraded and modernized to service at least 7,000 ha of farmland (2019 baseline: 1,117) (target from FSR) 1b. At least 20 ha of drip/precision irrigation systems installed and operational in each irrigation scheme financed by JFPR grant. (2019 baseline: 0) 1c. All project <i>soums</i> ensure O&M of project supported irrigation schemes (2019 baseline: 0) 1d. Pilot irrigation asset management systems 	1a–1f. Semi-annual progress reports produced by PIU, ADB review mission reports	Natural hazards such as extreme floods impacting irrigation system construction Turnover of <i>soum</i>

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
<p>2. Environmentally sustainable agriculture production systems improved</p> <p>3. Technical, institutional, and management capacity and coordination strengthened</p>	<p>commissioned in one project in the Western Region and one in the Central or Eastern Region (2019 baseline: 0)</p> <p>1e. 100% of contracts/documents for 3,094 households engaged in vegetable farming in new plots are co-signed by women (2019 baseline: 0)</p> <p>1f. 240 locals including 40% women and 10% from female headed households hired during construction. (2019 baseline: 0)</p> <p>By 2026:</p> <p>2a. Four crop production research institutes producing 1.8 tons of vegetable seeds and 40 tons of seed potatoes. (2019 baseline: 1.15 tons of vegetable seeds and 30 tons of seed potatoes)</p> <p>2b. IPP conducting 5,000 tests annually of vegetables and pesticides for food safety. (2019 baseline: 1,000 annually) (RFI C)</p> <p>2c. 20 women researchers received technical support on pest management (2019 baseline: 0)</p> <p>2d. 192 women from CGGs received training on best practices for food safety</p> <p>2e. 3,548 farmers including 50% women receive high-yielding and climate-resilient vegetable seeds (2019 baseline: 0)</p> <p>By 2026:</p> <p>With JFPR grant support:</p> <p>3a. At least 48 CGGs established, have an agreed operational plan and are producing vegetables and potatoes, with at least 40% women as members and 25%</p>	<p>2a–2e. Quarterly progress reports produced by PIU, ADB review mission reports</p> <p>3a–3d. semi-annual progress reports produced by PIU, ADB review mission reports</p>	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	<p>in leadership positions. (2019 baseline: 0 CGGs, 0)</p> <p>3b. At least 480 persons report improved skills on climate-smart farming and irrigation technologies provided to CGGs of which at least 40% are women (2019 baseline: 0 pm, 0%)</p> <p>With ADB loan support</p> <p>3c. 24 winter greenhouses and collective cold storage facilities in use by CGGs (2019 baseline: 0)</p> <p>3d. At least 144 persons report improved skills on technical and management issues conducted for <i>soum</i> and <i>bagh</i> local authorities, of which at least 30% are women (2019 baseline: 0 pm, 0%)</p>		
Key Activities with Milestones			
Output 1: Efficient and climate-resilient irrigation infrastructure and management systems installed			
<p>1.1 Upgrade irrigation infrastructure (Q3 2020–Q3 2025)</p> <p>1.2 Conduct training and capacity-building activities for farmers and local government on joint reservoir operations management (Q3 2022)</p> <p>1.3 Plant windbreaks by CGGs (Q2 2023)</p> <p>1.4 Procure drip/ precision irrigation equipment to vulnerable households (Q2 2023)</p>			
Output 2: Environmentally sustainable agriculture production systems improved			
<p>2.1 Rehabilitate irrigation systems and upgrade equipment at crop research institutes (Q2 2023)</p> <p>2.2 Set up inspection and testing facilities at IPP (Q1 2025)</p>			
Output 3: Technical, institutional, and management capacity and coordination strengthened			
<p>3.1 Implement technical assistance (Q4 2020–Q1 2025)</p> <p>3.2 Assess capacity demands and prepare a detailed training program (Q2 2020–Q4 2024)</p> <p>3.3 Contract facilitation team (Q1 2021–Q1 2026)</p> <p>3.4 Form vegetable grower groups (Q3 2020)</p> <p>3.5 Set up winter greenhouses for diversification of vegetables, growing high-value crops (Q2 2021–Q3 2024)</p> <p>3.6 Train relevant <i>aimag</i>, <i>soum</i>, and <i>bagh</i> local government officials (Q3 2020–Q1 2025)</p> <p>3.7 Establish and train CGGs on new technologies for farming, O&M for efficient irrigation systems and business planning (Q3 2020–Q3 2023)</p>			
Project Management Activities			
<p>Establish PIU (Q2 2020)</p> <p>Implement the EMP and submit semiannual environmental monitoring reports to ADB from 2020 to 2025</p> <p>Implement the gender action plan, social development action plan from 2020 to 2025</p> <p>Monitor and evaluate project impact, outcome, and outputs using the project performance management system; submit semiannual project progress reports from 2020 until 2025</p>			
Inputs			
<p>ADB: \$40.00 million</p> <p>JFPR Grant: \$2.00 million</p> <p>Government: \$4.25 million</p>			

Assumptions for Partner Financing

Not Applicable

ADB = Asian Development Bank, CGG = community grower group, EMP = environmental management plan, FSR = feasibility study report, IPP = Institute of Plant Protection, JFPR = Japan Fund for Poverty Reduction, O&M = operations and maintenance, PIU = project implementation unit, Q = quarter, RFI = results framework indicator.

^a Government of Mongolia. 2016. *Mongolia Sustainable Development Vision 2030*. Ulaanbaatar.

Contribution to ADB Results Framework:

RFI A: Farmers using quality farm inputs and sustainable mechanization. Target 3,548 farmers

RFI B: Land with higher productivity. Target: 7,000 hectares.

RFI C: Food safety and traceability standards improved. Target: 5,000 tests

Source: Asian Development Bank estimates.

B. Monitoring

85. Project performance monitoring. To monitor the progress of the project in achieving the planned outcome and outputs, MOFALI will coordinate with the PIU for the establishment and maintenance of the project performance management system (PPMS)—equivalent to the management information system—which will permit adequate flexibility to adopt remedial action regarding project design, schedules, activities, and development impacts.²⁷ In addition, risk management for the project shall be incorporated in the PPMS. The monitoring will cover all indicators listed in the design and monitoring framework as well as the indicators reflecting the development results contributed by the project. The PPMS will cover the following aspects of the project implementation: (i) project physical and financial progress; (ii) progress and results of capacity development; (iii) implementation of the EMP; (iv) implementation of the GAP and SDAP; and (v) compliance with loan covenants (policy, financial, economic, sector, and others).

86. The MOFALI agrees that they will (i) establish the PPMS; (ii) recruit the loan implementation consultants to provide consulting service as described in Appendix 1; (iii) confirm that targets are achievable; and (iv) develop recording, monitoring, and reporting arrangements.

87. At the beginning of project implementation, the PIU will finalize the comprehensive PPMS procedures to systematically generate data in the above areas. The PIU will refine the PPMS framework, confirm achievable targets and the monitoring and recording arrangements, and establish relevant systems and procedures not later than 6 months after project implementation begins. The implementing agency, and the PIU will assign staff or consultants to collect baseline and progress data at the requisite time intervals, including progress report on the implementation of the EMP, GAP, and SDAP. The PIU will be responsible for analyzing and consolidating reported data through its management information system, and reporting outcomes to ADB through semiannual progress reports.

88. A project progress report, monitoring the project inputs and activities, should be submitted to ADB semiannually starting from project inception. These semiannual progress reports and project monitoring and evaluation reports will provide information necessary to update ADB's PPMS.

89. Promptly after physical completion of the project, but in any event not later than 6 months thereafter or such later date as ADB may agree for this purpose, MOFALI will prepare and submit to ADB a project completion report, in such form and in such detail as ADB shall reasonably request, on the implementation and evaluation of the project, including project description,

²⁷ ADB's project performance reporting system is available at:
<http://www.adb.org/Documents/Slideshows/PPMS/default.asp?p=evaltool>

evaluation of design and implementation, evaluation of performance, and overall assessment and recommendations.

90. **Compliance monitoring.** During project implementation, ADB and MOFALI will closely monitor the compliance of all the covenants under the project; and will take necessary remedy actions for any noncompliance. The compliance status will be reported in the semiannual progress report by MOFALI and will be reviewed during project review missions.

91. **Environmental safeguard monitoring.** PIU environment safeguards specialist will monitor the implementation of the EMP, including the GRM, and include progress as part of the overall reporting to the PIU. Progress reporting will be: (i) semi-annual, during construction and implementation of the EMP; and (ii) annual, during operation of the project facilities until issuance of the project completion report. In the event of any environmental incidents, accidents, or complaints, the PIU will immediately report these to MOFALI, who will inform ADB. If required, corrective actions will be developed and agreed upon between the executing and implementing agencies, PIU, ADB and other relevant agencies.

92. Involuntary resettlement and indigenous peoples. The project will not involve any involuntary land acquisition and resettlement impacts or any impacts on communities of indigenous peoples as defined under ADB SPS. No legacy issues have been found in any of the 12 irrigation schemes. The executing and implementing agency will ensure that the project remains category C on for involuntary resettlement and Indigenous peoples' impacts and any activities that would trigger ADB safeguard requirements for involuntary resettlement and Indigenous peoples would not be included in the project scope in the future. A resettlement framework has been prepared to address potential temporary impacts particularly in Nogoon Kashaa subproject; and the project's progress report will include information on the status of implementation of the resettlement framework.

93. Social and gender monitoring. Monitoring of the GAP and SDAP implementation will be conducted and the targets are specified in the relevant action plans, and some indicators are also included in the design and monitoring framework. To implement social and gender measures properly, MOFALI and project soums will appoint social and gender focal points for implementation and internal social monitoring. A national social and gender specialist will be engaged under the PIU. The specialist will assist the implementing agency and PIU in setting up effective internal social and gender monitoring system and will provide training and capacity building to the focal staff for implementation. Results of internal monitoring on social and gender measures included in the SDAP and the GAP will be reported through regular progress reports.

C. Evaluation

94. In addition to regular monitoring, project progress and performance will be monitored at least once a year jointly by ADB and MOFALI during the ADB review missions. The review will assess implementation performance and achievement of project outcome and outputs, assess financial progress, identify issues and constraints affecting implementation, and work out a time-bound action plan for their resolution. ADB and MOFALI will undertake a midterm review in the mid-year of the project implementation period to (i) conduct a detailed evaluation of the project scope, implementation arrangements, progress of the overall project and each component, and status of achieving the performance targets; and (ii) recommend appropriate measures, including changes in the project scope and/or implementation arrangements, reallocation of loan proceeds, changes in the ADB financing ratios, and extension of the loan closing date. Promptly after physical completion of the project, but in any event not later than 6 months thereafter or such later

date as ADB may agree for this purpose, MOFALI will prepare and submit to ADB a project completion report, in such form and in such detail as ADB shall reasonably request, on the implementation and evaluation of the project.²⁸

D. Reporting

95. MOFALI will provide ADB with (i) semiannual progress reports in a format that is acceptable to ADB (format of the progress report included in appendix 7), including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions, (c) updated procurement plan, (d) compliance status with loan covenants, and (e) updated implementation plan for the next reporting period; (ii) audited annual report; (iii) consolidated financial statements; and (iv) a project completion report within 6 months of physical completion of the project.

96. MOFALI has agreed on the following reporting commitments:

Report	Timing
Semiannual project progress reports	Semiannual, within 1 month after the end of each reporting period
Audited financial statements	Not later than 6 months after the closure of fiscal year
Social monitoring report (appended to the progress reports) comprising: ➤ GAP and SDAP implementation progress and results	Semiannual, within 1 month after the end of each reporting period.
Environmental safeguard Construction phase ➤ Environmental safeguard monitoring reports	Semiannually, within 1 month after each semester (i.e. January and July)
Operational phase ➤ Environmental safeguard monitoring reports	Annually, within 1 month after the end of each year (February), until the project completion report
Project completion report	Not later than 6 months after the physical completion of the project

LURT = land use rights transfer, GAP = gender action plan, SDAP = social development action plan.

Source: Asian Development Bank.

E. Stakeholder Communication Strategy

97. Project information will be disclosed through ADB's and government's websites, the Consultation and Participation Plan (CPP), meetings, interviews, focus group discussions, and community consultation meetings, in accordance with requirements of ADB's information disclosure policy. Main stakeholders are MOFALI, participating *soums*, the irrigation systems, beneficiary farm households, and participants in the project implementation. Stakeholder communication is also part of the GAP, and SDAP.

98. **Environment.** Meaningful consultation, participation, and information disclosure were conducted during preparation of the IEE and EMP. Public consultations will be maintained with

²⁸ Project completion report format is available at: <http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar>

communities in the project areas during project implementation. Consultations will be arranged and facilitated by the PIU environment and social officers and PIU social and environmental focal staff. Methods of consultation and information disclosure may include household visits and village meetings. In particular, consultations will be made with residents living close to the subproject sites and who may be affected by construction or operational noise, dust, or other issues. Such communities are identified in the IEE and EMP.

99. **Social and gender.** Consultations with communities were conducted during preparation; and will be continued during the implementation of the GAP, and SDAP. Project information will be shared with communities during implementation, covering (i) project contents, scope, and implementation arrangements; (ii) cooperation mechanisms for farmers/CGGs (iii) local employment opportunities; (iii) SDAP/GAP targets; (iv) construction periods and timing; (v) Grievance Redress Mechanism; and (vi) project training and other information. Feedbacks received during consultation will be incorporated in the project design. Special attention will be paid to the participation of women, the poor, and other vulnerable groups. In Sagsai and Bayannuur *soums* (Bayan-Ulgii *aimag*), all meetings, activities and training to be provided in the presence of an interpreter; and all key project documents will be translated in Kazakh language. Social monitoring reports will be disclosed publicly.

100. **Public disclosure.** ADB, the government, and MOFALI will disclose relevant project information to the public and interested parties. This includes particularly the information regarding the overall project and environment and social safeguards. The information disclosure measures for different stakeholders are described in Table 14.

Table 14: Public Disclosure Measures

Information	Means of Communication	Responsibility	Audience	Frequency
Report and recommendation of the President with links to relevant documents	ADB website	ADB	Public	Once
Project information during design and construction	Stakeholder consultations and public notice boards	Government and MOFALI	Project beneficiaries and affected people	Regular intervals during design and construction phase
Social monitoring reports	Websites, and public notice boards	Government and MOFALI	Project beneficiaries/affected people and other interested stakeholders	Semi-annually
Information on the GAP, and SDAP activities	Stakeholder consultation, websites, and public notice boards	Government and MOFALI	Project beneficiaries/affected people and other interested stakeholders	Regularly
Project information documents	ADB website	ADB	Public	Semiannually
Project completion report	ADB website	ADB	Public	Once

ADB = Asian Development Bank, GAP = gender action plan, MOFALI = Ministry of Food, Agriculture, and Light Industry, Source: Asian Development Bank.

101. Detailed consultation, participation, and information disclosure related to social and environmental safeguards/measures are included in the EMP, GAP, and SDAP.

X. ANTICORRUPTION POLICY

102. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.²⁹ All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all project contractors, suppliers, consultants, and other service providers. Individuals and/or entities on ADB's anticorruption debarment list are ineligible to participate in the ADB-financed activity and may not be awarded any contracts under the project.³⁰

103. To support these efforts, relevant provisions are included in the loan and project agreements and the bidding documents for the project.

XI. ACCOUNTABILITY MECHANISM

104. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by the ADB-assisted projects can voice and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.³¹

XII. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

105. All revisions and/or updates during the course of implementation should be retained in this section to provide a chronological history of changes to implemented arrangements recorded in the project administration manual, including revision to contract awards and disbursement schedules.

²⁹ Anticorruption Policy: <https://www.adb.org/sites/default/files/institutional-document/32026/anticorruption.pdf>

³⁰ ADB's Integrity Office web site: <https://www.adb.org/site/integrity/main>

³¹ Accountability Mechanism. <https://www.adb.org/site/accountability-mechanism/main>

APPENDIX 1: TERMS OF REFERENCE FOR THE LOAN-FINANCED CONSULTING SERVICES

6. Overview

1. The consulting services to be financed by the Asian Development Bank (ADB) loan are divided into 4 packages: (i) project implementation startup legal specialist (CS-01; national individual consultant); (ii) capacity development (CS-10; international firm); (iii) Environmental Baseline Assessments and Environmental Impact Assessments (CS-15; multiple national firms); and (iv) Detailed Design (CS-16; multiple national firms) (Table 1). Terms of Reference (TORs) for the Project Implementation Unit (PIU) staffing requirements (CS-02 to CS-09; national individual consultants, 9 individuals) are also included in Appendix 1 although they are not classified as consultants.

2. The scope and tasks of the consulting services financed by the loan are described below. The Crop Production Development Policy and Coordination Department of MOFALI (the implementing agency) on behalf of MOFALI will be responsible for engaging all the consulting service contract packages in accordance with ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). The consulting firm will be selected for the capacity development by (i) inviting full technical proposals; and (ii) using the quality- and cost-based selection method, with a quality–cost weighting ratio of 90:10. The estimated cost of each package is also included in Table 1 and detailed in the individual terms of reference.

Table 1: Summary of Consulting Services

No	Package Name	Summary Details
CS-01	Project start-up Legal Specialist	Individual consultant: a legal specialist Expected duration: 9 months Selected by the IA through ADB's ICS selection method Estimated cost \$33,000
CS-02	PIU project coordinator	Individual consultant: a national project management specialist Expected duration: 70 months
CS-03	PIU finance specialist	Individual consultant: a national finance specialist Expected duration: 70 months
CS-04-01	PIU procurement specialist (civil works)	Individual consultant: a national procurement specialist Expected duration: 45 months
CS-04-02	PIU procurement specialist (goods)	Individual consultant: a national procurement specialist Expected duration: 45 months

No	Package Name	Summary Details
CS-05	PIU engineering and contract management specialist	Individual consultant: a national engineering and contract management specialist Expected duration: 12 months
CS-06	PIU monitoring and evaluation specialist	Individual consultant: a national monitoring and evaluation specialist Expected duration: 70 months
CS-07	PIU environment safeguards specialist	Individual consultant: a national monitoring and evaluation specialist Expected duration: 12 months
CS-08	PIU social and gender specialist	Individual consultant: a national monitoring and evaluation specialist Expected duration: 12 months
CS-09	PIU office manager	Individual consultant: a national office management specialist Expected duration: 70 months
CS-17	Driver	Administrative support: Driver Expected duration: 70 months
CS-10	Capacity Development	A consultant firm with international and national experts. Selected by the IA through ADB's QCBS (90:10) selection method Expected duration: 5 years Estimated cost \$987,000
CS-15	Environmental Baseline Assessments (EBAs) and Environmental Impact Assessments (EIAs)	National firms. Selected by the IA through ADB's QCBS (90:10) selection method Expected duration: 3 months for each contract if only EIA/ 6 months for combined EBA and EIA Estimated cost \$335,900
CS-16	Detailed Design	National firms. Selected by the IA through ADB's QCBS (90:10) selection method Expected duration: 3 months for each contract Estimated cost \$224,200

ADB = Asian Development Bank, CS = consulting service, IA = implementing agency, ICS = individual consultant's selection, QCBS = quality- and cost-based selection.

Source: Asian Development Bank.

7. Project Implementation Start-up Support

Legal Specialist (CS01)

3. A national legal expert with the total input of 9 person-months is required to assist the legal department of the EA in drafting a project implementation agreement between the EA and *aimag* governments in which the EA is intending to invest in irrigation subprojects. The expert will work on an intermittent basis with a schedule agreed with the IA/PIU to facilitate the start-up of project implementation.

**Table 2: Cost Estimates for Legal Specialist
(Package CS-01)**

No	Item	Amount (\$'000)
1	Consultants fees - remuneration and per diem (incl. domestic travel)	31.5
2	Contingencies	1.6
	Total	33.1

Source: Asian Development estimates.

4. The specialist will in consultation with the legal department of MOFALI, the IA and with *aimag* government representatives draft a project implementation agreement between MOFALI and the *aimag* government in which the project intends to invest in irrigation subprojects. The project implementation agreement shall be entered into with each *aimag* government which shall include: (i) a definition of *aimag* government responsibilities for operating and maintaining the irrigation systems, (ii) conditions for ensuring sufficient amount of funding for maintenance by the *aimag* annual budget, (iii) conditions ensuring small-farmers are the beneficiary of the irrigated systems for at least 15 years (land lease agreement period), (iv) selections criteria for land leasers to be included in the irrigated systems area, (v) legal basis for irrigation service fees to be charged by the *aimag* government.

5. The legal expert shall have a university degree or above in law, or related field with demonstrated knowledge in Government of Mongolia's institutional and legal framework for implementing official development assistance funded projects. Tasks and responsibilities of the specialist include but are not limited to the following:

6. The specialist will provide advice on (i) procurement procedures in accordance with the ADB procurement policy/regulations when necessary; (ii) preparation of the procurement manual from legal perspective;

- (i) Assist MOFALI's legal department in drafting a project implementation agreement based on individual consultations with *aimag* government representatives and based on a review of the existing legal framework between central level and *aimag* level government;
- (ii) Assist MOFALI's legal department in defining *aimag* government responsibilities for operating and maintaining of project supported irrigation systems;
- (iii) Assist MOFALI's legal department in defining implementation agreement conditions and penalties that ensure sufficient funding for maintenance by the *aimag* annual budget ;
- (iv) Assist MOFALI's legal department in defining implementation agreement conditions and penalties that ensure: (a) small-farmers are the beneficiaries of the irrigated systems for at least 15 years (land lease agreement period);

- (v) Assist MOFALI's legal department in defining implementation agreement selection criteria for land leasers to lease land in the project supported irrigation subprojects;
- (vi) Assist MOFALI's legal department in preparing a strategy paper on recommended reforms and implementation of the reforms in the legal, regulatory and institutional framework for charging irrigation service fees by the *aimag* government;
- (vii) Undertake other activities relating to the facilitation of project implementation, as required by the executing agency, implementing agency and ADB.
- (viii) Revise the government's standard bidding documents for community participation in procurement addressing ADB procurement principles and procedures and improvise the standard bidding documents strengthening legal and financial roles and responsibilities of community groups.

8. Project Implementation Unit Consultants

7. In consideration of the implementing agency's limited project implementation capacity for ADB and other international institutional funded projects, a PIU will be established using individually engaged national consultants to be financed by the loan. The PIU will be headed by a project coordinator who will be responsible for leading the activities of seven staff recruited as individual consultants and based in Ulaanbaatar, and guiding *soum* officers in the 16 project *soums*.

a. Project Coordinator (CS-02)

8. A project coordinator is required to organize the PIU, keep track of, coordinate, report on, and facilitate the deployment of the resources provided for under the project. While keeping scrupulously to the provisions agreed between the government and ADB the coordinator will keep in mind the overall objective of the project that is to sustainably improve the livelihoods of the project's rural clients in 17 selected irrigation schemes including the promotion of vegetable production under the proposed Japan Fund for Poverty Reduction (JFPR) grant. The PIU project coordinator will commence inputs immediately after loan effectiveness and will be engaged on a full-time basis. He/she will report directly to MOFALI's project director.

9. The coordinator will be responsible for preparation of annual work plans and budgets; communicating clearly to PIU staff the activities to be completed; ensuring that *soum*-based PIU staff complete assigned activities; monitoring progress according to agreed protocols; maintaining regular contacts with the Project Director to discuss progress and possible need for adjustments or modifications, periodically visiting field locations to have a first-hand knowledge of the situation, and preparing reports for the executing agency, MOF, ADB and JFPR.

10. The coordinator should have a university degree, preferably in public administration, business management, agricultural economics, or natural resources management. He/she must have experience in implementing a project of a multilateral development bank, preferably ADB, or another international development organization. Preferred candidates will have at least 8 years of overall work experience, of which 5 years in helping deliver the type of outputs specified below, including involvement in, community development, natural resources management, or horticulture in Mongolia. The coordinator must have led PIUs and have strong communication skills.

11. Tasks and responsibilities of the coordinator include but are not limited to the following:

- (i) Lead the PIU in project implementation including:

- (a) As delegated by the project director, provide the lead in project implementation, ensuring all outputs are delivered according to approved work plans and budgets.
- (b) Represent the project director as required for project related matters.
- (c) Supervise PIU project staff and contractors, ensuring that they follow the annual work plan and budget.
- (d) Assist the project director in discussing terms of reference and expected outputs of each PIU project staff, providing coaching where required, and review performance of PIU staff.
- (e) Ensure communications among PIU staff and contractors on project work plans, project issues, and project performance.
- (f) Conduct monthly PIU project management meetings to address the progress of the work plan and any impediments.
- (ii) Prepare implementation work plans and PIU budgets including,
 - (a) Based on the project work plans and related Gantt charts for (i) upgrading of irrigation schemes, (ii) providing small infrastructure, equipment and other selected inputs to farmer groups, and (iii) training, and other support provided to farmers in the irrigation systems, develop annual PIU work plans and budgets with detailed time bound activities and clear assignment of responsibilities and accountabilities and submit them for approval by the project director and ADB.
 - (b) Coordinate the activities of the PIU and ensure that planned activities are carried out.
 - (c) Adapt the PAM to more specific needs of the PIU in the form of a Project Management Manual that contains implementation and administrative procedures not already covered by the PAM and conduct related training of PIU staff.
- (iii) Ensure all ADB and JFPR policies and procedures are disseminated to all project staff and are being complied with including,
 - (a) Ensure that all PIU staff and consultants are aware of ADB policies, including social and environmental safeguards, gender, anti-corruption, financial management, procurement and disbursement.
 - (b) Ensure that the ADB Safeguards Policy Statement is shared with all project implementing staff and consultants. Ensure all project activities are in line with project social and environmental safeguards. Make all the *soum* coordinators aware of safeguard requirements and due diligence to do when starting project activities to ensure compliance.
 - (c) Disseminate JFPR policies and procedures to all engaged with project implementation.
 - (d) Request the Mongolia Resident Mission (MRNM) of ADB for additional training on ADB policies and procedures when needed.
- (iv) Promote timely implementation of PIU activities,
 - (a) Ensure timely preparation of contracts with suppliers and communities for various project activities according to ADB procurement standards
 - (b) Coordinate delivery of consultant work.
 - (c) Ensure linkages with *soum*-based local government staff to ensure the latter's input and participation in project activities
 - (d) Ensure PIU finance specialist actively manages cash flow through the advance account to enable timely implementation.

- (e) Obtain necessary and timely approvals by the project director of work activities; and
- (v) Conduct monthly monitoring of PIU activities and expenditures, prepare quarterly progress reports, and annual performance reviews,
 - (a) Monitoring PIU activities on a monthly basis against the annual work plan and budget, and report on the progress achieved to the project director.
 - (b) Participate in periodic field reviews of project preparatory and implementation activities, and project-funded inputs and services.
 - (c) Based on the preceding, prepare quarterly reports for submission to MOFALI/MOF and ADB.
 - (d) Complete annual performance reviews of PIU activities and expenditures highlighting activities outstanding and those that need to be strengthened or modified.
 - (e) Propose possible revisions of project plans and corresponding reallocation of resources within budget limits.
 - (f) Complete timely preparation of other reports to the project director, as required.
 - (g) Organize Project Steering Committee meetings in accordance with the work plan.

b. Finance Specialist (CS-03)

12. A finance specialist is required to oversee all financial aspects of project implementation. The finance specialist will commence inputs immediately after loan effectiveness and will be engaged on an intermittent basis as needed for the duration of the project. He/she will report directly to the PIU project coordinator.

13. The finance specialist will (i) prepare quarterly and annual budgets, (ii) prepare quarterly and annual financial reports, (iii) track the progress of disbursement under the project, (iv) perform cash management and disbursements, (v) maintain a fixed asset system, (vi) calculate and pay personal income tax of staff contracted for the project, and (vii) prepare financial and disbursement documents and other financial reports.

14. He/she should have a bachelor degree in accounting, finance or business administration and 5 to 10 years of proven experience in accounting in the public or private sector. The specialist will be familiar with accounting under ADB projects and accounting systems used by the Mongolian Government. The candidate must have a good command of spoken and written English.

15. Tasks and responsibilities of the finance specialist include but are not limited to the following:

- (i) Prepare and monitor budgets, including,
 - (a) Prepare quarterly and annual budgets for the PIU,
 - (b) Monitor expenditures against budgets on a monthly basis, and
 - (c) Prepare quarterly and annual financial reports of PIU activities;
- (ii) Prepare financial reports, including,
 - (a) Monitor expenditures against budget and prepare monthly reports of expenditures,
 - (b) Prepare bank reconciliation statements on a monthly basis,
 - (c) Prepare financial statements and financial reports,

- (d) Maintain accounting ledgers, and
- (e) Take responsibility for safe custody of accounting books, and all financial related documents and instruments;
- (iii) Manage cash and accounts payable, including,
 - (a) Initiate requisitions for payments,
 - (b) Arrange payments to suppliers, and
 - (c) Pay income and other required taxes of PIU staff and its contractors;
- (iv) Initiate requests for project funds and submit to ADB;
- (v) Respond to queries from ADB with respect to financial aspects of the Project;
- (vi) Prepare and maintain a fixed asset register; and
- (vii) Liaise with external auditors wherever required.

c. Procurement Specialist (Civil Works) (CS-04/1)

16. A procurement specialist is required oversee all financial aspects of project implementation. The procurement specialist will commence inputs immediately after loan effectiveness and will be engaged initially on a full-time basis with intermittent inputs expected after the first 3 years. He/she will report directly to the PIU project coordinator.

17. The procurement specialist (Civil Works) will carry all procurement-related duties of the project civil works based on ADB and MOF regulations, including (i) preparing and standardizing procurement-related documents; and (ii) implementing, managing, and monitoring the project's procurement.

18. He/she should have a bachelor's degree in accounting, finance or business administration preferably with 5–10 years of experience as a national procurement officer under a development project; and past experience in procurement in an ADB project. The specialist will be familiar with procurement systems of the Mongolian government and the rules, regulations, and practices of procurement and contracting in general, and have a good command of spoken and written English.

19. Tasks and responsibilities of the procurement specialist include but are not limited to the following:

- (i) Advise the PIU on best practices in procurement of civil works, based on the policies and guidelines for procurement of ADB and the Mongolian Government;
- (ii) For each civil works package in the project procurement plan, prepare bidding documents for civil works required, including technical specifications and BoQ for the civil works required, contract conditions that each bidder must accept, and formats/templates for bidders to use in preparing their bids;
- (iii) Submit the draft bidding documents for each civil works procurement package to the EA/IA/BEC/CSC and ADB (as required in the procurement plan) for review and approval according to the timelines in the project work plan;
- (iv) Supervise the advertisement of the request for bids for the civil works by the PIU as required;
- (v) Prepare list of qualified bids submitted in response to the request for bids;
- (vi) Support the IA/BEC/CSC on final evaluation of the bid proposals for technical compliance and financial criteria, and rank the bids;
- (vii) Prepare and submit final evaluation report on the bids to the IA/BEC/CS for review and to ADB for approval after review, as necessary;
- (viii) Provide advice to the BEC on the bids and evaluation as required;

- (ix) Assist the PIU/EA in finalizing a contract with the lowest-evaluated bidder;
- (x) Provide information to the Project Steering Committee, as required;
- (xi) Review and periodically revise the procurement plan as set out in the PAM and submit revisions through the PIU coordinator to the implementing agency and ADB for approval;
- (xii) Regularly monitor progress on procurement and prepare reports for the implementing agency and ADB;
- (xiii) Report progress of the procurement program on a monthly basis to the PIU project coordinator and complete quarterly and annual procurement reports; and
- (xiv) Timely advise the client on procurement issues that may impact the achievement of project outcomes (including issues of pre-award and post-award)

d. Procurement Specialist (Goods) (CS-04/2)

20. A procurement specialist is required oversee all financial aspects of project implementation. The procurement specialist will commence inputs immediately after loan effectiveness and will be engaged initially on a full-time basis with intermittent inputs expected after the first 3 years. He/she will report directly to the PIU project coordinator.

