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Independent Office of Evaluation

Republic of Uzbekistan
Horticultural Support Project

PROJECT PERFORMANCE EVALUATION

Republic of Uzbekistan

Horticultural Support Project

Project Performance Evaluation

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Photos of activities supported by the Horticultural Support Project

Front cover: Dehkan farmer in Termez District who received a loan from the project for the construction of a greenhouse. She also received training on horticultural production techniques, and now primarily uses the greenhouse for tomato production.

Back cover: Irrigation canal in Khasankhan, Surkhandarya, rehabilitated with concrete lining through an intervention supported by the project (left); Greenhouse with seedlings in production at the central nursery of the Mirzaev Scientific Research Institute of Horticulture and Viticulture, Denau, Surkhandarya. The project developed the capacity of the central nursery for research and development of healthy varieties and seedlings (right).

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Preface

This report presents the findings of the project performance evaluation of the Horticultural Support Project (HSP) in the Republic of Uzbekistan, undertaken by IFAD's Independent Office of Evaluation (IOE). This is the first evaluation undertaken by IOE in the Republic of Uzbekistan, and the report highlights some important lessons, which can inform future programming.

As IFAD's first project in the Republic of Uzbekistan, HSP was designed to support the diversification of agricultural production away from an almost exclusive focus on cotton and wheat towards higher-value crops, and with a particular emphasis on supporting smallholder ("dehkan") farmers. Overall, however, IFAD underestimated the level of support needed in a new partner country, particularly in the context of significant economic, social and political transition. Activities were focused mostly on the supply side of horticultural production, with little attention paid to markets and the demand side. Irrigation improvement activities have reduced water losses, but not at a sufficient scale given the context of increasing water scarcity in Uzbekistan. Meanwhile, data suggest that poorer dehkan households were excluded from accessing loans for horticultural development.

More broadly, the evaluation concluded that HSP did not adequately address the institutional capacity constraints that limit the potential of the horticultural subsector in Uzbekistan. In general, given the delays and lack of appropriate sequencing of activities, HSP did not effectively pilot or demonstrate the "comprehensive programme of support" that had been planned. Going forward, future investments in the horticulture subsector should be climate-smart and focus more on regulatory aspects, value chain dynamics, and creating and strengthening horizontal and vertical linkages among value chain actors. As more development partners invest in horticultural development, IFAD has a clear role to play in ensuring that resources are targeted towards poorer dehkan farmers, women and youth, who would otherwise risk being left behind.

I hope the results generated by this evaluation will be of use to help improve IFAD operations and activities in the Republic of Uzbekistan for enhanced development effectiveness.

Indran A. Naidoo, PhD
Director
Independent Office of Evaluation of IFAD

Acknowledgements

The project performance evaluation was led by Eoghan Molloy, IOE Evaluation Officer, in collaboration with Pamela White, senior international consultant, and Lasha Khonelidze, international rural finance expert. The evaluation team worked closely with the team of the IOE-led Country Strategy and Programme Evaluation in Uzbekistan, with inputs from: Ahmad Hamidov, agribusiness expert; Madina Hamidova, natural resources management expert; Mirzakhayot Ibrakhimov, irrigation and geographic information system expert; Isroiljon Khakimjonov, gender specialist; and Federica Lomiri, IOE evaluation consultant.

Johanna Pennarz, IOE Lead Evaluation Officer, Prashanth Kotturi, IOE Evaluation Officer, and Fabrizio Felloni, IOE Deputy Director, provided valuable comments on the draft report. Maria Cristina Spagnolo, IOE Evaluation Assistant, and Bahodir Amonov, Uzbekistan resource consultant, provided administrative support throughout the evaluation process.

IOE is grateful to IFAD's Near East and North Africa Division, to the Government of Uzbekistan and to country stakeholders and partners for their insightful contributions at various stages of the process, and for the support they provided to the overall evaluation process.

Contents

Currency equivalent, weights and measures

Currency equivalent

Currency unit = UZS (Uzbek s'om)
US$1.0 = UZS 1,700 (at design)
US$1.0 = UZS 10,116 (at completion)

Weights and measures

1 Kilogram = 1,000 g
1,000 kg = 2.204 lb.
1 kilometre (km) = 0.62 mile
1 metre = 1.09 yards
1 square metre = 10.76 square feet
1 acre = 0.405 hectare
1 hectare = 2.47 acres

Abbreviations and acronyms

ADB	Asian Development Bank
ADMP	Agriculture Diversification and Modernization Project
AKIS	Agriculture Knowledge and Innovation Service
COSOP	country strategic opportunities programme
DVCDP	Dairy Value Chain Development Project
EIRR	economic internal rate of return
FAO	Food and Agriculture Organization of the United Nations
HSP	Horticultural Support Project
IFI	international financial institution
IOE	Independent Office of Evaluation of IFAD
M&E	monitoring and evaluation
MAWR	Ministry of Agriculture and Water Resources
MCO	microcredit organizations
MFI	microfinance institutions
MTR	mid-term review
NDVI	Normalized Difference Vegetation Index
O&M	operation and maintenance
PCR	project completion report
PDR	project design report
PFI	participating financial institution
PMU	project management unit
PPE	project performance evaluation
RRA	Rural Restructuring Agency
SECAP	IFAD's Social, Environmental and Climate Assessment Procedures
SLA	subsidiary loan agreement
UZAIFSA	Agency for Implementation of Projects in the Field of Agro-industry and Food Security
WCA	water consumers' association
WIS	Welfare Improvement Strategy

Map of the project area

Uzbekistan
Horticultural Support Project (HSP)

Project performance evaluation

The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of IFAD concerning the delimitation of the frontiers or boundaries, or the authorities thereof.

Map compiled by IFAD | 01-02-2021

Greenhouse owner in Termez District who received a loan through the project's credit line for the construction of a greenhouse for the planting and production of lemons.

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Executive summary

Background

1. **Project background.** The Horticultural Support Project (HSP) was the first IFAD-financed project in Uzbekistan. The project's expected outcomes were: (i) the creation of a viable horticulture subsector with modern farming techniques, backward linkages to poor rural smallholders and improved access to domestic and international markets; (ii) increased investments by producers, processors and service providers in productive assets in the horticulture subsector; and (iii) improved farming efficiency and mobility of productive assets and produce. Approved in April 2012, the project became effective in December 2013, with a completion date of 31 December 2019. HSP was implemented in nine districts of the region of Surkhandarya with a total budget of US$25.7 million.

2. **Evaluation scope and approach**. This is the first IFAD project to be evaluated by the Independent Office of Evaluation (IOE) in Uzbekistan. This evaluation adopts IOE's evaluation methodology (2015 Evaluation Manual) and is based on a review of project-related documents, interviews and discussions with project stakeholders and beneficiaries, analysis of geospatial imagery, and in-person project site visits in Surkhandarya conducted in May 2021. The evaluation team was led by IOE. The evaluation took all necessary measures to mitigate any risks associated with the ongoing COVID-19 pandemic. The data collection phase concluded with a wrap-up meeting with key project stakeholders.

Main findings

3. As HSP was IFAD's first project in the country, there were understandably some initial challenges in aligning project management and procurement procedures with IFAD requirements. However, IFAD underestimated the amount of support that would be needed in a new country, resulting in the delay of important project activities.

4. **Targeting.** The targeting of *dehkan*[1] farmers in Surkhandarya was a relevant choice for piloting horticultural support in Uzbekistan, but rural finance products and services were not sufficiently adapted to the needs, barriers and cash flow of smallholder farmers. The poorest households, youth and women were generally excluded from accessing finance. The targeting strategy was based on the size of land holdings, which meant that there was no monitoring of beneficiaries' actual wealth status, and it is highly likely that poorer *dehkan* farmers, in particular, were excluded from accessing finance. There was a tendency, in practice, to promote larger loan sizes and more support was provided to non-*dehkans* (agrofirms, larger farmers). Cultural constraints made it difficult to encourage women to take loans and to receive training, while youth were not adequately considered as a target group in the project's design, and there was no monitoring of participants' age.

5. **Approach to value chain development.** HSP focused mostly on the supply side of horticultural production, with little attention paid to markets and the demand side. The emphasis on improving horticultural production was understandable as this was one of the first projects on horticulture. However, the sustainability of benefits and the scale of impact have been undermined by the lack of market access and vertical linkages between value chain actors. HSP made insufficient efforts to link farmers to processors and other value chain actors to ensure sustainable markets and fair pricing, and little attention was paid to regulatory constraints such as export rules, or the rural finance policy environment.

[1] *Dehkan* farms are household plots of a maximum size ranging from 0.35 to 1 hectare. The land may be used for agricultural and residential purposes and be held under life-long, inheritable tenure. Only family members can work on the plots.

6. **Inclusive financial services.** With over 80 per cent of the budget disbursed as sub-loans, HSP was essentially a credit line for onward lending through local banks. There was strong uptake of loans among the different borrower categories, although data suggest that poorer households were excluded. There was limited complementarity or sequencing of rural finance activities with other HSP activities. Not having received adequate sensitization and capacity development, commercial banks remain apprehensive about providing loans to *dehkan* smallholders, while *dehkans* themselves continue to face barriers to accessing finance.

7. **Effectiveness and sustainability of irrigation infrastructure improvement.** Irrigation improvement activities have reduced water losses, but the scale of activities was small, and more attention is needed on water-saving measures. The sustainability of irrigation works is in jeopardy due to: lack of clear operation and maintenance arrangements; limited collection of user fees; generally weak capacity; and frequent institutional changes related to water consumer associations. Water consumer associations were noted as having weak institutional capacity, while inequitable distribution of water resources means that benefits are not equally shared.

8. **Climate-smart agriculture.** Climate change adaptation received limited emphasis in HSP, and there were missed opportunities to introduce climate-smart agricultural practices. The diversification of agricultural production by itself was considered the principle "adaptive" response encouraged by HSP, coupled with improvements to irrigation (but this was on a relatively small scale, given the intended "pilot" nature of the project). Given the seriousness of climate predictions for Uzbekistan, more tailored and direct support is needed to ensure resilient and sustainable horticulture value chains and livelihoods.

