SECTOR ASSESSMENT (SUMMARY): AGRICULTURE, NATURAL RESOURCES, AND RURAL DEVELOPMENT

Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. Since 2002, Afghanistan has made important strides in building its economy, infrastructure, and institutions supported by large aid inflows. Human Development Index (HDI)\(^1\) for Afghanistan increased by about 2.5% annually between 2000 and 2013, higher than average HDI growth in South Asia and Sub-Saharan Africa. Afghanistan has also established and maintained macroeconomic stability, implemented important structural reforms, and built policy buffers—namely, a comfortable international reserves position and low debt and inflation.

2. Nonetheless, Afghanistan remains a poor and fragile state that is far from self-reliant, especially since grants finance the country’s budget and external current account deficits. Although the country has been successful in reducing the incidence of malnutrition over the period 2010–2015, the proportion of undernourished individuals in the population is still as high as 26.8%, correlating with a poverty incidence of 39%.\(^2\) Average GDP per capita during 2011–2015 was $634, causing Afghanistan to rank 168th out of 183 countries reviewed by the World Bank.\(^3\)

3. The country relies heavily on imported cereals to meet its population’s dietary energy requirements with an import dependency of 16% of the total food demand. This level of dependency is growing 11% per annum (footnote 2). Food insecurity is also prevalent, with the northern provinces having the highest level of food insecurity; Badakhshan at 73%, Bamyan at 72%, Baghlan at 53%, Takhar at 35%, and Kunduz at 28%.\(^4\)

4. Performance of the agriculture sector. Agriculture is Afghanistan's major source of livelihood, employs 79% of the national workforce, and is a significant source of national income. The country’s agriculture sector in 2014 contributed about $3 billion to the national GDP, representing a share of about 22% (footnote 3). Wheat and rice are the main agricultural crops of Afghanistan (footnote 2). In 2015, the total wheat production was 5.4 million tons, valued at $816 million, accounting for 27% of the agriculture sector GDP and 6% of the national GDP. Meanwhile, the country’s total production of rice in 2015 was around 0.5 million tons, valued at $143 million, representing approximately 5% of the agriculture sector GDP and 1.0% of the national GDP. Despite its wheat production, Afghanistan imported around $75 million of wheat and wheat products annually during 2013–2015.

5. Key issues in the agriculture sector. The core problem confronting the country’s economic performance is its low agricultural productivity due to (i) the lack of access to affordable high-quality farming inputs, (ii) the limited use of improved (climate resilient)
agricultural practices and techniques, and (iii) the lack of access to irrigation water. These factors cause the country's agricultural yields to fall below that of the regional and world average. For example, wheat overall production average in 2013 was 2.03 tons/ha, well below the world average of 3.27 tons/ha, and lower than neighboring countries (except Iran and Turkmenistan which are on par). The same is true for rice, with an overall production average of 2.50 tons/ha in 2013, far below the world average of 4.50 tons/ha, and lower than neighboring countries (except Pakistan and Turkmenistan which are on par) (footnote 2). The feasibility studies of the three representative subprojects indicate cropping intensity in the tail area of the canal is around 40% lower than that in the head area of the canal, and that yields (of wheat and rice) in the tail area is about 30% lower than that in the head area. These results suggest that sporadic irrigation has been the primary cause for low crop yields and that improving access to irrigation water is among the key factors to increase cropping intensity and yields. Best practice shows that, as farmers' incomes increase, they gradually adopt improved farming techniques and the use of quality inputs.

6. Only 12% (or 64.4 million ha) of Afghanistan’s terrain is arable. In 2015, the rain-fed area was 3.7 million ha and the irrigated area 3.8 million ha, each representing about 5%–6% of the total arable land. Of the total irrigated area of 3.8 million ha, it is estimated that around 2.2 million ha are single or double cropped every year, with the balance of 1.6 million ha being irrigated if and when water is available, at intervals of 2–6 years. Expansion of new irrigated areas has been examined on a number of projects, but high capital cost outlays make it economically unfeasible. While water is available, improving access to irrigation water on existing irrigation systems faces two critical constraints, (i) the inequitable distribution of water both between and within schemes, and (ii) the dilapidated and inefficient state of irrigation infrastructure.