21. The procurement specialist (Goods) will carry all procurement-related duties of the project Goods and community participation in procurement based on ADB and MOF regulations, including (i) preparing and standardizing procurement-related documents; and (ii) implementing, managing, and monitoring the project's procurement.

22. He/she should have a bachelor's degree in accounting, finance or business administration preferably with 5–10 years of experience as a national procurement officer under a development project; and past experience in procurement of goods in an ADB project. The specialist will be familiar with procurement systems of the Mongolian government and the rules, regulations, and practices of procurement and contracting in general, and have a good command of spoken and written English.

23. Tasks and responsibilities of the procurement specialist include but are not limited to the following:

- (i) Advise the PIU on best practices in procurement of goods and community participation in procurement, based on the policies and guidelines for procurement of ADB and the Mongolian Government;
- (ii) For each goods and community participation in procurement package in the project procurement plan, prepare bidding documents, including technical specifications and BoQ for the goods and community participation in procurement package required, contract conditions that each bidder must accept, and formats/templates for bidders to use in preparing their bids;
- (iii) Submit the draft bidding documents for each goods and community participation in procurement package to the EA/IA/BEC and ADB (as required in the procurement plan) for review and approval according to the timelines in the project work plan;
- (iv) Supervise the advertisement of the request for bids for the goods and community participation in procurement by the PIU as required;
- (v) Prepare list of qualified bids submitted in response to the request for bids;
- (vi) Support the IA/BEC on final evaluation of the bid proposals for technical compliance and financial criteria, and rank the bids;
- (vii) Prepare and submit final evaluation report on the bids to the IA/BEC for review and to ADB for approval after review, as necessary;

- (viii) Provide advice to the BEC on the bids and evaluation as required;
- (ix) Assist the PIU/EA in finalizing a contract with the lowest evaluated bidder;
- (x) Provide information to the Project Steering Committee, as required;
- (xi) Review and periodically revise the procurement plan as set out in the PAM and submit revisions through the PIU coordinator to the implementing agency and ADB for approval;
- (xii) Regularly monitor progress on procurement and prepare reports for the implementing agency and ADB;
- (xiii) Report progress of the procurement program on a monthly basis to the PIU project coordinator and complete quarterly and annual procurement reports; and
- (xiv) Timely advise the client on procurement issues that may impact the achievement of project outcomes (including issues of pre-award and post-award).

e. Engineering and Contract Management Specialist (CS-05)

24. An engineering and contract management specialist is required to ensure the quality and appropriateness of section 6 of the bidding documents, specifying the technical elements and capacity of contractors after detailed design and to follow the construction process and ensure its compliance with the technical specifications and design of the contract and adaptations needed, if required. The engineering and contract management specialist will be engaged on an intermittent basis with an expected input of 3 months in the first year, following completion of detailed design, and 6 months spread over the project construction phase. He/she will report directly to the PIU project coordinator.

25. The national engineering and contract management specialist will be responsible for the technical quality of the bidding documents for works, i.e. section 6, describing the employer's requirements consisting of technical specifications, drawings, description of works and personnel and equipment requirements and to ensure the works delivered are in line with the contract. He/she should have: (i) a bachelor's degree or higher in civil engineering or closely related fields; (ii) 10 years working experience as engineer preferably in construction projects; (iii) working experience in preparation or implementation of World Bank/ADB funded projects; and (iv) proficiency in written and spoken English.

26. Tasks and responsibilities of the specialist include but are not limited to the following:
- (i) Review the feasibility study report (FSR) design and identify necessary additional engineering details and information;
 - (ii) Review and comment on the cost estimates for the works prepared by the detailed design consultants;
 - (iii) For each civil works package in the project procurement plan review technical specifications, drawings, descriptions of works and personnel and equipment requirements prepared by the detailed design consultants and prepare the technical elements (section 6) of the bidding documents;
 - (iv) For each goods package in the project procurement plan, prepare the technical specifications of the bidding documents;
 - (v) Together with the procurement specialist finalize section 6 of the draft bidding documents for submit the draft bidding documents for each procurement package to the PIU and ADB (as required in the procurement plan) for approval according to the timelines in the project work plan;
 - (vi) Support the procurement specialist in bid evaluation;
 - (vii) Review technical progress reports from the capacity building consultants and contractors, ensure compliance with the (quality) standards of the contract document and propose adjustments if needed;
 - (viii) Visit construction sites and verify if the reported construction lay out, progress and

- quality in line with the contract documents, including approved contract variations; and
- (ix) Develop contract management plan for each contract.

f. Monitoring and Evaluation Specialist (CS-06)

27. A monitoring and evaluation (M&E) specialist is required to establish the project benefit monitoring and evaluation (PBME) system for the project and to oversee its implementation. The M&E specialist will be engaged on an intermittent basis with an expected duration of 15 months comprising tentatively 4 months during the first year to establish the system, 3 months in the second to fourth years and 1 month during the fifth and sixth years. He/she will report directly to the PIU project coordinator.

28. The M&E specialist will (i) establish the PBME system for the project, using the project Design and Monitoring Framework (DMF) as the basis, that meets the requirements of the Government of Mongolia and ADB, (ii) propose a monitoring plan to be used by the PIU, (iii) complete an M&E baseline report for the project, (iv) train PIU staff in compiling monitoring reports based on the project DMF and approved monitoring plan, and (v) produce a midterm M&E report and a final M&E report against DMF targets.

29. He/she should have a university degree in economics, agriculture or other relevant discipline. He/she will have at least 5 years of experience with rural development projects. Experience of ADB or World Bank projects is required and must have a good command of spoken and written English.

30. Tasks and responsibilities of the finance specialist include but are not limited to the following:

- (i) Establish the PBME system consistent with the DMF project that meets the requirements of the Government of Mongolia and ADB for monitoring of project implementation and achievement of project output, outcome and impact;
- (ii) Complete an M&E baseline report for the project, including targets set out in the DMF, indicators, and data collected for the baseline including data required by the project's SDAP, GAP, IEE and other documents;
- (iii) Develop a monitoring plan for routine monitoring to be used by the PIU and ensure this is approved by the project director;
- (iv) Assist MOFALI to prepare the TORs for the Mongolia National Remote Sensing Center (NRSC) to assess the increase in cropped area in irrigation schemes (outcome indicator d) using remote sensing technology in 2020 as a baseline, 2022, 2024, and 2026;
- (v) Check their findings of the NRSC and collate them into the PBME;
- (vi) Train PIU staff in generating data for regular monitoring reports, according to the approved monitoring plan;
- (vii) Review all monitoring activities on an annual basis to ensure the quality of their implementation and prepare the required reports;
- (viii) Produce a midterm M&E report and a final M&E report for inclusion in the Government' project completion report.

g. Environment Safeguards Specialist (CS-07)

31. An environment safeguards specialist is required to oversee all environmental aspects of project implementation, including compliance with the Environmental Management Plan (EMP).

The environment specialist will commence inputs immediately after loan effectiveness and will be engaged on an intermittent basis for an expected duration of 12 months. He/she will report directly to the PIU project coordinator.

32. National, PIU-based with frequent field travel. The consultant will have: (i) graduate degree and 10 years of relevant experience in environmental management for large construction projects; (ii) demonstrated experience in environmental impact assessment (EIA) and/or management for projects financed by ADB and/or other multilateral development organizations; (iii) strong participatory and facilitation skills, to work with local stakeholders and facilitate consultations resulting in positive outcomes and dialogue; (iv) willingness to regularly travel to all project construction sites; (v) national certification for environmental assessment, management, and/or monitoring; and (vi) good command of spoken and written English. Under the supervision of the project coordinator, the consultant will work closely with the other PIU staff, government counterparts (including *soum* government agencies), and other relevant stakeholders, to ensure effective implementation of the project EMP.

33. Specific duties include the following:

- (i) Become familiarized with the project initial environmental examination (IEE), environment management plan (EMP), and loan- and project-specific assurances related to the environment; as well as the three domestic environmental baseline assessments (EBAs) and General EIA Letters issued by the Ministry of Environment and Tourism (MET).
- (ii) Work closely with the other PIU team members, MOFALI and MET personnel, contractors, and other stakeholders, for effective implementation of the EMP, including mitigation, monitoring, and reporting.
- (iii) Establish positive and effective working relationships with stakeholders to ensure the EMP is implemented smoothly and that any compliance issues are reported and addressed quickly.
- (iv) Coordinate the preparation of domestic EBAs for the other irrigation schemes for which EBAs were not prepared during the project processing: (a) assist the PIU Procurement Specialist as needed to prepare the terms of reference; (b) coordinate the work of the domestic firm(s) that will prepare the EBAs; and (c) facilitate the review and endorsement of the EBAs by the MET and issuance of General EIA Letters.
- (v) Coordinate the preparation of the ecological survey and impact assessment required for the Okhindiin Tal subproject. The terms of reference for the survey are in IEE Appendix 5. Ensure that the assessment, and the development of site-specific mitigation measures for the ecological values of the project area, are developed in close coordination between the survey specialists and the design engineers.
- (vi) If Detailed EIAs are required by MET (as may be stated in the General EIA Letters): (a) assist the PIU Procurement Specialist as needed to prepare the terms of reference; (b) coordinate the work of the domestic firm(s) that will prepare the Detailed EIAs, and ensure these are prepared in close coordination with the detailed engineering designs (DED); and (d) facilitate the review and endorsement of the Detailed EIAs by the MET. Work closely with the environmental and engineering firms, MOFALI, and MET, to ensure timely finalization, review, and approval of the Detailed EIAs.
- (vii) With the other PIU specialists, identify whether the DEDs are consistent with the preliminary designs approved during project preparation; and assess whether the EMP requires updating. In the event that updates to the EMP are required, discuss

- and submit the proposed changes to MOFALI and ADB for review and endorsement.
- (viii) Work closely with the PIU, MOFALI, and contractors to ensure that no civil works proceed until the EMP is confirmed to be adequate, and/or that any revisions are approved.
 - (ix) Provide on-the-job training for the PIU, contractors, and other stakeholders as needed to ensure that all agencies are aware of their roles and responsibilities for implementation of the EMP, including the grievance redress mechanism (GRM).
 - (x) With the PIU Social Specialist, government personnel, and other stakeholders, establish the project GRM. Plan and implement regular and meaningful stakeholder consultations throughout the project implementation, to ensure that (a) the GRM is well understood and known by all stakeholders, (b) any grievances are reported quickly and addressed, and (c) stakeholders, especially local communities and civil society organizations working in the project areas, are well informed of progress relating to environmental safeguards and management for the project.
 - (xi) Screen all proposed activities against the EMP, and work with PIU members and other stakeholders to ensure the project activities comply with the EMP.
 - (xii) Facilitate on-site inspections by government agencies to ensure timely environmental certification and approvals of the completed civil works.
 - (xiii) Prepare semi-annual environmental monitoring reports to document the progress for EMP implementation. Submit the reports to the PIU project coordinator and MOFALI for review and consolidation, prior to submission of the progress reports by MOFALI to ADB.
 - (xiv) Support the PIU project coordinator in other tasks related to environment safeguards as needed.
 - (xv) **Written deliverables.** Semi-annual environment monitoring reports, using the template provided by ADB or a domestic format reviewed and approved by ADB.

34. PIU Social and Gender Specialist (CS-08)Error! Reference source not found.A social and gender specialist is required to oversee all social aspects of project implementation including implementation social development action plan (SDAP), consultation and participation plan (CPP) and gender action plan (GAP). The social and gender specialist will be engaged on an intermittent basis for an expected duration of 12 months. He/she will report directly to the PIU project coordinator.

35. The social and gender specialist shall have: (i) a bachelor's degree or higher degree in sociology or related fields; (ii) 10 years working experience as a social and gender specialist; (iii) working experience in preparation or implementation of World Bank/ADB funded projects; (iv) good knowledge on the ADB's social, gender and safeguards policies; and (v) proficiency in spoken and written English.

36. He/she will be responsible to provide social and gender aspect support for project implementation in compliance of ADB social policies and procedures, and covenants on social aspects. The specific tasks include, but are not limited to:

- (i) Develop a work plan for implementing and monitoring the poverty, social and gender dimensions of the project based on key socioeconomic indicators, and support implementing the project performance management system; take leadership to assist implementing the gender and social development action plans including the SDAP, CPP and GAP in accordance with the ADB's approved plans; provide practical advice and support to MOFALI/PIU on the implementation of

- (ii) relevant plans following both ADB and domestic policy frameworks;
- (iii) Closely monitor to ensure that the project does not have any indigenous peoples impacts within the meaning of the Safeguards Policy Statement. In the event that the project does have any such impact, assist the executing agency and PIUs to take all steps required to ensure that the project complies with the applicable laws and regulations of the PRC and with the SPS;
- (iv) Closely monitor to ensure that the project does not involve involuntary land acquisition and resettlement impacts as defined under the ADB SPS; and implement the resettlement framework as needed;
- (v) Assist the MOFALI/PIU to ensure that all the planned irrigated area is state-owned land provided by the government and there is no restriction on land use or access to natural resources;
- (vi) Assist MOFALI and PIUs in supervising contractors to ensure there are no issues triggering involuntary resettlement as defined under the ADB's Safeguard Policy Statement;
- (vii) Closely monitor and verify to ensure that the necessary budgetary and human resources to fully implement the SDAP, CPP and GAP are available;
- (viii) Review the bidding documents to ensure all the provisions related to labor and health, and the measures set forth in the GAP and SDAP have been incorporated into the bidding documents;
- (ix) Assist providing training on prevention and control of transmissible diseases and HIV/AIDS, and community disturbance to relevant officers at *aimag/soum* level, contractors and workers;
- (x) Assist the executing agency and PIU to disclose information at *aimag/soum* levels on the project and its benefits;
- (xi) Provide the inputs for the executing agency and PIU in the establishment and operation of GRM;
- (xii) Assist MOFALI and the PIU in supervising contractors to ensure compliance with requirements of the SDAP, CPP and GAP, applicable laws and regulations, and ADB's social policies;
- (xiii) Assist MOFALI and the PIU in supervising the implementation processes of SDAP, CPP and GAP, by collecting and updating basic data, closely coordinating between the MOFALI, PIU, other relevant agencies and officers at *soum* level (i.e. gender focal point and labor and social welfare officer);
- (xiv) Provide inputs of social and gender to project progress reports, annual monitoring reports, midterm report, project completion report, and other project required documents;
- (xv) Provide inputs for the training and capacity development of MOFALI/PIU and relevant officers at *aimag* and *soum* levels, coordinate with the team leader and other team specialists to carry out training program and provide support to the capacity development activities for implementation and monitoring and evaluation of the SDAP, CPP, GAP, and other social measures, as necessary;
- (xvi) Ensure that the performance indicators set-up in the Project DMF regarding gender and other social issues are met; and
- (xvii) Undertake any other necessary work assigned by the team leader/DTL.

h. PIU Office Manager (CS-09)

37. An office manager is required to ensure the smooth operation of the PIU. The office manager will commence inputs immediately after loan effectiveness and will be engaged on a full-time basis. He/she will report directly to the PIU project coordinator.

38. The office manager will (i) support the PIU project coordinator and all other PIU staff to ensure that they can undertake their duties in an efficient manner; (ii) assist the capacity development consultants with their in-country arrangements; and (iii) ensure the smooth operation of all office equipment.

39. He/she should have a bachelor's degree or equivalent in business administration, secretarial or other related fields and at least 2 years of relevant experience in the public or private sector. He/she should be proficient in main office software applications and fluent in spoken and written English.

40. Tasks and responsibilities of the office manager include but are not limited to the following:

- (i) Provide administrative and management support to the PIU including (a) maintaining project files and records, (b) assisting in preparing reports, as required, (c) arranging external and internal meetings and workshops, (d) preparing minutes of external and internal meetings, and (e) making logistic arrangements for project activities;
- (ii) Provide technical support to the PIU including (a) translating documents from Mongolian into English and vice versa, as required, (b) ensuring smooth functioning of office equipment and security of project-related information, and (c) undertake other IT-information-related tasks on an *ad hoc* basis; and
- (iii) Under the guidance of the project coordinator, assist the capacity development consultants, as required, to ensure the smooth implementation of their tasks.

9. Capacity Development (CS-10)

41. The consulting services for capacity development will be carried out by a team of consultants that will be engaged through an international consulting firm. The consultant team will have 4 international and 3 national consultants with a total input of 31 and 80 person-months respectively. The requirements of the consulting services and the budget are detailed in Table 12 and Table 13.

**Table 3: Summary of Consultant Inputs for Capacity Development
(Package CS-10)**

Area of Expertise	International (person-months)	National (person-months)
1. Hydro construction supervisor/team leader	20	
2. National construction supervisors (2)		60
3. Hydro operation and maintenance specialist	3	
4. Operation and maintenance specialist		20
5. Seed production specialist	6	
6. Conservation agriculture specialist	2	
Total person-months	31	80

Source: Asian Development Bank.

**Table 4: Cost Estimates for Capacity Development Consulting Services
(Package CS-10)**

Item	Amount (\$'000)
Consultants Fees - remuneration and per diem (incl. domestic travel)	
International	600
National ^a	300
International Travel	15
Training	15
Equipment	10
Contingencies	47
Total	987

^a Excludes 12 months each of national water user association specialist and operation and maintenance specialist to be financed under the proposed JFPR grant.

Source: Asian Development Bank.

42. The consulting services for capacity development will include but not be limited to: (i) construction supervision and coordination with suppliers for installation and commissioning; (ii) support for community grower groups and developing of operation and maintenance (O&M) procedures; (iii) training in seed production technology, seed multiplication, and conservation agriculture; (iv) safeguard management and monitoring; (v) facilitation of the ADB's missions to review project implementation; and (vi) formulation of capacity development plans and implementation of initiatives as required to assist the PIU.

43. Detailed tasks include but are not limited to the following.

a. Hydro construction supervisor/team leader (international, 20 person-months)

44. The international hydro construction supervisor/team leader should have: (i) bachelor's degree or higher degree in civil engineering or closely related fields; (ii) at least 10 years of relevant experience with recognized expertise for the support to implement international organizations funded projects; (iii) good knowledge of ADB project operations; (iv) good facilitation and presentation skill; (v) experience in capacity building for technology and farming, particularly training of farmers and irrigation management organizations; (vi) full proficiency in English including excellent report writing skills; and (vii) experience as team leader.

45. The specialist shall take overall leadership of capacity development to ensure the successful implementation of the project and provide all necessary support to MOFALI/PIU to fully comply with the loan covenants. Specific tasks include but are not limited to the following:

- (i) Coordinate all capacity building activities as team leader;
- (ii) Responsible for the preparation of the inception report on capacity building, semiannual progress reports, and contributions to the mid-term project implementation review report and project completion report;
- (iii) Supervise, guide and review all detailed designs for irrigation and buildings/facilities;
- (iv) Oversee and finalize all construction work plans, including preparation of bid documents with a focus on the technical sections, tendering and award of construction contracts, in conjunction with PIU staff;
- (v) Implement field inspections to assess subproject progress and quality of construction materials and completed works;

- (vi) Liaise with contractors and equipment suppliers to ensure compliance with specifications, and timely delivery and commissioning of completed works;
- (vii) Consolidate the progress reports from subprojects for overall progress reporting, including commitments and expenditures;
- (viii) Ensure the completion of as-built drawings and related equipment manuals; with copies at *aimag* and National levels;
- (ix) In cooperation with the procurement and contract management expert, monitor the executing agency's procurement activities under the project and assist the project management office (PMO) in preparing, updating, and implementing the procurement plan;
- (x) Assess needs for capacity development for staff of the MOFALI/PIU/*aimags/soums* referring to capacity development activities, and plan, design, organize, and implement seminars, workshops, and training involved staff and assist MOFALI in initiating the capacity development plan;
- (xi) Support and oversee training activities, monitor and evaluate the training and correct/adapt if needed;
- (xii) Monitor compliance with the loan assurances relating to irrigation system upgrading, assess key implementation issues, and make recommendations for improvement;
- (xiii) Prepare, with the assistance of the deputy team leader, a knowledge product focusing on integrating climate resilience considerations for irrigation investments in Mongolia;
- (xiv) Conduct any other necessary work for smooth and appropriate implementation of the project as requested by the ADB and executing agency/implementing agency;

b. Construction supervisors (national, 36 months and 24 months)

46. The national construction supervisors should have: (i) a bachelor's degree or higher degree in civil engineering or a closely related field; (ii) at least 10 years of relevant experience with recognized expertise in the construction supervision of international financial institutions' funded projects; (iii) good knowledge on the ADB project operations; and (iv) good facilitation and presentation skills.

47. The specialists will be responsible to the international construction supervisor/team leader. One specialist who is allocated 36 months will also act as the deputy team leader. Specific tasks include but are not limited to the following:

As deputy team leader

- (i) Work with the Team Leader to manage and guide all project activities;
- (ii) Maintain close coordination among ADB, project team, executing and implementing agencies;
- (iii) Support finalizing technical elements of bid documents;
- (iv) Coordinate with contractors to ensure proper sampling of materials and compliance with technical specifications, consistency in design, timely delivery and readiness for implementation in relevant spring/summer periods;
- (v) Facilitate liaison between civil works contractors and equipment suppliers as may be needed;
- (vi) Liaise with equipment suppliers for timely delivery of equipment to site, its assembly and commissioning, complete with relevant operators training;
- (vii) Lead capacity building on technical elements of irrigation system operations and maintenance and ensure suppliers comply with capacity building and instruction requirements and CGGs and *Soum* government are capable to carry out technical tasks;
- (viii) Assist the construction supervisor/team leader to prepare a knowledge product

- focusing on integrating climate resilience considerations for irrigation investments in Mongolia;
- (ix) as part of designs review, assess expected irrigation efficiency for the subprojects and ensure relevant measures are incorporated to improve both efficiency in design and overall future system efficiency through adoption of relevant technologies;
- (x) assist the *soum* government to plan and implement appropriate irrigation scheduling for the defined crops and subproject areas, and assist them to train and mobilize resources for effective irrigation and sustainable O&M; and
- (xi) assist and/or prepare relevant reports as required.

As construction supervisors

- (i) Site assessment: technical evaluation; ensure necessary permits for renovation works; project site surveillance
- (ii) Review of technical drawings, specifications and Bill of Quantities showing the necessary works prepared by a design company/engineer, and suggest for improvements, if necessary;
- (iii) Analysis of measures, quantities and description of each item in the Bill of Quantities (BoQ), sampling and quality assurance of materials according to specifications;
- (iv) Participation in the evaluation of bids – assessment of bidders' competency and qualification;
- (v) Analysis and review if the offered technical specifications are in accordance to the advertised one;
- (vi) Supervision design/renovation progress of works;
- (vii) Ensure quality of design/renovation works; and
- (viii) Arrangements related to official acceptance of works by relevant authorities.

c. Hydro operation and maintenance specialist (international, 3 person-months)

48. The international hydro operation and maintenance specialist should have: (i) a master's degree in agricultural engineering, agro-economy, or a related discipline (natural resource management in a wider sense); (ii) good understanding and proven track record in irrigation works operation and maintenance particularly with pumps, sprinkler and drip equipment; (iii) experience in participatory methods; and (iv) experience with donor-funded projects; knowledge of ADB project operations is preferred.

49. Of particular note for O&M, procedures should abide with the environmental management plan, with training provided on: water extraction at the canal sluice gate to ensure that extraction is in line with planned water requirements for the scheme, with due regard for environmental river flows and downstream users; opening of sluice gates (the one installed in the rock barrier adjacent to the weir and river bank) during low flow periods, and opening of sluice gates at all times outside irrigation periods, to ensure fish can migrate up and downstream.

50. The specialist will be responsible for developing the frameworks for training; (i) community grower groups in responsibilities for operation and maintenance; and (ii) *soum* representatives in operation and maintenance of headworks, pumps and main irrigation canals. Specific tasks include but are not limited to the following:

- (i) Assist *aimag/soum* governments to plan and establish relevant financing and fee structures to ensure sustainable O&M;
- (ii) Liaise with relevant stakeholders to plan and implement O&M procedures;
- (iii) Assist MOFALI with *aimags* to organize and establish relevant materials and equipment resourcing procedures to facilitate reliable and scheduled O&M actions;
- (iv) In relation to project schemes and components, help MOFALI and *aimags/soum*

- (v) prepare and use O&M manuals;
- (vi) Link the project with all relevant departments and units of MOFALI;
- (vii) Assist the local government in coordinating activities with other development partners and projects in irrigated agriculture;
- (viii) Develop strategies with regard to the application of innovative technical approaches in O&M;
- (ix) Monitor that equipment supplier provide the required training in coordination with the MOFALI and aimags/soum.
- (x) Supervise the preparation of the irrigation asset management plan.

d. Seed production specialist (international, 6 person-months)

51. The international seed production specialist should have: (i) a Master's degree in agronomy, applied genetics or similar with 5 years practical experience in seed systems and vegetable seed production; (ii) demonstrated ability to work in small- to medium-scale seed production; (iii) ability to work within the seed system from the research through to field production and seed cleaning storage and distribution; (iv) ability to cooperate with many stakeholders and other related projects in the vegetable production sphere.

52. The specialist will be responsible to the Team Leader for supporting and monitoring the upgrading of the seed production system through the Institute of Plant and Agriculture Sciences (IPAS) and its related institutes and farms. They will provide technical support for seed production, cleaning and storage and, prepare a seed quality and storage manual and collaborate with other vegetable projects to increase understanding of the need for and use of improved seed quality. Specific tasks include but are not limited to the following:

- (i) Work closely with seed production Institutes and farms to improve understanding of high-quality clean seed production and storage;
- (ii) Monitor the installation and operation of seed cleaning, packaging and storage equipment and provide technical support for best practice operation;
- (iii) Provide technical support in seed production, bulking (multiplication) and certification of high-quality seed;
- (iv) Prepare a seed quality and storage manual for use at production facilities; and
- (v) Work with the JPFR-funded facilitation partner of the proposed project and other vegetable production projects to support improved vegetable production supporting livelihoods and health outcomes.

e. Conservation agriculture specialist (international, 2 person-months)

53. The international conservation agriculture specialist should have: (i) a Master's degree in agronomy or similar with 5 years practical experience in conservation agriculture particularly with reference to vegetable crops; (ii) demonstrated ability to work in small to medium scale vegetable production; and (iii) ability to cooperate with many stakeholders and other related projects in the vegetable production sphere.

54. The specialist will be responsible to the Team Leader and work closely with the seed production specialist to improve cultivation and production practices on seed farms and prepare a manual on conservation farming techniques for field crops including vegetables relevant to the Mongolian environment and production systems. Specific tasks include but are not limited to the following:

- (i) Assess the current production practices used in field crops including vegetables on seed farms and large-scale wheat farming systems;
- (ii) Work with the seed production specialist to improve practices on seed farms

- (iii) through soil conservation methods to increase sustainability;
- (iv) Work with farm management at the Darkhan Elite farm and prepare a manual on conservation production practices based on large scale farming practices and how to improve these in Mongolia;
- (iv) Collaborate with the JPFR-funded facilitation partner of the proposed project and other vegetable projects to support farmer training in vegetable production to include conservation farming practices.

f. Operation and maintenance specialist (national, 20 person-months)

55. The national operation and maintenance specialist should have: (i) relevant training and practical experience (at least 5 years) in establishing and implementing O&M procedures for irrigation schemes; (ii) knowledge and understanding of the various types of irrigation infrastructure and equipment; (iii) prior experience of operating irrigation schemes and awareness of potential issues to be resolved; and (iv) experience in working together with MOFALI, *aimag* and *soum* officials to coordinate and maintain irrigation schemes.

56. Of particular note for O&M, procedures should abide with the environmental management plan, with training provided on: water extraction at the canal sluice gate to ensure that extraction is in line with planned water requirements for the scheme, with due regard for environmental river flows and downstream users; opening of sluice gates (the one installed in the rock barrier adjacent to the weir and river bank) during low flow periods, and opening of sluice gates at all times outside irrigation periods, to ensure fish can migrate up and downstream.

57. The specialist will be responsible to work with all stakeholders and help in establishing the framework of tasks and responsibilities for sustainable O&M of irrigation systems. Specific tasks include but are not limited to the following:

- (i) With *soum* government, prepare the O&M framework and manual (requirements, schedule, responsibilities, resources) to help ensure long term sustainable operation of the upgraded or new irrigation system;
- (ii) Work with nominated government and CGG personnel to identify and train key irrigation system participants in O&M planning and implementation of routine and periodic measures;
- (iii) Assist O&M capacity building and training participants to understand specific equipment O&M needs and establish key links with suppliers for supply of parts and/or servicing;
- (iv) Guide participants in how to inspect civil works and equipment to identify possible O&M issues and how to make arrangements for implementation of necessary action (activities and timing), including detailed schedules for routine maintenance and cleaning;
- (v) Provide guidance on irrigation scheduling and control actions needed to optimize water use efficiency and uniformity of coverage, including addressing any potential conflicts that could arise between operators and farmers;
- (vi) Provide guidance and practical training in the moving of sprinkler equipment and connecting to dedicated hydrants;
- (vii) Provide guidance on pre-planning to ensure materials, consumables (fuel and lubricants), parts and equipment are in place, or accessible, to implement scheduled maintenance;
- (viii) Support the use and regular updating of the asset management system;
- (ix) Ensure *aimag/soum* government staff are fully aware of planned O&M requirements well in advance, to minimize risks for delay in implementing measures at the optimal time; and
- (x) Address any other issues arising from stakeholders to ensure an effective O&M

- plan is established at irrigation system commissioning.
- 10. Environmental Baseline Assessment/General Environmental Assessment and Environmental Assessment (CS-15)**

a. Introduction

58. Contract type: Desk and field based
Duration of assignment: Up to 2.0 months
Location: Sub-project list is attached.

b. Background

59. The project objective is to increase income generation and enterprise support for smallholder vegetable farmers. This will be achieved through a number of components, most notably to upgrade and modernize existing (or new) government-owned irrigation systems (schemes). Support will also be provided to farmers on each scheme including: support to the formation of community grower groups for the operation and maintenance of irrigation infrastructure, and the improved production and marketing of vegetables; improved access to on-farm infrastructure and technology (e.g. seeders, harvesters, (conservation) tillage equipment, tube-wells, storage facilities, small-scale winter greenhouses, water-saving technologies such as drip irrigation technology, and community ponds / water tanks (linked to pipes, sprinklers, drop irrigation); and training on good agricultural practice (e.g. on correct use of pesticides and fertilizers, on efficient water use,etc).

c. Objective

60. The objective of the Environmental Baseline Assessment is the initial phase of the planning and developing a project, policy and program to describe state of the environment with the participation of professional organizations and scientific research methodology to ensure project success toward its objectives.