Conclusions

9. **HSP results were predominantly linked to rural finance activities, with limited complementarity with other project activities.** In general, given the delays and lack of appropriate sequencing of activities, HSP did not effectively pilot or demonstrate the "comprehensive programme of support" that had been planned; as such, results were limited to a small scale and primarily observed among the borrowers of refinanced credit. There was limited complementarity or sequencing of rural finance activities with other HSP activities (e.g. irrigation improvements, rootstock and planting materials).

10. **HSP did not adequately address the institutional capacity constraints that continue to limit the potential of the horticultural sub-sector in Uzbekistan.** The Government was reluctant to use loan financing for capacity development, with the emphasis being primarily on loan disbursement performance. Meanwhile, sub-loans were disbursed prior to any capacity development activities, undermining the sequencing logic of the project's activities. HSP offered one-off trainings to individuals but did not address capacity gaps at the institutional or enabling environment levels. Limited presence of technical advisors, a weak agricultural extension system, and generally weak capacities for value chain development remain barriers for realizing the potential of horticultural development in Uzbekistan.

11. **HSP made insufficient efforts to link farmers to processors and other value chain actors, and little attention was paid to regulatory constraints such as export rules, or the rural finance policy environment.** The emphasis on improving horticultural production was understandable as this was one of the first projects on horticulture. However, the sustainability of benefits and the scale of impact have been undermined by the lack of market access and vertical linkages between value chain actors, while regulatory constraints continue to pose barriers for the export of horticultural produce.

12. **As HSP was the first partnership between IFAD and the Government, it took time for the partners to understand each other's rules, procedures and**

requirements, leading to delays in implementation. There was, understandably, a learning process for both IFAD and the Government of Uzbekistan, as IFAD's first engagement with a new partner country. IFAD misunderstood the administrative hurdles, such as the feasibility study (as did other donors), leading to delays in execution. The Government struggled to understand IFAD's requirements for budget planning, audit and procurement, and monitoring and evaluation was generally weak.

Recommendations

13. **Recommendation 1. Investments in the horticulture subsector should be climate-smart and focus more on regulatory aspects, value chain dynamics, and the creation and strengthening of horizontal and vertical linkages among value chain actors.** HSP experience shows that the scale of future irrigation investments should be larger and include modern technology and innovations, so as to maximize the potential for impact and adaptation to climate change. Greater focus is needed on the marketing and demand sides for Uzbek horticultural products, particularly with regard to export barriers and international trade standards. This could include greater support for sanitary and phytosanitary measures, policy support for easing regulatory barriers to trade, and support for organic certification. Creating linkages and formalizing contractual agreements between producers, wholesale buyers and traders would enhance efficiencies in production and guarantee demand for horticultural producers. Supporting *dehkans* and farmers to create and join associations would enhance technical knowledge sharing and strengthen the bargaining power of producers in negotiating prices.

14. **Recommendation 2: Future projects should pay greater attention to institutional capacities and frameworks, knowledge-sharing, and ongoing support from technical advisors.** Training and capacity development activities should be better sequenced, ideally conducted prior to the disbursement of sub-loans. Capacity development activities should not be one-off events, but rather involve sustained coaching and mentoring, coupled with support to knowledge sharing, networking and twinning, focusing on both technical as well as functional capacities (i.e. soft skills, managerial skills), targeting individuals, organizations and the enabling environment. In the context of the horticultural value chain, this could include: capacity development for forming partnerships between the different value chain actors; organizational strengthening for water consumer associations and newly formed clusters; policy and normative capacity development for policymakers; and awareness-raising and sensitization of rural bank staff with regard to the needs of horticultural producers. Future activities could link more closely with the emerging AKIS service centres for extension support;[2] while the use of Telegram and YouTube offers great potential for knowledge-sharing.

15. **Recommendation 3: IFAD should maintain its comparative advantage by allocating sufficient resources and focus to target poorer *dehkans*, women and youth**. As more development partners bring investments to horticultural development centred on larger farms and the eventual shift to a cluster system, IFAD has created a niche in line with its comparative advantage, and in line with recent Government decrees, in targeting small *dehkan* farmers who may otherwise be left behind. However, poorer *dehkan* farmers also need targeted and differentiated support in the form of business planning and loan applications, capacity-building and market linkages. Household methodologies could be applied to address the role of women in the family economy, empowering them to be more socially and economically active in future projects. Job creation for rural youth should be a priority in future projects.

[2] Agriculture Knowledge and Innovation Service (AKIS) centres are a one-stop shop for agricultural services, including extension, and the model is being incorporated into new and upcoming agricultural projects (e.g. World Bank).

IFAD Management's response[3]

1. Management welcomes the overall evaluation findings of the Project Performance Evaluation (PPE) of the Horticultural Support Project (HSP) conducted by the Independent Office of Evaluation of IFAD (IOE) and the measures taken to mitigate data limitations and potential evidence gaps in the pandemic context.

2. Management takes note that IOE assesses the performance of this first IFAD-financed project in Uzbekistan as moderately unsatisfactory. Management would like to highlight that the Government and development partners have confirmed IFAD's pioneering role for a viable horticulture subsector with modern farming techniques, which was one of the priority objectives of HSP in a context of rapid institutional changes and policy reforms. IFAD's first lending to Uzbekistan and HSP's focus on small-scale *dehkan* farmers were instrumental for greater investments in the horticulture subsector with record-high levels of international co-financing. Management concurs with the PPE assessment that while HSP improved water availability and agricultural productivity, rural finance activities at project level faced challenges in reaching the targets, including women.

3. Management appreciates PPE's recommendations and assures that these are already being addressed through concrete steps and integrated as part of IFAD's active portfolio and engagement initiatives. The detailed Management's views on the proposed recommendations are presented below:

Recommendation 1. Investments in the horticulture subsector should be climate-smart and focus more on regulatory aspects, value chain dynamics, and the creation and strengthening of horizontal and vertical linkages among value chain actors.

4. **Partially agree.** While climate mainstreaming was not an IFAD requirement at the time of design, HSP has demonstrated potential for scaling up climate-resilient practices and water loss reductions through improved irrigation networks. As part of the Government's ambition to diversify an agricultural system historically reliant on cotton and wheat, the horticulture subsector was identified under HSP for its potential to increase agricultural outputs, improve assets of value chain actors and generate incomes for small-scale producers, *dehkans* and women. The next generation of IFAD-financed programmes in Uzbekistan, and in particular the Agriculture Diversification and Modernization Project (ADMP), has benefited from lessons learned under HSP. ADMP includes a component on climate-resilient rural infrastructure and supports multistakeholder platforms, value chain governance and market linkages. The steady growth of the horticulture subsector with increasing investments from sister international financial institutions are further evidence of HSP's contribution to the vision recently formalized by Presidential decree under the Agrifood Development Strategy 2020–2030 of a competitive sector that improves rural livelihoods.

Recommendation 2: Future projects should pay greater attention to institutional capacities and frameworks, knowledge-sharing, and ongoing support from technical advisors.

5. **Agree.** Under the ongoing IFAD-funded Dairy Value Chains Development Programme (DVCDP), training, capacity development and dissemination of knowledge products prior to disbursement of sub-loans by participating financing institutions are being closely monitored with additional implementation support from IFAD. This includes targeted technical advice to formulate viable business plans and value chain roadmaps benefiting the rural poor but also stakeholder coaching to seize opportunities of multiservice platforms and upgrade to "productive alliances". In

[3] The Programme Management Department sent the final Management's response to the Independent Office of Evaluation of IFAD on 24 November 2021.

addition, staff from the Project Management Unit have enrolled in IFAD's regional training on pro-poor value chains in order to gain exposure to best practices, foster exchanges and incentivize inclusive innovation. In alignment with the Government's agenda for a greater participation of the private sector in rural transformation, IFAD will assess options for extending non-sovereign operations under the Private Sector Financing Programme in Uzbekistan to scale up eligible pilots.

Recommendation 3: IFAD should maintain its comparative advantage by allocating sufficient resources and focus to target poorer *dehkans*, women and youth.

6. **Agree.** The upcoming formulation of a new multi-year country strategic opportunities programme and the early expression of interest by the Government of Uzbekistan in accessing the Fund's resources under the next financing cycle will allow IFAD to continue playing a critical role in reaching the people at greatest risk of being left behind. Uzbekistan's national pathway to transform rural economies and food systems by 2030 is aligned with IFAD's priorities to deepen impact of interventions for the rural poor, further empower rural women, and generate decent jobs for youth. Moving forward, the provisions of IFAD's Inclusive Rural Finance Policy approved by the Executive Board in September 2021 will inform further integration of financial products and services for small-scale farmers into value chain-focused programmes. To maximize impact for beneficiaries, the focus on project-level monitoring and evaluation, results-based management, targeting for social inclusion, and integration of mainstreaming themes will continue to be prioritized. As part of IFAD's decentralization agenda, the opening of an IFAD office in Tashkent will help translate adaptive management practices, already introduced following the mid-term review of DVCDP in September 2021, into greater results through learning and accountability during implementation and at project completion. An active country presence will allow for greater participation in policy dialogue and strategic engagement in non-lending activities, while proximity to the client, beneficiaries and partners will support IFAD's comparative advantage in assembling development finance for inclusive and sustainable rural transformation.

7. Management thanks IOE for the constructive evaluation process and will ensure that lessons learned from this exercise are internalized to further improve the performance of IFAD-financed projects in Uzbekistan and elsewhere.

Laboratory staff at work in the Scientific-Experimental Station of the Mirzaev Scientific Research Institute of Horticulture and Viticulture, Denau, Surkhandarya. The project provided laboratory equipment and training.

