

## ECONOMIC ANALYSIS

### A. Introduction

1. The additional financing for the Horticulture Value Chain Development Project will finance a range of enterprises to implement viable subprojects in horticulture production and post-harvest handling, storage, and processing. It is a follow-on project to the ongoing Horticulture Value Chain Development Project and will provide additional funding to meet the demand for credit within the horticulture subsector. As with the original project, all subproject financing will be demand driven based on potential subborrowers' proposals submitted to participating financial institutions. All subprojects, subborrowers, and subloans will be required to satisfy eligibility criteria established under the original project. Subproject proposals will include a detailed market assessment and technical and financial analyses in the form of a business plan. Participating financial institutions will appraise business plans and determine the subloan terms and conditions according to their prevailing credit policies, risk strategies, and appropriate commercial criteria. In this respect, it is not possible to state in advance exactly what types of or how many subprojects will be financed, though it is expected they will comprise a blend of production and post-harvest activities throughout Uzbekistan, as is the experience of the original project to date.

### B. Economic Overview

2. The economy of Uzbekistan has grown consistently in recent years. During 2011–2016 gross domestic product (GDP) grew at an average annual rate of 8.0%, though annual rates of growth fell from 8.2% in 2012 to 7.8% in 2016. GDP grew from \$46.2 billion in 2011 to \$63.4 billion in 2016.<sup>1</sup> Growth is expected to be slightly lower in 2017 and 2018 in view of protracted economic weakness in Uzbekistan's key trading partners, notably Russia (its major trading partner and source of remittances). GDP growth rates are expected to be 7.0% in 2017 and 7.3% in 2018.<sup>2</sup> Inflation is forecast at 9.5% in 2017 and 10.0% in 2018. Inflationary pressures will come mainly from higher government spending and continued depreciation of the sum against the dollar.

3. Uzbekistan has made significant progress in poverty reduction in recent years. According to national poverty line estimates, the proportion of the population living below the poverty line fell from 27.5% in 2001 to 12.8% in 2016.<sup>3</sup> Between 2011 and 2016, gross national income per capita (based on international dollar purchasing power parity) grew at an annual average rate of 7.4%, from \$4,650 to \$6,640.<sup>4</sup> The government aims to enable Uzbekistan to become an industrialized, upper middle-income country by around 2050, based on a strategy of continuing the transition to a more market-oriented economy to ensure equitable distribution of growth between regions and to maintain infrastructure and social services.<sup>5</sup> The country's policy goals and priorities are to (i) increase the efficiency of infrastructure, especially of energy, transport, and irrigation; (ii) increase the competitiveness of specific industries, such as agro-processing, petrochemicals, and textiles; (iii) diversify the economy and thereby reduce reliance

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<sup>1</sup> Based on GDP in current sum converted at the average annual exchange rate. Average annual growth in current sum was 20.4%. Source: Asian Development Bank (ADB). 2017. *Key Indicators for Asia and the Pacific 2017*. Manila.

<sup>2</sup> ADB. 2017. *Asian Development Outlook 2017*. Manila.

<sup>3</sup> On the basis of \$1.90 purchasing power parity criterion. Source: ADB. 2017. *Basic Statistics 2017*. Manila. <https://www.adb.org/sites/default/files/publication/298061/basic-statistics-2017.pdf>

<sup>4</sup> World Bank. 2017. <https://data.worldbank.org/country/uzbekistan>.

<sup>5</sup> In 2011 the World Bank reclassified Uzbekistan from a low-income to a lower-middle-income country.

on commodity exports; and (iv) improve access to and the quality and outcomes of education, health, and other social services.

4. Along with overall economic growth, GDP in agriculture has grown in line with aggregate GDP, though at a slightly lower rate. During 2011–2016 it grew at an average annual rate of 6.8%, ranging from 7.2% in 2012 to 6.0% in 2016. Agriculture is expected to grow by 6.8% in 2017 and 7.1% in 2018, reflecting higher production of fruit and vegetables from major horticulture and agro-processing development programs initiated in 2017, such as the original project (footnote 2). However, the expansion and higher growth rates in other sectors, largely as a result of significant government-financed investment programs, resulted in a decline in the contribution of the agriculture sector to GDP. In 2000, agriculture accounted for 34.4% of GDP; this had fallen to 29.5% by 2005 and 17.9% by 2016. A decline in the significance of agriculture was also recorded in respect of employment. In 2000 agriculture accounted for 34.4% of employment. This had fallen to 25.5% in 2009, but then started to increase slightly, reaching 27.7% in 2016.<sup>6</sup>

### **C. Project Rationale**

5. In recent years, the government has implemented several policies within the agriculture sector that have addressed issues such as farm restructuring and introducing private usufruct rights on former cooperative and state land. This has been accompanied by diversification in cropping patterns away from traditional cotton and wheat crops to higher-value fruit and vegetable crops. However, the agriculture sector continues to have low productivity and be labor intensive. Government policy for the fruit and vegetable subsector is to facilitate private sector, market-driven development.