61. The purpose of the service is to identify impacts on environment before commencement of the project and support MOFALI in ensuring the compliance with the Mongolian Law on Environmental Impact Assessment (passed in 1998, last amended in 2012) in construction of Irrigation Schemes. This will include following objectives:

- (i) Develop complete description of the environment of the project site
- (ii) Suggest needs for further Detailed Environmental Impact Assessment
- (iii) Develop EBA report
- (iv) Get GEIA from MET
- (v) Identification of the project potential risks and scope of impacts during and after the project implementation
- (vi) Suggest needs for mitigation measures by each environmental component
- (vii) Develop Environmental Management Plan (EMP)
- (viii) Get approval from MET on the EMP.

d. Environmental Baseline Assessment Scope of Work

62. The scope of EBA work will focus on the assessment current situation of the environment. Key activities of the EBA study will include research on the following environmental baseline.

63. Description of the Existing Environment. An inventory and assessment of the natural resources in the study area should be conducted for a period equivalent to at least one (1) calendar year adequately representing seasonal, diurnal and nocturnal variations. Secondary data can be used in the assessment as long as it is representative and relevant. The source of all data (existing or collected for the study) must be disclosed; who collected the information, when and where. All limitations and assumption made must be clearly stated. The following aspects must be described in this section:

- (i) Physical including,
 - a) Morphology and morphological processes,
 - b) A historical review of the site should be included going back at least 30 years,
 - c) Soils and geology of the area, including but not limited to geological structure, bearing capacity, permeability, and mineral resource potential;
- (ii) Climate and natural resources including,
 - a) Climate (air temperature, precipitation and wind),
 - b) Agro-climate,
 - c) Water resources and quality,
 - d) Energy sources (wind, solar, and water),
 - e) Air quality, and
 - f) Noise;
- (iii) Biological including,
 - a) Flora and fauna survey of the project site and surrounding environment,
 - b) Detailed qualitative and quantitative assessment including inventory (list) and distribution (map) of species, and
 - c) Detailed description and qualitative and quantitative assessment of species interdependence, habitats/niche specificity and community structure and diversity must also be considered;
- (iv) The field data collected shall include, but not be limited to,
 - a) Species lists and distribution for each community (ecosystem) migratory species, insects and micro-organisms should also be considered,
 - b) A habitat map of the area,
 - c) Other benthic features of the proposed development areas as well as the areas of potential impact,
 - d) Fish and other water species,
 - e) Vegetation profile of the site, and
 - f) Assessment of migratory and non- migratory birds;
- (v) Heritage including,
 - a) Archaeological assessment, and
 - b) Protected area; and
- (vi) Human/Social including,
 - a) Demography, regional setting, location assessment and current and potential land-use,
 - b) Description of existing infrastructure such as transportation, electricity, solid waste disposal; water and telecommunications, and public health and safety,
 - c) Identify all existing resource users (including traditional users) ranging from subsistence utilization of the natural resources to commercial activities, and
 - d) Public perception of the proposed project inclusive of potential impacts on social, aesthetic, historical and cultural values.

e. Environmental Impact Assessment Scope of Work

64. The scope of work will focus on the assessment and planning for subproject-related social and environment safeguards due diligence requirements in EIA on the base of EBA and GEIA. Key activities of the EIA study will include but not limited:

65. **Executive Summary.** This section should allow for a clear understanding of the project proposal and summarize the significant results of the EIA study, e.g. positive and negative environmental, social and economic impacts, options considered, reasons for selection of the proposed option and the measures to be implemented to prevent or mitigate negative impacts or capitalize on positive impacts.

66. **Introduction.** Provide the context of the project and the EIA, the delineation and justification of the boundary of the study area, general methodology, assumptions and constraints of the study. The study area shall include at least the area within 10 km radius of irrigation schemes, and the transport corridor from the site.

67. **Policy, Legal and Administrative Framework.** All applicable legislation, regulations, policies and standards in relation to the construction and operation of the development should be highlighted, including but not be limited to the other development permits such as Planning and Building. Describe traditional land use and prescriptive rights including public access rights. Discuss issues relating to provisions for law enforcement and security as it relates to this development.

68. **Public Participation and Consultation.** The proponent should consult with relevant entities and the public throughout the EIA process. Document the public participation. Describe the public participation methods, timing, type of information provided and collected from the public and stakeholder target groups consultations. Instruments used to collect the information must be included in the appendix. Summarize the issues identified during the public participation process and discuss the public input that has been incorporated or addressed in the EIA.

69. **Description of the proposed project.** This section should provide detailed description of the project including but not limited to:

- (i) History and background of the project,
- (ii) Site location, site layout,
- (iii) Schematic plans,
- (iv) Proposed project milestones,
- (v) Proposed times of operation of the facilities,
- (vi) Construction methods and equipment,
- (vii) Construction materials
- (viii) Project infrastructure:
 - a) Overview of the proposed infrastructure and structural components
 - b) water storage and supply,
 - c) drainage,
 - d) solid waste disposal,
 - e) transportation systems (on land and water),
 - f) electrical power (fossil energy, wind, sun,),
 - g) communications and other utility requirements,
- (ix) Project operation and maintenance:
 - a) equipment and machinery to be involved, and how these will be mobilized,

- b) areas to be used for storage of machinery and material should be clearly indicated,
- c) transportation systems or arrangement pre-, during- and post – construction,
- d) workforce requirements, including proposals for mobilization and accommodation,
- e) health, safety and security systems.

70. Identification and assessment of potential direct and indirect impacts. A detailed analysis of the various project components shall be done in order to identify the potential environmental impacts, both negative and positive, of the project at all stages. The identified impacts must be profiled to assess the magnitude and importance of the impacts. The extent and quality of the available data shall be characterized, explaining significant information deficiencies and any uncertainties associated with the predictions of impacts. The impact must take in account the number and magnitude of mitigation strategies which need to be employed to reduce the risk(s) introduced to the environment. Where possible, impacts must be quantified.

71. Each project activity or impact is to be assessed and ranked for both the magnitude and importance of the impact and presented in a weighted matrix for all the phases of the project (i.e. preconstruction, construction and occupation and operational). The impacts to be assessed shall include but not be limited to the following:

- (i) Physical,
 - a) Impacts of physical activities and elements on the environment are to be addressed Impacts of construction activities such as site clearance, earthworks and spoil disposal,
 - b) Impacts of operation and maintenance activities,
 - c) Impacts of accidental oil and chemical spills,
 - d) Impacts of solid waste, trade and sewage effluent Impacts on air quality,
 - e) Impacts on water quality,
 - f) Solid waste disposal,
 - g) Transport systems (on land and water),
 - h) Energy demands (fossil fuels, wind, sun,),
 - i) Communications and other utility requirements, and
 - j) Transport systems and supporting infrastructure required;
- (ii) Natural hazards including,
 - a) Natural hazard risk assessments must take into account climate change projections, and
 - b) Analysis of sedimentation dynamics - erosion and deposition should be carried out;
- (iii) Biological including,
 - a) Direct and indirect impact on ecology and on the terrestrial and aquatic habitats with emphasis on any rare, endangered, and endemic species found, including habitat loss, loss of special and natural features, and
 - b) Impact of noise and vibration; and
- (iv) Human and Social including,
 - a) Effects on socio-economic status such as changes to public access and recreational use, impacts on existing and potential economic activities, contribution of development to national economy and development of surrounding communities,
 - b) Safety and security arrangement, and

c) Support staff needs.

72. Cumulative Environmental Impacts. In assessing the cumulative impacts of the development, the EIA should examine possible impacts of development of these irrigation schemes on the surrounding area, i.e., physical, biological, social, etc.

73. Recommended Mitigation Measures. Mitigation and abatement measures shall be formulated for each potential negative impact identified. This will also include recommendations for the maximization and enhancement of beneficial impacts, energy conservation and water.

74. Environmental Management. A draft environmental monitoring and management plan must be developed which will detail the monitoring requirements for pre-, during- and post-construction and during the operational phases of the project. This will include recommendations to ensure the documented implementation of mitigation measures and long-term minimization of negative impacts and maximization of positive impacts. At a minimum the draft monitoring plan should include:

- (i) Introduction outlining the need for a monitoring and management plan;
- (ii) The activity being monitored, and the parameters chosen to effectively carry out the exercise;
- (iii) The methodology to be employed and the frequency of monitoring;
- (iv) Frequency of reporting to MOFALI and MET; and
- (v) The sites being monitored. These should incorporate a control site where no impact from the development is expected.

f. Results

75. By week 3 of the signing of the contract, the consultant shall submit an initial environmental baseline analysis for the assigned subproject. At the end of contract in week 4 of the signing of the contract, and subject to any modifications required, the Consultant shall submit:

1. The completed environmental baseline assessment report in hard and soft copies in Mongolian and English languages;
2. Sampling results collected during the field survey;
3. All GIS data; and
4. All supporting documents included in the EBA report.

76. At the end of contract (week 8 of the signing of the contract), and subject to any modifications required and approved EMP, the Consultant shall submit:

1. The completed EIA report in hard and soft copies in Mongolian and English languages;
2. All supporting data included in the EIA report; and
3. Approved EMP.

g. Schedule

77. The consultant shall complete all the services within 2 months after the contract date (1 month in the case of an EIA only).

List of Irrigation schemes:

No	IS	Aimag	Soum	Irrigation scheme size	Assessment	
					EBA	EIA
1	Tsakhir	Govi-Altai	Taishir	206	√	√
2	Yolton	Govi-Altai	Khaliun	320	√	√
3	Erdeneburen	Khovd	Erdeneburen	2000	√	√
4	Boomiin Am	Khovd	Altai	300	X	√
5	Tsul-Ulaan	Bayan-Ulgii	Bayannuur	161	√	√
6	Ulaandel	Bayan-Ulgii	Sagsai	400	√	√
7	Khurental	Zavkhan	Telmen	500	X	√
8	Nogoon khashaa	Zavkhan	Uliastai	64	√	√
9	Iven	Selenge	Sant	240	√	√
10	Sugnuger	Tuv	Batsumber	140	√	√
11	Okhindiin tal	Selenge	Zuunburen	2670	X	√
12	Dulaanii khondii	Khentii	Kherlen	700	√	√

Note: √ required X not required, EBA = environmental baseline assessment, EIA = environmental impact assessment

11. Detailed Design (CS-16)

a. Introduction

Contract type: Desk and field based

Duration of assignment: upto 1 month

Location: List is attached.

b. Background

78. The project objective is to increase income generation and enterprise support for smallholder vegetable farmers. This will be achieved through a number of components, most notably to upgrade and modernize existing (or new) government-owned irrigation systems (schemes). Support will also be provided to farmers on each scheme including: support to the formation of CGGs/farmer vegetable grower groups for the operation and maintenance of irrigation infrastructure, and the improved production and marketing of vegetables; improved access to on-farm infrastructure and technology (e.g. seed producers, harvesters, (conservation) tillage equipment, tube-wells, storage facilities, small-scale winter greenhouses, water-saving technologies such as drip irrigation technology, and community ponds / water tanks (linked to pipes, sprinklers, drop irrigation), etc.); and training on good agricultural practice (e.g. on correct use of pesticides and fertilizers, on efficient water use, etc.). Project investments in irrigation infrastructure will safeguarded by investments into shelter belts (tree windbreaks) surrounding the irrigated area.

c. Objective

79. The main objective of the Detailed Irrigation Scheme Design is to assess the technical feasibility of proposed works and to prepare detailed designs ready for construction.

d. Scope of Work

80. **Scheme Investigation.** On the base of the review of the feasibility study report of the proposed irrigation schemes the further following detailed activities are to be undertaken:

- (i) Discussion with *Aimag* and/or *Soum* Governments to confirm the overall scope and objectives for the proposed scheme.
- (ii) Site inspections and determination of optimal options and constraints to be taken into account when formulating the scheme (see provisional proposed design).
- (iii) Soil testing/verification – take representative soil samples to depth to be evaluated for water holding capacity, minerals/salts composition, structure and suitability for particular crops, to root zone depth + 1 m (auger holes and graded samples for examination and testing).
- (iv) Water source evaluation/verification – hydrology to confirm water source flow regime and variance through the growing season, water quality and possible variance through the growing season, and identification of any salinity risks, and potential constraints to particular crops.
- (v) Confirmation of planned cropping pattern (broad area, row crop, vegetables, greenhouses), and based on climate, soils water holding capacity, rainfall pattern and drainage/flood factors, determine the water demand pattern over the growing season for each crop, and aggregated for the overall scheme.
- (vi) On the basis of crops, soils, and provisional design identify the optimal irrigation systems to be adopted – open canal or piped conveyance, surface, sprinkler or drip irrigation, application rates for efficient land and crop watering between soil moisture depletion limit and adopted full capacity limit (circa 30% to 85%, specifics to be confirmed).
- (vii) Assess and set the water supply pattern against the crop water demand pattern, allowing for all system inefficiencies (conveyance, application, storage) and modify/improve the scale (if any) of required balancing water storage(s) to be incorporated on the supply side, and the optimal location related to whether gravity, low pressure or pressurized system irrigation to be adopted (for sprinkler, drip, micro-spray).
- (viii) Implement a detailed examination of the planned intake area (river, intake location, main canal alignment) and consider whether optimal for appropriate sediment management and exclusion, pre-intake or post intake (or both), whether specific works are required to ensure river flow (environmental flow maintained) to the intake at all times (low flows particularly, but sufficient for capture of high flows to storage, with passage of major floods safely away from the intake).
- (ix) In settling on the broad intake requirements and location, check to see if any alternative site options are available, and whether these might provide any advantage for safer and more certain water intake, sediment management, provision of pressure (if main canal is pipeline).
- (x) In determining the form of intake and associated works, make allowance and consideration for the impacts of snow/ice on the structures and fixtures (gates, stop logs, sluices etc.).
- (xi) Complete the assessment with a pros and cons decision matrix.
- (xii) Prepare detailed designs and cost estimates to inform intake site and size selection (river works, intake with flow control (gates, sluice) and sediment management, storage tank (if needed) and main canal (or pipe)).
- (xiii) Include costs estimates for all appurtenant control and safety infrastructure (gated sluices, overspill weir and channel, as needed for safety, protection of works, and long term safe and durable operation).
- (xiv) Confirm the main canal (or pipeline) alignment, whether to be lined canal or buried pipe (depth), and scope and cost all details and requirements up to and including the first bifurcation (whether to distributary canal/pipeline) or into balancing storage.

- (xv) Scale, design and cost all required storage tanks, inclusive of effective inflow/outflow control structures, and any details for periodic sediment flushing and/or removal. It is suggested that such storage be provided with from 10 to 15% additional dead storage 'depth' to accommodate any entrained sediment, especially where using open channel conveyance.
 - (xvi) Design siting and setting levels for storage that could enable periodic flushing of sediment to drains, or else if fine sediment, whether this could be useful as added value topsoil in vegetable areas.
 - (xvii) Prepare Technical Specifications and BoQ; prepare cost estimations (unit rate breakdown by resources and summarized unit rates); and develop detailed and general specifications of bidding documents and Section 6 of Bidding Documents. Technical specifications shall include general instructions and recommendations for the contractor (bidders) as well as detailed specifications (specifying all mandatory standards) for controlling materials used, methods of work performance and quality.
81. The important part of the detailed design is to design on whether the scheme is to be:
- (i) surface irrigation;
 - (ii) sprinkler system;
 - (iii) drip/micro-spray system; or
 - (iv) a combination scheme, with two or more of these types.
82. The main differences to consider in selecting the appropriate technical irrigation system for the schemes (in logical sequence) are:
- (i) suitability for landform, and required or acceptable water application rates;
 - (ii) suitability of the area and soils for the planned crops;
 - (iii) areas of the planned scheme, for vegetables, greenhouse, row crops or large area crops;
 - (iv) the required application efficiency (depends if water is limiting);
 - (v) pressure requirements and this is to be provided (gravity pipeline, pumps) for the particular irrigation system;
 - (vi) power requirements and costs, if pumping is required;
 - (vii) operation and maintenance requirements (labor, durability, recurrent costs) to ensure long term sustainability of the project (infrastructure, equipment, land/soil condition);
 - (viii) any requirements for crop handling, storage and/or processing at site in readiness for market or consumption;
83. Taking these factors in turn:
- (i) Surface system
 - a) Water source – catchment and management for low to flood flows;
 - b) Intake structure – diversion, sediment management, flow regulation and protection;
 - c) Main canal – lined or unlined, graded or as per contour, velocity management for self-cleaning and/or non-scour (if unlined) and energy control (intermediate structures – drops, bifurcations, gated or ungated), sediment exclusion and/or management as part of long-term operations;
 - d) Storage – is some short term off-stream, on-stream storage needed to balance source supply against irrigation demand; in river, at headworks, or near command area (1 or more storages) to be matched against particular

- e) sub-area and crop requirements, safety escape and flow management works around or through the irrigated area;
 - f) Distributary canals – open ditches, graded, control structures, alignments, land block sizes, regular or irregular, needs to isolate some parts of the scheme from other areas due to different crops and growing seasons (generally in consideration of the broader operation of irrigation for effective crop production in the command areas);
 - g) Drainage requirements within the irrigation command area for storm runoff and/or safe passage of excess irrigation supply water;
 - h) Flood protection requirements – against meandering river flows (normal, flood) and overland runoff from storms, with safe passage around the irrigated area and away from critical infrastructure (intake, canals, storages, drains);
 - i) Location and provisions for moving harvest and other equipment around and over key infrastructure (culverts, bridges etc.) and general access for farmers without damaging constructed works;
- (ii) Sprinkler system
 - a) Many of the points mentioned for surface systems may be relevant for sprinkler system installations so review and design accordingly;
 - b) Identify the optimal form of irrigation equipment required to match area, crop, and general irrigation performance requirements across the command area (soils, infiltration rates, runoff on slopes, range of soil moisture profile and application rates to be adopted);
 - c) Ensure adequacy of water supply to match equipment water delivery rate – whether open canals to sump, canal to storage pond, pipes and pumping rates etc.;
 - d) Ensure adequate provision in water supply system to remove any harmful sediment, with effective settlement, flushing and safe disposal away from the irrigation infrastructure;
 - e) Assess power requirements and make estimates for appropriate power supply and resourcing, fuel storage etc. as may be required (power lines, fuel tanks, hard standing, engine set ups and connections required for equipment to work reliably as required);
 - f) Consider needs for draining equipment, storing over winter, servicing and maintenance, with provision and handling of critical parts;
 - g) Ensure irrigation layout is optimized for the particular types of irrigation equipment to be used;
 - h) Consider what monitoring and warning systems are needed for safe operation and protection of the equipment;
 - i) Assess any special training that is needed, and how many trainees are required for the mode of operation (part time, full time, fixed system or mobile system that has to be moved periodically between irrigated areas).
- (iii) Drip system
 - a) Again, some aspects of the irrigation systems for surface and sprinkler may have relevance for installing and operating drip systems, so refer to the above and take into account as necessary when preparing designs;
 - b) Take note of any particular scheme layout and grading requirements to even out pressure variance in drip lines;
 - c) Ensure clean water will be supplied to the drip system intake sump, and allow for flushable micro-filter systems on the suction side; with this and pumps installed in a suitably sized protected shed, with flushing drainage

- outlet, and room to work around the pumps, pipes and switchgear that will have to be installed;
- d) Ensure any fixed pipes for the installation from filter/pumps can be effectively drained out through the drip line connection points of the header main pipe – which would have a grade and end drainage outlet (covered structure) to the surface drainage system;
 - e) Ensure there is a source of adequate and reliable power supply;
 - f) If incorporating any injection equipment for liquid fertilizers, herbicides or pesticides, then include sufficient working space for the necessary safe storage of the supplies;
 - g) Ensure all electrical circuitry has relevant safety features to protect the electronic control equipment from power surge and/or lightning strike;
 - h) Ensure the adopted water supply and farm area layout is appropriate for the size of drip lines being used, the crops to be grown, and the needs for installation and removal for growing season, land cultivation etc.
 - i) Ensure sufficient storage to hold the rolled-up drip lines through winter, safe from climate and vermin degradation, having been fully drained before storing;
 - j) Maintain an adequate supply of replacement drip line, or suitable repair materials, as inevitably drip lines can be damaged during operations;
 - k) Consider and arrange for all the necessary training in relation to the particular equipment adopted and installed.

84. Note: most reputable manufacturers will usually provide the design in accordance with the Clients requirements – equipment arrangements, quantities (inclusive of spares) and will specify or design to the particular power and resources available at the site. They will also install and train personnel as part of the scheme commissioning responsibilities. For sprinkler and drip systems, designers for the broader irrigation scheme are shall to seek out relevant manufacturers and request copy of their general design manuals, specifically to help guide the selection of equipment, and to ensure the broad site area for the scheme (part or overall) is designed to accommodate and support the effective operation of preferred equipment types.

In approaching any suppliers, designers shall ensure they obtained the full quantity of materials needed (to be procured) and a breakdown of the costs, inclusive of spares, training and future support once the scheme is commissioned.

85. **Scheme Design.** Provide a detailed irrigation scheme layout, with identified components to be designed and/or procured, with indicative plans, designs and drawings (using AutoCAD or similar) sufficient to cost and confirm future operational practice, resource requirements and long-term maintenance. Specific training requirements shall be identified – at owner, field, equipment and management levels. This shall also include structured budget estimates for:

- (i) Planning, implementation and completion or relevant surveys (topographic, soils, water, environment, social, markets);
- (ii) Equipment and materials procurement
- (iii) Delivery and installation at the sites
- (iv) Construction of all necessary civil works for long term irrigation scheme operation and management;
- (v) Preparation and organization of the land areas for the particular crops, within the framework of the irrigation water supply canals, pipes etc.
- (vi) Allowances for provision of power supply infrastructure or equipment as needed, and budgetary estimates for the annualized usage;

- (vii) Operation manuals and relevant contact and emergency response contacts in the event of major faults that cannot be addressed by the locally resident operators; and
- (viii) Other requirements that may arise that need to be addressed when preparing the design.

86. **Results.** By week 3 of the signing of the contract, the consultant shall submit an initial design of irrigation scheme for the assigned subproject. At the end of contract in week 4 of the signing of the contract, and subject to any modifications required, the Consultant shall submit:

- (i) The completed technical report with detailed explanations of the detailed drawings in hard and soft copies in two Mongolian and English language; and
- (ii) The completed detailed design drawings and approved by expertise.

e. Schedule

87. The consultant shall complete all the services within 1 month after the contract date.

List of Irrigation Schemes

No	Irrigation Scheme	Aimag	Soum	Irrigation scheme size, ha
1	Tsakhir	Govi-Altai	Taishir	206
2	Yolton	Govi-Altai	Khaliun	320
3	Erdeneburen	Khovd	Erdeneburen	2,000
4	Boomiin Am	Khovd	Altai	300
5	Tsul-Ulaan	Bayan-Ulgii	Bayannuur	161
6	Ulaandel	Bayan-Ulgii	Sagsai	400
7	Khurental	Zavkhan	Telmen	500
8	Nogoon khashaa	Zavkhan	Uliastai	64
9	Iven	Selenge	Sant	240
10	Sugnuger	Tuv	Batsumber	140
11	Okhindiin tal	Selenge	Zuunburen	2,670
12	Dulaanii khondii	Khentii	Kherlen	700

12. Water Quality Monitoring Program (CS-19)

a. Background

88. The Asian Development Bank (ADB) is supporting the Government of Mongolia to implement the Vegetable Production and Irrigated Agriculture Project. The project will establish or revitalize agricultural production in 12 subproject locations in central, eastern, and western Mongolia. Several of the subprojects will be located close to rivers or shallow groundwater aquifers, and there is a risk that project operations could lead to water contamination e.g. from the use of agricultural chemicals. A national firm with certified monitoring capacity will be recruited to conduct water quality monitoring for these subprojects. The firm will be recruited through the project executing agency, the Ministry of Agriculture and Light Industry (MOFALI), and work under the coordination of the project implementation unit (PIU). The firm will liaise with *aimag* (province) and *soum* (district) governments and other stakeholders as needed to develop and implement the program.

b. Qualifications

89. National firm, intermittent over 6 years, annual field assignments. The firm will have: (i) relevant domestic certification for the design and implementation of water quality monitoring programs; (ii) staff with undergraduate degrees (postgraduate is preferred) in hydrology, water resources management, wastewater monitoring and treatment, and/or related field; (iii) at least 10 years demonstrated experience in the design and implementation of water quality monitoring programs to high standards; (iv) the necessary resources and equipment to collect and analyze water samples, especially for a range of pollution parameters; (v) established professional networks with key monitoring and research agencies in Mongolia that may be involved in the project, including the Information and Research Institute of Meteorology, Hydrology and Environment (IRIMHE) and National University of Mongolia (NUM); and (vi) experience in capacity building and training of other agencies and personnel. Proposals that include collaboration with monitoring and research agencies, local groups, and/or civil society organizations will be highly regarded. Basic command of English by the nominated staff will be an advantage. Under the supervision of the PIU coordinator and field coordinator, the firm will design and implement a water quality monitoring program tailored to detecting water contamination that may occur from operation of the subprojects specified below. The assignment will comprise a single lump-sum contract that is expected to support all costs (including staff, resources, analyses, reporting, and travel) to conduct the following.

- (i) Design and implement a water quality monitoring program that is as simple and cost-effective as possible to measure whether the following subprojects are causing water contamination as a result of operational activities, specifically including the use of fertilizers and/or pesticides:

For surface water quality – 4 subprojects: Yolton, Iven Gol, Dulaanii Tal, Sugunur. Rationale: subproject operations will be close (<100 m) to river, and/or additional fertilizer will be added as part of operations due to low soil nutrient levels. Anticipated method: 2 monitoring points: 100 m and 500 m downstream of subproject.

For groundwater quality – 3 subprojects: Tsul-Ulaan, Khuren Tal, Nogoon Khashaa. Rationale: subproject operations will be close to shallow aquifers. Anticipated method: minimum of 1 monitoring point (well or borehole) per subproject, downstream of subproject site.

- (ii) Parameters to monitor should include nitrogen, potassium, and phosphorous levels, and, the detection of pesticides. The selection of specific pesticides to be tested for should be identified by the firm based on consultations with the PIU, *soum* governments and farmers on the most commonly used (if any) pesticides and/or professional estimation of which pesticides are most likely to be used, based on national regulations and common practice in other agricultural areas.
- (iii) Monitoring will be conducted at least annually. The first monitoring session will be conducted prior to any project works and will establish a baseline. Subsequent monitoring will be conducted in August or September – to coincide with the growing season – and the results compared with national water quality standards.
- (iv) The program will include specific monitoring locations, sampling frequency (sufficient to provide a rigorous baseline against which to measure project efforts), a consistent and

replicable method for sampling and analysis, key stakeholders, roles and responsibilities, and costs.

- (v) The program will be designed to be as simple and low cost as possible, in order to increase the likelihood of successful handover and sustainability after the consultancy is completed.
- (vi) Early in the consultancy, identify potential agencies that may take over the program after the project and assess their financial and technical capacity and resources to undertake such works.
- (vii) Establish a program database, in a format that is (i) accessible to the executing and implementing agencies, (ii) compatible with the monitoring databases of IRIMHE, and (iii) enables statistical analyses, including the rapid preparation of summary statistics for reporting.
- (viii) Prepare a monitoring manual in Mongolian and English language that describes all aspects of the program and is a reference guide for all stakeholders.
- (ix) In the event that monitoring detects water contamination, immediately inform the executing agency and PIU, so that these agencies can initiate corrective actions with the relevant subproject stakeholders.
- (x) Provide capacity building in water quality monitoring tailored to the agency that is most likely to take over the program after completion of the consultancy, through training sessions and involving them in the field sampling, analyses and reporting.
- (xi) Collaborate with local schools, NUM, Mongolian Academy of Sciences and/or other relevant civil society organizations to facilitate their involvement in the program, including the possibility of student studies which complement the program.
- (xii) With the executing agency and PIU, prepare a clear hand-over strategy for the water quality monitoring program. This will include costs, proposed financing source, recommended agency(s) to continue the program after project completion, and assessment of their existing technical and financial capacity and resources to continue to program.

c. Deliverables

90. Deliverable 1. Annual progress reports, in digital format. The annual progress reports will include: program methodology; activities and findings in the previous year of work; recommendations or actions for follow-up; and, work program for the following year. The annual progress report for the second year of operation will include the draft monitoring manual.

91. Deliverable 2. A simple database for storage and easy retrieval of the monitoring program data. The database will be aligned with any existing government databases (e.g. of IMRHE) to ensure easy transfer. The database will be transferred across to the agency selected (if any) to continue the program after completion of the consultancy. This transfer will be made at least one year before completion of the consultancy, to ensure familiarity of the future users with the data and database.

92. Deliverable 3. Final report. This will include the program monitoring manual, database, all data, and hand-over strategy.

d. Location of Work Assignment

93. The subproject sites (i) field work; and (ii) homebase (presumed to be Ulaanbaatar).

e. Work Schedule

94. Six years. January–July: design of program, meetings with executing agency and PIU, preparation for field work; August / September – field work; October – preparation of annual progress reports; November – submission of annual progress reports. (i) field work; and (ii) homebase (presumed to be Ulaanbaatar).

f. Draft Budget

95. The maximum estimated total cost of the consultancy, for six years, is \$41,370.

13. National Biodiversity Specialist for Ecological Survey of Okhindiin Tal Subproject: (CS-20)

96. The Asian Development Bank (ADB) is supporting the Government of Mongolia to implement the Vegetable Production and Irrigated Agriculture Project. The project will establish or revitalize agricultural production in 12 subproject locations in central, eastern, and western Mongolia. One of the subprojects is the Okhindiin Tal subproject in Selenge *Aimag* (province). The subproject area comprises existing agricultural and pasture land within a delta between the Selenge and Orkhon rivers. The entire subproject is located within an internationally designated Important Bird and Biodiversity Area (IBBA): MN054 Delta of Orkhon and Selenge Rivers (26,800 ha). The IBBA supports: (i) seasonal and/or breeding populations of at least globally threatened bird species – Swan Goose *Anser cygnoides*, Baikal Teal *Anas Formosa*, Lesser Kestrel *Falco naumanni*, and Great Bustard *Otis tarda*; (ii) at least 1% of the East Asian-Australasian Migratory Bird Flyway populations of at least five bird species: Bean Goose *Anser fabalis*, Greylag Goose *A. anser*, Ruddy Shelduck *Tadorna ferruginea*, and Demoiselle Crane *Anthropoides virgo*; (iii) nationally threatened mammal species, including Red Fox *Vulpes vulpes*, Corsac Fox *V. corsac*, Grey Wolf *Canis lupus* and Siberian Marmot *Marmota sibirica*; and (iv) nationally threatened fish species including Mongolian Grayling *Thymallus revirostris*, Lenok *Brachymystax lenok* and Taimen *Hucho taimen*.