Republic of Uzbekistan
Horticultural Support Project
Project Performance Evaluation

I. Evaluation objectives, scope, methodology and process

1. In line with the IFAD Evaluation Policy, the Independent Office of Evaluation of IFAD (IOE) undertook a project performance evaluation (PPE) of the IFAD-financed Horticultural Support Project (HSP) in Uzbekistan. This is the first IFAD project to be evaluated by IOE in Uzbekistan. The main purpose of this evaluation was to assess the results and impact of HSP and generate findings and recommendations for the design and implementation of ongoing and future operations in Uzbekistan.

2. **Objectives.** The main objectives of the evaluation were to: (i) provide an independent assessment of the overall results and impact of the project; (ii) draw lessons that can inform the future development of IFAD's cooperation with the Republic of Uzbekistan; and (iii) obtain detailed insights and lessons on key issues to inform other IOE evaluations, in particular the Uzbekistan Country Strategy and Programme Evaluation.

3. **Scope.** The scope of the PPE has been defined within the context of the ongoing COVID-19 pandemic, which limits the possibility for IOE to deploy international missions to conduct primary data collection in project communities.

4. **Methodology and process**. The PPE was undertaken in accordance with the revised IFAD Evaluation Policy[1] and the IFAD Evaluation Manual (second edition, 2015). It adopts a set of internationally recognized evaluation criteria and a six-point rating scale (annexes II and III, respectively) to assess the performance of the project.

5. The evaluation applied a mixed-method approach based on a theory of change. The project design report (PDR) did not provide a theory of change. Hence, it was reconstructed on the basis of a desk review and interviews with project personnel (annex IV). The key evaluation issues and the analysis of data were informed by the theory of change. To address the key evaluation issues, evaluation questions were posed along evaluation criteria. An evaluation framework was prepared to present these questions and the sources of data (annex V).

6. The evaluation team was led by IOE and included a senior international consultant and several subject matter experts. The evaluation team relied on multiple data collection methods to answer the evaluation questions. An extensive review of available documents was undertaken to obtain already existing data, while HSP monitoring and evaluation (M&E) data were utilized to the extent possible. The PPE involved extensive stakeholder and beneficiary interviews (in person and online) and field visits. Some analysis of land use changes took place using remote-sensing techniques (see annex VIII). In addition, a telephone survey of participating financing institutions (PFIs) and loan beneficiaries was undertaken. Working papers were prepared on Rural Finance and Agribusiness/Climate Smart Agriculture to inform the main report.

7. In-country data collection was conducted by a team of national consultants, working under the supervision and guidance of the IOE lead evaluator and international consultant. A field mission took place in early May 2021 to Surkhandarya province – to Termez City, Termez District, Kumkurgan district, Denau district and Sariosiyo district – and included group and individual discussions with officials at the provincial, district and village levels, and beneficiaries. Specific visits were made to assess: Regional Project Management; Project loans (greenhouses, orchard, cold storages, dehkan farms); Regional and district PFI performance; Irrigation network

[1] https://webapps.ifad.org/members/eb/102/docs/EB-2011-102-R-7-Rev-3.pdf

rehabilitation; In-vitro plant nursery; and Environmental and Social Safeguards. The mission itinerary and list of people met is annexed to this report (annexes IX and X, respectively).

8. An online wrap-up meeting was held on 11 June 2021 with IFAD and Government of Uzbekistan stakeholders to validate findings, share emerging messages and inform the stakeholders of the next steps. This was followed by report-drafting and peer review.

9. **Data availability and limitations.** This PPE was limited by the restrictions imposed to control the spread of COVID-19, which had implications for data collection and stakeholder interactions, particularly the difficulty of conducting field work, rendering it impossible for IOE. As the international team could not travel to the country, the PPE relied on field visits by national consultant experts as well as triangulation of findings through, inter alia, remote sensing, phone surveys, online interviews with key stakeholders and extensive document review. The COVID-19 pandemic also affected the completion mission of HSP, which had to be carried out remotely during May and June 2020.

10. The PPE was heavily dependent on secondary data and project M&E data from The Agency for Implementation of Projects in the Field of Agro-industry and Food Security (UZAIFSA). As the project has already closed, and the project team disbanded in 2019, it was somewhat difficult to access data and former staff. The M&E data were not of sufficient quality or granularity to enable IOE make a thorough assessment – for example, with regard to poverty targeting and the profile of beneficiaries. Qualitative interviews and field visits complemented the analysis to the extent possible. In addition, it proved difficult to obtain data on loan borrowers from the PFIs for the telephone survey, and many of the borrowers could not be reached by phone (or were reluctant to be interviewed).[2] However, bank representatives and borrowers were also interviewed during the field visits as a means to complement and validate the phone survey findings.

[2] Ultimately, the phone survey reached only 15 borrowers, roughly half the intended sample size.

II. The project and country context

A. Country background

11. The Republic of Uzbekistan is a landlocked country in Central Asia that shares borders with Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, and Turkmenistan. Since its independence in 1991, the country has achieved sustained economic progress through a gradual transition from a centrally planned to a market-based economy. Starting from 2004, Uzbekistan recorded significant growth in terms of GDP and, to a lesser extent, poverty reduction. The World Bank classified Uzbekistan as a lower middle-income country in 2011. During HSP's implementation, Uzbekistan's economy was one of the world's best performers, with economic growth driven primarily by state-led investments, and exports of natural gas, gold and cotton.[3] During 2004-2019, GDP annual growth averaged 6.6 per cent, and GDP per capita increased from US$465 to US$1,720 but remains low, especially if compared with other countries in the region. Over the same period, the official poverty rate declined from 26 per cent to 11 per cent,[4] mainly driven by small business development, income from remittances[5] and targeted social assistance programmes.

12. **Overview of the agriculture sector in Uzbekistan.** The agriculture sector accounts for 33 per cent of all jobs in the country.[6] Agricultural land is about 64 per cent of the total land area and it belongs entirely to the State.[7] As a result of farm restructuring and land reallocations implemented since independence, there are currently two main agricultural structures in the country: the small-scale family farms (*dehkan)*, averaging 0.2 ha,[8] and the large wheat- and cotton-producing commercial private farms (*fermer),* averaging 15 ha.[9] *Dehkan* farms, estimated at 4.8 million, produce livestock and horticulture products and employ 60 per cent of the farm labour force. They operate on less than 20 per cent of the country's arable land but generate 70 per cent of the country's agricultural output.[10] Growing fruit and vegetables are among the most profitable activities on both *dehkan* and private farms.

13. **Increasing importance of horticulture.** Between 2009 and 2019, the agriculture sector grew at an average annual rate of 4.8 per cent. The sector has traditionally been dominated by cotton and wheat, produced and marketed under a centrally planned system, and absorbing the majority of land use, water and fertilizer inputs. However, environmental issues (such as soil salinization and water-logging), as well as social issues (such as the use of mobilized labour) associated with cotton production have spurred the shift from cotton and wheat to horticulture, in order to export higher value-added goods rather than raw materials. Hence, the strongest growth in the last 15 years has come from horticulture, in particular fruits (apple, grape, pear, melon, watermelon, cherry, persimmon, pomegranate, apricot, peach, quince, walnuts) and vegetables (cabbage, tomatoes, potatoes, onions, carrots, cucumbers, garlic, pepper, beets). This production has steadily increased, driven also by higher prices and growing markets;[11] as a result, the subsector accounted for 35 per cent of the agriculture export value in 2018.[12]

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[3] Uzbekistan is the 81st largest economy of the world with a GDP of US$57.92 billion (in current prices) in 2019. Source: https://www.imf.org/external/datamapper/NGDPD@WEO/UZB

[4] According to the calculations based on the international definitions for lower middle-income countries, an estimated 9.6 per cent of the total population lived below the poverty line of US$3.20/day in 2019. (The International Bank for Reconstruction and Development [IBRD]. Agriculture Modernization Project. Project Appraisal Document. February 2020).

[5] After 2003, remittances became a significant source of income for Uzbekistan.

[6] World Bank, 2020c.

[7] Land Code of the republic of Uzbekistan. 30.04.98, no. 598-I (amended in 2019).

[8] *Dehkan* farmers are granted land by the State as lifetime inheritable possession.

[9] The individual farms operate under long-term land lease agreements with the State.

[10] 48 per cent of crop output, 60 per cent of horticulture production, and 92 per cent of livestock output.

[11] In 2015, the cotton-growing area was 1.3 million ha. In 2020 it declined to 1.0 million ha. The decline in wheat area during this period was smaller, from 1.44 million ha in 2015 to 1.30 million ha in 2020. (World Bank. 2020. "Uzbekistan: Agri-Food Job Diagnostic," World Bank, Washington, D.C.).

[12] World Bank (2018). Uzbekistan: Agricultural Trade Policy Report.

14. **Land constraints.** According to the Land Code, if individual farmers do not fulfil agricultural production agreements for three years in a row and have negative economic performance, the State is entitled to withdraw land use rights from a farmer. *Dehkan* farms rent the land for lifetime use with the inheritance rights but are not entitled to sell and buy lands or to sublet the land. Accordingly, *dehkan* farmers cannot use the land for collateral to obtain bank loans – a significant barrier for *dehkan* beneficiaries, who struggle to find alternative collateral.

15. **Trade and marketing of horticultural produce.** Horticultural products are usually sold in local bazaars and/or to wholesalers that are specialized trading companies that collect and transport products to the chain supermarkets in the cities. Moreover, local private enterprises purchase from *dehkan* farms and export to Commonwealth of Independent States and European markets. Horticulture product processing companies are also one of the main players in the horticultural chain. The economic importance of the subsector is significant; it accounts for more than 35 per cent (or about US$1.2 billion in 2019) of the agricultural export value.[13] About 180 types of agricultural products are exported to more than 80 countries around the world.[14] The five key countries importing Uzbek fruit and vegetables are Russia, China, Kazakhstan, Kyrgyzstan and Afghanistan. Uzbekistan's main horticultural exports in 2016 were raisins (US$67 million), grapes (US$62 million), cherries (US$46 million) and persimmons (US$32 million).[15]

16. **Challenges to horticulture subsector growth.** Despite the key economic and social role played by horticulture and the increasing political support,[16] the productivity potential of small farms is challenged by several constraints, such as their very small size, limited access to irrigation, and out-migration of youth to foreign countries (mainly to Russia and Kazakhstan prior to COVID-19), resulting in loss of young and skilled family members and ageing of farm labour, limited access to financial resources to purchase production inputs, and lack of market awareness, public research, agricultural extension and advisory services.