7. Water availability. Afghanistan includes the western part of one of the world’s great mountain ranges, the Hindu Kush, rising to 7,500 meters in the country’s north-east. The mountains experience rain and snowfall of up to around 1,200 mm annually, with the melting of snow fields and glaciers contributing to the flow of water in the country’s rivers. Commencing in the Hindu Kush, Afghanistan’s main rivers flow through valleys and over plains before crossing into neighboring states. Natural storage of water in the form of winter precipitation (snow) at elevations above 2,000 meters represents 80% of Afghanistan’s water resources (excluding fossil groundwater). The amount of water received in these areas through precipitation is estimated to be in the order of 150 billion m³ per year. The rest of the country receives only 30 billion m³ annually through rainfall, resulting in a total of 180 billion m³ for the whole country.

8. The total annual surface water volume is 57 billion m³, which corresponds to approximately 47% of the total precipitation. Considering an estimated water use of 65% inside the country, approximately 37 billion m³ of surface water is used in Afghanistan. Surface waters in Afghanistan compare favorably with Iran and the Central Asian countries, as the surface water per capita in Afghanistan is estimated at 1,900 m³/year (Iran: 1,430 m³, Pakistan: 1,000

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5 See the problem tree for the agriculture, natural resources, and rural development sector on page 5.
6 Feasibility study reports for three representative subprojects are in Supplementary Documents 18, 19, and 20 (accessible from the list of linked documents in Appendix 2 of the RRP).
Afghanistan also has substantial groundwater resources, with recharge estimated at around 18 billion m$^3$ based on 10% of the average national volume of precipitation of 180 billion m$^3$. In 2015, only around 3 billion m$^3$ of ground water is used annually, with water drawn from springs, karezes, and shallow and deep wells. The low current level of utilization of groundwater suggests that there is great potential for increasing development in future, including for irrigation. However, groundwater irrigation usually involves pumping, thus imposing energy costs on users.

9. Afghanistan has five major river basins and a number of non-drainage areas, mainly in the south. With the exception of the Northern Basin, the river basins, share water resources with neighboring countries and are thus referred to as transboundary basins. On a per-capita basis, the Northern Basin is already highly stressed, though it does have the Amu Darya river flowing past the city of Balkh and part of the Jowzjan province, offering potential for expansion of the irrigated area provided that effective de-silting mechanisms can be devised. The Panj–Amu River Basin has significant water availability per capita, well above the water stress threshold. However, water is not always available at the right place or at the right time. This is due to the inadequate water distribution structures and water allocation regimes, as opposed to a lack of water at a basin or river level.

10. **Competing Users.** In 2010, Afghanistan’s water usage was estimated at 27 billion m$^3$ including 89 million m$^3$ urban consumption, 231 million m$^3$ rural domestic, and 45 million m$^3$ industrial. The balance of over 98% was used in agriculture for irrigation or livestock. This percentage is likely to be even higher in the Panj–Amu River Basin. Of the total agricultural water consumption (estimated at 26.8 billion m$^3$), 22.7 billion m$^3$ is estimated to be from surface water and 4.1 billion m$^3$ from groundwater. Thus, at present, the competition for water from industrial and domestic use is limited, although there is a need to maintain enough water in rivers to provide adequate environmental flow.

11. **Climate change.** Afghanistan is considered highly vulnerable to the adverse effects of climate change. Current models indicate significant warming across all regions of Afghanistan, and a decrease in precipitation, particularly spring rainfall. The anticipated rise in average temperatures means that the average timing of the spring snow melt may occur earlier in the year, reducing water availability in the summer growing season. This may be counteracted to some extent by the decrease in spring rainfall, which is another important catalyst in the initiation of spring snow melt. The anticipated rise in average temperatures means that there will be more energy available, which may result in a higher frequency of extreme storm events and resultant flooding. Higher temperatures and lower precipitation may increase the frequency, intensity, and duration of droughts. Improving the irrigation infrastructure proposed under the project—to protect irrigation schemes from flood events and to improve water distribution to downstream users, particularly in dry years, as well as watershed management—will address key climate change adaptation needs identified in the National Adaptation Plan and Intended Nationally Determined Contribution submitted to the United Nations Framework Convention on Climate Change.