97. Activities for the proposed subproject comprise the establishment of a new “command area” (the area under irrigation) of 2,700 ha on current pastureland, to improve pasture management and cereal, vegetable and fruit growing. The main characteristics of the new scheme will be: water extraction directly by pump into a main canal thence by gravity to balancing storage, pump, pipes, command area by sprinkler and drip.

98. Although the subproject site is located on existing agricultural land, Google Earth imagery and comparison of the IBBA and subproject areas indicate that (i) the subproject is within the

IBBA, and (ii) the subproject area encompasses at least one main tributary and many smaller waterways. These waterways may support wet meadows, marshes, and other wetland habitats, and biodiversity values that are part of the overall IBBA values. Under the ADB Safeguard Policy (SPS, 2009), these habitats may qualify as ‘critical habitat’ e.g. “sites that are critical for the survival of migratory species” and/or “areas supporting globally significant concentrations or numbers of individuals of congregatory species”.

99. There is limited available data on the ecological values of the IBBA in general and of the subproject area specifically. The technical designs for the subproject are at the preliminary stage of development (detailed engineering designs have not yet been prepared). There is insufficient data to ascertain whether the subproject area qualifies as critical habitat and to conduct an ecological impact assessment for the subproject. The SPS requires that “when the project involves activities in a critical habitat, the borrower/client will retain qualified and experienced external experts to assist in conducting the assessment”.

100. One national migratory waterbirds biodiversity specialist is required to implement a eight-week consultancy, including a four-week field survey in September (presumed to be peak migration season). The key objective of the survey is to assess the ecological significance of the area for migratory waterbirds and other biodiversity, including its global and national significance; and to conduct an ecological impact assessment of the proposed subproject construction and operation, to inform the detailed engineering designs. The findings will assist the Government and ADB in making a determination on the presence of “critical habitat” as defined under the SPS, and appropriate mitigation and management responses for any potential project impacts.

101. The specialists will be recruited by the Ministry of Agriculture and Light Industry (MOFALI, the executing agency), through the project implementation unit (PIU). It is anticipated the specialist will be joined in the field for some of the time by the PIU Environment Safeguard Specialist, *soum* environment officers, and other personnel as needed.

102. The national specialist will have: (i) demonstrated experience in the survey and conservation of fauna in Mongolia, especially birds and mammals, but with strong working knowledge of fish and amphibians as well; (ii) demonstrated experience in environmental impact assessment, focusing specifically on issues related to ecology and biodiversity management; (iii) a postgraduate degree and/or equivalent experience in biology/ecology; (iv) demonstrated ability to work effectively in teams, analyse data, and prepare reports; and (v) proficiency in spoken and written English. The specialist will supply their own technical equipment for their use (e.g. telescope, binoculars, field guide, GPS).

103. The specialist will do the following:

- (i) Design and implement a two-week waterbird survey, to be conducted in May 2020, in the subproject area and overall IBBA. The survey design will reflect what can be achieved in the two-week period and given the number of team members (assumed to be 2 to 5), resources, and the need to ensure that at least one person skilled in waterbird census and identification is present in each survey group. The design will ensure that representative areas of the IBBA can be surveyed as well as the subproject area, to enable site comparisons.
- (ii) Be responsible for the daily collection and entry of field data, including quality control for count data and species identification.

- (iii) Document and describe the current management status of the IBBA, including the presence of any local protected areas and/or plans for protection or Ramsar designation. This may include: (a) master plans (if any); (b) existing management zones and regulations; (c) existing operations, including park infrastructure, staff, management activities, monitoring, reporting, and budget; (d) the stated values of the park, including hydrological function, ecology, biodiversity, recreation and education; (e) existing threats and management issues.
- (iv) Assess the global and national significance of the subproject project area based on established international criteria, including the determination of wetlands of international importance under the Ramsar Convention, and other relevant national and international criteria and agreements for the conservation and protection of waterbirds.
- (v) Review the preliminary technical designs for the subproject.
- (vi) Assess potential impacts from the subproject construction and operation to the ecological and biodiversity values within and adjacent to the subproject area, and to the IBBA overall. The impact assessment will consider impacts at different scales e.g. national and international, to place the scale of impacts in context.
- (vii) Assess the extent to which the project design could be improved to avoid or reduce impacts to the documented ecological values.
- (viii) Develop mitigation measures to avoid and/or reduce potential subproject impacts, focusing especially on sites of highest ecological value. This might include, but not be limited to: offsite measures; subproject operational procedures to ensure that farmers and other on-site personnel do not impact nearby ecological values (e.g. nesting waterbirds); a biodiversity conservation action plan for the subproject. Proactive measures that contribute to the protection of the overall IBBA area will be well regarded.
- (ix) Work with the detailed design engineers, to assess whether designs can be modified to avoid, reduce, or mitigate potential ecological impacts of the subproject.
- (x) Assess the net (residual) impacts assuming that the identified mitigation measures are implemented. Facilitate discussions with the Government and ADB to assess the extent of these net impacts and their implications under national regulations and ADB's SPS.
- (xi) Design a six-year waterbird monitoring program, using a Before-After-Control-Impact (BACI) framework, to assess construction and operation impacts of the project. The program will focus on comparing seasonal species richness and abundance of migratory waterbirds (waterfowl, waders) in the subproject area (the impact site) with nearby IBBA areas (the control site).
- (xii) Develop recommendations, including time-based next steps.
- (xiii) Prepare a report on the findings.
- (xiv) Design a survey for other fauna, to be conducted in parallel with the waterbird survey, for mammals and amphibians. This might include a combination of systematic field surveys, consultations with residents, and desktop review.

(xv) Conduct original field work, data collection and analyses as necessary and realistic within the time available to address major information gaps or shortcomings in domestic studies. Undertake the majority of fieldwork and coordination required for the tasks of the national and international environment specialists.

(xvi) For any key information gaps that cannot reasonably be addressed with the time and resources available, discuss these with the international specialist and ADB as soon as possible so that solutions can be discussed.

(xvii) Assess the extent to which the project design could be improved to avoid or reduce impacts to the documented ecological values.

104. Deliverable 1: a report addressing the outputs above, in a digital format agreed with ADB and the Government. A draft report will first be provided to ADB for review. The report will include:

- review of existing data and description of survey methods, including a map of survey sites;
- survey results, including analysis of count numbers by site and broad habitat, and all raw data (summarized in an appendix);
- an estimate(s) of the total number of migratory waterbirds which visited the study area over the two-week survey period, with clear description of definitions and assumptions used to derive these estimates;
- identification of any species found in the study area that are listed under the IUCN Red List of Threatened Species, Mongolian Red Data Book, or other relevant national regulations or international agreements;
- an assessment of the significance of the subproject area with respect to established international criteria including the documented conservation values of the IBBA and criteria of the Ramsar Convention;
- a five-year waterbird monitoring program, designed to monitor the impacts of the subproject construction and operation;
- mitigation measures to avoid, reduce and/or minimize subproject impacts to ecological values within and adjacent to the subproject area;
- conclusions and recommendations.

105. Deliverable 2: a powerpoint presentation summarizing the survey findings and recommendations.

APPENDIX 2: TERMS OF REFERENCES FOR THE GRANT-FINANCED CONSULTING SERVICES

A. Overview

1. The consulting services to be financed by the Japan Fund for Poverty Reduction (JFPR) grant comprise a combination of (i) individually recruited consultants providing specific support for JFPR-grant implementation for (a) agriculture and agri-business (CS-11) and (b) greenhouse technical support (CS-12), as well as assisting the overall project as required; and (iii) a single package for vegetable production facilitation (CS-13). The services for package CS-13 are expected to be provided by a national firm/ nongovernment organization (NGO) but could include international consultants/volunteers where these are suitably qualified and can be engaged within the contract budget. Details of these packages are summarized in Table 1.
2. The scope and tasks of the consulting services financed by the grant are described below. The Crop Production Development Policy and Coordination Department of MOFALI (the implementing agency) on behalf of MOFALI will be responsible for engaging all the consulting service contract packages in accordance with ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). The consulting firm/NGO will be selected for the project implementation support and capacity development by using the quality- and cost-based selection method, with a quality–cost weighting ratio of 90:10. The estimated cost is included in Table 1 and detailed in the terms of reference.

Table 1: Summary of Consulting Services

No	Package Name	Summary Details
CS-11	Agronomist/agri-business specialist	Individual consultant: an agronomist/agri-business specialist Expected duration: 6 months Selected by the IA through ADB's ICS selection method Estimated cost: \$126,000
CS-12	Greenhouse (Technical) Specialist	Individual consultant: a greenhouse (technical) specialist Expected duration: 2 months Selected by the IA through ADB's ICS selection method Estimated cost: \$42,000
CS-13	Vegetable Production Facilitation	A national firm/NGO with national experts. Selected by the IA through ADB's QCBS (90:10) selection method Expected duration: 5 years Estimated cost: \$686,070

ADB = Asian Development Bank, CS = consulting service, IA = implementing agency, ICS = individual consultant's selection, NGO = nongovernment organization, QCBS = quality-and cost-based selection.
Source: Asian Development Bank.

B. Individual Consultants for Grant Support

1. **Agronomist and Agri-business Specialist** (international, 6 person-months)
3. An agronomist/agri-business specialist is required to assist the vegetable production facilitation team in establishing the basis for vegetable production in each of the participating

soums. The costs of the package are in Table . The specialist will be engaged on an intermittent basis with a 3-month input at the beginning of grant implementation to establish the required inputs and further shorter inputs during grant implementation to review progress and recommend required changes. He/she will report directly to the PIU project coordinator and the team leader of the facilitation team

**Table 2: Cost Estimates for the Agronomist and Agri-business Specialist
(Package CS-11)**

No	Item	Amount (\$'000)
1	Consultants fees - remuneration and per diem (incl. domestic travel)	120.0
2	Contingencies	6.0
	Total	126.0

Source: Asian Development estimates.

4. The specialist must have master's or higher degree qualification in agronomy or related fields with at least 10 years of experience in vegetable and fruit farming, especially protected cropping in climatic conditions approximating those of Mongolia. Strong preference will be given to candidates having prior experience of working directly with farming communities, participating in the design of community-based initiatives and working on ADB or World Bank projects. A working knowledge of English is essential.

5. The expert will build on the achievements of the ongoing JFPR grant financed project for vegetable production in Mongolia³² and will be responsible for: (i) updating relevant international and local knowledge on vegetable varieties, cultivation techniques, technologies, and practices best suited to the climate and soil conditions of Mongolia's central region and supplementing this with similar information for Mongolia's eastern and western regions, ensuring full coverage of the project area; (ii) make recommendations to the project on the choice of varieties, technologies, and practices to be used by local community growers' groups (CGGs); (iii) in consultation with the national agronomist, develop a training program for project farmers on the use of existing, and introduction of new, vegetables varieties and production technologies; (iv) train project national agronomist and agribusiness specialist and other team members in delivering the developed training programs to project farmers, and (v) maintain regular communications with the project team and update and revise, as necessary, the recommendations on the choice of vegetable varieties, protection culture technologies and techniques, best horticulture practices and corresponding training program.

6. Detailed tasks for the agronomist and agri-business specialist include, but are not limited to, the following:

- (i) In collaboration with the national agronomist in the facilitation team, consolidate local and international knowledge and experience of growing vegetables in the climatic conditions similar to Mongolia's central, eastern and western regions.
- (ii) Make recommendations on the choice of vegetable types and varieties most suitable for the central, eastern and western regions, and for the community farming model.
- (iii) In collaboration with the national agronomist review and consolidate local and international experience on best farm practices of protected horticulture (especially the use of greenhouses and tunnels) applicable to the central region of Mongolia and suitable for adoption by CGGs.

³² Japan Fund for Poverty Reduction, 2017. *Mongolia: Community Vegetable Farming for Livelihood Improvement* (GAR MON 50278). Manila.

- (iv) Conduct field visits to project *soums* to validate the initial analysis and make recommendations on the technologies and techniques of protected horticulture best suited to the needs of the project.
- (v) Maintain regular communications with the facilitation team and project coordinator, and revise and update as necessary the recommendations concerning vegetable varieties, best farm practices, protected horticulture technologies and operating procedures.
- (vi) In collaboration with the national agronomist, develop a training program for project farmers on introduction of new vegetables and application of best farming practices.
- (vii) Train the national agronomist and other facilitation team members in delivering in-field training to project farmers on improved vegetable production and post-harvest practices.
- (viii) In collaboration with the international and national greenhouse technical specialists develop a training program and prepare designs for operation of greenhouses.
- (ix) Provide guidance to the PIU and Capacity Development consultants, as requested, in relation to vegetable crop production use of greenhouses in the project *soums*.
- (x) Consolidate the analysis and recommendations made in a report that could serve as a learning resource for the project communities and others beyond the confines of the project.

2. Greenhouse (Technical) Specialist (international, 2 person-months)

7. A greenhouse technical specialist is required to assist the vegetable production facilitation team in identifying the appropriate types of greenhouses for adoption in the project *soums* a providing guidance on their design and operation. The costs of the package are in Table 3. The specialist will be engaged on an intermittent basis with an initial input of 1 month and further short inputs, possibly from home office, as required.

**Table 3: Cost Estimates for the Greenhouse (Technical) Specialist
(Package CS-12)**

No	Item	Amount (\$'000)
1	Consultants fees - remuneration and per diem (incl. domestic travel)	40.0
2	Contingencies	2.0
Total		42.0

Source: Asian Development estimates.

8. The specialist shall have a bachelor's degree in engineering, horticulture or other subjects relevant to protected horticulture and a proven track record of successfully using greenhouses to grow vegetable crops in countries with similar climate conditions.

9. The expert will be responsible for: (i) ensuring the technical appropriateness of the proposed greenhouses; and (ii) setting out procedures for their regular maintenance.

10. Detailed tasks for the agronomist and agri-business specialist include, but are not limited to, the following:

- (i) Visit project *soums* and work closely with national agronomist and agribusiness expert, national resource person for greenhouse technology to determine farmer communities' needs and scope for greenhouses.

- (ii) Share with the project lessons learned from building and operating greenhouses in other countries.
- (iii) Recommend the types of greenhouses and sizes, best suited to project conditions under CGG management.
- (iv) Assist the community development expert, national agronomist, and *soum* coordinators in selecting sites appropriate for constructing greenhouses.
- (v) Create preliminary technical drawings for greenhouses in cooperation with the national resource person for greenhouse technology.

C. Facilitation Team for Vegetable Production

11. The consulting services for facilitation of vegetable production will be carried out by a team of national consultants engaged through a national consulting firm/NGO. The consultant team will have 16 regular specialists, including 12 *soum* coordinators each for 6 months/year for 4 years, and a pool of 4 short-term specialists to be recruited as required with a total input of 422 person-months. The requirements of the consulting services and the budget are detailed in Table 4 and Table 5.

**Table 4: Summary of Consultant Inputs for facilitation of Vegetable Production
(Package CS-13)**

Area of Expertise	National (person-months)
Regular Specialists	
1. Community development specialist/team leader	50
2. <i>Soum</i> coordinators (12 @ 24 person-months each))	288
3. Vegetable production and agribusiness specialist	24
4. Water management and irrigation specialist	24
5. Greenhouse technical specialist	12
Subtotal person-months	398
Pool of Short-term Specialists	
6. Soil scientist	6
7. Entomologist/pest management specialist	6
8. Seed management specialist	6
9. Fertilizer quality and application specialist	6
Subtotal person-months	24
Total person-months	422

Source: Asian Development Bank.

**Table 5: Cost Estimates for Vegetable Production Facilitation
(Package CS-13)**

Item	Amount (\$'000)
Consultants Fees - remuneration	
National Regular	523.20
National Short-term Pool	57.60
Travel (including per diem)	42.60
Equipment	30.00
Contingencies (5%)	32.67
Total	686.07

Source: Asian Development Bank.

12. The consulting services for vegetable production facilitation will include but not be limited to: (i) *soum*-level community development including formation of CGGs with specific emphasis on vegetable production; (ii) promotion of unprotected and greenhouse vegetable production; (iii) water management and use of sprinkler and trickle irrigation systems; (iv) improved storage and marketing of vegetables including processing; (v) facilitation of ADB/JFPR missions to review project implementation; (vii) communications and coordination with JFPR to ensure their objectives are achieved; and (vi) formulation of capacity development plans relating to vegetable production by poor farmer groups and implementation of initiatives as required to assist the PIU.

14. Regular Specialists

g. Community development specialist/team leader (50 person-months)

13. The specialist shall have a university degree in social or environmental sciences, or other discipline relevant to community farming, experience of horticulture considered a plus. The candidate must have at least 5 years of experience working with rural communities under a project of an international organization such as ADB, World Bank, a United Nations affiliate or an international NGO. The candidate must be fluent in English, both spoken and written.

14. Reporting to the PIU coordinator and the implementing agency, the specialist will be principally responsible for PIU support given to local communities in organizing and making functional the CGG established under the grant and for the delivery of technical inputs to them. The specialist will (i) coordinate the process of forming CGGs and preparing community group action plans (CGAPs), (ii) work with the project coordinator, *soum* coordinators, and other team members and consultants to deliver the technical aspects of community vegetable farming and training programs, (iii) technically and administratively oversee project *soum* coordinators, (iv) perform PIU project coordinator's tasks in the event of the coordinators temporary inability to do so, and (v) contribute to the development of knowledge products and dissemination of project activities and results.

15. Detailed tasks for the community development specialist/team leader include, but are not limited to, the following:

- (i) Oversee, and directly contribute to the process of setting up new collaborative structures for vegetable production by the CGGs and developing such structures' operating rules including,
 - (a) Develop suitable teaching aids (visual presentations, video clips, examples of similar initiatives elsewhere in Mongolia and in other countries) that help the target communities embrace the concept,
 - (b) Design and deliver a training program for *soum* coordinators and target communities on community farming including its organizational and management principles,
 - (c) Present a vision that goes beyond a passive implementation of CGAPs and introduces innovations throughout the vegetable value chain and the prospect of turning the CGGs, over time, into true and financially viable cooperatives/horticulture businesses,
 - (d) Clearly specify and communicate the roles and responsibilities of all project stakeholders including the participating households, the PIU and local government officials, and define their inputs and financial responsibilities,
 - (e) Ensure that the operating rules of CGGs are adequately explained to participating households and *soum* project coordinators,

- (f) Ensure that CGG members understand and support the principle of gradually re-investing some of the expected profits into further modernization of own facilities and skills, and
- (g) In collaboration with the PIU project coordinator and *soum* coordinators, build on the community growers scheme developed under JFPR grant No. 9192³³ and incorporate the lessons learned into all project activities;
- (ii) Provide advice and assistance on the preparation of CGAPs including,
 - (a) Through *soum* coordinators help the newly formed CGGs develop CGAPs and make them ready for approval by local governments and the PIU. These CGAPs will include a list of equipment to be purchased by the project for the CGG.
 - (b) Ensure that all *soum* coordinators and *soum* governors have a chance to comment on CGAPs under preparation and that the plans are then reconciled with the broader *soum* development plans following procedures specifically developed for this purpose.
 - (c) Develop such procedures for approval by PIU project coordinator and project director, after consultation with *soum* governors and organize related training.
- (iii) Coordinate the delivery of inputs and technical support for implementation of CGAPs
 - (a) Design and deliver a training program for project *soum* coordinators on best practices in community farming to guide them in overseeing the implementation of CGAPs.
 - (b) Design and deliver a training program for CGG members on best practices in community farming covering production and management aspects.
 - (c) Design the rules and regulations for access and use by CGGs of seed fund, equipment, shared storage facilities and greenhouses provided by the grant.
 - (d) Design and deliver training of project *soum* coordinators and CGG members on operating and maintaining tractors and other equipment provided to FGs and initially managed by the relevant *soum* authority.
 - (e) In consultation with the project resource person on greenhouse technology, deliver training of project *soum* coordinators and CGG members in constructing and operating greenhouses, and using other protection cultivation technologies and shared storage facilities.
 - (f) Monitor the progress of implementation of CGAPs directly in the field and through monthly reports submitted by *soum* coordinators.
 - (g) Ensure that project *soum* coordinators complete their assigned tasks in line with the project plan.
- (iv) Ensure all activities are in line with project social and environmental safeguards. Make all the *soum* coordinators aware of safeguard requirements and due diligence to do when starting project activities to ensure compliance.
- (v) Represent the PIU project coordinator, as and when required, and perform PIU project coordinator's tasks
- (vi) Work with the PIU project coordinator and the capacity development consultants on other assignments, as required.

³³ JFPR. 2017. *Mongolia: Community Vegetable Farming for Livelihood Improvement*. Manila

h. *Soum coordinators* (12 persons, 24 person-months each)

16. The candidates shall have a university degree in business, agriculture, or other discipline relevant to community development/vegetable production with at least 3 years of involvement in rural community development projects. The candidates shall preferably have prior experience in the *soum* to which they are assigned.

17. Reporting to the community development specialist/team leader, *soum* coordinators stationed in the project's *soums* will be JFPR grant's local facilitators. The *soum* coordinators will (i) help organize and participate in all relevant farmer training, (ii) working with the *soum* administration and the target farming households and guided by the community development expert, help establish CGGs in the *soum* subproject, (iii) assist the community development expert in training the CGGs in developing and updating CGAPs, (iv) help develop procedures for reconciling CGAPs with *soums'* broader development plans, (v) advise directly or organize assistance by technical consultants on implementing CGAPs and best ways of overcoming possible obstacles, (vi) monitor implementation progress and report on it to the community development specialist/team leader; and (vii) contribute to the project's awareness raising, and dissemination activities.

18. Detailed tasks for the *soum* coordinators include but are not limited to the following:

- (i) Ensure that suitable venues exist for initial discussions with local households and *soum* administrations on the principles of community farming and its organizational and management basics.
- (ii) Assist the community development expert in preparing and using teaching tools (videos, posters, etc.) to better illustrate the potential of community horticulture in the *soum* and present a broader vision of this activity.
- (iii) Assist the community development expert in developing CGG operating rules and their acceptance by target project beneficiaries.
- (iv) Inform the *soum* administration on all aspects of CGG formation.
- (v) Facilitate and participate in the training on CGAPs preparation conducted by the community development expert or a facilitation team technical consultant.
- (vi) Work alongside CGGs in drafting the CGAPs and ensure that they are completed on time and to the standard required.
- (vii) Obtain opinions of *soum* administration on best ways of integrating CGAPs into the *soum*'s broader development plans. Taking these opinions into account, help the central PIU develop procedures of reconciling CGGs with *soums'* broader development plans and help obtain local administration's approval of these procedures.
- (viii) Work alongside CGGs to help them implement CGAPs including monitoring the delivery of project inputs and services and alerting the community development specialist/team leader to any impediments to implementation.
- (ix) Support CGGs to identify equipment/technology packages to be procured under the grant for use in implementing the CGAPs.
- (x) Help deliver training of CGGs on best horticultural practices and the operation of project-supplied facilities such as greenhouses or shared storage.
- (xi) Help deliver training of CGGs, as required, in operation and maintenance of tractors and other equipment provided by the project.
- (xii) In collaboration with the branding and marketing expert, help deliver training of CGG members in selected value-added activities such as part-processing of produce, quality control, packaging, distribution, and sales promotion.

- (xiii) Help identify any unexpected technical or governance-related obstacles to implementation, alert the community development specialist and other facilitation team members to their existence and provide feedback to CGG members of their resolution.
- (xiv) Monitor CGG implementation progress and report to the central PIU on a monthly basis highlighting any departure from work plans and budgets together with proposed remedial action.
- (xv) Provide inputs to the central PIU for the preparation of the consolidated annual work plans and budgets.
- (xvi) Help ensure that suitable information on technical and management aspect of vegetable farming can be accessed by CGG members, and coordinate with the community development specialist in the preparation of such information and its availability to FGs.
- (xvii) Help ensure exchange of technical and practical information among the *soum's* CGGs as well as exchange of information and learning between participating *soums* in the region.
- (xviii) Encourage publicity given to CGG activities, both as a means of finding new markets for their produce as well as to consolidate political support for the sub-sector.

i. Vegetable production and agribusiness specialist (24 person-months)

19. The specialist shall have a university degree in agronomy or related subjects with at least 5 years of experience in agricultural and rural development, especially in horticulture. The specialist must have a good command of spoken and written English.

20. Reporting to the community development specialist/team leader, the specialist will: (i) in collaboration with international vegetable production and agribusiness specialist, consolidate local experience of vegetable breeds and cultivation practices best suited to Mongolian climate and soil conditions; (ii) summarize local experience of protected horticulture, especially the use of greenhouses, to supplement the review undertaken by the ongoing JFPR grant; (iii) train CGG members in applying best cultivation and protected horticulture practices, (iv) develop rules and operating procedures for the use of shared storage facilities and greenhouses by CGG members, and (v) monitor the progress of and report on CGGs' adoption of best practices, and use of project-financed facilities.

21. Detailed tasks for the vegetable production specialist include, but are not limited to, the following:

- (i) Contribute to the identification of crops, crop varieties, technologies, techniques and practices most suitable for adoption by the project CGGs by,
 - (a) Consolidating the results of local research on vegetable crops and varieties best suited for the climatic conditions of Mongolia's central region,
 - (b) Consolidating local experience of protected horticulture, in particular, the use of greenhouses and tunnels, to be combined with a similar review of international experience in the domain by the agronomist's international counterpart,
 - (c) Assisting the *soum* coordinators and CGGs to identify equipment/technology to be procured under the grant for use in the CGAP, and
 - (d) In collaboration with the international agronomist and agribusiness specialist and the national greenhouse technology specialist, developing a

- training program for project farmers on introduction of improved vegetable varieties, best cultivation practices, post-harvest operations, and practices of protected horticulture;
- (ii) Help ensure that the technical recommendations made are incorporated in CGAPs by,
 - (a) Conducting field consultations with CGGs to understand their current situation and perceived needs,
 - (b) Working closely with the community development expert, provide technical support to CGGs during the process of CGAP preparation to ensure that CGAPs (a) have a sound technical basis and incorporate the best of local and international horticulture experience, and (b) embody realistic targets; and
 - (iii) Assist CGGs in implementing CGAPs by,
 - (a) Delivering in-field training to CGG members on the most suitable crops, crop varieties, technologies, techniques and practices,
 - (b) Training CGGs in the operation and maintenance of equipment provided to the group by the project,
 - (c) Providing refresher training during the project,
 - (d) In collaboration with the community development expert, the international agronomist and agribusiness specialist and the greenhouse technology expert, determining the types of greenhouses and storage facilities to be constructed with project support,
 - (e) Developing rules and operating procedures for the use of shared storage facilities and greenhouses by CGG members and train CGGs on their use, and
 - (f) In collaboration with the *soum* coordinators, monitor CGGs' observance of the technical and management recommendations made and suggest remedial steps when such steps are considered necessary.
 - (g) Help CGGs, and groups of CGGs, to establish marketing links with buyers either locally or in Ulaanbataar

j. Water management and irrigation specialist (24 person-months)

22. The specialist shall have a degree in agriculture water management, irrigation engineering other relevant fields and at least 5 years of experience in agricultural irrigation in Mongolia, preferably with respect to horticultural crops using sprinkler and/or drip irrigation.

23. Reporting to the community development specialist/team leader, the specialist will be responsible for (i) identifying the appropriate type of irrigation systems for vegetable production, both outdoors and in greenhouses each of the *soums*, (ii) recommending on their adoption, and (iii) guiding the CGGs on system operation and maintenance.

24. Detailed tasks for the water management and irrigation specialist include but are not limited to the following:

- (i) support CGGs in water management;
- (ii) assess irrigation efficiency of subprojects
- (iii) introduce best practices of modern, efficient irrigation technologies to improve irrigation efficiency;
- (iv) train farmers or WUAs in modern, efficient irrigation technologies;
- (v) prepare together with WUAs the irrigation schedule for entire irrigated season;

- (vi) design operational system for increasing efficiency and productivity of irrigation;
- (vii) prepare a knowledge product focusing on integrating climate resilience considerations for irrigation management

k. Greenhouse specialist (24 person-months)

25. The specialist shall have a university degree in engineering agronomy/horticulture or related subject relevant to protected horticulture with at least 5 years of experience in agricultural and rural development, especially in horticulture. The candidate must have a good command of spoken and written English.

26. Reporting to the community development specialist/team leader, the specialist will be responsible, in collaboration with the international greenhouse (technical) specialist for (i) identifying the appropriate type of greenhouses for use in each of the *soums*, (ii) recommending on their adoption, and (iii) guiding the CGGs on the appropriate crops to be produced.

27. Detailed tasks for the greenhouse specialist include, but are not limited to, the following:

- (i) Visit project *soums* and work closely with international and national agronomist and agribusiness specialists to determine CGGs needs and scope for greenhouses;
- (ii) Share with the project lessons learned from building and operating greenhouses in other locations in Mongolia;
- (iii) Recommend the types of greenhouses of several sizes, best suited to project conditions under CGG management;
- (iv) Assist the *soum* coordinators and CGGs to identify greenhouse types to be procured under the grant for use in the CGAP,
- (v) Assist the community development expert, national agronomist, and *soum* coordinators in selecting sites appropriate for constructing greenhouses;
- (vi) Create preliminary technical drawings for greenhouses in cooperation with the international greenhouse (technology) specialist; and
- (vii) Train the facilitation team and CGGs in the selection of crops to be grown in the greenhouses, operating practices, greenhouse maintenance, and operating costs.

15. Pool of Short-term Specialists

28. Detailed tasks for the pool of short-term specialists include but are not limited to the following:

I. Soil scientist (6 person-months)

29. The soil scientist shall have a degree in soil and crop sciences or other relevant fields and at least 5 years of experience in soil analysis and vegetable production in Mongolia or in growing conditions similar to those of Mongolia.

30. The specialist will undertake soil sampling and analysis, and ensure that the CGG members understand their meaning, particularly with respect to improved quality of vegetables produced

m. Entomologist/pest management specialist (6 person-months)

31. The candidate shall have a degree in entomology, agricultural pest management or other relevant fields, and at least 5 years of experience in agricultural pest management in Mongolia or in conditions similar to those of Mongolia.

32. The specialist will train and advise CGG members on insect identification and pest management, including integrated pest management and the minimization of pesticide use, on an as-needed basis.

n. Seed management specialist (6 person-months)

33. The specialist shall have a degree in seed technology, agricultural biotechnology, or other relevant fields and at least 5 years of experience in vegetable seed management (grading, quality control, sorting, etc.) in Mongolia or in growing conditions similar to those of Mongolia.

34. The specialist will train and advise CGG members on seed selection, grading, and sorting on an as-needed basis.

o. Fertilizer quality and application specialist (6 person-months)

35. The fertilizer quality and application specialist shall have a degree in crop sciences or other relevant fields and at least 5 years of experience in vegetable production in Mongolia or in growing conditions similar to those of Mongolia.

The specialist will train and advise CGG members on the selection of appropriate types of fertilizers, including composting and the use of organic fertilizers, and the determination of appropriate application rates.