17. **Access to formal financial services** in Uzbekistan is very low: only about 1 per cent of people obtain credit from a financial institution. The financial system of Uzbekistan is dominated by the banking sector, holding about 95 per cent of total financial sector assets.[17]

18. **Challenges for water availability and climate.** Most irrigation canals were built during the Soviet era but have not been maintained. Water supply from the Government to the water consumer associations (WCAs) is free.[18] They supply to farmers, households and businesses. They claim to charge for operation and maintenance (O&M) of the infrastructure; however this appears irregular and there is little income. There have been significant shortages in water supply, due to delayed rains, and the situation is anticipated to worsen with climate change. Consequently, the Government understands the importance of introducing water-saving technologies such as drip irrigation, laser levelling and improved water use. However, without a transparent system of water tariffs and a significant improvement of the canal system to avoid water losses, it will be difficult to achieve improvements.

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[13] Tadjibaeva, D. (2019). Small and Medium-Sized Enterprise Finance in Uzbekistan: Challenges and Opportunities. ADBI Working Paper 997. Asian Development Bank Institute, Tokyo. Available at: https://www.adb.org/publications/small-medium-sized-enterprise-finance-uzbekistan-challenges-opportunities

[14] https://east-fruit.com/en/news/fruit-and-vegetable-products-from-uzbekistan-exports-to-more-than-80-countries-worldwide/

[15] IFPRI (2019). Agriculture Development in the Central Asia Regional Economic Cooperation Program Member Countries: Review of Trends, Challenges, and Opportunities. International Food Policy Research Institute. Available at: https://www.ifpri.org/publication/agriculture-development-central-asia-regional-economic-cooperation-program-member

[16] The ongoing agricultural sector reforms as part of the 2017-2021 Strategy recognize the need for diversifying away from cotton into high value-added and labour-intensive production and processing, including horticulture.

[17] IFAD (2017). Agriculture Diversification and Modernization Project (ADMP) Design Report.

[18] The Water and Water Use Law of Uzbekistan was revised in December 2009 and the previously used Water Users Association term was changed to Water Consumers Association (WCA). Distinctions between these two terms were clarified as follows: water users do not affect the actual amount of available water (e.g. fisheries and hydropower), while water consumers reduce the actual amount of available water (e.g. irrigation and drinking).

19. **Changing political context.** HSP was designed in a politically, socially and economically different Uzbekistan to that of 2021. In late 2016, a dramatic political and economic change began, with the death of the previous president. The country opened up to trade and exchanges with a wider range of countries and is building a more open and market-oriented economy. The currency system was liberalized in late 2016 (with significant changes in the exchange rate and availability of US$ loans). Further reforms in 2017 and 2018 included: the end of the state-owned enterprise export monopoly and the liberalization of trade; permission to use any form of transport (not only rail); promotion of inclusion of smallholders in horticulture value chains, and the gradual development of cooperatives and clusters; and the increasing recognition by the Government of the role of *dehkans*, agricultural value chains and the private sector. The new Strategy for Agriculture Development during 2020-2030,[19] which came at the end of HSP implementation period, demonstrates this change in approach.

20. **IFAD's programme in Uzbekistan.** IFAD began its operations in Uzbekistan with the Horticultural Support Project, after Uzbekistan joined the Fund in 2011. IFAD did not prepare a country strategic opportunities programme (COSOP) until 2017 (after HSP was well under implementation). Hence, rather than the COSOP informing the design of HSP (as in most countries), HSP experiences have informed the COSOP and future project implementation.

B. The project

21. **Project area.** HSP was implemented in nine districts (out of a total of 14) of the region of Surkhandarya, the southern-most province of Uzbekistan. The total population of Surkhandarya is 2.5 million, of whom around 65 per cent live in rural areas. In 2012, when HSP was approved, Surkhandarya was among the three regions with the lowest socio-economic indicators, with an estimated poverty incidence of 22.6 per cent, just behind the region of Karakalpakstan and Kashkadarya at 32.5 and 24.9 per cent, respectively. Crop production in Surkhandarya mainly consists of cotton and cereals, which account for more than 80 per cent of the total sown area of the province (117,100 ha in 2016), combined with horticulture, and viticulture in particular.

22. **Time frame.** HSP was approved by the IFAD Executive Board on 3 April 2012 and declared effective on 17 December 2013, with the first disbursement of IFAD financing on 22 May 2014. The project completion date was 31 December 2019, two years later than the originally proposed completion date on account of the start-up delays.

23. **Project objectives.** The goal of HSP was to improve the living standards and further the economic welfare of the rural population in the project area. The project's development objective was to increase the incomes and assets of smallholder farmers, processors and service providers through a comprehensive programme of support to the country's horticulture subsector, initially on a pilot basis.

24. The project's expected outcomes were: (i) the creation of a viable horticulture subsector with modern farming techniques, backward linkages to poor rural smallholders and improved access to domestic and international markets; (ii) increased investments by producers, processors and service providers in productive assets in the subsector; and (iii) improved farming efficiency and mobility of productive assets and produce. It was expected that these efforts would then have led to better quality and productivity, increased access to domestic and export markets, improved food security, and increased incomes and employment opportunities for small-scale producers and market service providers.

[19] Approved by the Decree of the President of Uzbekistan No. PP-5853 on 23 October 2019.

25. **Project components**. HSP comprised three components, besides project management: (i) Support to horticultural production and marketing; (ii) Rural finance; and (iii) Rural infrastructure: improved irrigation network.

- Component 1 - Support to horticultural production and marketing (US$1.82 million). The goal of this component was to improve the regional nurseries through the establishment of a central nursery for importing, testing and disseminating modern varieties of seed plants and rootstock for onward sale to project beneficiaries (agrofirms and farmers). This component consisted of three subcomponents – subcomponent 1.1: Upgrading of nurseries; subcomponent 1.2: Modernization of agrofirms; subcomponent 1.3: Modernization of horticultural production.
- Component 2 - Rural finance (US$18.53 million). This component aimed to improve farmers' access to appropriate financial services through the establishment of refinancing facilities to provide capital to PFIs for on- lending to the horticulture subsector production and marketing. The intended beneficiaries of this component were agrofirms with a suitable strategic positioning in horticultural value chains, providing services to farmers with development impacts in the form of employment creation and access to marketing, and identified as eligible for project support with commercially viable and bankable business proposals, adequate collateral, satisfactory rates of return, and repayment capacity as demonstrated in their business plans. Component 2 consisted of three subcomponents that provide financing for the investments described under subcomponents 1.2 and 1.3.
- Component 3 - Rural infrastructure: improved irrigation network (US$3.45 million). This component was intended to provide a small-scale modern on-farm irrigation system, through investments in public irrigation and drainage infrastructure that complement the support to beneficiaries provided under components 1 and 2, so that they would be more likely to achieve the full economic potential of their production.

26. **Project financing.** The PDR estimated the total cost of HSP to be US$31.7 million, of which: (i) IFAD loan was US$9.6 million (30 per cent of the total cost) and IFAD grant was US$1 million; (ii) IFAD-administered Spanish Trust Fund loan was about US$11.4 million[20] (36 per cent of the total cost); (iii) contribution from PFIs was estimated at US$2.6 million; (iv) contribution of project beneficiaries was estimated at US$5.1 million; and (v) Government estimated contribution was US$1.9 million. However, by the time the project became effective, currency fluctuations meant that different US$ amounts were calculated in the Government's feasibility study. In addition, there was the exchange rate devaluation during HSP's implementation. To account for these changes, all the appraisal figures were recalculated by the Government of Uzbekistan to more accurately reflect the US$ amount (see table 1).

[20] The Spanish Trust Fund loan amounted to EUR 8.46 million, corresponding to about US$11.4 million.

Table 1
Project financing by financier (US$'000)

	Appraisal (PDR 2012)*	*Currency adjusted appraisal (2014)*	*% of adjusted appraisal costs*	*Actual costs*	*% of actual costs*	*% disbursed against adjusted appraisal (2014)*
IFAD loan	9 635	8 716	34%	8 348	32%	96%
IFAD grant	999	913	4%	799	3%	88%
Spanish Trust Fund	11 365	9 486	37%	9 421	36%	99%
PFIs**	2 589	-	0%		0%	0%
Government of Uzbekistan	1 957	1 524	6%	1 043	4%	68%
Beneficiaries	5 148	4 863	19%	6 376	25%	131%
Total	31 693	25 503	100%	25 987	100%	102%

* Appraisal figures in US$, as reported in the IFAD PDR, 2012; ** PFI contribution was not included in the Government's feasibility study appraisal figures.

Source: IFAD Operational Results Management System and UZAIFSA.

27. Table 2 outlines the relative weight of each component in relation to the total financing of the project. As can be seen, component 2 (rural finance) absorbed 73 per cent of total project funding, followed at a distance by the irrigation infrastructure component (14 per cent). Financial data for actual disbursements (at completion) under each project component were not reported in the project completion report (PCR) but was subsequently updated by UZAIFSA and appears in table 2.

Table 2
Project financing by component (US$'000)

Component	*Appraisal* (PDR 2012)*	*Currency adjusted appraisal*	*% of adjusted appraisal costs*	*Actual costs*	*% of actual costs*	*% disbursed against adjusted appraisal (2014)*
1. Support to horticultural production and marketing	2 361	1 822	7.2%	1 185	4.7%	65%
2. Rural finance	21 574	18 527	72.7%	20 334	80.4%	110%
3. Rural infrastructure: improved irrigation network	5 400	3 452	13.5%	2 272	9.0%	66%
4. Project management	2 358	1 679	6.6%	1 498	5.9%	89%
Total	31 693	25 480	100%	25 289	100%	99%

Source: IFAD Operational Results Management System and UZAIFSA.

