

SECTOR ASSESSMENT (SUMMARY): AGRICULTURE AND NATURAL RESOURCES

Sector Road Map

A. Sector Performance, Problems, and Opportunities

1. **Context.** Tajikistan's population is predominantly rural and largely dependent on agriculture. Agriculture accounts for a quarter of Tajikistan's gross domestic product and export revenues, 39% of tax revenues, and half of total employment. Given the widespread migration of male Tajik workers overseas, women constitute the majority of employees (accounting for 53% of the economically active population in agriculture).¹ Arable land is in short supply at 0.15 hectares (ha) per capita (rising to 0.20 ha per capita for the rural population).

2. **Food insecurity.** Tajikistan is the most vulnerable country in Central Asia with regard to food insecurity given (i) limited irrigated land that accounts for 95% of crop production, (ii) underdeveloped agriculture, and (iii) poor connectivity between markets and agricultural production areas.² According to a 2013 World Food Programme assessment of Tajikistan's 11 livelihood zones, the food security status in rural livelihood zones was classified as phase 3 (crisis) for 3% of the population (152,000 people) and phase 2 (stressed) for 39% of the population (2,285,000 people).³ The Eastern Pamir plateau livestock zone is Tajikistan's most food insecure zone because of its poor access to food products, while the Southern Khatlon cotton, vegetable, and wheat zone in the Pyanj river basin is the most food insecure zone among irrigated areas.

3. **Arable land.** Tajikistan is a mountainous, landlocked, and isolated country with significant river systems. A quarter of Tajikistan's total land area (14 million ha) is agricultural land, which declined significantly since independence, reflecting progressive corrections of inflated Soviet statistics, land reform, and land use privatization.⁴ Tajik statistics differentiate between five agricultural land uses (arable land, perennial cultures, pastures, meadows, and storage areas). In 2010, less than one-fifth of agricultural land was classified as arable. Tajikistan's cultivated land per capita is 0.1 ha: the smallest among Central Asian countries.⁵

4. **Irrigated land.** Irrigation is critical for the development of Tajikistan's agricultural sector, food security, and economic advancement. By 1960, 51% of arable land was irrigated following extensive irrigation investments in cotton production areas in the 1950s. In 2010, more than 90% of arable land was irrigated. The current total area developed for irrigation is 748,000 ha. However, the actual annual irrigated area is estimated at 700,000 ha because of deteriorating irrigation and drainage infrastructure, salinization, waterlogged soils, and unreliable electricity supplies to pump stations. Approximately 563,000 ha of actual irrigated areas are in *good* condition and 133,000 ha are in *satisfactory* condition.⁶

¹ FAO. 2011. *Women in Agriculture – Closing the Gender Gap for Development*. Rome.

² ADB. 2014. *The Operational Plan for Agriculture and Natural Resources: Promoting Sustainable Food Security in Asia and the Pacific in 2015–2020*. Manila; and FAO. 2012. *Irrigation in Central Asia in figures (AQUASTAT Survey – 2012)*. Rome. According to the FAO, food security exists when people have physical, social, and economic access to sufficient, safe, and nutritious food at all times (<http://www.fao.org/docrep/013/al936e/al936e00.pdf>).

³ World Food Programme. 2013. *Food Security Classification Overview – June 2013*. Dushanbe.

⁴ Statistical corrections were necessary because of (i) increasing salinity, mainly of cotton fields; (ii) agricultural land lost by erosion or covered under mudslides; and (iii) radioactive or hazardous land taken out of use.

⁵ FAO. 2012. *Irrigation in Central Asia in figures (AQUASTAT Survey – 2012)*. Rome.

⁶ Ministry of Land Reclamation and Water Resources. <http://www.mwr.tj/en/>.

5. **Agriculture.** In almost all zones, agro-climatic conditions permit only a single crop per year. However, some early maturing cultures (e.g., winter wheat) allow second crops with short vegetation periods (e.g., melons or buckwheat) to be grown. Tajikistan's primary crops are cereals (mainly wheat) and cotton. Cropping patterns remained the same since independence, although their relative importance changed: cereals and legumes steadily increased, while industrial crops (mainly cotton) decreased. Wheat and fodder comprise 35% and 15% of the total arable cropped area, respectively, and cotton comprises 43% of the irrigated area. Kitchen and presidential (i.e., allocated by Presidential decree) plots account for 33% of the area planted to wheat, and about two-thirds of the area planted to potatoes and vegetables.