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9 An irrigation system consisting of a tunnel dug at a very slight upward gradient into rising ground so that water from deep within the earth runs out to the surface.
10 Further details are included in Supplementary Document 29.
Based on the above analysis, the increase in cultivated area and cropping intensities (wheat and rice) in the command area cannot be improved without providing reliable irrigation water supply in adequate amounts. This, in turn, depends on suitable levels of agriculture development investments. Therefore, to achieve a significant improvement in agricultural productivity to meet the national agricultural production requirements, it is important that the government, through the public finance window, invest in irrigation infrastructure since funding is unlikely to be provided by the private sector given the magnitude of the capital costs and the limited potential for financial or commercial returns.

2. Government’s Sector Strategy

The Strategic Framework for the Water Sector approved in 2006, provides directions for the water sector in Afghanistan. To support this policy, a revised Water Law was enacted in 2009 facilitating river basin management. The National Water and Natural Resources Development Program (2010–2013, but continuing), with a budget of US$1.1 billion, targets improved access to irrigation for 300,000 ha; establishing and strengthening sub-basin agencies, sub-basin councils, river basin agencies, river basin councils, and water users’ associations (WUAs); and restoring 28,000 ha of rangeland through community-based management. As a result of the program, a river basin agency and six sub-basin agencies are now operational in the Panj–Amu Basin and WUAs have been established. The National Irrigation Program (2016–2025), with a budget of US$1.5 billion, aims to achieve self-sufficiency in wheat through (i) improved irrigation services for 900,000 ha in irrigation rehabilitation; (ii) enhanced extension services; and (iii) improved on-farm water management, operation, and maintenance.

3. Asian Development Bank Sector Assistance Program

Afghanistan has been a recipient of ADB support since 1966. While most ADB operations in the area focus largely on other sectors, such as energy and transportation, the agriculture and natural resources sector has received roughly 13.5% of the total cumulative loans, grants, and technical assistance since 1966, amounting to around US$545 million. This investment has largely gone into enhancements of the water supply through irrigation, as well as other agricultural infrastructure needs. So far, around 140,000 ha of irrigated land have been improved through ADB operations, with more than 225,000 still in development. ADB operations in the country have also focused on improving various aspects of the agricultural economy including farm productivity, farmer incomes, and post-harvest handling.

The main thrust of ADB’s current sector assistance is to enhance agricultural productivity to help increase household incomes and food security. ADB’s sector operations give importance to Afghanistan water resources development since it is one of the major constraints to productivity gains. The ADB’s country operations business plan (COBP), 2016–2018 include specific measures, including rehabilitation and upgrading of irrigation and water management systems, while continuing to support on-farm water management and agricultural extensions. The target is that by 2018, irrigation systems for nearly 225,000 ha of agricultural land will be rehabilitated and upgraded and all rehabilitated and/or updated schemes will be properly

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15 Details of water sector governance are in Supplementary Document 22 (accessible from the list of linked documents in Appendix 2 of the RRP).
maintained by water users’ groups and irrigation associations to ensure long-term sustainability, and improved policy and institutional capacity for resource management.

Problem Tree for Agriculture, Natural Resources, and Rural Development Sector

**LOW PERCAPITA INCOME AND HIGH RURAL POVERTY**

- Limited value addition and profitability in the sector
- Long-term sustainability of present patterns of agricultural growth increasingly in doubt
- Limited growth of agro-enterprises, agro-industry uncompetitive, lack of diversification into higher-value crops

**CORE PROBLEM**

- Low agricultural productivity

**CAUSES**

- Lack of access to affordable high-quality inputs
- Lack of access to irrigation water
- Limited use of improved (climate resilient) agricultural practices and techniques

**EFFECTS**

- Adoption of improved, more productive agricultural technologies and farming systems restricted to a minority of farmers due to weaknesses in research and extension systems, particularly the link between them
- Limited accessibility to/availability of good quality seeds and agricultural inputs and credit due to farmers’ limited financing/borrowing capacity and underdeveloped input supply systems
- Inequitable distribution of water
- Lack of new irrigation and water storage (reservoir) schemes
- Dilapidated (inefficient) irrigation infrastructure
- Ineffective water resources management at the basin level
- Inadequate O&M
- Damage to infrastructure (through flooding) due to upstream erosion, poor upper catchment conservation, and increased storm events
- Droughts (exacerbated by climate change)
- Lack of land tenure/ownership security leading to lack of investment
- Limited knowledge and experience of farmers
- Poorly functioning markets for agricultural technology
- Lack of private sector investment due to high risk to innovate
- Poor research and extension services
- Lack of investment and poor service delivery