28. **Target groups.** Three target groups were identified: small-scale horticultural producers operating 6 ha or less as the primary target group; agrofirms assisted to support the primary group; rural unemployed to be benefited from greater job opportunities at the farm and processing levels of the value chain. Within this cluster, women constituted a specific target group whose involvement would be guaranteed by a minimum target quota of 30 per cent of direct beneficiaries of training, loans and employment opportunities.

29. **Project implementation arrangements.** Initially the Ministry of Agriculture and Water Resources (MAWR) was the lead agency. HSP was implemented by the Rural

Restructuring Agency (already implementing the World Bank and Asian Development Bank (ADB) projects), which in 2018 later became the UZAIFSA.

Key points

- Uzbekistan is a landlocked country of Central Asia, with an economy that was, until recently, centrally planned and managed, and based on state-led investments in cotton, wheat, gas and gold. In 2016-17 there was a significant political and economic change. The country opened up to trade and exchanges with a wider range of countries and is building a more open and market-oriented economy. The currency system was liberalized (with changes in the exchange rate and availability of US$ loans).
- The agriculture sector accounted for 33 per cent of all jobs in the country in 2020. In particular, small-scale family farms (*dehkans*) generate a large part of the country's agricultural output (48 per cent of crop output, 60 per cent of horticulture production, and 92 per cent of livestock output) and employ 60 per cent of the farm labour force, despite operating on less than 20 per cent of the arable land.
- IFAD began its operations in Uzbekistan with HSP, after Uzbekistan joined the Fund in 2011. At the time of planning, most Government support was focused on cotton and wheat production. However, there has been growing interest in the horticulture subsector, as a source of export earnings, as well as employment and food security.
- Uzbekistan faces increasing threats from climate change. The irrigation infrastructure is ageing and poorly maintained, and there are problems with water scarcity, waterlogging and pesticide residues (especially from cotton).
- The main objectives of the PPE were to: (i) provide an independent assessment of the overall results and impact of the project; (ii) draw lessons that can inform the future development of IFAD's cooperation with the Republic of Uzbekistan; and (iii) obtain detailed insights and lessons on key issues to inform other IOE evaluations, in particular the concurrent Uzbekistan Country Strategy and Programme Evaluation.
- HSP was implemented 2013-2019 and comprised three components – Support to horticultural production and marketing; Rural finance; and Rural infrastructure: improved irrigation network. With over 80 per cent of the budget allocated to component 2 (rural finance), it was primarily a rural finance project.
- At the design stage, the estimated project cost was US$31.7 million. However, after the currency exchange rate devaluation, the planned and disbursed amounts were recalculated. With the new exchange rate, the planned cost was US$25.5 million and the total cost at the end was US$25.6 million.

III. Main evaluation findings

A. Project performance and rural poverty impact

Relevance

Alignment with national policies

30. **HSP was consistent with the objectives of national policies and strategies for rural development and agricultural diversification.** At the time of design of HSP, the Government's growth and poverty reduction targets were outlined in the Welfare Improvement Strategy (WIS-I) 2008-2010 and subsequent WIS-II 2013-2015, which aimed to reduce the percentage of low-income people[21] from 17.7 per cent in 2010 to 12.8 per cent by 2016. With its goal of furthering the economic welfare of rural populations, HSP was broadly aligned with the main thrust of the WIS-II and its promotion of greater rural productivity and income-generating activities. More specifically, HSP's objectives at design remained relevant with regard to the agriculture-related objectives of the WIS-II, which included: (i) structural reforms focusing on production diversification; (ii) mechanization of agriculture, improvement of infrastructure, and agribusiness development; (iii) profitable use of land and water;[22] (iv) greater financial stability of farms; and (v) more market-oriented agricultural policies.

31. **The project's focus on developing the horticulture subsector was timely and in line with a general shift in focus from cotton and wheat towards more diversified agricultural production.** Diversifying agricultural production away from an almost exclusive focus on cotton and wheat, towards higher-value crops, has become a priority for the Government of Uzbekistan. Horticulture is now recognized not only for its increasing contribution to national GDP, but also the important role that fruits and vegetables play in the agriculture export market[23] and in contributing to rural household incomes (see Figure 4, annex VI). Already an explicit objective of the WIS-I and WIS-II, diversification of agricultural production was subsequently given further prominence through a series of Presidential Decrees which mandated the conversion of production areas from cotton and cereal crops to orchards, as well as the intensive creation and renovation of high-density orchards.[24] This became even more relevant as the country underwent reforms post-2017. HSP was thus well positioned to both capitalize on and support this shift in focus. Moreover, as the horticulture subsector was less subject to government control (with no state orders for fruit and vegetables), and restrictions on imports and exports were relatively less stringent, there was potential for the engagement of private agribusinesses.[25]

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[21] According to Government respondents, prior to 2019, there was no recognition of poverty in Uzbekistan – only "low-income people".

[22] Similarly, the HSP's promotion of water-saving technologies and irrigation rehabilitation was aligned with other government initiatives, specifically Decree No. 176 of the Cabinet of Ministers, which launched an incentives programme for water-saving irrigation technologies, such as drip strategic alignment; with such incentive programmes, the actual coherence of HSP activities with these government schemes is less clear (i.e. it is not clear to what extent there may have been overlap or competition with the HSP's promotion of drip irrigation or the extent to which HSP beneficiaries were made aware of these other incentive programmes).

[23] Horticulture accounts for more than 35 per cent (or about US$1.2 billion in 2019) of the agricultural export value. Tadjibaeva, D. (2019). Small and Medium-Sized Enterprise Finance in Uzbekistan: Challenges and Opportunities. ADBI Working Paper 997. Tokyo: Asian Development Bank Institute. Available at: https://www.adb.org/publications/small-medium-sized-enterprise-finance-uzbekistan-challenges-opportunities

[24] Relevant decrees of the President of the Republic of Uzbekistan with regard to the horticulture subsector: (i) PP-1937 dated 13 March 2013 "On further development of viticulture in the Republic for the period 2013-2015"; (ii) PP-2460 dated 29 December 2015 "On further reformation and development of the agriculture sector in the period 2016-2020"; (iii) PP-2505 dated 5 March, 2016 "On measures to further develop the raw material base, expansion in processing of horticulture, meat and dairy products, increasing foodstuffs production and export within 2016-2020"; (iv) PP-2515 dated 7 April 2016 "On formation of a specialized foreign trade company to support export of fresh and processed horticulture products "Uzagroexport""; (v) PP-2517 dated 8 April 2016 "On creation of an association of companies active in storage and processing of horticulture products for export "Uzbekozikovkatzahira""; and (vi) PP-2520 dated 12 April 2016 "On measures to enhance the system of procurement and usage of horticulture products, potatoes and melons".

[25] Agribusinesses include "agrofirms", which are non-government associations and commercial firms in the horticulture subsector that participate in the distribution and processing of fruit and vegetables.

32. **Alignment with IFAD strategies in Uzbekistan.** As HSP was the first IFAD-financed intervention in Uzbekistan, it was designed prior to any COSOP or agreed country strategy for IFAD's operations in the country.[26] HSP was broadly aligned with IFAD's strategic priorities for the Central Asian subregion,[27] and once the 2017 COSOP was approved, the objectives of HSP remained generally relevant to the strategic objectives of IFAD's strategy for Uzbekistan: (i) improve rural people's capacity and ability to benefit from high-value agricultural systems; (ii) increase the productive assets and competitiveness of smaller-scale productive entities in rural areas to enhance their market participation; and (iii) enhance small-scale producers' ability to make environmentally sustainable use of natural resources, and raise their proficiency in adapting to climatic variability and shocks affecting their economic activities (although there was no explicit focus on climate change adaptation in HSP, as discussed further in Section B).

33. **There was limited emphasis paid to IFAD mainstreaming themes** such as gender, and environment and climate change (i.e. mainstreaming themes of IFAD 8 and IFAD 9, at the time of HSP's design and entry into force, respectively).[28] The IFAD mainstreaming themes of youth and nutrition were not corporate priorities at the time of HSP design, but became so during HSP's implementation (i.e. for IFAD 10, 2016-2018). Youth were not a focus of HSP, despite 60 per cent of the national population being under 30 years of age and high rates of out-migration of young people from rural areas.[29] Since the design of HSP, the Government has begun to pay increasing attention to youth, given the increasing issues of youth unemployment (and especially due to the restrictions on migration because of the COVID-19 pandemic).[30]

Quality of design

34. **As the first IFAD project in Uzbekistan, the design of HSP was relatively simple,** with the majority of project financing geared towards a credit line for onward lending through local banks. Interviews with stakeholders suggest that, since this was the first official cooperation between IFAD and the Government of Uzbekistan, a conscious and pragmatic decision was made to primarily fit with government priorities, and to avoid an overly complex or ambitious project design. After decades of government projects focused almost exclusively on wheat and cotton, the willingness of the Government to utilize IFAD loan financing for horticultural production was already seen as a significant departure. Moreover, that this loan-financing would be used to support *dehkan* farmers was a first for the Government. As such, IFAD and other development partners reported that they were keen to support this shift towards diversification without placing too many conditions or layers of complexity on project design.