6. Agricultural productivity in Tajikistan is low compared to other countries in the region. For example, yields of major crops (2.2 tons/ha for wheat, 1.7 tons/ha for cotton, and 21.9 tons/ha for potatoes) are significantly lower than Uzbekistan's yields (4.5 tons/ha for wheat, 2.3 tons/ha for cotton, and 24.5 tons/ha for potatoes), which are low by international standards. Yields for irrigated wheat should be in the range of 5–6 tons/ha.

7. **Farming reform.** Progress was made in reforming and restructuring collective *dehkan* farms (mid-sized, privately owned commercial farms distinct from household plots) (mainly *sovkhos* or *kolkhos* successors), with individual and family farms occupying almost 65% of agricultural land. However, around 35% of agricultural land remains within the *dehkan* farm system. *Dehkan* farmers who have the right to split off from the collective are often reluctant to do so because of high costs, administrative complexities, and accrued debts that are transferred with the land.⁷

8. **Climate change and disasters triggered by natural hazards.** Climate change is a key threat to Tajikistan's development. Reduced contributions of glacier melts could reduce flows in the Amu Darya basin by 5%–15% by 2085. In the driest years, flows could be reduced by as much as 35% relative to current discharge. Tajikistan's food insecurity will be exacerbated by its limited capacity to respond to climate-induced shocks. Tajikistan was selected to participate in the Pilot Program for Climate Resilience in view of the serious climate threats it faces. A recent study carried out by ADB and the government under the Pilot Program for Climate Resilience demonstrates that higher temperatures, decreased snowfall, droughts, avalanches, landslides, rock falls, and violent winds routinely destroyed crops and infrastructure and, in the worst cases, taken lives. The projected rise in average global temperatures of up to two degrees centigrade by 2050 will catalyze glacial and early snow melts, changing the seasonality of runoffs and affecting the stability of water supplies for agriculture, hydropower, and human consumption. Increased drought frequency, catastrophic flooding because of glacier lake outbursts, destabilization of mountain slopes, and more frequent landslides will produce economic losses, pose risks to the population, and hamper the ability of communities to fight poverty. Adverse effects of climate change will be compounded by the projected 67% population growth during the 21st century.

9. **Water resource management.** Among Central Asian countries, Tajikistan has the second lowest level of total actual renewable water resources per capita (before Uzbekistan), which is a key indicator of water stress. Tajikistan lags in terms of access to improved water sources, at 71.7% of the population in 2012.⁸ During 1990–2004, annual diversions from

⁷ While land, house, and kitchen garden areas are privatized, larger farming infrastructure such as stables, machinery, and processing units must be purchased for individual use.

⁸ ADB, UNESCAP, UNDP. 2015. *Making it Happen: Technology, Finance and Statistics for Sustainable Development in Asia and the Pacific. Asia-Pacific Regional MDGs Report 2014/15.* Manila.

surface and groundwater declined from 13.7 cubic kilometers (km³) to 12.3 km³, and water delivered declined from 12 km³ to 9 km³, resulting in a decrease of water delivery efficiency from 88% to 75%.⁹ These declines resulted from deteriorating water resource management (WRM) infrastructure (particularly irrigation and drainage, since 91% of diverted water is used for irrigation) and the weak capacity of WRM institutions, including government agencies and water users' associations, to conduct operation and maintenance (O&M) activities.

10. Tajikistan's water productivity is also low. Water productivity for fully irrigated wheat (unconstrained by water) with sufficient related inputs should be 0.8–1.0 kilograms/m³ (based on a potential yield of 4 tons/ha and annual water demand of 4,000 m³/ha).¹⁰ However, the water productivity of Tajikistan's wheat was estimated at less than 0.5 kilograms/m³ in all four river basins in 2012.¹¹ This low productivity may reflect irrigation constraints (supply) and limits on farm inputs.