APPENDIX 3: SUBPROJECT SELECTION CRITERIA AND GUIDING PRINCIPLES

A. Introduction

1. The project aims to upgrade and modernize existing irrigation systems with a primary focus to improve water management to enhance agricultural production in selected schemes. In particular, the emphasis is to increase vegetable production to meet increasing national demand and reduce reliance on imports. Current annual vegetable production is about 54% of requirements and, with population growth, this proportion is likely to decline without appropriate investment in improved irrigation and crop production technologies.
2. Mongolia has a history of developed irrigated agriculture, which is reported to have worked well under the old soviet style practices through to the end of the 1980s. With the decline of the soviet system, and introduction of democracy, the government opted to sell off the old collective irrigation farms to farmers (groups) and/or new enterprises forming post centralized management. The decentralization did not result in stronger self-managed irrigated farms as expected, and during the transition, many of the assets of the irrigation schemes were sold off rather than retained and utilized. The consequence is that now irrigated agriculture has declined, many schemes are stripped of physical assets (fixed and moveable) and many of the schemes have ceased crop production.
3. Under the propose project,³⁴ the Government of Mongolia aims to upgrade and modernize selected schemes that have been returned to government ownership, working with interested farmers to restore them to optimal production. With a primary focus to increase vegetable production, efforts will also be made to rebuild fodder and cereal production on suitable land to support the large livestock industry across the country.

B. Subproject Selection

2. Overall Process

4. There are over 380 irrigation schemes of varying size in Mongolia. From this long-list of potential projects presented through the Ministry of Food, Agriculture and Light Industry (MOFALI) by *soum* and *aimag* governments, a short-list of 48 schemes was agreed between the Asian Development Bank (ADB) and the EA with the assistance of the technical assistance (TA) consultant (Table 1). Forty-eight schemes were identified for further study. Most of them are located across the Western, Central and Eastern Regions of Mongolia, and have been reviewed and inspected during project preparation.
5. Based on review and inspection, a list of 17 priority schemes was prepared (Table 1). The primary criteria for priority selection were: (i) smallholder farmers' access to irrigated land through a transparent and fair land lease distribution system; (ii) public ownership of irrigation infrastructure with no resettlement issues (Cat C only); (iii) reliable water source in terms of quantity and quality; (iv) market access with at least 9% economic return on project investment; (v) no significant or irreversible environment issues: (Cat B and C only) with sustainable water resource use. Of 17 irrigation schemes selected as first priority for feasibility and environmental studies prior to inclusion in the project, 10 are located in the Western Region, 5 in the Central Region and 2 in the Eastern Region (Table 1). The list was reviewed and agreed during the interim review mission for project preparation.

³⁴ Vegetable Production and Irrigated Agriculture Project. Project No. 51423-002

Table 1. List of selected irrigation schemes for detailed due diligence

No	IS	Aimag	Soum	Selection criteria					Note
				Smallholder farmers' access to irrigated land through a transparent and fair land lease distribution system	Public ownership of irrigation infrastructure with no resettlement issues	Reliable water source in terms of quantity and quality	Market access with at least 9% economic return on project investment	No significant or irreversible environmental issues: (Cat B and C only)	
Western region									
1	Tsakhir	Govi-Alтай	Taishir	√	√	√	√	√	
2	Yolton	Govi-Alтай	Khaliun	√	√	√	√	√	
3	Erdenebur-en	Khovd	Erdenebur-en	√	√	√	√	√	
4	Boomiin-am	Khovd	Altai	√	√	√	√	√	
5	Khoid gol	Khovd	Darvi	√	√	√	√	√	Over budget
6	Tsul-Ulaan	Bayan-Ulgii	Bayannuur	√	√	√	√	√	
7	Ulaande	Bayan-Ulgii	Sagsai	√	√	√	√	√	
8	Ulaantolgoi	Uvs	Ulaangom	X	√	X	o	√	
9	Khuren tal	Zavkhan	Telmen	√	√	√	√	√	
10	Nogoon khashaa	Zavkhan	Uliastai	√	√	√	√	√	
Central region									
11	Tsagaan tolgoi	Selenge	Sant	X	X	√	o	√	
12	Iven	Selenge	Sant	√	√	√	√	√	
13	Okhindiin tal	Selenge	Zuunburen	√	√	√	√	√	
14	Sugnuger	Tuv	Batsumber	√	√	√	√	√	
15	Ulaantolgoi	Orkhon -Uul	Jargalant	√	√	√	o	X	
Eastern region									
16	Dulaanii khondii	Khentii	Kherlen	√	√	√	√	√	
17	Kherlen Bayan-Ulaan	Khentii	Delgerkhaan	X	√	√	o	√	

√ = meet the criteria, X = does not meet the criteria, o = not assessed

Source: ADB.

6. Three of the prioritized irrigation schemes were defined as representative subprojects for which detailed feasibility studies and environmental baseline studies would be contracted to licensed companies during project preparation. The schemes are:

- (i) Boomin Am irrigation scheme in Altai *Soum* of Khovd *Aimag* of the Western Region, an existing small scheme with a designed area of 300 ha out of a potential of 700 ha but no plan for expansion under the current project. The scheme is considered representative of small schemes that will be upgraded under the project.
- (ii) Khuren Tal irrigation scheme in Telmen *Soum* of Zavkhan *Aimag* in the Western Region, an existing medium scheme with a designed area of 200 ha out of a potential 3,000 ha and with plans for expansion to 500 ha under the current project. The scheme is considered representative of medium to large schemes that will be upgraded under the project.
- (iii) Okhindin Tal irrigation scheme in Zuunburen *Soum* of Selenge *Aimag* of the Central Region, a new large scheme for which 3,000 ha out of potential 12,000 ha is planned for development under the project. The scheme is considered representative of new schemes that will be developed under the project, of which there are three.

7. During preparation of the feasibility study report four schemes were identified as being unsuitable for inclusion in the project and were therefore dropped. Three schemes, Ulaantolgoi in the Western Region, Tsagaan Tolgoi in the Central Region, and Kherlen Bayan-Ulaan in the Eastern Region were dropped due to social issues, specifically that the land is currently occupied by a few large companies, although in some cases it is rented to individual farm households on an annual basis, and there is no guarantee that the land will be available to farmers following upgrading. One scheme, Ulaantolgoi in the Central Region, was dropped due to the very poor water quality, which impacts on vegetable quality and would trigger environmental concerns.

8. All five irrigation schemes, Ulaantolgoi and Khoid gol in the Western Region, Tsagaan Tolgoi and Ulaantolgoi in the Central Region, Kherlen Bayan-Ulaan in the Eastern Region, that had to be dropped after the interim mission due to budget limitations or not meeting the selection criteria can be considered during project implementation in case budget is available and the conditions of the irrigation schemes changed to that selection criteria can be met.

9. A quick feasibility study and collection of data required for ADB's initial environmental examination were undertaken by the TA Consultant for the remaining 10 subprojects. EBAs will be conducted for these during project implementation. Detailed design and national environmental impact assessments, as required, will be conducted for all subprojects included in the project.

10. Subsequently one subproject, Khoid gol, was dropped from the final project preparation due to financial constraints.

3. Subproject Selection Criteria

11. A final list of 12 irrigation schemes for project support was selected based on further field visits for due diligence (Table 2). The four irrigation schemes, Ulaantolgoi in the Western Region, Tsagaan Tolgoi in the Central Region, Kherlen Bayan-Ulaan in the Eastern Region, and Ulaantolgoi in the Central Region that had to be dropped due to budget limitations or not meeting the selection criteria can be considered during project implementation in case budget is available and the conditions of the irrigation schemes changed to that selection criteria can be met.

Table 2: Final List of Selected Irrigation Scheme Subprojects

No	Irrigation System	Aimag	Soum	Water source	Current Crops
Western Region					
1	Tsakhiriin Tal	Govi-Alтай	Taishir	Zavkhan River	Fodder, vegetables
2	Yolton	Govi-Alтай	Khaliun	Ustchachrangiiin River	Fodder, vegetables
3	Erdeneburen	Khovd	Erdeneburen	Khovd River	Fodder
4	Boomiin am	Khovd	Altai	Uench River	Fodder, vegetables
6	Tsul-Ulaan	Bayan-Ulgii	Bayannuur	Khovd River	Fodder, vegetables
7	Ulaandel	Bayan-Ulgii	Sagsai	Khovd river	Fodder, vegetables
9	Khuren tal	Zavkhan	Telmen	Ider River	Fodder, vegetables
10	Nogoon khashaa	Zavkhan	Uliastai	Chigestei River	Vegetables
Central Region					
12	Iven	Selenge	Sant	Iven River	Fodder, fruit trees, vegetables
13	Okhindiin tal	Selenge	Zuunburen	Selenge River	New irrigation scheme: no crops
14	Sugnuger	Tuv	Batsumber	Sugnuger River	Vegetables
Eastern Region					
16	Dulaanii khondii	Khentii	Kherlen	Kherlen River	New irrigation scheme: no crops

Source: ADB.

C. Technical Guiding Principles – Subprojects

12. Technical guiding principles required to ensure priority subprojects fulfil development objectives include (i) developing efficient and climate-resilient irrigation infrastructure; (ii) promoting improved climate smart agriculture production systems; and (iii) modernizing agricultural production. Further information on these technical guiding principles are detailed below.

1. Developing Efficient and Climate-Resilient Irrigation Infrastructure

13. Technical guiding principles related to developing efficient and climate-resilient irrigation infrastructure include:

- (i) Improved and reliable access to a reliable water source, which predominantly means perennial rivers flowing due to upstream snow melt and/or rainfall runoff throughout the growing season;
- (ii) Improved surface water source headworks with controlled intakes, sediment exclusion/management and protection from flood (river flows and/or overland runoff) to feed secure and durable main supply canals or pipes to efficiently convey water to the irrigated command area (for various crops and cropping pattern defined in the FSRs and preliminary design details);
- (iii) Improved command area water distribution and on-farm water application methods appropriate to the terrain, crops and water source, lifting overall water conveyance and water use efficiency in the irrigation scheme;
- (iv) Appropriate irrigated area protection works against short-term flood impacts (intense rainfall runoff events), and potential wind erosion (provision of windbreaks);
- (v) Inclusion, if and where necessary, of appropriate drainage works and capacity particularly for safe passage of overland runoff around or through the irrigated command areas;
- (vi) Adoption of relevant irrigation equipment, where required, to optimize water use efficiency on permeable soils when high water use efficiency would be unattainable if relying solely on surface water application;

- (vii) Adoption of improved soil moisture monitoring to guide irrigation scheduling and water applications that more appropriately keep soil moisture between soil saturation and excessive depletion, thus reducing the risk for crop waterlogging and/or extended water stress that could impede crop growth and yield;
- (viii) Inclusion of water storage facilities to minimize drought risk for crops between the early spring snow melt runoff and the late summer rainfall period;
- (ix) Incorporation of sediment exclusion/management and disposal features into the design to mitigate regular maintenance requirements, risks for reduced irrigation system capacity over time, and ensure water availability for crops when water source flows decline between spring melt and summer rains;
- (x) Inclusion of flow control mechanisms (gated canal and outlet structures, piped system valves, and overflow safety release outlets, as required, to ensure the sustainable use of the irrigation infrastructure with optimized system operations and water use efficiency;
- (xi) Provisions within the canal/pipe network to facilitate effective drainage ahead of winter conditions; and
- (xii) Effective water capture and use from overland runoff where feasible to supplement the main supply from the primary water source (river or springs).

2. Promoting Improved Climate Smart Agriculture Production Systems

14. Technical guiding principles related to promoting improved climate smart agriculture production systems include:

- (i) Assessing the risks for altered river flows and rainfall runoff change in the event of specified changes in rainfall, temperature and other climate related factors, as per the indicators on climate change identified for the locations of the irrigation schemes;
- (ii) Consideration of the possible impacts on scheme water use efficiency, scheme size and crop mix that is possible both now and, if expected climate change scenarios occur, in the future and ensure scheme scale and details remain viable under expected climate change scenarios;
- (iii) For mitigation of excessive water use and system losses, assess the benefits for and adopt modernization plans for the irrigation systems through a switch from surface irrigation to more technically efficient sprinkler or drip systems as may be best suited to defined crops and soils, whether in part or the whole of the irrigation system command area;
- (iv) Consideration of the possibility for, and interest of, participating communities to adopt a changed crop mix and cropping pattern under expected climate change conditions for the irrigation system;
- (v) Allowing for the adverse consequences and need for managing excessive runoff around and across the irrigation system command area that arises in the event of more intense storm events – both potential to capture water for use within the scheme, and also evacuation through drainage of any short-term flooding that could be deleterious to the crop;
- (vi) Assessment of whether any adverse climate change impacts might mean that some crops would not be sustainable within the irrigation system; and
- (vii) Assessment on whether climate change extremes might necessitate altered crop seasons, varieties, harvesting schedules and crop handling/storage to optimize market benefits.

3. Modernizing Agriculture Production

15. Technical guiding principles related to modernizing agriculture production within the upgraded and modernized irrigation schemes include:

- (i) Assess potential for introduction of greenhouse vegetable production to extend the vegetable production season for greenhouse and field transplanted vegetables;
- (ii) Promote linkages to the seed systems to promote the use of best available varieties from the Mongolian seed system to improve climatic adaptation and resilience in production;
- (iii) Assess the potential for technical/extension support available at *aimag* and *soum* to introduce water efficient irrigation for greenhouse and field vegetable production including drip and sprinkle irrigation to improve water use efficiency and limit salting in susceptible areas;
- (iv) Assess the ability of the technical/extension support available at *aimag* and *soum* to support the adoption of machinery to increase production efficiency through improved timeliness of operations and improved labor efficiency;
- (v) Assess the resources available to increase farmer understanding of farming practices through training in production in association with other vegetable production projects;
- (vi) Assess *aimag* and *soum* resources to manage local storage facilities and to increase the understanding of vegetable storage practices and use of local storage facilities to improve farmer returns;
- (vii) Support soil conservation practices to improve soil fertility and increase sustainability of production for vegetables and field crops with the use of legume rotations; and
- (viii) Promotion of linkages to local, regional and UB markets.

APPENDIX 4: MAJOR ACTIVITIES FOR THE PROJECT IRRIGATION SYSTEMS

No.	Irrigation System	Major Activities		Added Capacity	Main Civil Works, Equipment and Materials Supported
		Existing	As Result of Project		
1.	Tsakhir	No irrigation so unused	About 200 ha will be cropped including: Potatoes about 15 ha Vegetables about 15 ha Fodder about 170 ha	At full project development, annual incremental production of about, 230 tons of potatoes, 278 tons of vegetables (including cabbages, carrots, turnips and onions), plus 5 tons of garlic, and about 2,230 tons of fodder	Rockfill river weir with spillway across the Zhavkhan River channel New gated intake structure Main canal reformation and re-lining/repair Settlement basin Distributary low pressure pipeline 2 lateral move-pivots Earth drains and protection banks 4.8 km of windbreaks fed by drip irrigation 10 km protection fence Access roads
2.	Yolton	About 80 ha of potatoes, 3 ha of vegetables and 5 ha of seabuckthorn.	About 320 ha will be cropped including: Potatoes about 50 ha Vegetables (cabbages, carrots, turnips and onions) about 45 ha Oats about 120 ha Wheat about 100 ha, and Seabuckthorn about 5 ha	At full project development, annual incremental production of about 370 tons of potatoes about 1,120 tons of vegetables (including cabbages, carrots, turnips and onions), 215 tons of oats and 140 tons of wheat,	Rockfill river weir with spillway across the Ust-Chatsran River channel New gated intake structure Main canal reformation and re-lining/repair Upgraded balancing storage Main pressure pipeline, 2 main distributary pipes and 2 drip irrigation systems Two linear move sprinkler irrigation machines Earth drains and protection banks 4.2 km of windbreaks fed by drip irrigation 10 km protection fence Access roads
3.	Erdeneburen	Irrigated area currently is about 42 ha with about 10 ha of potatoes and 19 ha of vegetables including cabbages, carrots, turnips, onions, melons and watermelons), 2 ha of seabuckthorn, and 11 ha of fodder. The remainder of the subproject area is uncropped	About 2,000 ha will be cropped including; Cereals about 500 ha (250 ha of wheat and 250 ha of barley) Vegetables and fruit (cabbages, carrots, turnips, onions, garlic and watermelon) about 300 ha total, seabuckthorn 5 ha; and Fodder about 1,195 ha.	At full project development, annual incremental production of about 1,610 tons of potatoes, about 4,550 tons of vegetables (including cabbages, carrots, turnips and onions) plus about 40 tons of garlic, 90 tons of watermelons, 15 tons of seabuckthorn, 810 tons of cereals and 16,570 tons of fodder.	Improvement, raising and strengthening of existing rockfill weir across the Khovd River, with spillway New gated intake structure Reformation, realignment and lining of main canal Balancing storage Pump station and pumps Main and subsidiary pressure pipes Four 100-ha center pivot sprinkler sets Drip systems for up to 80 ha Earth drains and protection banks 7.5 km of windbreaks fed by drip irrigation 20 km protection fence Access roads
4.	Boomiin am	Irrigated area currently about 27 ha of which about 2 ha is	About 263 ha will be cropped including:	At full project development, annual incremental production of about 1,130	Rockfill weir with spillway across the Bodonch River

No.	Irrigation System	Major Activities		Added Capacity	Main Civil Works, Equipment and Materials Supported
		Existing	As Result of Project		
		a mixture of potatoes and vegetables and the remainder undefined.	Potatoes about 74 ha; Vegetables and fruits (cabbages, carrots, turnips, onions, garlic and watermelon) about 11 ha total; Cereals (wheat) about 110 ha; Fodder about 56 ha; and Seabuckthorn about 10 ha	tons of potatoes, about 190 tons of basic vegetables (including cabbages, carrots, turnips and onions) plus about 2 tons of garlic, 22 tons of watermelons, 51 tons of seabuckthorn, 142 tons of wheat and 730 tons of fodder.	Gated intake structure Reformation and lining of main canal Rehabilitation of the existing balancing storage Pump station and 2 pumps Main and subsidiary pressure pipes Five center pivot sprinkler sets Reforming and/or construction of new drains and protection bank 8 km of windbreaks fed by drip irrigation 13 km protection fence Access roads
5.	Tsul Ulaan	Currently no crops are grown as there is no irrigation water in the command area	About 165 ha of the 200-ha command area will be cropped including: Potatoes about 15 ha Vegetables about 21 ha Fruit trees about 5 ha; and Fodder about 126 ha .	At full project development, annual incremental production of about 230 tons of potatoes, about 280 tons of basic vegetables (including cabbages, carrots, turnips and onions) plus about 8 tons of garlic, 36 tons of watermelons, 23 tons of tomatoes, 29 tons of cucumbers, 70 tons of apples and 1,750 tons of fodder.	Dredging of river section Rockfill weir with spillway across the Khovd River Gated intake structure Reformation and lining of the main canal, header canal and 19 distributary canals Two lateral move sprinkler sets Drip irrigation for 8 ha Reforming and/or construction of new drains and protection bank 3.1 km of windbreaks fed by drip irrigation 6.6 km protection fence Access roads
6.	Ulaandel	Currently no crop is cultivated as there is no water coming to the command area	About 400 ha will be cropped including: Potatoes about 25 ha; Basic vegetables (cabbages, carrots, turnips and onions) about 25 ha total; Wheat about 100 ha; Rapeseed about 100 ha; and Fodder about 100 ha	At full project development, annual incremental production of about 385 tons of potatoes, about 580 tons of basic vegetables (including cabbages, carrots, turnips and onions), 100 tons of rapeseed, 190 tons of wheat, and 1,310 tons of fodder.	Rockfill weir with spillway across Sagsai River Gated intake structure Reformation and lining of the main canal Settling basin Pump station equipped with 2 pumps Main and subsidiary pressure pipes One 84-ha center pivot sprinkler system Six 10-ha water efficient drip irrigation systems Reforming and/or construction of new drains and protection bank 7 km of windbreaks fed by drip irrigation 12 km protection fence Access roads
7.	Khuren tal	Current irrigated area is about 123 ha with cropping	About 500 ha will be cropped including:	At full project development, annual incremental production of about 300	Rockfill weir with spillway across the Ider River

No.	Irrigation System	Major Activities		Added Capacity	Main Civil Works, Equipment and Materials Supported
		Existing	As Result of Project		
		of about 8 ha of potatoes, 5 ha of vegetables, 4.5 ha of seabuckthorn and 105 ha of fodder	Potatoes about 25 ha; Vegetables (cabbages, carrots, turnips, onions and garlic) about 25 ha; Seabuckthorn about 8 ha; and Fodder about 445 ha	tons of potatoes, about 315 tons of basic vegetables (including cabbages, carrots, turnips and onions), 7 tons of garlic, 11 tons of seabuckthorn and 2,860 tons of fodder.	gated intake structure Reformation and lining of main canal Balancing storage Lining of distribution canals Main and subsidiary pressure pipes Two center pivot sprinkler systems Four self-propelled lateral move sprinkler sets Two 10-ha drip irrigation systems Reforming and/or construction of new drains and protection bank 8 km of windbreaks fed by drip irrigation 20 km protection fence Access roads
8.	Nogoon Khashaa	Current cropping is about 64 ha including about 33 ha of potatoes, 29 ha of vegetables (including 1.5 ha of red-skin garlic) and about 1.5 ha of seabuckthorn.	No change in the total cropped area is expected but the individual crop areas are expected to change to include: Potatoes about 15 ha; Basic vegetables (cabbages, carrots, turnips and onions) about 29 ha; Red-skin garlic about 10 ha; and Seabuckthorn about 10 ha.	At full project development, annual incremental production of about 20 tons of potatoes, about 490 tons of basic vegetables (including cabbages, carrots, turnips and onions), 14 tons of garlic and 47 tons of seabuckthorn.	Rockfill weir with spillway across Chigestei River channel Gated intake structure Reformation and lining of the main canal, distributary canal and 12 field canals Four lateral move sprinkler sets Drip irrigation for 8ha Reforming and/or construction of new drains and protection bank 3.1 km of windbreaks fed by drip irrigation 8.4 km protection fence Access roads
9.	Iven Gol	Current cropped area is about 120 ha with about 60 ha of potatoes and about 60 ha of vegetables, including minor crops.	About 242 ha will be cropped including: Potatoes about 126 ha; and Vegetables and fruits (cabbages, carrots, turnips, onions, garlic and watermelons) about 116 ha.	At full project development, annual incremental production of about 1,520 tons of potatoes, about 1,710 tons of basic vegetables (including cabbages, carrots, turnips and onions), 17 tons of garlic and 110 tons of watermelons. Pumpkins are not expected to be grown.	Rockfill weir with spillway across the Iven Gol River channel Gated intake structure Balancing storage Reformation and lining of the main canal and distributary canal Up to 15 pressure pipes to supply either open canal (sump) for sprinkler systems or drip irrigation control stations Three lateral move sprinkler sets Reforming and/or construction of new drains and protection bank 5.9 km of windbreaks fed by drip irrigation 6.9 km protection fence Access roads

No.	Irrigation System	Major Activities		Added Capacity	Main Civil Works, Equipment and Materials Supported
		Existing	As Result of Project		
10.	Okhindiin tal	This is a new irrigation system. Currently a small area of 1-2 ha of land is planted by households for production of potatoes, vegetables and watermelon for their own consumption.	About 2,760 ha will be cropped including: Potatoes about 120 ha Vegetables (cabbages, carrots, turnips, onions, garlic and watermelons) about 410 ha and Seabuckthorn about 20 ha Cereals (wheat, barley and rye) about 950 ha; Fodder about 1,280 ha	At full project development, annual incremental production of about 1,680 tons of potatoes, about 5,200 tons of basic vegetables (including cabbages, carrots, turnips and onions), 54 tons of garlic, 570 tons of watermelons, 100 tons of seabuckthorn, 1,450 tons of cereals and 12,800 tons of fodder.	Rockfill weir with spillway across the Selenge River Gated intake structure Lined main canal Balancing storage Pump station with 4 pumps Installation of main pressure and subsidiary pressure pipes 5 100-ha and 4 21-ha center pivot sprinkler systems Drip systems Reforming and/or construction of new drains and protection bank 23.1 km protection fence Access roads
11.	Sugnugur	In the existing command area of 139 ha there are typically about, 50 ha of potatoes, 49 ha of vegetables and 35 ha of fodder. About 5 ha of seabuckthorn are also grown.	The upgraded area of 145 ha, is expected to include: Potatoes about 50 ha; Vegetables (cabbages, carrots, turnips, onions, garlic and watermelons) about 100 ha; Seabuckthorn about 5 ha; and Fodder about 40 ha	At full project development, annual incremental production of about 230 tons of potatoes, about 730 tons of basic vegetables (including cabbages, carrots, turnips and onions), 9 tons of garlic, 38 tons of watermelons, 8 tons of seabuckthorn and 540 tons of fodder.	Rockfill weir with spillway across the Sugnugur River channel new gated intake Reformation and re-lining/repair of main and distributary canals Balancing storage Pressure pipes to supply either open canal (sump) for sprinkler systems or drip irrigation control stations One lateral move sprinkler set 11 drip irrigation sets Reforming and/or construction of new drains and protection bank 5.2 km of windbreaks fed by drip irrigation 12 km protection fence Access roads
12.	Dulaanii Tal	Current cropping is about 80 ha of which about 30 ha is potatoes, about 45 ha is vegetables and 5 ha is seabuckthorn.	After upgrading, about 700 ha is expected to be cropped including: Potatoes about 170 ha; Vegetables(cabbages, carrots, turnips, onions, garlic and watermelons) about 170 ha; Seabuckthorn about 20 ha; Cereals (wheat and barley) about 170 ha; and Fodder about 170 ha	At full project development, annual incremental production of about 2,450 tons of potatoes, about 3,700 tons of basic vegetables (including cabbages, carrots, turnips and onions), 8 tons of garlic, 90 tons of watermelons, 75 tons of seabuckthorn, 275 tons of cereals and 3,050 tons of fodder and 540 tons of fodder.	rockfill weir with spillway across the Kherlen River Gated intake structure Reformation, realignment and lining of main canal Pump station with 4 diesel pumps Installation of main and subsidiary pressure pipes 3 56-ha central pivot sprinklers 10 drip systems

No.	Irrigation System	Major Activities		Added Capacity	Main Civil Works, Equipment and Materials Supported
		Existing	As Result of Project		
					Reforming and/or construction of new drains and protection bank 13.9 km of windbreaks fed by drip irrigation 13.9 km protection fence Access roads

Source: Asian Development Bank.

APPENDIX 5: ENVIRONMENTAL MANAGEMENT PLAN

A. Objectives

1. This environmental management plan (EMP) is for the Vegetable Production and Irrigated Agriculture Project (the project). The EMP is to be implemented in all phases of the project – design, pre-construction, construction, and operation. The EMP is to ensure project compliance with Mongolian environmental laws and ADB's Safeguard Policy Statement (SPS, 2009). The EMP describes: the roles and responsibilities of all project agencies to implement this EMP; anticipated impacts and mitigation measures; inspection, monitoring, and reporting arrangements; training and institutional strengthening; grievance redress mechanism (GRM); and ongoing public consultation.
2. During preparation of the detailed engineering designs (after loan effectiveness), the project implementation unit (PIU), acting on behalf of the executing agency, will pass this EMP to the engineering design institutes for incorporation of the mitigation measures into the detailed designs. If necessary, the EMP will be updated at the end of the detailed design, to reflect any significant changes as compared with the designs agreed in the project documents between the Government of Mongolia and ADB. To ensure that bidders will respond to the EMP's provisions, the PIU will prepare and provide the following specification clauses for incorporation into the bidding documents: (i) a list of environmental management requirements to be budgeted by the bidders in their proposals, (ii) environmental clauses for contractual terms and conditions, and (iii) the domestic General EIA (GEIA) and Detailed EIA (DEIA) (as needed for each subproject), and the project initial environmental examination (IEE), including the updated EMP, for compliance.

B. Implementation Arrangements

3. The Ministry of Food, Agriculture and Light Industry (MOFALI) is the executing agency (EA) responsible for overall project implementation. MOFALI will establish a PIU, which will be responsible for the day-to-day management of the project. The PIU will have a central office at MOFALI (Ulaanbaatar). *Soum* governments will provide office space as required. The PIU staff will comprise a team of consultants, who will be responsible for project implementation, including accounting, procurement, training, preparation and dissemination of knowledge products, monitoring, and reporting. The EA and PIU will work closely with the *aimag* and *soum* governments for project implementation.
4. Project guidance and sector coordination will be through the project steering committee (PSC) to be established during loan effectiveness. The PSC will include representatives from MOFALI, Ministry of Finance (MOF), the target *aimag* governments, and other relevant agencies. The committee will meet at least twice a year.
5. The PIU will include a qualified national Environment Safeguard Specialist. The specialist will coordinate the implementation of the EMP, supervise contractors and ensure compliance with the EMP, conduct regular site inspections, coordinate periodic environmental quality monitoring in compliance with the approved monitoring plan, act as local entry point for the project grievance redress mechanism, and prepare semi-annual monitoring results for the EA to submit to ADB. The specialist will also support contractors in developing construction site-specific environmental management plans (CEMPs) prior to construction and operation. The specialist will be engaged and in place prior to the start of any project works. The terms of reference for this position is in Appendix 2 of the IEE.
6. The EMP implementation arrangements are summarized in Table EMP-1.