35. **HSP's design was mostly focused on the supply side of horticultural production, with less consideration for marketing, prices, value chain dynamics, and the demand side.** Although ostensibly designed as a value chain development approach, HSP's design was solely focused on product and process

[26] IFAD did not prepare a COSOP until 2017 (after the HSP was well under implementation).
[27] IFAD's Subregional Strategic Opportunities Paper for Central Asian Countries, approved by the Executive Board of IFAD in December 2005, identified four strategic priorities for IFAD's activities: (i) natural resources management; (ii) rural financial services and rural microenterprise development; (iii) support for the privatization of land and for the land reform process; and (iv) strengthening grassroots participation.
[28] The performance of the HSP with regard to these aspects is discussed further in the respective sections of the report on gender equality and women's empowerment; environment and natural resources management, and adaptation to climate change in Section B.
[29] UNICEF (2020). Youth of Uzbekistan: Challenges and Prospects. Available at https://www.unicef.org/uzbekistan/media/3541/file/Youth%20of%20Uzbekistan-%20Challenges%20and%20Prospects.pdf
[30] For example, this issue is now being considered in other projects (e.g. the IFAD-financed ADMP).

upgrading within the horticulture value chain.[31] HSP's design did not include aspects such as functional upgrading (i.e. adding new functions and activities to the target group to capture more value), strengthening vertical and horizontal linkages, addressing policy and regulatory conditions, and/or improving market information systems.[32] While the focus on supply-side constraints and productivity enhancement was in line with the Government's approach, this did not fully reflect IFAD or other donor approaches to value chain development already established at the time of design (see Box 1, annex VII). This notwithstanding, the PPE notes that subsequent IFAD projects in other regions of Uzbekistan have learned from HSP and have further refined the value chain development approach applied (most notably in the ADMP).

36. **The design of rural finance activities was constrained by the lack of diversity of financial providers.** There was limited diversity of financial providers at the time of HSP's design, and the PFIs were mostly state-owned commercial banks, except for one private bank (the microfinance organizations were mainly closed by the Government in 2007).[33] The IFAD design documents made reference to the participation of credit unions so that they could become service providers for small farmers normally excluded from formal banking systems.[34] However, their inclusion appears to have been dropped in the finalization of the design, and the PPE could find no evidence of this consideration in the actual implementation of HSP (see Box 2, annex VII for a summary of the history of non-banking financial institutions in Uzbekistan).

37. **Given the contextual constraints, rural finance activities did not fully integrate the guiding principles of IFAD's Rural Finance Policy (2009), nor did they apply value chain financing approaches** as outlined in the 2012 IFAD Technical Note on agricultural value chain finance strategy and design (e.g. multiple-party contract farming arrangements, or forming associations)[35] (see Box 3, annex VII). Nonetheless, the PPE notes that to do so would have required a more complex approach, which might not have been feasible given the context, and could arguably have involved higher transaction costs, especially as this was IFAD's first project in Uzbekistan. The 2019 Evaluation Synthesis Review on Inclusive Rural Finance also noted that the diversity of segments in value chain financing requires very different approaches to serve the poorest as well as small and medium enterprises, which makes design more complex.

38. **The design of HSP did not include adequate support for the institutional modernization of the horticulture subsector.** For example, although institutional capacity constraints of water consumer associations were clearly noted in HSP design documents, HSP did not include sufficient institutional capacity development support to address these. As a result, the longer-term impact of water savings is threatened without more systemic planning and improvement of the irrigation system, and effective O&M. Payment for water services remains inconsistent, contributing to the poor O&M. Similarly, the design did not address capacity constraints of PFIs to better

[31] The IFAD Corporate Level Evaluation of Pro-Poor Value Chains (2019) developed the following operational definition: A value chain is a set of enterprises and stakeholders collaborating to varying degrees along the range of activities required to bring a product from the initial input supply stage, through the various phases of production, to its final market destination.

[32] For instance, although the HSP project design report included an annexed working paper with comprehensive value chain analyses, coupled with draft contract farming agreements, the project activities themselves, and the feasibility study prepared by the Government, paid little attention to strengthening horizontal and vertical linkages.

[33] The financial sector of Uzbekistan is dominated by the banking sector, holding about 95 per cent of total financial sector assets. The traditional role that the non-banking sector played in the past (until 2007) in providing rural finance in the country had been lost, meaning that the HSP was able to work only with the commercial banks (the only type of financial institution at the micro-level).

[34] HSP Design Working Paper 3 on rural finance: "*the intended participation of credit unions in project credit line activities will support their possibilities to attain sustainability, thereby establishing themselves as service providers to target groups not normally reached by the banking system.*"

[35] IFAD (2012). Agricultural value chain finance strategy and design - technical note. Available at: https://www.ifad.org/en/web/knowledge/-/publication/agricultural-value-chain-finance-strategy-and-design-technical-note

support *dehkan* horticultural producers, while aspects relating to the organizing and linking of producers were not addressed.

39. **The design of the irrigation rehabilitation works was top-down, without a public consultation process.** Interviews with community members indicate that there was little consultation with water users prior to the rehabilitation of irrigation canals. Existing water intakes were closed during the project rehabilitation works, which impeded access of the population to water resources, even though local people use water from canal for drinking and irrigation. Safety issues were not adequately considered in the design.[36]

Relevance of targeting

40. **The targeting of *dehkan* farmers in Surkhandarya was a relevant choice for piloting horticultural support in Uzbekistan.** It has been estimated that more than 90 per cent of horticultural commodities are produced by *dehkan* farms.[37] Growing fruit and vegetables is among the most profitable activities on both *dehkan* and private farms. While targeting *dehkan* farmers was initially viewed by the Government as an inefficient use of financing and therefore not encouraged, IFAD persisted, and with time there has been growing interest by the Government in targeting *dehkan* farmers for other loan-financed development projects. The relevance of this approach is further underlined by the fact that *dehkan* farmers are now prominently included in government plans for intensification of production systems.[38]

41. Given the limited available IFAD resources, HSP applied geographic targeting to focus on a limited area. Surkhandarya was a relevant region to target for HSP's support, given the high concentration of dehkan farmers and significant poverty rates, combined with a high productive potential in the horticultural subsector, as compared to other regions in Uzbekistan.[39] (See Figure 5, annex VI for a breakdown of the share of agricultural production by farmer type per region).

42. **The targeting of three distinct tiers of borrowers for rural finance was relevant, but rural finance products and services were not sufficiently adapted to the needs, barriers and cash flow of smallholder farmers.** The need for specific windows for rural finance was demonstrated to be correct, given that during the first years of implementation the windows for agrofirms and larger farms were rapidly disbursed, while *dehkan* farmers were slower to take out loans. It is likely that had there not been a dedicated window exclusively for *dehkan* farmers, the funds would not have reached the primary target group of HSP.[40] However, HSP design did not allow for a variety of financial services to be supported as part of an "external value chain financing" approach, or products that were differentiated or tailored to the different target groups (i.e. agrofirms, service providers, *dehkan* farmers), under each subcomponent of the rural finance component. In practice, as also noted by the PCR, the loans were not tailored to the specific needs of horticulture value chain actors or to the horticulture production cycle (i.e. in terms or repayment schedules and/or collateral requirements).

Adjustments to design

43. **HSP activities were primarily guided by the Government's feasibility study and project implementation manual, but these contained important**

[36] For example, the flow is reportedly now very fast in Sariosiyo canal, and already there were cases reported where children collecting drinking water were washed downstream.
[37] IFAD (2016). Social, Environmental and Climate Assessment Preparatory Study, Republic of Uzbekistan, Tashkent.
[38] For example, on 23 October 2019, the President approved the Agri-food Development Strategy 2020-2030 with the overall objective to create a competitive and market-oriented agrifood sector while seeking job creation, food security, improvements in the quality of life in rural areas, and preservation of natural resources – *dehkan* farmers are a core part of this strategy.
[39] In 2012, when the HSP was approved, Surkhandarya was among the three regions with the lowest socio-economic indicators, with an estimated poverty incidence of 22.6 per cent, just behind the region of Karakalpakstan and Kashkadarya at 32.5 and 24.9 per cent, respectively.
[40] This was also noted in the May 2016 Supervision Mission Report.

differences from the original IFAD PDR. Subsequent to the approval of the PDR by the IFAD Executive Board, it emerged that the project could not commence without the elaboration of a feasibility study prepared by the Government. With the resulting delay in HSP's entry into force, a President's Decree with attached feasibility study was issued for HSP in 2013, which effectively superseded the IFAD PDR; however, no official translation or comparison with the original IFAD PDR was apparently requested. The feasibility study, only available in Russian, and the project implementation manual which was based thereon, had many important differences from the approved IFAD PDR (see Box 4, annex VII). As the project management unit (PMU) was primarily guided by the feasibility study, while IFAD in some cases followed the PDR, this led to some confusion. Most significantly, the feasibility study paid less attention to gender considerations and the demand-driven value chain development approach originally outlined in the IFAD PDR.

44. **Minor adjustments after the midterm review (MTR) sought to address some of the discrepancies between the project design and the feasibility study, most notably with regard to supporting women's access to finance.** The MTR noted that further allocation of finance would be needed to improve the access of women to financial services. It was also planned to expand the scope of loans to include working capital. In 2018, the financing arrangement was thus modified to reflect a reallocation of US$2.7 million from component 3 (irrigation), where output targets had already been achieved, to component 2 (rural finance) with the objective of expanding the eligibility criteria for credit requests and increasing the number of women loan beneficiaries. It is noted, however, that while the proportion of women loan takers increased slightly in the final implementation period, there were no adjustments to allow working capital loans, despite the recommendations of the MTR.

45. **In summary,** HSP was mostly concentrated on the supply side of horticultural production, and less attention was given to aspects of marketing, prices, standards and value chain dynamics. Discrepancies between the IFAD PDR and the subsequent feasibility report meant that important aspects related to targeting and value chain linkages were dropped from the original design. On the other hand, the PPE recognizes the need to avoid an overly complex design for the first IFAD project in Uzbekistan, also given the contextual constraints in the early years of the project. Meanwhile, the project's overall focus on agricultural diversification and horticultural development through directly supporting *dehkan* farmers was timely and relevant. On balance, the relevance of HSP is rated *moderately satisfactory (4).*

Effectiveness

Project outreach

46. **While overall targets for beneficiary numbers were achieved or exceeded, project outreach data were primarily based on estimated numbers of people assumed to be benefiting from irrigation activities.** According to the project logical framework, 18,242 households directly benefited from the project (12,769 men and 5,473 [30 per cent] women]), against a target of 11,000. Indirectly it was estimated that the project reached 109,452 household members (against the target of 66,000). However, this figure is primarily based on an estimated outreach through improved irrigation, given that loans and trainings accounted for only a small share of the outreach.[41] As discussed further below, not all households in the capture area benefited equally from the relatively small-scale infrastructure works.