B. Government's Sector Strategy

11. Food security is a core government priority. The Living Standards Improvement Strategy of Tajikistan, 2013–2015 outlines 16 goals for food security. The government is seeking to increase the effectiveness and efficiency of WRM, including irrigation, drainage, and agricultural production. Specifically, it is targeting the improvement of irrigated agriculture covering 320,000 ha and the creation of 1,500 ha of irrigated land by 2015 to increase the value of agricultural products by 7% to meet national food demand. To achieve these targets, investments of \$262 million for WRM and \$24 million for agriculture are required, representing 7.4% of national funding requirements across sectors.¹²

12. The amended Land Code, which was approved in July 2012, provides for land use rights to be lifelong, inheritable, marketable, and exchangeable. However, these rights can be revoked if the government deems the land is being misused.¹³ The government is also reforming WRM. The Ministry of Land Reclamation and Water Resources was abolished in November 2013 and its responsibilities were reassigned to the newly formed (i) Ministry of Energy and Water Resources, which is responsible for WRM policies and regulations; and (ii) Agency of Land Reclamation and Irrigation, which is tasked with the development and management of WRM infrastructure. Further reforms include (i) the reclassification of WRM areas from territorial administrative to hydrological areas; and (ii) the establishment of river basin management plans (RBMPs) and water governance institutes. RBMPs will clarify and monitor water allocations, and water governance institutes will develop and approve RBMPs and provide a participation mechanism for different water users.

C. ADB Sector Experience and Assistance Program

13. Since 1999, ADB provided \$150 million in loans and grants and \$17 million in technical assistance (TA) to the agriculture and natural resources (ANR) sector and disaster and risk

⁹ Scientific-Information Center Interstate Commission for Water Coordination in Central Asia (SIC ICWC). 2011. *Water Quality in the Amu Darya and Syr Darya River Basins*. Tashkent. (Note: updated data is not available).

¹⁰ International Water Management Institute. 2007. *A Comprehensive Assessment of Water Management in Agriculture*. London.

¹¹ Wheat and cotton are Tajikistan's two main crops and account for 36% and 24% of its total cropped area, respectively.

¹² Government of Tajikistan. 2012. *Living Standards Improvement Strategy of Tajikistan for 2013–2015*. Dushanbe.

¹³ Government of Tajikistan in cooperation with the Development Coordination Council. 2012. *Report on the Results of the Agrarian Reform of the Republic of Tajikistan*. Dushanbe.

management (DRM) operations.¹⁴ The WRM subsector, including irrigation, drainage, and flood risk management, was the major recipient of ADB support (\$100 million), followed by climate change adaptation (\$29 million), rural development (\$20 million), and the cotton subsector (\$15 million).

14. ADB's support to the ANR sector and DRM declined to 6.7% in 2010–2014 (compared with 25% under ADB's previous two strategies covering 1998–2009), as ADB prioritized critical investments in other sectors. ADB's previous strategies focused on land reform, farm restructuring, and rural private sector development to support Tajikistan's transition to a market-based economy. They also provided direct support to rehabilitate irrigation and drainage systems. The second strategy included measures to mobilize and strengthen water users' associations and farmer organizations, address cotton-related debt, and improve sustainable land management. While the ANR sector was not prioritized in 2010–2014, climate change was a crosscutting theme. During this period, ADB's assistance to the sector was for climate change adaptation projects and TA.

15. ADB's performance in Tajikistan's ANR sector and DRM has been mixed. The 2014 country assistance program evaluation for Tajikistan noted projects suffered from (i) complex and ambitious project design with unquantifiable targets; (ii) deficient scale in the on-farm level components post-completion of ADB supported activities; and (iii) the deterioration of infrastructure investments because of insufficient O&M. It also suggested that ADB should (i) shift from conventional irrigation and drainage rehabilitation to modernization to improve sustainability; (ii) continue to support policy reform in the ANR sector; (iii) involve NGOs in projects for specialized roles; (iv) enhance the integration of climate change and disaster risk activities and resilience into the national development agenda; and (v) develop a long-term plan for increasing institutional and financial sustainability.