Table EMP-3: Institutional responsibilities for EMP implementation

Organization	Roles and Responsibilities
Ministry of Food, Agriculture and Light Industry (MOFALI)	<ul style="list-style-type: none"> • Project executing agency • Assumes overall accountability and responsibility for project planning, management, and implementation • Ensures timely and effective execution of the loan agreements • Co-signs (with MOF) withdrawal applications to ADB • Co-signs (with PIU coordinator) withdrawals from the advance accounts to the local currency accounts; and for expenditures from the local currency accounts • Responsible for recruitment and coordination of PIU • Ensures all PIU tasks are completed in a timely and efficient manner • Reviews PIU progress reports • Submits progress reports to ADB and MOF • Ensures PIU uploads project financial statements and progress reports to MOF's Official Development Assistance Management Information System (ODA MIS) • Ensures that procurement is undertaken in accordance with government laws and regulations and ADB policies • Develop and submit annual project budget to MOF in line with the Budget Law of Mongolia • Facilitates auditing of project accounts • Chairs the PSC • Provides timely policy and coordination support
Ministry of Finance (MOF)	<ul style="list-style-type: none"> • Represents GOM for loan negotiations • Signs the loan agreements and project approval on behalf of GOM • Opens the two project advance accounts • Co-signs (with MET) withdrawal applications to ADB • Reviews project progress and/or audit reports, as needed • Repays ADB loan
Project Steering Committee (PSC)	<ul style="list-style-type: none"> • Comprises MOFALI State Secretary, MOF, <i>aimag</i> governments, and other relevant agencies • Provides advice on project implementation • Reviews project progress • Endorses procurement and implementation plans • Ensures timely inter-ministerial coordination and support for the project, including information exchange and facilitation of meetings and approvals, as needed • Meets at least semi-annually
Project Implementation Unit (PIU)	<ul style="list-style-type: none"> • Comprising a project coordinator, accountant, procurement specialist, and technical specialists, including an environmental safeguards specialist and social and gender specialist • Based at MOFALI in Ulaanbaatar • On behalf of the executing agency, coordinates and implements the project activities, including recruitment, procurement, financial management, disbursement, safeguards, supervision of contractors, monitoring, and reporting • On behalf of the executing agency, maintains the advance and local currency accounts. Prepares the withdrawal applications to be submitted to ADB by MOF and MOFALI. PIU coordinator co-signs (with MOFALI) project expenditures from the two advance accounts and two local currency accounts • Ensures compliance with the EMP, SGAP, CPP and other project documents. For the EMP, this includes screening procedures and the GRM • Coordinates the preparation and delivery of the domestic detailed environmental impact assessment and any social safeguard requirements

Organization	Roles and Responsibilities
	<ul style="list-style-type: none"> Monitors project progress, including site inspections and compliance with project administration manual, EMP, SGAP, and other project documents On behalf of the executing and implementing agencies, prepares and submits quarterly and annual reports, annual audit reports, and financial statements; submits and uploads relevant documents and reports to MOF's official development assistance monitoring and information system in a timely manner Prepares semi-annual project progress reports
Aimag governments for the target irrigation subprojects	<ul style="list-style-type: none"> Facilitate <i>aimag-</i> and <i>soum</i>-level project support, including arrangement of project workshops Assign at least one <i>soum</i> officer per project <i>soum</i> to attend meetings and trainings. A <i>soum</i> environment and social safeguards focal point will be appointed. <i>Soum</i> officers to ensure <i>soum</i> and <i>aimag</i> governments are updated on project progress Undertake regular coordination with the PIU Participates in central- and <i>aimag</i>-level meetings to define operation and maintenance arrangements and financing for the project facilities, including the allocation of government funds for operation and maintenance Provides timely information and clarification on any local land issues and permits, as needed Participates as members of the PSC Reviews PIU progress reports
Other Domestic Agencies	
General Agency for Specialized Inspection –environment, health and safety inspectors	<ul style="list-style-type: none"> <i>Soum</i> environment, health, and safety inspectors will inspect project facilities and issue completion certificates
Construction contractor	<ul style="list-style-type: none"> Implement the EMP mitigation measures Team to include at least one qualified environment, health and safety officer to oversee EMP implementation Prepare site-specific EMPs (including health and safety plan) tailored to the subproject sites building on the measures in this project EMP Prepare monthly reports on EMP implementation and submit to PIU Report any spills, accidents, and grievances received, and take appropriate action
Capacity development consulting firm	<ul style="list-style-type: none"> Supervise construction contractors to ensure proper implementation of EMP
CSOs and other donors	<ul style="list-style-type: none"> Project will coordinate with existing CSOs as needed for any relevant initiatives in the project areas
Asian Development Bank (ADB)	<ul style="list-style-type: none"> Oversees project administration and timely execution of the loan agreements by the executing and implementing agencies Disburses loan proceeds Reviews procurement, consultant recruitment, progress reports, and audit reports Reviews project compliance and targets against the design and monitoring framework, EMP, SGAP, and project administration manual Monitors project progress and conducts review missions Discloses monitoring reports on ADB public website Serves as observer to the project steering committee

CPP = stakeholder consultation and participation plan, CSO = civil society organization, EMP = environmental management plan, GOM = Government of Mongolia, GRM = grievance redress mechanism, MOF = Ministry of Finance, MOFALI = Ministry of Food, Agriculture and Light Industry, PIU = project implementation unit, PSC = project steering committee, SGAP = social and gender action plan.

Source: Asian Development Bank.

C. Potential Impacts and Mitigation Measures

7. Table EMP-2 summarizes the potential impacts of the subproject subcomponents during project preparation, design, construction and operation, and the mitigation measures. The mitigation measures will be incorporated into detailed design, bidding documents, construction contracts and operational management manuals, by the design institutes (during detailed design) and contractors (during construction), under the supervision of the PIU and PSC. The effectiveness of the measures will be evaluated based on environmental inspections and monitoring to determine whether they should be continued, improved or adjusted

Table EMP-4: Environment Impact and Mitigation Measures during Pre-construction, Construction, and Operation Phases

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
A. DESIGN AND PRE-CONSTRUCTION PHASES				
Detailed design stage	Institutional strengthening for EMP implementation	<ul style="list-style-type: none"> At least 2 months before construction: <ul style="list-style-type: none"> (i) appoint PIU environment safeguard officer; (ii) establish project GRM, including contact details and training for project agencies Organize and conduct training on EMP for relevant agencies. 	PIU	MOFALI
	Preparation of Environmental Baseline Assessments	<ul style="list-style-type: none"> Prepare EBAs for the irrigation subprojects for which EBAs were not prepared during the project processing; Ensure General EIA Letters are issued for the EBAs; Assess the requirements in the General EIA Letters, including the need to prepare Detailed EIAs for the irrigation subprojects Assess whether the General EIA Letters, Detailed EIAs, and/or MET instructions, present new findings and/or require new mitigation or monitoring measures which are not already included in this project EMP. Submit these findings, including the translated General EIA Letter and other MET approvals, including for the Detailed EIA, to ADB for review. Update the project EMP as needed with these additional domestic requirements. PROJECT SAFEGUARD PERFORMANCE INDICATOR: No civil works for a subproject will proceed until all domestic environmental approvals are completed; the findings are provided to ADB; the project EMP is updated as needed; and the updated EMP is included in all relevant project tenders and bidding documents (see also below). 	PIU (for admin procedures), certified domestic firm (for EBAs, Detailed EIAs)	PIU, MET
	Detailed Engineering Designs and Preparation of Domestic Detailed EIA	<ul style="list-style-type: none"> Recruit domestic certified firm to prepare DEIAs; PIU environment safeguard specialist will: (i) facilitate recruitment and coordination of firm; (ii) review final decisions of MET and any safeguard conditions or mitigation measures; (iii) assess whether EMP needs updating; Prepare detailed engineering designs; For the output 2 subproject - support to IPAS research facility in Darkhan - which will include the provision of cold storage facilities, the cooling systems will be designed for the use of "R32", "R290" or other coolants with low-impacts to greenhouse gases. The designs will not use the coolant "R134a" Power requirements and sources will be confirmed (for pumps at irrigation schemes). If power is to be sourced from power stations then due diligence of these facilities will be undertaken. The designs and DEIAs are to be prepared in close coordination 	Certified domestic firm For cold storage - Goods provider (and PIU for tender specifications)	PIU, MET, MOFALI
	Updating EMP	<ul style="list-style-type: none"> Update mitigation measures defined in this EMP based on final detailed designs and DEIAs; Submit the updated EMP to ADB for review; In case of major changes of project location and/or additional physical components, 	PIU, MET	MET, ADB

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
		determine whether the change is minor or major and consult with ADB.		
	Establish baseline water quality	<ul style="list-style-type: none"> For surface water (and for groundwater using wells if they exist at Tsul-Ulaan, Khuren tal and Nogoon Khashaa schemes where the groundwater levels are in places near the surface). 	Contractor, EMA	PIU, MET
Construction Preparation	Environmental monitoring plan	<ul style="list-style-type: none"> Prior to construction, hire an EMA, to conduct environment monitoring in accordance with the EMP monitoring plan; Prepare detailed monitoring plan in accordance with the monitoring plan in this EMP. 	PIU	MOFALI
	Bidding and contract documents	<ul style="list-style-type: none"> Incorporate EMP mitigation measures into all bidding documents; Define spoil disposal sites and borrow pit locations in the construction tender documents; Bidding documents are sent to ADB for review; Ensure that the contractors recruited conform with, and implement, the domestic <i>Environmental Safeguard Clauses for Civil Works Contracts</i>; including that each contractor shall have a qualified environment specialist on the team, especially for contractors implementing any road works. Ensure that the contractors fulfill any additional domestic safeguard requirements that are not otherwise covered in this EMP. 	PIU	MOFALI
	EMP training	<ul style="list-style-type: none"> Provide training on construction environmental management, implementation, supervision, to contractors and the Capacity Development consulting firm, in accordance with the training plan in this EMP. 	PIU	MOFALI
	Establish GRM	<ul style="list-style-type: none"> Responsibility for GRM implementation is assigned to PIU environment and social specialists and <i>soum</i> government focal points; All agencies aware of, and trained in, the GRM, and will help support the environmental and social specialists when necessary; Key contact details for the GRM (phone number, fax, address, email) provided on the MOFALI, PIU and/or <i>soum</i> government public websites, and information boards at construction sites. 	PIU	MOFALI
	Location of work camps	<ul style="list-style-type: none"> Prior to any works, identify specific site locations for camps and assess these for adequacy of construction requirements and to minimize ecological and social impacts, especially to avoid sites along rivers or other environmentally sensitive areas 	Contractor	PIU
	Reconfirmation of borrow and spoil sites	<ul style="list-style-type: none"> Based on the finalized quantities of spoil needed calculated in the DEDs, identify the sites to be used and ensure they have sufficient capacity to provide the volumes needed; Obtain MET and <i>soum</i> governments approval for the required material volumes (rock, gravel) and site use. 	Contractor	PIU

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
B. CONSTRUCTION PHASE				
Topography and Soils	Earthwork, soil erosion, soil contamination	<ul style="list-style-type: none"> Construct intercepting channels to prevent construction runoff entering waterways; Divert runoff from sites to sedimentation ponds or existing drainage; Limit construction and material handling during periods of rains and high winds; Stabilize embankments, and other erosion-prone areas during works; Minimize open excavation areas and use compaction techniques for pipe trenches; Properly store petroleum products, hazardous materials and wastes on impermeable surfaces in secured and covered areas; Rehabilitate all spoil disposal sites and construction sites; Site rehabilitation will only use native plant species of local source; and/or sterilized seedlings (to avoid weed invasion); Situate construction camps and storage areas to minimize land area required; Remove construction wastes from the site to the approved disposal sites; For soil protection: preserve existing soil layer where practicable; if soil removal is required, strip and stockpile topsoil and cover (with geotechnical cloth) in accordance with Mongolian legislation; reuse topsoil for site rehabilitation; seed grass as soon as possible to minimize duration of ground exposure; use only sterilized seedlings (to avoid weed invasion); Limit construction and material handling during periods of rains and high winds; Properly slope or re-vegetate disturbed surfaces e.g. pipeline trenches and cut banks; Establish emergency preparedness and response plan for spills including cleanup equipment at each construction site and training in emergency spill response procedures; Stabilize earthwork areas within 15 days after earthworks have ceased at the sites. 	Contractor	PIU, Capacity Development consulting firm
Ambient Air	Dust generated by construction activities, gaseous air pollution (SO_2 , CO, NO_x) from construction machinery	<ul style="list-style-type: none"> Equip material stockpiles and concrete mixing equipment with dust shrouds; Spray water on construction sites and earth/material handling routes; Cover materials during truck transport; Store petroleum or other harmful materials in appropriate places; Ensure emissions from vehicle and machinery comply with Mongolian standards. 	Contractor	PIU, Capacity Development consulting firm
Noise and vibration	Noise generated from construction activities	<ul style="list-style-type: none"> Properly maintain vehicles and machineries to minimize noise; Apply noise reduction devices and methods for high noise equipment operating within 150 m of the sensitive sites (Section VI of IEE); Locate sites for rock crushing and concrete-mixing ≥ 500 m from sensitive areas; Prohibit operation of machinery generating high levels of noise, such as piling, and movement of heavy vehicles along urban and village roads between 18:00 and 08:00; Place temporary hoardings or noise barriers around noise sources during construction, if necessary; 	Contractor	PIU, Capacity Development consulting firm

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
		<ul style="list-style-type: none"> • Monitor noise at sensitive areas and consult residents at regular intervals (see monitoring plan in this EMP). If noise standards are exceeded, equipment and construction conditions shall be checked, and mitigation measures shall be implemented to rectify the situation; • Conduct interviews with residents adjacent to construction sites to identify and resolve issues, including adjustment of work hours of noise-generating machinery. 		
Surface water pollution	Impact of works on water quality and/or hydrology of project rivers	<ul style="list-style-type: none"> • Timing of works to avoid as far as possible peak rainfall (August); • Plan and implement construction in staged sections, with one section completed and stabilized before beginning the next; and, minimize open excavation areas; • Construct intercepting channels and drains to prevent runoff entering construction sites and to divert runoff from sites to existing drainage or open ground; • Contractors will develop actions for control of oil and other dangerous substances as part of their site EMPS; • Perform concrete casting, joints sealing, application of water-proofing paint or protective systems, and use of curing agents during the dry summer season to avoid pollution of waterbodies; • Install petrol/oil interceptors at each outfall; • Fuel storage, machinery maintenance workshop and vehicle cleaning areas will be stationed at least 200 m from waterbodies; • Storage facilities for fuels, oil, and other hazardous materials will be within secured areas on impermeable surfaces and provided with bunds and cleanup installations; • Contractors' fuel suppliers must be properly licensed and will follow established protocol for transferring fuel; • Labor camps will be located at least 200 m from waterbodies; • Portable toilets and on-site wastewater pre-treatment systems will be installed at construction camps along with proper maintenance protocols; • Monitor water (for turbidity) 	Contractor, EMA	PIU, Capacity Development consulting firm
	Impact of wastewater pollution	<ul style="list-style-type: none"> • Construction wastewater collected in retention ponds and filter tanks to remove silts and oil; • Machine wash-down sites are equipped with water collection basins and sediment traps; • Locate storage / cleaning areas for fuel, machinery and vehicles ≥ 500 m from waterways; • Storage facilities for fuels, oil, and other hazardous materials will be within secured areas on impermeable surfaces, and provided with bunds and cleanup installations; • Contractors to follow regulatory procedures for transferring fuel; • All earthworks along waterways will be accompanied by measures to minimize sediment runoff, including sediment traps. • Labor camps will be located ≥ 200 m from waterways; • Portable toilets and on-site wastewater pre-treatment systems will be installed at 	Contractor, EMA	PIU, Capacity Development consulting firm

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
		<p>construction camps along with proper maintenance protocols;</p> <ul style="list-style-type: none"> • Water quality at wastewater discharge points will be monitored by EMAs during construction (Table EMP-3). 		
Solid Waste	Solid waste generated by construction activities and from workers' camps	<ul style="list-style-type: none"> • Wastes will be reused or recycled to the extent possible; • Littering by workers will be prohibited; • Excavated soil will be backfilled onsite to the extent possible, or if not disposed of in the nearest <i>soum</i> government landfill sites; • Install waste collection and storage containers with lids (to exclude scavenging birds and animals) at locations away from surface water or sensitive spots; • Sort the waste (including organic waste such as food remains) and discard non-hazardous materials to the closest <i>soum</i> landfills; • Burning of waste is strictly prohibited; • Fecal waste from on-site portable toilets to be disposed by contractor at the closest wastewater treatment plant (WWTP). • Prohibit any final waste disposal on site. Waste incineration at or near the site is strictly prohibited. • Contractors will be held responsible for proper removal and disposal of any significant residual materials, wastes, spoil, that remain on the site after construction. 	Contractor	PIU, Capacity Development consulting firm
Hazardous materials	Inappropriate transportation, storage, use and spills	<ul style="list-style-type: none"> • A hazardous material handling and disposal protocol that includes spill emergency response will be prepared and implemented; • Storage facilities for fuels, oil, chemicals and other hazardous materials will be within secured areas on impermeable surfaces provided with dikes with a 110% volume, and at least 200 m from drainage structures and important water bodies. A standalone site within the storage facility will be designated for hazardous wastes; • Signs will be placed at chemicals and hazardous materials storage sites to provide information on the type and name of chemicals and hazardous materials (paint, solvent, lubricants); • Suppliers of chemicals and hazardous materials must hold proper licenses and follow all relevant protocols and Mongolian regulations and requirements; • Contractors must prepare a plan for hazardous waste disposal with the <i>aimag</i> and <i>soum</i> environment inspectors, which is in line with the <i>soum</i> waste handling operational plan and environmental protection management plan. • Laboratory chemicals of the Institute for Plant Protection: (i) will be stored in a specified and locked room, with limited access; (ii) handling of the chemicals will be by qualified staff only; (iii) waste chemicals will not be discharged into drains but will be collected in closed containers and stored in the locked chemicals room; and (iv) the full containers will be periodically collected by a certified agency for hazardous waste collection, which 	Contractor, IPP	PIU, Capacity Development consulting firm

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
		will also treat and dispose the liquid waste in accordance with national procedures.		
Ecological values	Protection of flora and fauna	<ul style="list-style-type: none"> • Strictly prohibit the hunting, killing, consumption, and/or trade of native flora and fauna (including native rodents) by all staff. Training provided by Capacity Development consulting team. • Immediately inform the PIU in case an injured endangered or threatened species is found (fauna or flora); • For all works adjacent to vegetation, prior to construction, demarcate vegetation e.g. vegetated roadsides, trees, riverbanks; • As far as possible avoid clearance of any vegetation; • Pre-inspection of trees to be removed, to ensure no nesting fauna are present; • Soil stabilization after tree removal, to avoid local erosion; • If local communities or residents are not interested in obtaining the cut trees, transport cut vegetation to approved waste landfill within 2 days; • Conduct offset planting to replace the trees removed, at a ratio of 1:10, as close as possible to the affected site • Use only native plant species of local provenance (i.e. sourced locally) for all re-vegetation; • Maintain the planted seedlings until the start of project operation and then hand over responsibility for maintenance to the <i>soum</i> government; • Maintain strict speed limits (maximum 50 km/h) for work vehicles; • Restrict construction activity and project vehicle activity between 18.00 and 06.00 to minimize the risk of collisions with fauna at night • To reduce the risk of spreading weeds, pest animals, and/or soil-based organisms, the project will allow only use of native plant species. • All re-vegetation activities under the project, including for the rehabilitation of construction sites, and for landscaping, will be subject to operation and maintenance procedures after planting, to ensure the planted vegetation is adequately protected and maintained. • To avoid soil and water pollution, no pesticides and no top-dressing fertilizers will be used for any of the re-vegetation, planting, or landscaping activities under the project 	Contractor, Capacity Development consulting firm	PIU, Capacity Development consulting firm
Socio-economic resources	Protection of physical cultural resources and sacred areas	<ul style="list-style-type: none"> • Implement the following chance-find procedure at all sites, if an artefact is found: • Stop works immediately; notify <i>soum</i> government, park administration, PIU, Ministry of Education, Culture and Science; isolate site; document and photograph it; await specific instructions from Ministry of Education, Culture and Science on how to manage the site and for approval to proceed with works 	Contractor	PIU, Capacity Development consulting firm, Ministry of Education, Culture and Science

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
	Community health and safety; and potential interruptions to power supply or other public services	<ul style="list-style-type: none"> • Signs will be placed at construction sites informing people of the project GRM, potential dangers (e.g. moving vehicles, hazardous materials, excavations) and safety issues; • Prior to works, re-confirm the planned construction schedule and site EMP actions; • Information disclosure. Villagers, residents and businesses will be informed in advance through media and information boards at construction sites of the construction activities, given the dates and duration of expected disruption; • Posting of billboards on road/lane closure, traffic rerouting plan at strategic places, at least 1 week prior to works; • Prepare and implement a traffic control plan, for approval by local traffic management administration before construction. This will include scheduling or diverting construction traffic to avoid peak hours, regulating traffic at road crossings, selecting routes to reduce disturbance, reinstating roads, and opening them to traffic when construction is completed; • Posting of traffic (flag) persons during entire working hours; • Spread out the schedule for materials delivery in non-peak hours; • Efficient management of truck arrival/ departure; • In case of accidental interruption, immediately inform affected communities and assist with water supply until the issue is resolved; • Heavy machinery will not be used at night; • All sites will be secured from unauthorized public access. • Public consultations on work phasing and schedules, anticipated access blocking, provisions for safe access for blocked properties and temporary parking for blocked garages/driveways; • Provision of safe access, if needed, to blocked properties, e.g., steel planks of adequate grade, width and length, and if necessary, with guide rail; • For power utilities, coordinate with <i>soum</i> governments and power substations as needed and establish contact arrangements and procedures in case of accidental damage to power lines. • In case of accidental interruption, immediately inform affected communities and assist with water supply until the issue is resolved. 	Contractor	PIU, Capacity Development consulting firm
	Occupational health and safety	<ul style="list-style-type: none"> • Prepare environmental, health and safety plan, to include: i) Clean and sufficient supply of fresh water for construction sites, camps, offices; ii) Sufficient latrines and other sanitary arrangements at construction sites and work camps; iii) Garbage receptacles and regular emptying; and iv) Provide safety clothing to workers as needed (e.g. boots, helmets, gloves, goggles, ear protection) in accordance with health and safety regulations; • Emergency response plan prepared and approved by <i>soum</i> governments and LASI. Establish emergency phone links with township hospitals. Maintain a first-aid base in each 	Contractor	PIU, Capacity Development consulting firm

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
		<p>construction camp;</p> <ul style="list-style-type: none"> Establish a records management system for occupational accidents, diseases, incidents. The records will be reviewed during compliance monitoring and audits; Safety communication. Ensure that occupational health and safety matters are given a high degree of publicity to all persons on-site. Display posters prominently; Training, awareness and competence. Train all workers in basic sanitation, health and safety matters, and work hazards. Implement awareness and prevention program for HIV/AIDS and other diseases – target the local community and construction workers; Core labor standards will be implemented. Civil works contracts will stipulate priorities to: (i) employ local people for works; (ii) ensure equal opportunities for women and men; (iii) pay equal wages for work of equal value and pay women's wages directly to them; and (iv) not employ child or forced labor; <p>CONTRACTOR PERFORMANCE TARGET: Camps clean, emergency response plans in place, and 100% of workers aware of emergency response procedures.</p>		
	Community consultation	<ul style="list-style-type: none"> Hold meetings with residents at construction sites prior to the start of any works; Document community feedback and solutions to any concerns raised; Update contractor site plans as needed to incorporate the solutions, including revisions in work schedules, daily working hours, construction methods, and/or mitigation methods; Revise monitoring schedules and criteria as needed to reflect the updated contractor site management plans. 	Contractor, Capacity Development consulting firm, PIU	MET
C. OPERATION PHASE				
Operation and maintenance	Routine maintenance and repair	<ul style="list-style-type: none"> Conduct capacity building of project agencies responsible for O&M of project facilities; Prepare O&M procedures for each project-funded facility; Integrate O&M maintenance activities into existing work program of the agencies; Ensure all preparations for timely handover of facilities from the contractors to the agencies are ready at least 2 months before expiry of the Defect Liability period 	Capacity Development consulting firm, PIU, Soum government	MOFALI, soum and aimag government, LASI
Occupational health and safety	Personnel safety during operations	<p>Establish emergency risk and response plan to guide operations in the event of on-site injuries, spills, or other issues. In line with World Bank EHS Guidelines:</p> <ul style="list-style-type: none"> Identify procedures for responding to types of emergencies; Train all staff for key responsibilities under the plan, including new staff, and when facilities begin, and with new equipment Procedures for immediate on-site action: first responder will assess the nature of the report – status of the emergency, estimate of how the incident might progress, and evaluation of the manpower, equipment, and materials needed to adequately cope with the situation. 	Operator of facility	MOFALI, soum and aimag government, LASI

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
		<ul style="list-style-type: none"> If there is a strong odor or any measurable reading of gas detected inside a structure: clear the building of all occupants; eliminate potential ignition sources; localize or isolate the problem and shut off the gas as needed; determine the extent of the hazardous area and establish a restricted area. Responding supervisor shall determine the extent of the emergency and inform the dispatcher of the condition at the site. All employees reporting to the scene of the emergency will report to the command post for identification and instructions. Key personnel will be alerted and responsible to keep the emergency personnel under their supervision informed and available Notify local fire department, police, medical emergency center and other relevant public officials. Prepare an emergency call list 		
Non-point source pollution	Pollution of soil and/or water from agricultural chemicals	<ul style="list-style-type: none"> Minimize the use of agricultural chemicals through the project designs for farmer training, drip irrigation, and conversion from chemical to organic fertilizers No pesticides classified as “hazardous” or for restricted-use by WHO or the government will be used for the project (including omethoate and methamidophos, used in People’s Republic of China) For surface water (and for groundwater using wells if they exist at Tsul-Ulaan, Khuren tal and Nogoon Khashaa schemes where the groundwater levels are in places near the surface), monitoring undertaken 	Farmers, <i>Soum</i> government, PIU, MET	MOFALI, MET, LASI
Water availability	Unsustainable abstraction from rivers	<ul style="list-style-type: none"> Annual reporting of surface water flows utilizing daily data from river gauges collected by the Center for Meteorology, Hydrology and Environment. Active operation of intake gates to control flow of water to schemes during low water availability periods to ensure equitable and sustainable distribution of water 	PIU to collect data from Hydrology Center, <i>Soum</i> government (later possibly river basin administration) for gate operations	MET, MOFALI, PSC
Safe handling of chemicals	Occupational health and safety	<ul style="list-style-type: none"> A registry of all activities that involve the handling of potentially hazardous substances will be developed, including protocols for the storage, handling and spill response at the Institute for Plant Protection. Laboratory chemicals will be stored in a specified and locked room, with limited access; 	IPP	MOFALI, LASI

Item	Potential impacts / issues	Mitigation measures	Implement	Supervise
		<ul style="list-style-type: none"> • Handling of the chemicals will be by qualified staff only; • Waste chemicals will not be discharged into drains but will be collected in closed containers and stored in the locked chemicals room; • Full containers will be periodically collected by a certified agency for hazardous waste collection, which will also treat and dispose the liquid waste in accordance with national procedures. 		
Solid waste	Safe collection and disposal	<ul style="list-style-type: none"> • Install litter bins and waste collection containers at subproject sites in line with the <i>soum</i> waste handling operational plan and environmental protection management plan. • Training for farmers on responsible disposal of packaging; • Discussions between community grower groups and <i>soum</i> (and <i>aimag</i>) governments on options for safe disposal and potential recycling options in line with the <i>soum</i> waste handling operational plan and environmental protection management plan, and awareness raising provided to farmer groups on safe disposal of plastics, reduction, recycling and re-use; • Ensure timely disposal of non-hazardous materials at <i>soum</i> landfill site 	<i>Soum</i> government, Facility operators, PIU, Capacity Development firm and Facilitation Partner	MOFALI, LASI

ADB = Asian Development Bank, CSC = construction supervision company, DED = detailed engineering design, EA = executing agency, EMA = Environmental Monitoring Agency, GRM = grievance redress mechanism, LASI = local agency for specialized inspection, MET = Ministry of Environment and Tourism, MOFALI = Ministry of Food, Agriculture and Light Industry, PAM = project administration manual, PIU = project implementation unit, TOR = terms of reference, WWTP = wastewater treatment plant.

Source: Asian Development Bank.

D. Environment Monitoring, Inspection, and Reporting

8. Environmental monitoring and inspection will consist of: (i) environmental impact monitoring; and (ii) EMP performance verification. Environmental impact monitoring will cover ambient air quality, noise, surface water quality, and community health and safety, during construction and the first year of operation; and workers health and safety during construction. EMP performance verification will monitor the performance of the design consultants, contractors, operators, PIU, and other relevant agencies in complying with the EMP. Monitoring shall comply with the methodologies provided in the relevant national environmental monitoring standards. Other associated standards to be followed are the national environmental quality standards of ambient air, surface water, noise and the pollutant discharge standards. The environmental impact monitoring is in Table EMP-3; the compliance monitoring is in Table EMP-4; and the project environmental safeguards reporting is in Table EMP-5.

Table EMP-5: Project Environmental Impact Monitoring Plan

Subject	Parameter/Method	Location	Frequency	Implement	Supervise
A. Construction Phase					
Air Pollution	Ambient dust monitoring (TSP) Visual/compliance inspection of implementation of air pollution control measures	Boundaries of the subproject construction sites	Daily to weekly during construction season	Contractor	PIU
Noise	Ambient noise monitoring (day and night Leq dB(A)) using a portable monitoring device following the Mongolian requirements	Boundaries of the construction site and sensitive receptors ≤ 150 meters	Weekly during construction	Contractor	PIU
Water quality	Turbidity, pH, conductivity, temperature, and petroleum products (fuel, fluids and lubricants)	Boundaries of the construction site and sensitive receptors ≤ 200 m from rivers, intakes	Weekly during construction	Contractor	PIU
Solid Waste	Compliance inspection of implementation of solid waste management measures	Waste collection and disposal sites	Monthly during construction	Contractor	PIU
Hazardous and Polluting Materials	Compliance inspections of implementation of hazardous materials management measures	Storage facilities for fuels, oil, chemicals and other hazardous materials. Vehicle and equipment maintenance areas.	Monthly during construction	Contractor	PIU
Flora and Fauna	Compliance inspection to ensure mitigation measures are being implemented	Construction site	Weekly to monthly during construction	Contractor	PIU
Compliance with EMP mitigation measures	As specified in the EMP	Boundaries of construction site	Weekly	Contractor	PIU

Subject	Parameter/Method	Location	Frequency	Implement	Supervise
Health and Safety and Emergency Response	Compliance inspection of occupational and community health and safety measures including traffic control, records on the near miss, minor, major, fatal accidents; and emergency response plan	Construction site	Monthly during construction	Contractor	PIU
B. Operation Phase					
Solid Waste	Compliance inspection of operation phase solid waste management measures implementation	Subproject site	Annual	Operator	MOFALI
Compliance with EMP mitigation measures	As specified in the EMP	Boundaries of the subproject sites	Weekly	Operator	MOFALI
Health and Safety and Emergency Response	Compliance inspection of operation phase occupational and community health and safety management measures including keeping records on the near miss, minor, major, fatal accidents and an Emergency Response Plan implementation	Subproject site	Annual	Operator	MOFALI
Environmental acceptance	Compliance testing for environment acceptance	Subproject site	Once	Operator	MOFALI
Water use	Water extraction volume	Intake of the irrigation subprojects	Monthly reading of intake valve	Operator	MOFALI
Surface and ground water quality	Nitrogen, potassium, and phosphorous levels – comparison against national water quality standards	Surface water – 12 schemes, but key focus on 3 schemes: Yolton , Iven Gol, Dulaanii Tal (as additional fertilizer will be added due to low soil nutrient levels). 2 monitoring points: 100 m and 500 m downstream of scheme Groundwater – 6 schemes: Yolton , Iven Gol, Dulaanii Tal (see above); and Tsul-Ulaan, Khuren tal and Nogoon Khashaa schemes (groundwater near surface). At least 1 monitoring point	Monthly	EMA	MOFALI

Subject	Parameter/Method	Location	Frequency	Implement	Supervise
		per subproject, downstream of scheme			

ADB = Asian Development Bank, CSC = construction supervision company, DED = detailed engineering design, EA = executing agency, EMA = Environmental Monitoring Agency, GRM = grievance redress mechanism, LASI = local agency for specialized inspection, MET = Ministry of Environment and Tourism, MOFALI = Ministry of Food, Agriculture and Light Industry, PAM = project administration manual, PIU = project implementation unit, TOR = terms of reference, WWTP = wastewater treatment plant.