47. **The profile of the target group was not fully recorded, and outreach for women was lower than anticipated.** The poverty status of borrowers was not

[41] The PCR reports that 17,848 households owning 15,470 hectares benefited from the irrigation activities.

monitored by the PFIs or the project[42] and the PFIs did not disclose the poverty status of borrowers at the time of taking the loan – only their land-holding size.[43] As also noted by the PCR, it is possible (and highly likely) that poorer *dehkan* households were therefore excluded, especially given the high collateral requirements required for taking loans, while richer *dehkan* holders may have benefited more from the loans (though this is an assumption as there are no data). For other activities (e.g. trainings), the poverty status of the beneficiaries is not recorded, such that there is uncertainty regarding the wealth/poverty status of beneficiaries or their classification as *dehkan*.[44]

48. **Overall, the participation of youth in HSP was limited.** HSP monitoring system did not identify the age of beneficiaries or those taking up new jobs (nor whether they were unemployed to start with). Some initial efforts were made with the encouragement of IFAD. For instance, UZAIFSA respondents reported that they tried involving youth by renting land to them for activities. According to UZAIFSA respondents, youth had little interest in agriculture – although efforts were made to encourage interest and participation in the trainings. Collateral was a major barrier for youth in accessing finance – no specific finance windows were available for youth during HSP.[45]

Achievement of objectives

49. **Owing to delays in sequencing of activities and limited outreach to the rural poor, HSP could not fully achieve its development objective** of piloting a comprehensive programme of support for the technical and institutional modernization of Uzbekistan's horticulture in a manner that specifically benefits small-scale, less socio-economically advantaged private producers and market services providers and the rural unemployed. Given the serious delays in implementing irrigation activities, and the delay in developing rootstocks and planting materials, HSP could not demonstrate the comprehensive programme of support that was intended at design.

50. **Limited outcome-level data.** Owing to weak M&E data collected by the project, there were limited outcome-level data to assess the achievement of objectives. The annual outcome survey and impact study mostly reported on output-level data (e.g. number of people trained), as did the project logframe. For this reason, the PPE has assessed the achievement of HSP objectives against the four "impact pathways" of the reconstructed theory of change, as developed in the PPE approach paper (see annex IV).[46]

Impact pathway (i): Enhanced access to productive assets including improved crop varieties and rootstocks developed by nurseries and the central laboratory; and public irrigation and drainage infrastructure, sustainably and efficiently used and managed by water consumer associations.

51. There was weak performance and limited achievement of outcomes along this impact pathway.

[42] The concept of poverty was not recognized in Uzbekistan at the time of the HSP design, and the HSP design documents made reference only to "less advantaged" populations (HSP Project Final Design Report Working Paper 1: Poverty, Gender and Targeting). According to respondents, this only changed in 2019, when the President issued a statement recognizing the millions living in poverty, and in 2020 the Ministry of Economy and Industry changed its name to the Ministry of Economic Development and Poverty Reduction.

[43] Neither this PPE nor the 2019 impact study could gain access to such information.

[44] For example, 3,251 individuals reportedly received training, of whom 1,075 were women (33 per cent). However, the profile of people trained, i.e. in terms of whether they were *dehkans* or larger farmers, was not recorded. While the number of people accessing financial services was higher than targeted (379 individual loans, against a target of 200), the majority of these were men, and the target for women was not achieved (17 per cent of loans were taken by women, against a target of 30 per cent).

[45] Specific finance windows solely for youth have subsequently been incorporated into the IFAD-financed ADMP follow-on project in Fergana Valley.

[46] The HSP's ToC can essentially be understood as the piloting of comprehensive support to product and process upgrading within the horticulture value chain in Uzbekistan, leading to greater private sector investments in the horticulture subsector overall, and increased incomes and assets of farmers and other value chain actors, thereby improving the living standards and economic welfare of the rural population.

52. **Serious delays affected the sequencing of HSP activities and undermined the programme logic.** HSP was designed as a pilot to demonstrate the "multiplier effect" of sequenced, coherent and multifaceted support to different elements of the horticultural production and supply chain. In reality, various activities were beset by delays, and this sequencing of activities did not take place; nor were the "multiplier effects" of coordinated support demonstrated. For example, the agreed timetable for the establishment of the in-vitro laboratory could not be followed for a number of reasons, including incorrect specifications in the feasibility study, lack of adequate budget, delay in procurement, and failure to deliver the equipment on time. As a result, the laboratory was established only in October 2019, and the first commercial sales of rootstocks were only possible after project completion.

53. **There is increased demand for new plants and rootstock, but capacity to meet this demand remains below expectations.** The Central Nursery and Mirzaev Institute in Denau reports that there is now a good demand for the new plants they are producing via tissue culture, and they are receiving orders from farmers and the Horticulture Department; however, they do not yet have capacity to meet this demand.[47] The staff are trained and operating but there are some design faults in the laboratory that inhibit production. The nursery has started cooperation with local educational entities – the State Agrarian University and Termez State University. Currently, outdoor classes are conducted at the nursery. Education of postgraduate students is considered as the next step of collaboration.

54. **Procurement of contractors for the improved irrigation network was problematic, leading to significant delays in construction**, and the subsequent retendering of several contracts.[48] Some contractors said they were not interested in carrying out relatively small-scale works (for instance, noting that they did not have machinery locally available). In other cases, contracts had to be cancelled as contractors were not following their obligations. As a result, many of the works were not completed until 2019, at the end of HSP. Moreover, the PCR and supervision reports indicate that the quality of irrigation works was not always satisfactory, and some schemes were noted to be already in need of urgent repair at the time of the final supervision mission (August 2019).

55. **All the planned irrigation rehabilitation works were eventually completed, resulting in improved water availability and agricultural productivity for the serviced areas.** In terms of physical outputs, the project has exceeded targets.[49] Rehabilitation of canals has reportedly reduce water losses and helped to stop further deterioration.[50] Improvements in water availability and agricultural production were reported by the representatives of households located at the head of the canals.[51] This was confirmed to some degree by the analysis of geospatial data conducted by the PPE team (see annex VIII).[52] However, the years without maintenance prior to the rehabilitation means there are still significant problems, and the works did not completely resolve the issue with irrigation water supply.

56. **WCAs were noted as having weak institutional capacity.** This lack of institutional capacity was not addressed by HSP on the assumption that other

[47] The plan was to produce 600,000 plants per year for sale, but they are only ready now to produce 150,000.
[48] The supervision report from February 2019 notes that works under 8 of the 10 contracts had to be retendered at different stages due to "poor and inadequate performance of contractors".
[49] Ten irrigation networks were rehabilitated, allowing improved water supply to an estimated 15,470 ha (against a target of 6,000 ha), and access to irrigation water for an estimated 17,848 households, against a planned coverage of about 8,000 households.
[50] The PCR estimated that the total volume of water losses decreased from 17.75 million m^3 (before the project) to 4.4 million m^3.
[51] Producers interviewed by the PPE team reported that they have started to grow crops and seedlings of various vegetables which are more profitable than what they grew earlier. The better water availability allows them to cultivate more profitable crops.
[52] The analysis showed a positive change in vegetation index in the sampled areas. It should be noted, however, that since some irrigation works were only completed in 2019, there was insufficient time-series data to establish a credible trend in vegetation index through the analysis of satellite imager, nor was it possible to control for other factors that might have affected production, such as rainfall or crop varieties.

development projects would provide such support. This assumption did not prove correct. HSP did train 110 people, including WCA hydraulic engineers and Basin Management Irrigation Systems specialists in the management of infrastructure facilities and water resources. However, towards the end of the project, WCAs were consolidated at the district level, such that the personnel trained were no longer responsible, and there was a lack of clarity regarding future O&M responsibilities. This issue was not resolved by the time of HSP's completion. Inadequate collection of water tariffs also makes O&P unsustainable.

57. **Inequitable distribution of water resources means the benefits are not equally shared.** Stakeholder interviews and field visits indicated that the limitations in capacity of the WCAs are leading to uneven water distribution. Larger farms (especially wheat and cotton) reportedly have priority for irrigation, and *dehkan* farms have to interrupt their own irrigation process. Unequal water distribution between households located at the head of the canal and at the tail exacerbates differences in production.[53]

Impact pathway (ii): Modern production techniques and enhanced agricultural skills, introduced through trainings, exposure visits enable farmers to use their resources more efficiently.

58. There has been moderate achievement of outcomes along this impact pathway.

59. **HSP investment in capacity development of horticultural producers was minimal, and training methods were not in line with best practice.** Of the planned US$885,837 budgeted for the subcomponent on Modernization of Horticultural Production, only about US$130,000 was earmarked for capacity development of horticultural producers. The remainder was set aside for trainings and study tours for agrofirms and service providers (discussed under impact pathway (iii), below). Supervision missions noted that, in general, the trainings tended to be one-off events, and classroom-based without practical demonstrations of improved techniques in the field.

Table 3
Number of people trained in modern farming practices, professional skills and entrepreneurship

	Target (PDR)			*Achievement (PCR)*				
Indicator	*Men*	*Women*	*Total*	*Men*	*Women*	*Total*[54]	*% achievement (total)*	*% achievement (women)*
Number of people trained in income- generating activities and business management	720	180	900	751	460	1 211	135%	256%
Number of people trained in production practices and/or technologies	720	180	900	1 425	615	2 040	227%	342%

Source: HSP PDR, 2012; HSP PCR, 2020.