6. Policy initiatives to support horticulture will provide an impetus to development but do not fully address key constraints. Despite recent project initiatives from international financial institutions,<sup>7</sup> horticulture enterprises throughout the value chain (in both production and post-harvest activities) continue to have limited access to equity and long-term debt financing. The horticulture subsector does not receive preferential financing under government programs, as is the case for cotton and wheat production. Financial institutions have a largely negative perception of profitability and creditworthiness of the agriculture sector, indicated by a disproportionately low level of credit disbursed in the sector compared to its GDP contribution. In the fruit and vegetable subsector, this is exacerbated by a lack of acceptable collateral among many small-scale producers or collateral with low realizable values among agribusiness enterprises. Even amongst those banks participating in the original project (which has resulted in a significant increase in lending in horticulture), agriculture accounts for only 3.3% and horticulture for only 1.1% of their aggregate portfolio as of the end of the third quarter of 2017.

### **D. Demand Analysis**

7. Horticulture production has grown significantly since 2005. In 2005, production was estimated at 6.6 million tons but by 2016 production had reached 20.0 million tons, representing an average annual growth rate of 11.8%. This has had a marked impact upon average Uzbek

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<sup>6</sup> ADB. 2017. *Key Indicators for Asia and the Pacific 2017*. Manila.

<sup>7</sup> Including ADB's Horticulture Value Chain Development Project and the World Bank's Horticulture Development Project.

food consumption patterns. In the early 2000s, per capita consumption of fruit in Uzbekistan was below that of the average for the Commonwealth of Independent States (CIS) countries and well below the average for developed countries. The situation with respect to vegetable consumption was better, though it remained below that of some neighboring countries. The growth in supply has resulted in an increase in the share of fruit and vegetables in the average Uzbek daily energy supply. Variations by region and by income group are likely to exist but data are not available to estimate the extent of such variations. Demand for fruit and vegetables in Uzbekistan will derive partially from population growth, which averaged 1.5% per year between 2000 and 2016, but principally from changing patterns of demand as household incomes rise and consumers demand higher levels of fruit and vegetable quality and safety and a higher proportion of processed products. According to Ministry of Agriculture (MOA), in 2015, about 69.0% of fruit is consumed fresh, 20.0% is processed, and 11.0% exported, while 81.0% of vegetables is consumed fresh, 11.3% is processed, 4.3% is used for seeds, and 3.4% is exported.

8. While there is likely to be a shift in the pattern rather than significant increase in the volume of domestic demand, the major source of demand is expected to be exports. Growth in the volume, diversity, and value of exports was considerable between 2005 and 2015. According to MOA, the volume of exports increased by 1.8 times and the value 18-fold over the period. In 2016, Uzbekistan exported 65 types of fruit and vegetable products to 43 countries amounting to 818,500 tons, an increase of 38.3% on 2015.<sup>8</sup> Of this, vegetables accounted for 242,100 tons, fruit 229,600 tons, and grapes 96,200 tons. According to MOA estimates, exports are forecast to rise significantly by 2020 with average annual growth rates ranging from 11.8% in the case of grapes to over 100.0% for melons. While these growth rates appear ambitious, the average annual rate of growth of fruit and vegetable exports from 2000 to 2013 was 21%, increasing from \$68.7 million in 2000 to \$1.45 billion in 2016. This growth was achieved despite government agriculture sector policy that focused on cotton and wheat and effectively constrained horticulture access to land, inputs, machinery, and finance. Now that the government is actively supporting horticulture development, e.g., through export promotion and provision of finance from international financial institutions including ADB through the Horticulture Value Chain Development Project (and potentially the proposed project), increases in exports at the forecasted level may be achievable.