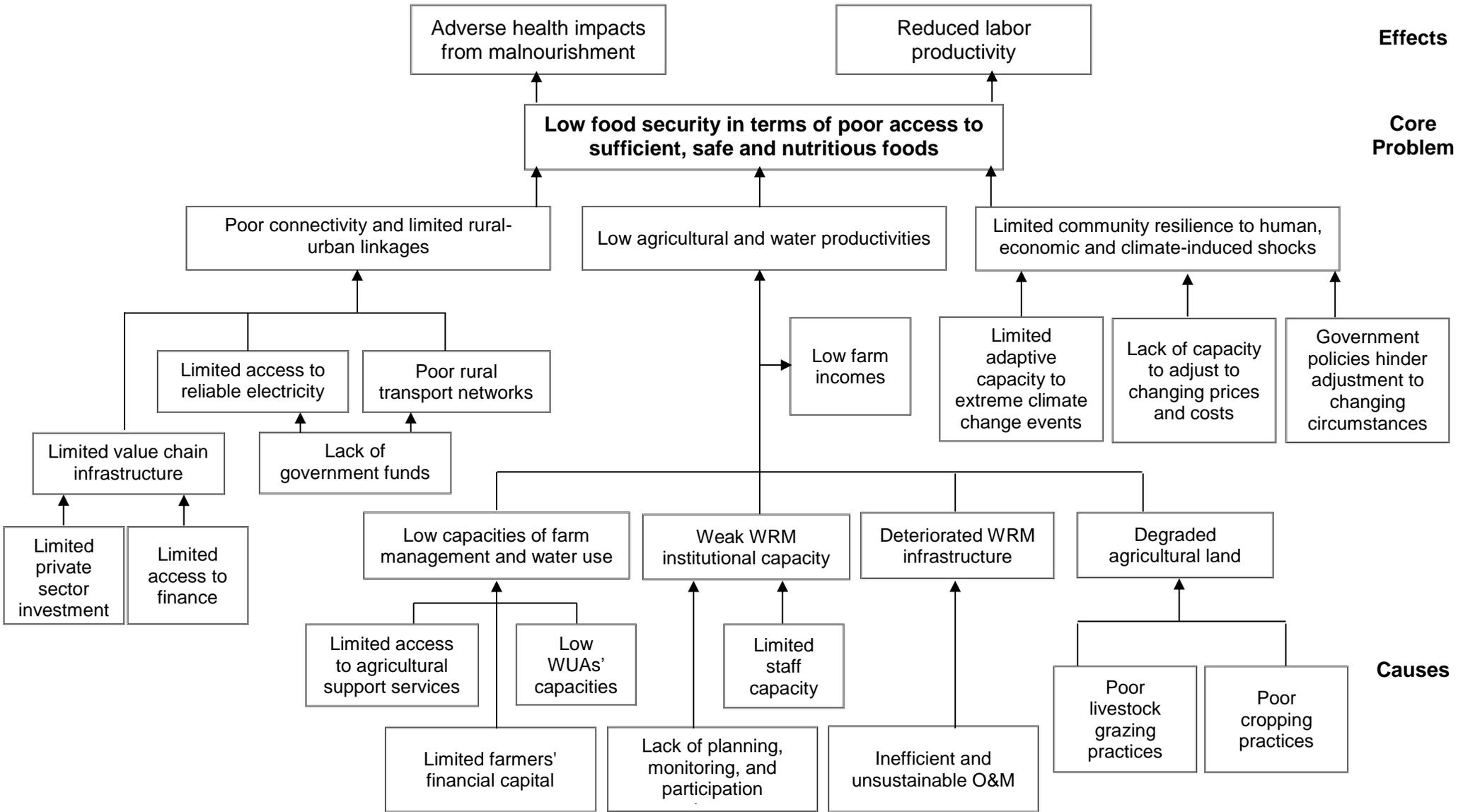
16. ADB will sharpen its focus on sustainable and inclusive food security, enhanced WRM through a river basin approach, and better O&M methods to ensure long-term sustainability. ADB's interventions will support ongoing government reforms to WRM and measures to strengthen climate change resilience. ADB will prioritize WRM reform and the modernization and climate-proofing of WRM infrastructure in the Pyanj river basin, Tajikistan's largest river basin. Pyanj river basin's WRM is critical for food security because it covers the majority of Khatlon province, which has the highest population (2.7 million) in Tajikistan. Khatlon is the country's largest agricultural producer (e.g., 774,000 tons of cereal production). It is also the least developed river basin and includes Tajikistan's most food insecure zone.

17. ADB's future interventions will be informed by the findings and lessons of previous projects, including (i) the importance of focusing on full rehabilitation for effective system performance; (ii) the need to anticipate and address implementation challenges; (iii) high administrative costs of projects dispersed over a broad geographic area; (iv) the importance of improvements to on-farm agricultural productivity for project sustainability; (v) the imperative to ensure sufficient funds are raised (e.g., through water use levies or government contributions) to ensure the sustainability of water users' associations and long-term coverage of O&M costs; and (vi) ensure participation of women to improve water resources management.¹⁵

¹⁴ These include ADB's administered cofinancing grants and TA resources.

¹⁵ ADB. 2012. *Completion Report: Irrigation Rehabilitation Project in Tajikistan*. Manila.

Problem Tree for Agriculture and Natural Resources Sector



O&M = operation and maintenance, WRM = water resources management, WUA = water users' association.
 Source: Asian Development Bank