Source: Asian Development Bank.

Table EMP-6: Environmental Management Plan Performance Monitoring (compliance monitoring)

Parameter	Location	Method	Frequency
Construction Phase			
Mitigation measures implemented as per EMP	All works	Visual inspection, public consultations, review of lodged grievances, review of workers accidents and sick leave	Weekly; daily for peak construction and/or at sensitive sites
Grievances addressed promptly as per GRM	All works	Review of lodged grievances. Consult local authorities	Regular bi-weekly and random. At least once a week
Engineering investigation after any storms, seismic, or extreme weather event; remediation works as needed	All works	Review of investigation and remediation works report.	At the latest 1 week after each event
Operation Phase			
Grievances addressed promptly as per GRM All works Review of lodged grievances. Consulting village authorities. Annually		Review of lodged grievances. Consulting village authorities	Annual
Engineering investigation after any storms, seismic, or extreme weather event; remediation works as needed		Review of investigation and remediation works report.	Up to 1 week after each event

EMP = environmental management plan, GRM = grievance redress mechanism, PIU = project implementation unit.

Note: for all parameters, the responsibility for implementation will be the contractor, supported by the construction supervision company; and responsibility for supervision is the PIU

Table EMP-7: Environmental safeguards reporting plan

Report	From	To	Frequency
Construction Phase			
Internal progress reports	Consulting firm	PIU	Monthly
External reports	EMA	PIU	Semi-annual
Environmental acceptance monitoring and	PIU	MOFALI, soun	Within 3 months

audit reports		government	after component completion
Compliance Monitoring with EMP progress reports	PIU	ADB	Semi-annual
Operation Phase			
EMP progress reports	PIU	ADB	Semi-annual

ADB=Asian Development Bank, EMA = environmental monitoring agency (recruited by contractor), EMP =environmental management plan, MOFALI = Ministry of Food, Agriculture, and Light Industry.

E. Institutional Strengthening and Capacity Building

9. MOFALI is experienced in the implementation of ADB projects but the *aimag* and *soum* governments are not. To ensure effective implementation of the EMP, a capacity building program will be implemented. Training will focus on the mitigation measures, monitoring, and reporting requirements in this EMP, and will be conducted by the PIU Environment Safeguard Specialist and Social and Gender Specialist, with facilitation and support from the *aimag* and *soum* government, and the General Agency for Specialized Inspection and its local (*aimag* and *soum*) inspectors. Trainees will include MOFALI, contractors, the Capacity Development consulting firm, and *soum* agricultural, environment, and water officials as relevant.

10. The PIU will organize the safeguard trainings. The training shall include, but not be limited to: (i) coordination with the PIU procurement specialist for inclusion of the EMP and other relevant environmental clauses in the bidding documents for the project works; (ii) minimizing waste at source; (iii) respecting and protecting flora and fauna at site; (iv) proper handling of the waste; (v) occupational health and safety measures during work and emergency preparedness in case of incidents; (vi) establishment and implementation of the GRM; (vii) implementation of the mitigation and monitoring measures; and, (vi) reporting. The training program is shown in Table EMP-8.

Table EMP-8: Project Environment Safeguard Training Program

Topic	Scope	Trainer	Trainee	Time	Days	Persons
Procurement and contract management (emphasize EMP implementation)	<ul style="list-style-type: none"> • ADB procurement guidelines • Bidding document and contract preparation, including EMP clauses • Risk of improper procurement and mitigation measures, and handling variation orders and contract management 	PIU, ADB	MOFALI	2	2	15
Implementation of EMP	<ul style="list-style-type: none"> • Roles, responsibilities, monitoring, inspection, reporting in EMP • Environment monitoring program • Mitigation measures • Closure plans and remediation of landfill sites and wastewater pits • Public consultation and participation • GRM implementation, coordination, reporting, working with the public • Environment, health and safety during project construction and operation for workers and the community • Prevention and control of transmissible diseases and HIV/AIDS 	PIU	MOFALI, <i>soum</i> , <i>aimag</i> government, contractors, Capacity Development consulting firm	2	2	90
Ecological management	<ul style="list-style-type: none"> • Management and conservation of natural habitats (forests, wetlands) and biodiversity 	PIU	As above	2	2	80

	<ul style="list-style-type: none"> Maintenance of planted vegetation and habitats Point and non-point pollution control 					
Solid waste management (SWM)	<ul style="list-style-type: none"> Organizational arrangements and responsibilities SWM principles and hierarchy Waste streams, types and sources SWM facilities 	PIU	As above	2	10	20
Hazardous waste management	<ul style="list-style-type: none"> Management procedures (collection, recovery, recycling and disposal) and support documents Hazardous waste management procedures Monitoring, surveillance and reporting Setting objectives and targets Communication and public awareness plan 	PIU	As above; IPP			
Sanitation management	<ul style="list-style-type: none"> Wastewater collection management 	PIU	As above	2	10	20
Climate change resilience	<ul style="list-style-type: none"> Energy saving, GHG emission reduction Carbon sink by revegetation 	PIU	As above	2	1	80
Total				14	28	385

F. Grievance Redress Mechanism

11. A project grievance is defined as an actual or perceived project-related problem that results in a complaint by an affected person. The PIU will work proactively toward preventing grievances through the implementation of mitigation measures and community consultations. To address any complaints that do arise, this project grievance redress mechanism (GRM) will be established. The GRM is a simple and time-based process for receiving, recording, and addressing project-related grievances transparently and quickly. The GRM will be accessible to diverse members of the local communities, including more vulnerable groups such as women, youth and elderly. Multiple points of entry, including face-to-face meetings, written complaints, telephone calls, or e-mail, will be available. Opportunities for confidentiality and privacy for complainants will be honored where requested. The GRM does not impede or replace legal procedures and the Mongolian judicial system.

12. In Mongolia, residents' complaints or concerns are generally communicated taken to the bagh (village) or *soum* representatives, and this system has been integrated into the GRM.

13. The PIU Environment Safeguard Specialist and Social and Gender Specialist will be the lead coordinators for GRM implementation. All project agencies and staff will be trained in the GRM and will take an active role in supporting these staff as and when necessary. The PIU will establish a GRM tracking and documentation system, instruct all project agencies in the GRM procedures, conduct daily coordination with project agencies, arrange meetings and conduct site visits as necessary, maintain the overall project GRM database, and prepare the reporting inputs for progress reports to ADB. In each subproject the *soum* government will nominate a focal person for the GRM. The names and contact details of the PIU and *soum* focal points will be disseminated to the project agencies and communities. Upon receiving any complaints, the *soum* focal points will immediately inform the PIU Environment Safeguard Specialist and Social and Gender Specialist.

14. Once a complaint is received and filed, MOFALI and PIU will identify if complaints are eligible. Eligible complaints include those where (i) the complaint pertains to the project; and (ii) the issues arising in the complaint fall within the scope of environmental issues that the GRM is authorized to address. Ineligible complaints include those where: (i) the complaint is clearly not project-related;

(ii) the nature of the issue is outside the mandate of the environmental GRM; and (iii) other procedures are more appropriate to address the issue. Ineligible complaints will be recorded and passed to the relevant authorities and the complainant will be informed of the decision and reasons for rejection. The procedure and timeframe for the GRM is as follows; and see Figure EMP-1.

- **Stage 1 (5 calendar days):** If a concern arises during construction or operation, the affected person may submit a written or oral complaint to the contractor (construction phase), operator of the project facility (operation phase), *soum* focal point, other local authorities, PIU, or any level of authority they are comfortable with. The contractor will: (i) respectfully acknowledge the issue and immediately stop the causal activity (e.g. on-site construction causing high noise levels to a nearby household); (ii) not resume the activity until the complaint has been resolved; (iii) inform the PIU of the incident on the same day of the incident occurring and how the contractor has responded or will respond; (iv) give a clear reply to the affected person within two calendar days; and (v) as far as possible, resolve the problem within five calendar days from receiving the complaint. The contractor will keep the PIU fully informed at all stages. The PIU will inform the implementing agency and *soum* government of the incident within one working day of being informed by the contractor; and, subsequently keep these parties informed at all stages.
- **Stage 2 (5 calendar days):** If the issue cannot be resolved in Stage 1, after five calendar days, the PIU will take over responsibility. Eligibility of the complaint will be assessed and a recommended solution given to the complainant and contractors within two calendar days. If the solution is agreed by the complainant, the contractors and/or facility operators (in operation) will implement the solution within five calendar days from the PIU taking over responsibility of the complaint. Written records will be made of all stages and outcomes. At the expiration of Stage 2, PIU will inform ADB of the outcome.
- **Stage 3 (15 calendar days):** If no solution can be identified by the PIU, and/or the complainant is not satisfied with the proposed solution, the PIU will organize, within seven (7) calendar days, a stakeholder meeting (including the complainant, contractor and/or operator of the facility, PIU, and *soum* government). A solution acceptable to all shall be identified including clear steps. The contractors (during construction) and facility operators (during operation) will immediately implement the agreed solution. All attempts will be made to fully resolve the issue within 15 calendar days. Written records will be made of all stages and outcomes. At the expiration of Stage 3, PIU will inform ADB of the outcome.

15. The implementing agency shall bear any and all costs of implementing the GRM, including meeting, travel, and/or accommodation costs of the government staff or affected person. The GRM will be implemented throughout project construction and at least the first year of operation for each irrigation scheme. The PIU will include any grievances, steps taken, and results, within the semi-annual reports to ADB.

16. **Accountability mechanism.** ADB implements an “accountability mechanism” as a forum where people adversely affected by ADB-assisted projects can voice and seek solutions to their problems and report alleged noncompliance of ADB's operational policies and procedures. The policy is available at: <http://www.adb.org/documents/accountabilitymechanism-policy-2012>. The mechanism is designed to: (i) enhance ADB's development effectiveness and project quality; (ii) be responsive to the concerns of project-affected people and fair to all stakeholders; (iii) reflect the highest professional and technical standards in its staffing and operations; (iv) be as independent and transparent as possible; and (v) be cost-effective, efficient, and complementary to the other supervision, audit, quality control, and evaluation systems at ADB. The mechanism provides two approaches to which affected persons may apply: (i) review of perceived grievances and complaints,

which is undertaken by ADB's Office of Special Project Facilitator (OSPF); and (ii) review of whether non-compliance with ADB's policies has occurred, which is undertaken by ADB's Compliance Review Panel.

17. The PIU, in its trainings and consultations, shall inform project stakeholders about the Accountability Mechanism. As far as possible, attempts should first be made to resolve any grievances through the project GRM, before applying to the Accountability Mechanism.

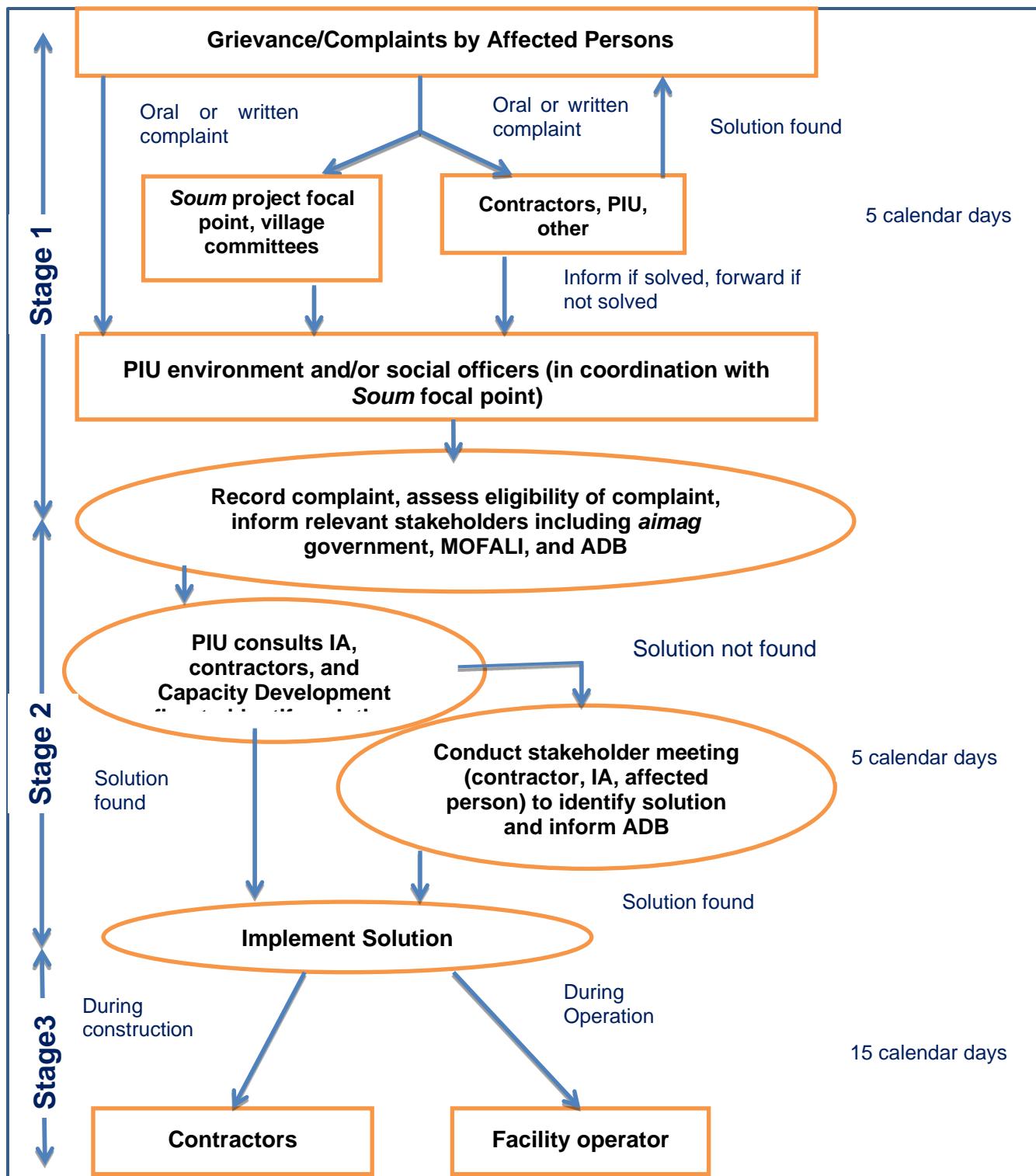


Figure EMP-1: Project Grievance Redress Mechanism (GRM)

ADB = Asian Development Bank, IA = Implementing Agency (MOFALI), PIU = project implementation unit, SAR = semi-annual report.

G. Public Consultation and Awareness Raising

18. Public consultations were conducted during project preparation and will continue throughout the project implementation. The public consultations will raise awareness of project activities, especially those which may impact the public such as noise or dust. A public consultation plan is in the table below. This includes public participation in evaluating environmental benefits and impacts. The PIU will be responsible for facilitating the public consultations, with support from all project agencies. The plan complements the consultation and participation plan (CPP) for the overall project (see project administration manual).

Table EMP-9: Public Consultation and Participation Plan for Environment Safeguards

Organizer	Approach	Frequency	Subject	Participants
Construction				
PIU	Questionnaires, site visits, and/or informal interviews	At least four times/year during peak construction	Construction impacts; adjusting mitigation measures; feedback	Workers, residents in construction areas
	Public workshops	At least twice per year during peak construction	EMP implementation progress; construction impacts; adjusting mitigation measures; feedback	Residents, social sectors
Operation				
PIU, operators of project facilities	Public consultation and site visits	At least once in first year of operation	Effects of mitigation measures, impacts of operation, feedback	Residents adjacent to project facilities
	Public workshop	As needed based on public consultation	Effects of mitigation measures, impacts of operation, feedback	Residents, social sectors
	Public Satisfaction Survey	At least once after one year of operation	Comments and suggestions	Project beneficiaries

EMP = environment management plan, PIU = Project Implementation Unit.

H. Expenses for EMP Implementation

19. The expenses for EMP implementation will be for implementation of the mitigation measures, impact monitoring, performance monitoring, capacity building, GRM implementation and reporting. The costs for implementation of the mitigation measures and impact monitoring will be funded through the contractor packages. The costs for performance monitoring, capacity building, GRM implementation, and reporting will be funded through the salaries for the PIU team, especially the position of PIU Environment Safeguard Specialist, and training/workshop budget.

I. Mechanisms for Feedback and Adjustment

1. Based on the established project environmental monitoring and reporting systems, MOFALI and the PIU shall assess whether further mitigation measures are required as corrective actions, and/or whether improvement in environmental management practices are required. The effectiveness of mitigation measures and monitoring plans will be evaluated as part of the project reporting. If the PIU identifies a substantial deviation from the EMP, or if any changes are made to the scope of the subprojects that may cause significant adverse environmental impacts or increase the number of affected people, then the PIU shall immediately consult MOFALI and ADB for feedback and/or approval to update the EMP. If necessary, further public consultations will be undertaken. The revised project IEE, including this EMP, will be submitted to ADB for review, appraisal, and public disclosure. The revised EMP will be passed to the contractors, Capacity Development consulting firm and operators of the project facilities for implementation.

APPENDIX 6: RESETTLEMENT FRAMEWORK

I. INTRODUCTION

A. Project Description

1. The primary objective of the proposed project is to support the government's effort of expanding local agricultural production (vegetables) for increasing domestic demand, reducing climate vulnerability, and improving employment opportunities and income for rural households. The project will be aligned with the following impact: Income generation and enterprise support for smallholder vegetable farmers increased. The project outcome will be: Efficiency of climate resilient agricultural production and marketing increased. The proposed outputs are.

- **Output 1: Efficient and climate-resilient irrigation infrastructure and management systems installed.** This output will focus on (i) upgrading, modernizing, and climate-proofing irrigation and (if needed) drainage infrastructure; and (ii) strengthening coordination and management of irrigation services, irrigated land areas, including storage ponds and canals in irrigation systems, ensuring irrigation supplies for agricultural land. The project will finance remodeling and improvement of main, secondary, and tertiary canals, drainage facilities (where required), flood management facilities, and associated structures.
- **Output 2:** Climate smart agriculture production systems improved. Through this output, the project aims to improve productivity and resilience of agriculture production systems, focusing specifically on (i) improving the quality of inputs, specifically the production of high-yielding and climate-resilient vegetable seeds, and (ii) measures to combat crop damage from pests (rodents) and improve the quality of pesticides on the market (and test for their occurrence in food products).
- **Output 3: Technical Institutional, and management capacity and coordination strengthened.** Through this output, the project aims to improve efficiency and increase farmers' share of the value addition along the value chain, focusing on production, storage, and to a limited extent the marketing of vegetables. The project will finance investments in small-scale civil works, equipment and extension services (training) for climate-smart vegetable production (including post-harvest storage facilities).

2. The proposed project will cover 12 selected irrigation schemes in 3 regions (Western, Central, and Eastern), 9 aimags and 12 soums.

B. Works to be Undertaken under the Project

3. The project aims to upgrade and modernize a number of the existing irrigation systems that have fallen into disrepair. The functional deterioration for some of these schemes is substantial, to the extent that virtually new schemes have to be designed and built. The work required includes: i) upgrading and/or reforming intake headworks and associated water storage and sediment management facilities; and ii) redevelopment of secure main and distributary canals, with gated flow control structures. Wherever feasible, use will be made of the existing infrastructure, with or without structural upgrade, to improve overall water flow and distribution management to the command areas.

4. Due diligence has confirmed that the project will not require any land acquisition or involuntary resettlement as no ownership rights have been issued in all the irrigation schemes areas. Therefore, all the land of the 12 irrigation schemes is owned by the soums governments.

In addition, when an existing canal network is present and will be upgraded, the works will be undertaken within the footprint of the existing canal network. Therefore, the project is categorized "C" for Involuntary Resettlement (IR)

5. For the Nogoon Khashaa irrigation scheme (Uliastai soum Zavkhan aimag), the existing canal, built in 1974, is going through a built-up area. A total of 8 households and one company have been issued possession or ownership rights on the adjacent land along the canal (see Figure 1 below). The canal will be lined canal and will be covered at the locations nearby the lands involving possession/ownership rights of these households/company (to limit contamination of water and to provide safety). The current design can be changed to a pipe (without realignment) after detailed investigation during detailed design. The RoW will be 1.2m which is approximately the same as the current RoW width. No permanent LAR impacts are anticipated.

6. The households/company have agreed to provide access to workers for the upgrading of the canal during construction and for Operation & Maintenance as needed.³⁵ The owners recognize that the canal is public land and they will not claim any rights on the canal (See Annex 1).

7. However, the Nogoon Kashaa irrigation scheme may involve some temporary impacts during project construction (e.g., structures like walls may be affected or land occupied temporarily). This Resettlement Framework has been prepared to manage such impacts during construction and any other unforeseen impacts that may arise during project implementation.

³⁵ For the HH that is not currently available in the village, best efforts will be done to find and seek this HH's written agreement prior to construction.

Figure 1: Main Canal Going through a Built-up area in Nogoon Khashaa Irrigation Scheme (Uliastai soum, Zavkhan aimag)



II. LEGAL FRAMEWORK AND ADB SAFEGUARD POLICY STATEMENT

A. Mongolian Laws and Regulations.

8. In Mongolia there is no dedicated and comprehensive law that regulates issues of land acquisition and resettlement. Although the Constitution of Mongolia has provisions that justify exercising of eminent domain power, none of the land related legislation provides the power of eminent domain to the state or any other entity. According to the current Mongolian legislation, any land acquisition, including the ones for public needs such as land for public sewer main collector pipes, shall take place through negotiation and agreement. If negotiations fail, then the case must be resolved at the courts. The laws are silent on land expropriation, but do provide provisions on exchange of land or taking over land with compensation for state special needs. However, the related procedures are incomplete, imprecise and fail to properly protect the rights of affected persons and property rights. The basic legislative framework for LAR and related issues consists of: i) Constitution of Mongolia, ii) Law on Land, iii) Law on Allocation of Land to Mongolian Citizens for Ownership and iv) Civil Code of Mongolia. In addition to these laws, Annex 4 of the Government Decree No. 28 from 2003, "Regulation on Taking Over Land for and Releasing Land from State Special Needs", is used in the LAR activities.

B. ADB Involuntary Resettlement Policy Requirements.

9. The 2009 ADB Safeguard Policy Statement outlines the requirements that ADB borrowers/clients are required to meet in delivering involuntary resettlement safeguards to ADB supported projects. The overriding objectives of the safeguards are: "*to avoid involuntary resettlement wherever possible; to minimize involuntary resettlement by exploring project and design alternatives; to enhance, or at least restore, the livelihoods of all displaced persons in real terms relative to pre-project levels; and to improve the standards of living of the displaced poor and other vulnerable groups.*"

10. The ADB's IR safeguards state that eligibility includes all people with formal legal rights to affected land (in whole or part) and those who have claims to the affected land that is recognized under national laws. People without formal legal rights or recognized claims, but who have occupied the land or structure prior to the agreed upon and publicized cut-off date, are eligible for compensation for non-land assets and resettlement assistance.

11. The ADB's IR principles also describe the compensation and assistance that will be provided, including: adequate and appropriate replacement land and structures, or cash compensation at full replacement cost without depreciation, transaction costs, accrued interest, transitional/restoration costs and any other payments; preference for land-based (not cash) resettlement strategies; assistance with relocation and improved housing with comparable access to employment/productive opportunities, civic infrastructure and community services; transitional support and development assistance; and opportunities to share in project benefits. For those who are economically displaced, they will be compensated for loss of income, and as well be assisted in restoring, and where possible improving, their earning capacity, production levels and standard of living.

C. Assessment of Policy Gaps.

12. There are several significant policy gaps between the Mongolian legal framework and the ADB IR safeguards. According to Mongolian law or practice: (i) non-titled occupants of land (without ownership or possession license), including lessees of land and structures, are not

eligible for compensation and rehabilitation entitlements; (ii) income and livelihood rehabilitation is not normally considered in local land acquisition practice; (iii) transaction costs are not included in compensation payments; (iv) there are no project internal grievance procedures preceding dispute resolution by governors and the courts; (v) public consultation and information disclosure is not practiced; (vi) an eligibility cut-off date is not declared; (vii) there is no limitation on commencement of civil works until after completion of all land acquisition procedures, and (viii) there is no need to prepare a resettlement plan (RP) or to undertake monitoring and evaluation activities.

13. The table below outlines the key provisions of existing Mongolian laws and practices relevant to structure demolition and temporary impacts; and indicates their compatibility or inconsistency with the ADB IR safeguards.

Table 1 Comparison of Mongolian National Laws and ADP SPS 2009 and Gap-filling Measures

ADB SPS	Legal Provisions and Local Practice	Gap-filling Measures	Remarks
Policy Principle 1: Screen the project early on to identify past, present, and future involuntary resettlement impacts and risks. Determine the scope of resettlement planning through a survey and/or census of displaced persons, including a gender analysis, specifically related to resettlement impacts and risks.	Land Agency assesses resettlement impacts but it does not include past impacts.	During project/resettlement planning, IR screening, and census to be carried out to include both licensed and non-licensed households, and gender analysis.	Screening and due diligence was carried out during project preparation. It included due diligence on past land acquisition. No person/ HH expected to be affected by LAR under the project. Due diligence shows that there are no outstanding issues from the time the land was allocated.
Policy Principle 2: Carry out meaningful consultations with affected persons, host communities, and concerned nongovernment organizations. Inform all displaced persons of their entitlements and resettlement options.	Affected households are informed about the project through issuance of letter and household-level consultations. Public consultation and information disclosure are limited.	Identification of the poor and vulnerable groups as early as the screening process so they can participate and their concerns are taken into account during consultations and planning.	No person/household expected to be affected by LAR under the project.
Ensure their participation in planning, implementation, and monitoring and evaluation of resettlement programs.	Provision of compensation and assistance are limited to affected persons with ownership, possession and land use rights.	Documentation of the consultation and information disclosure activities and grievances received.	Consultations will be carried out in the event that temporary or unforeseen impacts occur during implementation.
Pay particular attention to the needs of vulnerable	Households which receive assistance under the	Other vulnerabilities such as women headed,	

ADB SPS	Legal Provisions and Local Practice	Gap-filling Measures	Remarks
<p>groups, especially those below the poverty line, the landless, the elderly, women and children, and Indigenous Peoples, and those without legal title to land, and ensure their participation in consultations.</p>	<p>Government food stamp program are the only group considered as vulnerable.</p> <p>It does not consider households who may be considered as "separate households" living on the same plot who may be poor and may need special attention and support.</p>	<p>elderly, disabled households are considered as vulnerable in the project. It also takes into consideration on separate households living on the same plot who may be poor and may need special attention and support</p>	
<p>Establish a grievance redress mechanism to receive and facilitate resolution of the affected persons' concerns. Support the social and cultural institutions of displaced persons and their host population.</p>	<p>The Land Law refers disputes over land to the governors of administrative units and eventually the courts (Article 60). The Civil Code and Land Allocation Law refer various types of disputes to the courts.</p>	<p>An effective project level grievance redress mechanism will be established.</p>	<p>A GRM has been established for the project.</p>
<p>Where involuntary resettlement impacts and risks are highly complex and sensitive, compensation and resettlement decisions should be preceded by a social preparation phase.</p>	<p>There is no provision in the law. Social preparation phase is not practiced.</p>	<p>This project is not categorized as highly complex and sensitive.</p>	<p>A poverty, gender and social analysis as well as due diligence on resettlement and land use has been undertaken during the project preparation.</p>
<p>Policy Principle 3: Improve, or at least restore, the livelihoods of all displaced persons through (i) land-based resettlement strategies when affected livelihoods are land based where possible or cash compensation at replacement value for land when the loss of land does not undermine livelihoods, (ii) prompt replacement of assets with access to assets of equal or higher value, (iii) prompt compensation at full replacement cost for assets that cannot be restored, and (iv) additional revenues and services through benefit</p>	<p>In the case of land under ownership title, the compensation is based on market rates assessed by certified appraisers. For land under possession and land use rights, no eligibility for compensation unless converted to an ownership title.</p> <p>The practice of using the government land valuation tariff (Cabinet Resolution 103, 2003) is used if the market rate is lower than the tariff.</p> <p>There is no mechanism in place in terms of providing specific assistance to those who are non-titled users.</p>	<p>Titled and non-titled affected entities are eligible to receive different entitlements. Titled affected entities are entitled to compensation and rehabilitation for affected land and non-land assets at replacement cost.</p> <p>Non-titled affected entities are eligible for entitlements for non-land assets at replacement cost and to rehabilitation assistance to restore the livelihood of affected persons to at least pre-project level or better.</p>	<p>No person/ household expected to be affected by LAR under the Project. The loan project will not support any impacts that will entail physical and economic displacement.</p> <p>Any temporary impacts on structures or temporary occupation of land will be compensated based on the principle of replacement cost.</p>

ADB SPS	Legal Provisions and Local Practice	Gap-filling Measures	Remarks
<p>sharing schemes where possible.</p> <p>Policy Principle 4: Provide physically and economically displaced persons with needed assistance, including the following: (i) if there is relocation, secured tenure to relocation land, better housing at resettlement sites with comparable access to employment and production opportunities, integration of resettled persons economically and socially into their host communities, and extension of project benefits to host communities; (ii) transitional support and development assistance, such as land development, credit facilities, training, or employment opportunities; and (iii) civic infrastructure and community services, as required.</p>			<p>No person/ household expected to be affected by LAR under the Project. The loan project will not support any impacts that will entail physical and economic displacement.</p> <p>Any temporary impacts on structures or temporary occupation of land will be compensated based on the principle of replacement cost.</p>
<p>Policy Principle 5: Improve the standards of living of the displaced poor and other vulnerable groups, including women, to at least national minimum standards. In rural areas provide them with legal and affordable access to land and resources, and in urban areas provide them with appropriate income sources and legal and affordable access to adequate housing.</p>	<p>Assistance provided varies, depending on the project.</p>	<p>Identification of the poor and vulnerable groups as early as screening process so they can participate, and their concerns are taken into account during consultations and planning</p> <p>Monitoring of the standards of living of the displaced poor and other vulnerable groups will be carried out.</p>	<p>No person/ household expected to be affected by LAR under the Project. The loan project will not support any impacts that will entail physical and economic displacement.</p> <p>Any temporary impacts on structures or temporary occupation of land will be compensated based on the principle of replacement cost.</p>
<p>Principle 6. Develop procedures in a transparent, consistent, and equitable manner if</p>	<p>The Civil Code of Mongolia is the legal basis for contractual agreements on the transfer of land from affected entities to the</p>	<p>Recognition of negotiated settlement, where there is a willing buyer and a willing seller.</p>	<p>No person/ household expected to be affected by LAR under the Project. The</p>

ADB SPS	Legal Provisions and Local Practice	Gap-filling Measures	Remarks
land acquisition is through negotiated settlement to ensure that those people who enter into negotiated settlements will maintain the same or better income and livelihood status.	government (Chapter 15, Articles 1, 6, 7, 8, 109 and 112, among others).		loan project will not support any impacts that will entail physical and economic displacement. Any temporary impacts on structures or temporary occupation of land will be compensated based on the principle of replacement cost.
Policy Principle 7: Ensure that displaced persons without titles to land or any recognizable legal rights to land are eligible for resettlement assistance and compensation for loss of non-land assets.	Assistance provided varies, depending on the project.	Assistance and support to be provided based on needs and socio-economic situation of each HH. Compensation for loss of non-land assets will be at replacement costs.	No affected person/household expected to be affected by LAR under the Project. The loan project will not support any impacts that will entail physical and economic displacement. Any temporary impacts on structures or temporary occupation of land will be compensated based on the principle of replacement cost.
Policy Principle 8: Prepare a resettlement plan (RP) elaborating on displaced persons' entitlements, the income and livelihood restoration strategy, institutional arrangements, monitoring and reporting framework, budget, and time-bound implementation schedule. Policy Principle 9: Disclose a draft resettlement plan, including documentation of the consultation process in a timely manner, before project appraisal, in an accessible place and a form and language(s) understandable to	This is not required under the law.	RP to be prepared and disclosed as per ADB SPS.	No affected person/household expected to be affected by LAR under the Project. The loan project expected to not support any impacts that will entail physical and economic displacement. A Resettlement Plan will be prepared and disclosed if there will be LAR impacts in accordance with ADB SPS.