## **E. Analysis of Indicative Subprojects**

9. Various indicative subprojects that could be financed under the additional financing that are comparable with those already financed under the original project have been analyzed for financial and economic viability. These include (i) greenhouse production of fruit and vegetables, (ii) cold storage of fruit and vegetables, (iii) fruit and vegetable drying, (iv) establishment of a walnut orchard, and (v) investment in agricultural machinery for field production of vegetables and other crops. Subproject investment costs range from \$220,500 to \$17.9 million. All investments are financially viable with financial internal rates of return ranging from 10.3% to 38.3%, compared with an estimated weighted average cost of capital of 5.8%. Economic analysis based on the domestic price numeraire has been undertaken to determine the economic viability of representative subprojects. In the analysis, financial prices of traded subproject inputs and outputs have been converted into economic prices based on border price equivalent values. In accordance with the numeraire, financial (domestic market) prices of nontraded inputs and outputs have been assumed to reflect their economic prices, and transfer

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<sup>8</sup> Source: Uzagroexport ([www. http://uzagroexport.uz/2017/01/05/](http://uzagroexport.uz/2017/01/05/)).

payments, such as taxes and duties and subloan interest payments, have been set to zero. The corresponding economic rates of returns are in the range of 11.4% to 57.1%, significantly above the ADB cut-off rate for economic viability of 9.0%. Sensitivity analysis indicates that the subprojects are robust regarding adverse movements in revenues (including output volumes and/or prices) and investment and operating and fixed costs in both financial and economic terms. With respect to greenhouse production, diversification of production of fruit and vegetables from field to greenhouse cultivation also results in significant benefits in water use efficiency and associated environmental management in addition to financial and economic benefits. Research indicates that such benefits are potentially very significant.<sup>9</sup> A summary of key parameters of indicative subprojects is presented at the end of this document.

## **F. Employment and Social Impact**

10. Employment will increase as a result of project investments. The majority of employment opportunities created will, however, be for skilled laborers who possess the required technical knowledge and skills for intensive greenhouse or orchard production. Since the analysis has been based on indicative models and project investments will be demand driven, it is not possible to estimate the project's overall employment impact, though it is expected to be significant. Equally, it is not yet meaningful to undertake a distribution analysis for the project.

## **G. Risks**

11. Market access and the volume of exports to CIS countries and beyond will be affected by increasing competition from other CIS countries. This is a key potential market and business risk to the attainment of subproject financial viability and overall project economic benefits. Mitigation of product quality and market access risks are inherent in the perception of Uzbek fruit and vegetables as being of high quality. Uzbekistan has also begun to initiate Global Good Agricultural Practice (GlobalGAP) with the assistance of development partners, and further promotion of GAP certification will help to ensure wider market access. In other areas, the government has indicated its willingness to support private sector development in horticulture and facilitate private sector involvement in fruit and vegetable marketing. Having established Uzagroexport with sole responsibility for consolidation and export of fruit and vegetable products, the government terminated its monopoly and opened fruit and vegetable exports to private entities. Liberalization of foreign currency markets and exchange also signals the government's support for greater commercialization in the finance sector and within the economy as a whole. Continued efforts in this direction with support of development partners will help to address risks.

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<sup>9</sup> Economic analysis has been undertaken in accordance with ADB. 2017. *Guidelines for the Economic Analysis of Projects*. Manila. Details of the analysis of subproject financial and economic viability are in the Detailed Project Economic Analysis (accessible from the list of linked documents in Appendix 2 of the report and recommendation of the President).

### Summary of Key Parameters of Indicative Subprojects

Item	Greenhouse and Cold Storage (3 ha)	Fruit and Vegetable Drying (17,100 tons)	Fruit and Vegetable Cold Storage (500 tons)	Walnut Orchard (400 ha)	Field Vegetable Production (8,000 ha)
Total cost of investment (\$)	3,001,056	8,178,001	220,481	1,470,950	17,960,593
Total revenue (\$ per year)	662,388	15,147,000	259,876	2,454,820	17,738,387
Total operating and fixed costs (\$ per year)	159,297	12,339,475	190,310	257,642	9,885,384
Net cash flow after financing and tax (\$ per year)	503,091	2,428,850	69,566	2,197,178	6,652,401
Investment financing requirement (\$)	1,998,760	1,383,000	156,200	690,950	5,000,000
Equity contribution (\$)	1,002,296	6,795,001	64,281	780,000	12,960,593
Profit margin (%)	76.0	16.0	26.8	89.5	37.5
Return on assets (%)	16.8	29.7	31.6	149.4	37.0
Return on equity (%)	50.2	35.7	108.2	281.7	51.3
FIRR (%)	10.3	28.8	24.5	38.3	28.3
FIRR after ADB subloan (%)	13.8	31.8	44.7	46.7	35.8
FIRR after ADB subloan and tax (%)	13.8	26.4	44.7	46.7	33.3
Switching values (%) on FIRR before ADB subloan and tax					
Revenue	14.1	10.8	14.2	67.0	25.7
Investment cost	22.4	141.6	116.6	525.7	153.2
Operating and fixed cost	61.3	13.2	19.4	329.9	44.8
EIRR (%)	11.4	57.1	14.6	44.1	10.9

ADB = Asian Development Bank, EIRR = economic internal rate of return, FIRR = financial internal rate of return, ha = hectare.

Source: ADB.