ADB SPS	Legal Provisions and Local Practice	Gap-filling Measures	Remarks
affected persons and other stakeholders. Disclose the final resettlement plan and its updates to affected persons and other stakeholders.			
Policy Principle 10: Conceive and execute involuntary resettlement as part of a development project or program. Include the full costs of resettlement in the presentation of project's costs and benefits. For a project with significant involuntary resettlement impacts, consider implementing the involuntary resettlement component of the project as a stand-alone operation.	See policy principle 9.	RP to be prepared and implemented as per ADB SPS	No affected households expected to be affected by LAR under the project. The loan project will not support any impacts that will entail physical and economic displacement. A Resettlement Plan will be prepared and implemented if there will be LAR impacts in accordance with ADB SPS.
Policy Principle 11: Pay compensation and provide other resettlement entitlements before physical or economic displacement. Implement the resettlement plan under close supervision throughout project implementation.	In practice, payment is done in tranches: 60% of the compensation upon agreement and the remaining 40% is paid once the household vacate the land and property and show the photo to the Land Agency.	Pay compensation and provide other resettlement entitlements before physical or economic displacement. Monitoring and supervision throughout project implementation.	No affected households expected to be affected by LAR. The loan project will not support any impacts that will entail physical and economic displacement. Any temporary impacts on structures or temporary occupation of land will be compensated based on the principle of replacement cost; and prior to temporary occupation of land required during construction. PIU to closely monitor and supervise during implementation.
Policy Principle 12: Monitor and assess resettlement outcomes, their impacts on the standards of living of	No monitoring during implementation.	Monitoring and supervision throughout project implementation.	No affected person/household expected to be affected by LAR under the Project. The

ADB SPS	Legal Provisions and Local Practice	Gap-filling Measures	Remarks
displaced persons, and whether the objectives of the resettlement plan have been achieved by taking into account the baseline conditions and the results of resettlement monitoring. Disclose monitoring reports.			loan project will not support any impacts that will entail physical and economic displacement. PIU to closely monitor and supervise during implementation.

III. PROJECT ENTITLEMENT AND ELIGIBILITY

14. While the loan project will not finance any infrastructure that will entail land acquisition, there may be some temporary impacts, such as temporary impacts on structures and temporary occupation of public land during project construction.

15. To ensure that any such impacts are properly addressed, the following entitlement matrix will be adopted:

Table 2: Entitlement Matrix

Type of Assets/Impacts	Specification	Eligibility	Compensation entitlements
Private structures	Any damages or loss of structure	Owner structure regardless of tenure status	Cash compensation at replacement cost determined through professional valuation without deduction of depreciation and no deduction for salvaged materials Right to salvage materials from the compensated affected structures.
	Alteration to structure	Owner structure regardless of tenure status	Cash compensation at replacement cost for affected structure determined through professional valuations without deduction of depreciation and no deduction for salvaged materials. Right to salvage materials from the compensated affected structures.
	Moving back of fences	Owner of fence regardless of tenure status	May choose one of the following alternatives: - Cash compensation for relocation of fence at replacement cost without deduction of depreciation and no deduction for salvaged materials OR - Replacement/reconstruction of the fence by the subproject owner / contractor.
Public Facilities	Relocation/restoration of public facilities	Owner facilities	Public facilities including embankment, electrical poles, sewage system will be estimated by project design company based on technical permission and related standards; and will be included into the construction work budget. Restoration will be done by the project.

Type of Assets/Impacts	Specification	Eligibility	Compensation entitlements
Temporary use of land outside ROW	Civil works on land outside ROW	Owner, possessor, land user	Enable continued access to land and residences Rental fee for land for the temporary occupation to be agreed between contractor and landowner/possessor/user. Restore land to pre-project condition.
Unidentified Impacts	Unanticipated impacts	Type of APs to be determined based on impacts	To be identified during project implementation; measures will be formulated as appropriate according to ADB policy and reported to ADB prior to implementation. The principle of replacement cost will be adopted.

IV. INSTITUTIONAL ARRANGEMENTS, MONITORING, AND REPORTING

16. The Ministry of Food Agriculture and Light Industry (MOFALI) will be the executing agency. The Crop Production Development Policy and Coordination Department of MOFALI will be the implementing agency. Local governments in relevant project soums will be involved in project implementation.

17. A Project Implementation Unit (PIU) will be established under MOFALI. A social and gender specialist will be recruited at PIU to ensure the effective implementation of the SDAP/GAP, the RF and other social aspects. MOFALI and soums will also appoint their staff as focal persons (officers) for social tasks.

18. The MOFALI/PIU will immediately inform ADB of any LAR impacts during implementation. Resettlement Plan (RP) will be prepared as needed in accordance with this RF and ADB SPS before awarding any civil works contracts involving LAR impacts. An indicative outline of the RP is available in the SPS Appendix 2, which will be adopted in preparing an RP with details commensurate to the level of impacts.

19. The social and gender specialist will also cover safeguards monitoring for the project; and reporting will be included in semi-annual progress reports by the PIU to ADB. The project will be implemented for seven years from January 2020 to December 2026.

V. GRIEVANCE REDRESS MECHANISM

20. The project includes a grievance redress mechanism (GRM) for potential environmental and social impacts that may occur during project construction and implementation.

21. A project grievance is defined as an actual or perceived project-related problem that results in a complaint by an affected person (including workers). The PIU will work proactively toward preventing grievances through the implementation of mitigation measures and community consultations. To address any complaints that do arise, this project grievance redress mechanism (GRM) will be established. The GRM is a simple and time-based process for receiving, recording, and addressing project-related grievances transparently and quickly. The GRM will be accessible to diverse members of the local communities, including more vulnerable groups such as women, youth and elderly. Multiple points of entry, including face-to-face meetings, written complaints, telephone calls, or e-mail, will be available. Opportunities for confidentiality and privacy for

complainants will be honored where requested. The GRM does not impede or replace legal procedures and Mongolia's judicial system.

22. In Mongolia, residents' complaints or concerns are generally communicated taken to the *soum* representatives, and this system has been integrated into the GRM.

23. The PIU environment officer and social officer will be the lead coordinators for GRM implementation. All project agencies and staff will be trained in the GRM and will take an active role in supporting these staffs as and when necessary. The PIU environment officer and social officer will establish a GRM tracking and documentation system, instruct all project agencies in the GRM procedures, conduct daily coordination with project agencies, arrange meetings and conduct site visits as necessary, maintain the overall project GRM database, and prepare the reporting inputs for progress reports to ADB. In each project *soum*, the government will nominate a focal person for the GRM³⁶. The names and contact details of the PIU, *soum* focal points will be disseminated to the project agencies and communities. Upon receiving any complaints, the *soum* focal points will immediately inform the PIU environment and/or social officer.

24. Once a complaint is received and filed, the MOFALI and PIU officers will identify if complaints are eligible. Eligible complaints include those where (i) the complaint pertains to the project; and (ii) the issues arising in the complaint fall within the scope of issues that the GRM is authorized to address. Ineligible complaints include those where: (i) the complaint is clearly not project-related; (ii) the nature of the issue is outside the mandate of the GRM (such as allegations of fraud or corruption); and (iii) other procedures are more appropriate to address the issue. Ineligible complaints will be recorded and passed to the relevant authorities and the complainant will be informed of the decision and reasons for rejection. The procedure and timeframe for the GRM is as follows; and see Figure 3.

- **Stage 1 (5 working days):** If a concern arises, the affected person may resolve the issue directly with the contractor or make the complaint known to the *soum* focal point, other local authorities, PIU, or any level of authority they are comfortable with. Whenever possible, the contractor will resolve the issue directly with the affected person. The issue shall be immediately reported to the PIU.
- **Stage 2 (5 working days):** If the issue cannot be resolved in Stage 1, after five days, the PIU will take over responsibility in close coordination with the *soum* focal point. The eligibility of the complaint will be assessed and a recommended solution given to the complainant and contractors within five (5) working days. If the solution is agreed by the complainant, the contractors and/or irrigation scheme operators will implement the solution within seven days. Written records will be made of all stages and outcomes.
- **Stage 3 (10 working days):** If no solution can be identified in Stage 2 and/or the complainant is not satisfied with the proposed solution, the PIU and *soum* focal points will organize, within ten (10) days, a stakeholder meeting (including the complainant, contractor and/or irrigation scheme operator, and local government agencies). A solution acceptable to all shall be identified including clear steps. The contractors (during construction) and irrigation scheme operators (during operation) will immediately implement the agreed solution. Written records will be made of all stages and outcomes.

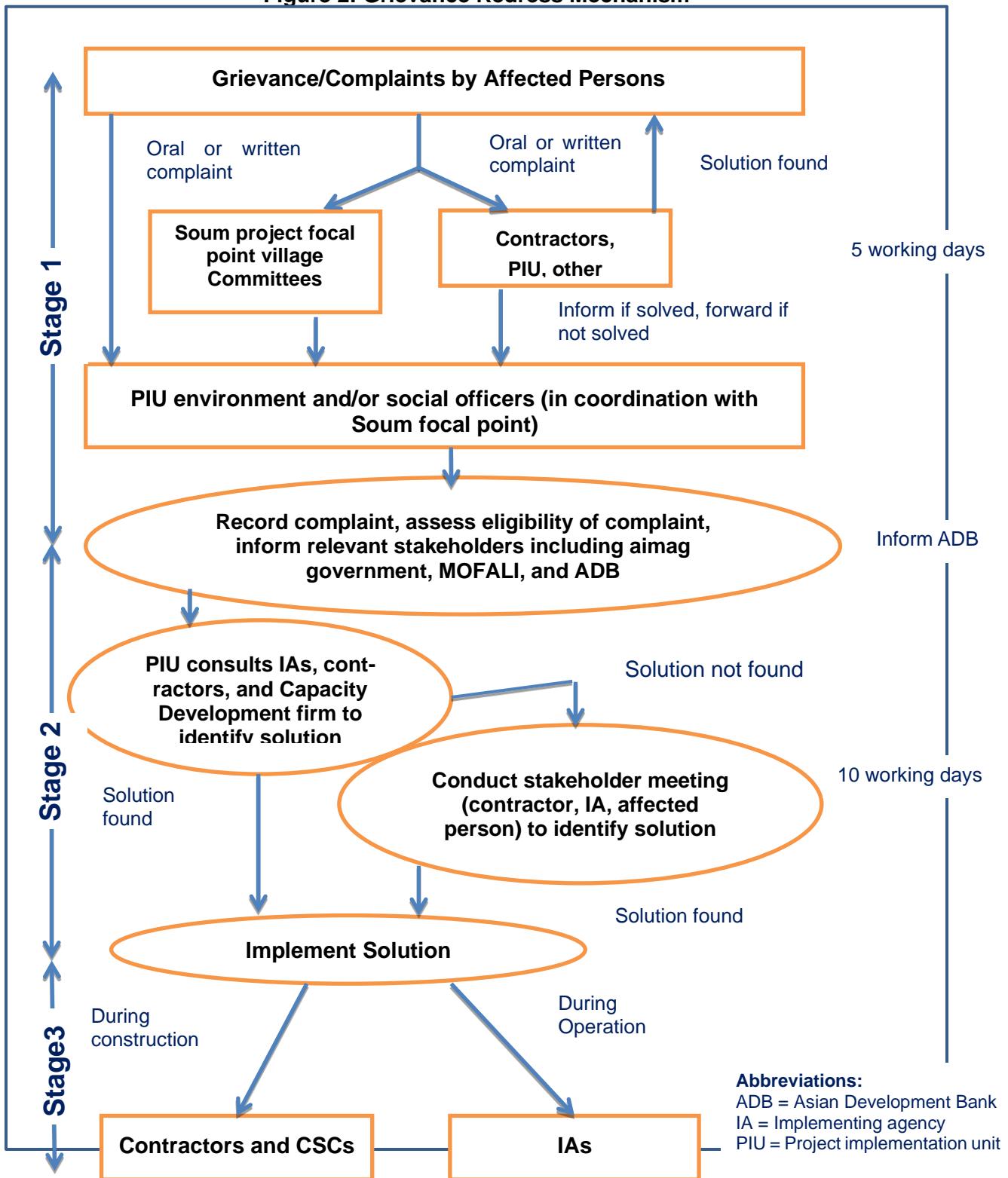
³⁶ This focal person could be the citizen representative at both and bag levels

25. The executing and/or implementing agencies shall bear any and all costs of implementing the GRM, including meeting, travel, and/or accommodation costs of the government staff or affected person. The GRM will be implemented throughout project construction and at least the first year of operation for each irrigation scheme. The PIU will include any grievances, steps taken, and results, within the semi-annual reports to ADB. The GRM is included in the PAM (Appendix 5).

26. **Accountability mechanism.** ADB implements an “accountability mechanism” as a forum where people adversely affected by ADB-assisted projects can voice and seek solutions to their problems and report alleged noncompliance of ADB's operational policies and procedures. The policy is available at: <http://www.adb.org/documents/accountabilitymechanism-policy-2012>. The mechanism is designed to: (i) enhance ADB's development effectiveness and project quality; (ii) be responsive to the concerns of project-affected people and fair to all stakeholders; (iii) reflect the highest professional and technical standards in its staffing and operations; (iv) be as independent and transparent as possible; and (v) be cost-effective, efficient, and complementary to the other supervision, audit, quality control, and evaluation systems at ADB. The mechanism provides two approaches to which affected persons may apply: (i) review of perceived grievances and complaints, which is undertaken by ADB's Office of Special Project Facilitator (OSPF); and (ii) review of whether non-compliance with ADB's policies has occurred, which is undertaken by ADB's Compliance Review Panel.

27. The PIU, in its trainings and consultations, shall inform project stakeholders about the Accountability Mechanism.

28. Before submitting a complaint to the Accountability Mechanism, the affected people should make a good faith effort to solve their problems by working with the concerned project staff and ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.

Figure 2: Grievance Redress Mechanism

VI. CONSULTATION AND DISCLOSURE

30. Stakeholder consultations have been conducted for each irrigation schemes during the project preparation. Specific consultations were conducted with 8 AHs/company in Nogoon Khashaa irrigation schemes, that reside along the main canal in Nogoon Khashaa irrigation scheme in September 2019.

31. Broad and meaningful consultations will continue throughout the project implementation cycle, building on the initial consultations held with various stakeholder groups during project preparation. The various stakeholders, mechanisms for participation, entities responsible, indicative schedules and resources are set out in Consultation and Participation Plan (CPP). The CPP has been included as Appendix 7 of the PAM.

32. Additional specific consultations will be conducted with 8 AHs/company in Nogoon Khashaa irrigation scheme when the final detailed design will be known.

33. Resettlement Framework will be placed in the MOFALI and project soum offices; and disclosed on the ADB website.

**Annex 1: Letter of Agreement from Owners with Properties Along the Main canal
(English Translation)**

PROPOSED ADB LOAN
MONGOLIA: VEGETABLE PRODUCTION AND IRRIGATED AGRICULTURE
ULIASTAI SOUM
AGREEMENT FOR UPGRADING THE MAIN CANAL THROUGH THE PROPERTIES FOR
THE NOGOON KHASHAA IRRIGATION SCHEME

- The Nogoon Kashaa irrigation scheme will be rehabilitated under the proposed ADB project managed by MOFALI: Vegetable Production and Irrigated Agriculture;
- The existing main canal will be upgraded (the canal will be lined and covered when crossing properties.);
- The upgraded canal will have the same alignment; the RoW of the canal will be 1.2 m;
- During construction (estimated to start in 2023), machinery will need to go through properties;
- During operation, some maintenance activities may be needed along the canal;
- Additional consultation will be provided at the start of implementation.

The owner of the properties along the canal agree on the following:

- The owner agrees to provide access to workers for the upgrading of the canal during construction;
- The owner will be compensated for all impacts that may occur during construction (i.e. on fence, secondary structure, crop, trees); Rental fee for land for the temporary occupation will be agreed between contractor and landowner during construction.
- No compensation for land will be provided.
- No HH will be resettled and all HHs could remain on their existing plot;
- The owner agrees to provide access during Operation & Maintenance as needed.
- The owner recognizes that the canal is public land;
- The owner will not claim any rights on the canal;

No.	Name of head of HH	Home address Cadastral Plot	Area (m2)	Land Use	Type of Land Use Right	Agree according to the above conditions.	
						Date	Name & Signature
1.	Tumendelger. P	Jims bagh, Nogoochin- 300 /3-1/	1,118	Residential	Ownership		
2.	Uyangalbazar	Jims bagh, Nogoochin- 203	3,591	Residential	Ownership		
3.	Batmend	Jims bagh, Nogoochin- 207	1,266	Residential	Ownership		(cannot be contacted)
4.	Bazar sad	Jims bagh, Nogoochin- 209	2,944	Residential	Ownership		

No.	Name of head of HH	Home address Cadastral Plot	Area (m2)	Land Use	Type of Land Use Right	Agree according to the above conditions.	
						Date	Name & Signature
5.	Amarjargal. S	Jims bagh, Nogoochin- 304 /3-11/	1,111	Residential	Ownership		
6.	Tsogoo Dulamsuren	Jims bagh, Nogoochin- 217-1/	945	Residential	Possession		
7.	Ouyntuya. U	Jims bagh, Nogoochin- 3- 13	1,349	Residential	Possession		
8.	Lkhagvabaatar. B	Jims bagh, Nogoochin- 305 /1-1/	481	Residential	Possession		
10	Jamyanmyadag. Sh	Jims bagh, Nogoochin- 307 /1-2/	674	Residential			Not Affected
11	Purevdorj. G	Jims bagh, Nogoochin- 309 /1-3/	883	Residential			Not Affected
12	Purvee. T, FHH	Jims bagh, Nogoochin- 313 /1-5/	1415 m2	Residential			Not Affected
13.	Agro-park	Jims bagh, Nogoochin	18,442	Agriculture	Possession		(agree by phone)

Confirmation from soum officer that all HHs agree and signed freely this letter

Date:

Soum officer (name Mr. Narangerel and signature)

АЗИЙН ХӨГЖЛИЙН БАНКНЫ ЗЭЭЛИЙН ТӨСЛИЙН ТӨСӨЛ

МОНГОЛ УЛС: ХҮНСНИЙ НОГООНЫ ҮЙЛДВЭРЛЭЛ БА УСАЛГААТАЙ ГАЗАР ТАРИАЛАН

ЗАВХАН, УЛИАСТАЙ СУМ

НОГООН ХАШАА УСЛАЛТЫН СИСТЕМИЙН БУСДЫН ГАЗАР ДЭЭГҮҮР ДАЙРАН ӨНГӨРЧ БАЙГАА ГОЛ
СУВГИЙГ ЗАСЧ САЙЖРУУЛАХ ТОХИРОЛЦОО

- Санал болгож буй “Хүнсний ногооны үйлдвэрлэл ба усалгаатай газар тариалан” АХБ-ны зээлийн төслийн хүрээнд Ногоон хашаа услалтын системийг сэргээн сайжруулна;
- Одоо байгаа гол сувгийг засч сайжруулна (сувгийг доторлож, бусдын газар дээгүүр дайрч буй хэсэгт битүүлнэ);
- Сэргээн сайжруулах суваг өмнөх сувгийн дагуу байрлана; сувгийг засч сайжруулах ажил хийгдэх зурвасын өргөн 1.2м байна;
- Барилгын ажлын үеэр (2023 онд эхлэхээр тооцоолж байгаа) машин механизм бусдын өмч/газар дээгүүр дайран явах шаардлага бий болно;
- Ашиглалтын үед услалтын сувгийн дагууд арчилгаа тордолгоо хийх шаардлага тулгарч болзошгүй;
- Төслийн хэрэгжилт эхлэх үеэр өрхүүдтэй нэмэлт уулзалт зөвлөгөөн хийнэ.

Услалтын суваг өмч/газар дээгүүр нь дайран өнгөрч байгаа газрын эзэн дараах нөхцлүүдийг зөвшөөрч байна:

- Газрын эзэн барилгын ажил хийгдэх үеэр сувгийг засч сайжруулах ажил хийх ажилчдыг өөрийн газарт нэвтрүүлнэ;
- Газрын эзэн барилгын ажлын явцад учруулсан аливаа хохирлыг нөхөн төлүүлнэ (ж.нь: хашаа, барилга байгууламж, тария ногоо, мод зэрэгт учирсан хохирол);
- Барилгын ажлын явцад газрыг нь түр хугацаагаар ашиглах тохиолдолд түрээсийн төлбөрийг газрын эзэн болон барилгын компани харилцан тохиролцно.
- Газарт нөхөн олговор олгохгүй.
- Нэг ч айлыг нүүлгэн шилжүүлэхгүй буюу өрхүүд одоогийн газар дээрээ үлдэнэ.
- Шаардлагатай засвар үйлчилгээний үеэр ажилчдыг өөрийн газарт нэвтрүүлнэ.
- Газрын эзэн услалтын сувгийг төрийн өмч гэж хүлээн зөвшөөрнө.
- Газрын эзэн услалтын сувгийг өмчлөх аливаа эрх үүсэхгүй.

No.	Өрхийн тэргүүний нэр	Хаяг	Газрын хэмжээ	Газрын зориулалт	Газрын эрхийн төрөл	Дээрх нөхцлөөр миний газар дээрх услалтын сувгийг сайжруулахыг зөвшөөрч байна.	
						Огноо	Гарын үсэг
1.	П.Түмэндэлгэр	Жинст баг, Ногоочин - 300 /3-1/	1118 m2	Гэр бүлийн хэрэгцээ	Өмчлөл	2019 10. 06	98467847-
2.	Ө.Мангалбазар	Жинст баг, Ногоочин - 203	3951 m2	Гэр бүлийн хэрэгцээ	Өмчлөл	2019 10. 01.	Батмэндэл хот 16
3.	Д.Батмэнд	Жинст баг, Ногоочин - 207	1266 m2	Гэр бүлийн хэрэгцээ	Өмчлөл		
4.	М.Базарсад	Жинст баг, Ногоочин - 209	2944 m2	Гэр бүлийн хэрэгцээ	Өмчлөл	2019 10. 3.	Д.Базарсад 99086457
5.	С.Амаржаргал	Жинст баг, Ногоочин - 304 /3-11/	1111 m2	Гэр бүлийн хэрэгцээ	Өмчлөл	2019 10. 4	Амаржаргал 99782382
6.	Ц.Дуламсүрэн	Жинст баг, Ногоочин - 217-1/	945 m2	Гэр бүлийн хэрэгцээ	Эзэмшил		Дуламсүрэн 886999
7.	У.Оюунтуяа	Жинст баг, Ногоочин - 3-13 •	1349 m2	Гэр бүлийн хэрэгцээ	Эзэмшил		98468957 С.Оюунтуяа
8.	Б.Лхагвабаатар	Жинст баг, Ногоочин - 305 /1-1/	481 m2	Гэр бүлийн хэрэгцээ	Эзэмшил	2019. 10. 4.	Б.Лхагвабаатар Альбаджим
9.	Ш.Жамъянмядаг	Жинст баг, Ногоочин - 307 /1-2/	674 m2	Гэр бүлийн хэрэгцээ	Өмчлөл		+
10.	Ж.Мөнгентуяа	Жинст баг, Ногоочин - 309 /1-3/	883 m2	Гэр бүлийн хэрэгцээ	Өмчлөл		+
11.	Т.Пүрэвээ	Жинст баг, Ногоочин - 313 /1-5/	1415 m2	Гэр бүлийн хэрэгцээ	Эзэмшил		+
12.	Агропарк	Жинст баг, Ногоочин	18442 m2	Төмс хүнсний ногоо	Эзэмшил		+

Бүх өрхүүд зөвшөөрт энэхүү бичигт гарын үсгээ зурсныг баталсан:

Улиастай сумын газрын даамал Г.Нарангэрэл

Огноо: 2019, 10. 4.

APPENDIX 7: CONSULTATION AND PARTICIPATION PLAN

Stakeholder Group	Objective of their Involvement	Participation Methods	Who is Responsible	Time frame	Budget source
Local governments/authorities	- To allocate new plots of land in the planned irrigated areas and to engage farmers in vegetable farming.	<ul style="list-style-type: none"> - Information: discussion on plot allocation mechanisms and engagement of farmers. - Consultation: Soum/bagh meetings and discussions to discuss plot allocation process and engagement of farmers. - Decisions: Soums/baghs agree on plot allocation mechanism and engagement of farmers with prioritization of poor & vulnerable HHs 	<ul style="list-style-type: none"> - Soum government; - PIU 	- 2020-2024	- Project budget
Beneficiary communities, poor and vulnerable households, women	- Engage project beneficiaries in planning, implementation and monitoring of subprojects and related activities such as training, workshops, and employment	<ul style="list-style-type: none"> - Information: Community meetings for dissemination of information on project scope, design elements, irrigation fees, Grievance Redress Mechanism and participation mechanisms. - Consultation: Regular soum/bagh meetings and discussions (both mixed gender and women's meetings) to monitor progress and discuss measures to enhance project benefits and mitigate risks. - Decisions: Community members contribute with suggestions for effective participation and guidelines for capacity building needs with support from soum/bagh leaders to ensure they are inclusive, with equal representatives of women 	<ul style="list-style-type: none"> - PIU; - Soums government - Gender and social focal points - 	- 2020-2026	- Project budget
Kazakhs in Bayannuur and Sagsai soums	- Engage beneficiaries of the project with their own language	- Information/consultation: all meetings, activities and training to be provided in the presence of an interpreter. All key project	<ul style="list-style-type: none"> - PIU - Soums government - 	- 2020-2026	- Project budget

Stakeholder Group	Objective of their Involvement	Participation Methods	Who is Responsible	Time frame	Budget source
(Bayan-Ulgii aimag)		documents will be translated in Kazakh language.			
Community Grower Groups (CGGs)	- Engage CGGs in small works and vegetable farming	<ul style="list-style-type: none"> - Consultation: Local meetings to i) inform about mechanisms for sharing of facilities and equipment; ii) location of equipment (i.e. storage, winter greenhouse) and iii) assess training and capacity building needs for Good Agricultural Practice (climate smart agriculture, on-farm water management, fertilizer and pesticide use) and on the use of improved technologies (such as greenhouses and storage) and marketing - Decisions: Recommendations for: i) mechanisms for sharing facilities and equipment; ii) location of storage and greenhouses; and iii) type of training required. - Contributions from both men and women farmers will be encouraged 	<ul style="list-style-type: none"> - PIU - Soums government - 	- 2020-2026	Project budget

PIU=Project implementation unit, SDAP=Social Development Action Plan, GAP=Gender action plan, O&M = Operation and maintenance, WUAs=Water Users Associations, MOFALI= Ministry of Food and Agriculture and Light Industry
Source: Asian Development Bank

APPENDIX 8: TEMPLATE FOR PMO PROJECT PROGRESS REPORT

A. Introduction and Basic Data

1. Provide the following:

- (i) ADB loan number, project title, borrower, executing agency(ies), implementing agency(ies);
- (ii) Total estimated project cost and financing plan;
- (iii) Status of project financing including availability of counterpart funds;
- (iv) Dates of approval, signing, and effectiveness of ADB loan;
- (v) Original and revised (if applicable) ADB loan closing date and elapsed loan period based on original and revised (if applicable) loan closing dates; and
- (vi) Date of last ADB review mission.

B. Utilization of Funds (ADB Loans, JFPR Grant and Counterpart Funds)

2. Provide the following:

- (i) Cumulative contract awards financed by the ADB loan and counterpart funds (commitment of funds to date), and comparison with time-bound projections (targets);
- (ii) Cumulative disbursements from the ADB loan and counterpart funds (expenditure to date), and comparison with time-bound projections (targets); and
- (iii) Re-estimated costs to completion, need for reallocation within ADB loan categories, and whether an overall project cost overrun is likely.

C. Project Purpose

3. Provide the following:

- (i) Status of project scope/implementation arrangements compared with those in the report and recommendation of the President (RRP), and whether major changes have occurred or will need to be made;
- (ii) An assessment of the likelihood that the immediate development objectives (project purpose) will be met in part or in full, and whether remedial measures are required based on the current project scope and implementation arrangements;
- (iii) An assessment of changes to the key assumptions and risks that affect attainment of the development objectives; and
- (iv) Other project developments, including monitoring and reporting on environmental and social requirements that might adversely affect the project's viability or accomplishment of immediate objectives.

D. Implementation Progress

4. Provide the following:

- (i) Assessment of project implementation arrangements such as establishment, staffing, and funding of the PMO or PIU;
- (ii) Information relating to other aspects of the EA's internal operations that may impact on the implementation arrangements or project progress;

- (iii) Progress or achievements in implementation since the last progress report;
- (iv) Assessment of the progress of each project component, such as,
 - a. recruitment of consultants and their performance;
 - b. procurement of goods and works (from preparation of detailed designs and bidding documents to contract awards); and
 - c. the performance of suppliers, manufacturers, and contractors for goods and works contracts;
- (v) Assessment of progress in implementing the overall project to date in comparison with the original implementation schedule—quantifiable and monitorable target, (include simple charts such as bar or milestone to illustrate progress, a chart showing actual versus planned expenditure, S-curve graph showing the relationship between physical and financial performance, and actual progress in comparison with the original schedules and budgets, the reference framework or guidelines in calculating the project progress including examples are shown in Appendix 2); and
- (vi) An assessment of the validity of key assumptions and risks in achieving the quantifiable implementation targets.

E. Compliance with Covenants

5. Provide the following:

- (i) The borrower's compliance with policy loan covenants such as sector reform initiatives and EA reforms, and the reasons for any noncompliance or delay in compliance;
- (ii) The borrower's and EA's compliance with financial loan covenants including the EA's financial management, and the provision of audited project accounts or audited agency financial statements; and
- (iii) The borrower's and EA's compliance with project-specific loan covenants associated with implementation, environment, and social dimensions.

F. Major Project Issues and Problems

6. Summarize the major problems and issues affecting or likely to affect implementation progress, compliance with covenants, and achievement of immediate development objectives. Recommend actions to overcome these problems and issues (e.g., changes in scope, changes in implementation arrangements, and reallocation of loan proceeds).