60. **Targets were achieved for training participation, and trainings on production were appreciated by participants.** The project exceeded the somewhat modest target for number of people trained in modern farming practices, professional skills and entrepreneurship (see Table 3). Trainings were primarily on horticultural production – for instance, pome and stone fruit, nuts, grapes, melons, vegetable, citrus and subtropic crop production techniques; and pest and disease identification and treatment – and were generally appreciated by participants

[53] For example, farmers interviewed by the PPE team indicated that households located at the head of the canal are able to grow a second crop, while households located at the tail have only sufficient water for one crop during the year.
[54] According to the 2019 Impact Study, 4,129 participants received training and were satisfied with the results. The discrepancy between the Impact Study and the PCR is not clear, although double-counting has reportedly been a persistent issue throughout the project.

interviewed by the PPE team.[55] There were three courses on technologies in storage, processing and export of fruit and vegetables, held in 2015, 2017 and 2018. The project logframe recorded that 45 per cent of households surveyed had adopted new or improved inputs, technologies or practices. (See Table 5, annex VI for the full list of trainings provided.)

Impact pathway (iii): Enhanced capacity of agrofirms for processing, aggregating, post-harvest handling, marketing and exporting horticultural produce.

61. This impact pathway was generally effective.[56]

62. **The project exceeded its target for capacity development of agrofirms**, with a total of 62 agrofirms and 496 people accessing the business services offered by the project against a target of 15 agrofirms supported. Agrofirms interviewed by the PPE team reported increased volume of production and quality, which enabled them to bring on new clients. In addition, their new storage facilities enabled them to expand sales in the off-season period and reach new clients. However, three respondents said they were not happy with the outcome and their condition had worsened due to difficulties in repaying their US$-denominated loans.

63. **International study tours were effective in showcasing cold storage practices.** Study tours on issues of fruit and vegetable value chains took place to Armenia, Georgia, Moldova, the Netherlands and Turkey. Participants included heads of agricultural enterprises, agrofirms and farms (mainly medium and large-scale farmers), as well as ministry and UZAIFSA staff. The practical value was for them to learn about the logistics chain and to understand the benefits of cold store and harvest preservation. The cold store owners also noted that they had learned to use their infrastructure more effectively. Development of the cold chain reportedly enabled farmers to produce the same number of crops (mainly fruits, vegetables and greens) but decrease post-harvest losses and gain more profit.

64. **There is insufficient quantitative M&E data to prove that the value of sales from horticulture has increased**. As noted in the PCR, "*While there is considerable evidence that significant investments were made in improving production and processing capacity, there is no documented evidence about the actual increase in the amount of produce marketed and increase in the value of sales from horticulture."* Also, considering that loans were disbursed to agrofirms in the first year or two of the project, while capacity development activities came much later, and given the limited attention to supporting linkages within the value chain (other than study tours), the effectiveness of the loans was dependent on the existing experience of the agrofirms.

Impact pathway (iv): Enhanced access to inclusive financial services for horticultural value chain actors, including poor dehkan *farmers. Commercial banks are facilitated in providing refinanced loans to horticultural value chain actors, including small-scale producers, agrofirms and service providers as a means to develop the horticulture subsector and expand banking services.*

65. Overall, there was mixed achievement of outcomes along this impact pathway.

66. **Larger farmers and *dehkans* were enthusiastic about taking up loans for horticulture production, particularly for greenhouse construction**. By the end of 2019, a total of US$14.7 million had been disbursed to 379 borrowers (309 were

[55] Some of the beneficiaries met during the field visits had not participated in any training; however two women with greenhouses reported that they had participated in three to four trainings organized in Termez during the project period. Trainings were on greenhouse crop production techniques. The women said that the training was useful and that they have applied the acquired knowledge in managing their greenhouse businesses.

[56] The project mostly supported the improvement of storage facilities (i.e. cold storage, packing houses). This was mirrored in the strong uptake of sub-loans for storage facilities taken by agrofirms (see impact pathway iv below). The PPE could find limited evidence that capacities had been developed for processing of horticultural produce into higher value products (e.g. juicing, drying), while logistical and regulatory constraints still pose barriers for the export of horticultural produce.

men; 70, or 18 per cent, were women), exceeding the target of 200. The average loan size across the three types of borrowers was US$27,337 per borrower, while the average loan size for *dehkans* was US$14,720.[57] Considering that the 2019 GDP per capita in Uzbekistan was only US$1,717,[58] it is highly likely that the majority of *dehkan* borrowers were wealthier than average *dehkans*, and that poorer households were excluded. See table 4 for the breakdown of loan beneficiaries by type of borrower.[59]

Table 4
HSP loan portfolio by type of borrower

Target group	*No. of loans*	*%*	*US$*	*%*	*Average size*
Dehkans	184	49%	2 708 543	18%	14 720
Small farm production & service units	58	15%	908 500	6%	15 664
Farms	72	19%	4 289 720	29%	59 579
Agrofirms & private enterprises	65	17%	6 812 355	46%	104 805
Total loan portfolio	379	100%	14 719 118	100%	27 337

Source: PPE analysis of PFI data.

67. **HSP facilitated the access of smallholders to loans by insisting that a separate window should cater only for them.** The phone survey and interviews with borrowers confirmed the uptake in investments in horticulture through HSP sub-loans (see Box 5, annex VII). *Dehkans* were financed almost exclusively for greenhouses, with just three loans for gardens and one for storage; unlike the small farms and enterprises that received the loans evenly for the greenhouses, gardens and storage with just one loan for storage.[60] The same pattern was seen in the larger farm category. All of the agrofirms' large-size loans (above US$150,000) went to processing and packaging (see table 6, table 7 and table 8, annex VI).

68. **However, the interlinkages between the borrower groups was not guaranteed, despite this being an explicit condition at design.** The specific targeting criteria for the rural finance component were supposed to be written in the subsidiary loan agreements (SLAs) that the PFIs signed with the project. The agrofirms were expected, as a condition of project support, to agree on the project's targeting criteria and engage fully with the small-scale producers who had taken loans under the other financing windows. In theory, these loans should have enabled the producers to access technical advice and inputs from project-supported service providers and agrofirms, thus linking their activities to value chains. In practice, the SLAs did not refer to any borrower selection criteria or project priorities, which undermined the project logic.

69. **Due in part to lack of awareness-raising and institutional capacity constraints, PFIs were less enthusiastic about providing loans to *dehkans*.** This is partly due to the additional paperwork required. Application forms were in Russian, which was a barrier for many applicants. HSP staff did assist with loan applications, and this was appreciated by beneficiaries, but there was limited capacity among PFIs at the local level, with bank personnel unaware of existing benefits or IFAD's loan options, thus creating barriers for potential borrowers. The

[57] Two *dehkan* loans were far above the US$20,000 limit. If one loan of US$150,000 (which was issued to one *dehkan* borrower) is excluded, the average is US$13,980. Another *dehkan* borrower received a loan of US$40,200, well above the US$20,000 limit. All other loans were within the set credit line limit.
[58] World Bank. Available at: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=UZ
[59] The average loan size for other non-*dehkan* private enterprise small farms was slightly higher, at US$15,664. The farms received on average US$59,600 in loan financing. The average loan size for the agrofirms and enterprises was US$104,805 (with 10 loans above US$150,000, 29 loans between US$90,000 and US$150,000, and the remaining 26 loans under US$90,000).
[60] The following five investment purposes were offered: greenhouse construction; garden improvement; garden planting; cold storage facilities; and processing and packaging equipment.

PPE field visit noted that nearly all the people who had succeeded in accessing HSP financing already had experience in finance and therefore already knew which documents were required. HSP did not include capacity development support for PFI staff.

70. **Following the currency exchange liberalization in 2017, and the resulting devaluation of the Uzbek s'om, many borrowers faced severe repayment issues.** Loans were disbursed in local currency and United States dollars, with the choice left to the PFIs and borrowers. The interest rate on SOM-denominated sub-loans was set at 9 per cent, which was significantly lower than the refinancing rate of the Central Bank of Uzbekistan, and effectively constituted a subsidized interest rate, which was very attractive for the first-time borrowers, but not sustainable from the market point of view. Almost all loans issued in Uzbek s'om have been fully repaid. On the other hand, borrowers who had taken loans in United States dollars had to assume the foreign exchange risk. As a consequence of the sudden devaluation of the local currency in 2017, the project loans denominated in United States dollars ended up costing almost twice as much for borrowers earning incomes in the local currency. Many borrowers faced severe repayment issues, causing the deterioration of the dollar-denominated loan portfolio in three banks. The loan repayment rates and restructuring data for problem loans were not disclosed.[61] It was not possible for the PPE to gain insight into the restructuring process applied to the delinquent borrowers, most of whom had taken United States dollar loans (over 90 per cent of the cases, reportedly).

71. **The provisions in the sub-loan agreement with regard to loan disbursement currency and the exchange rate risk exposure of the PFIs varied across the different banks.** The SLAs were concluded in 2014, 2015 and 2016, all in United States dollars but sub-loans were allowed in both currencies at the discretion of the bank. The phone interviews with HSP borrowers revealed this inconsistency of the currency rule, which did not depend on the borrower's repayment currency. The loan currency distribution shows that a high percentage (64 per cent) of the US$ loans were taken by small farms and service units and the lowest (11 per cent) were taken by *dehkans* (see Table 9, annex VI).[62]

72. **Rural finance activities were constrained by several problems that were still not rectified upon completion.** The following issues were revealed during implementation (especially after the 2017 exchange rate shock) but could not be addressed during implementation: (i) working capital loans were not offered at all, even though they were included in the design of the three windows. This issue is linked to the general problem of loans that were not tailored to specific needs of the borrower and only formally following the set of requirements of the windows; (ii) there was more emphasis on collateral and less on cash-flow from financed business; (iii) the application of grace periods was arbitrary (some borrowers never needed it but still received it); (iv) in some cases, the proceeds of the revolving fund were not reported for the issuance of new loans. In general, the use of the revolving fund has not been clearly stipulated, including post-project; and (v) the project M&E system did not monitor key financial indicators such as portfolio at risk and operational self-sufficiency of the financial partners.

73. **In summary**, targets were generally achieved at output level, but there was mixed performance overall in achieving HSP's objectives. HSP has facilitated the access to financial services for horticultural value chain actors, but producers still face barriers

[61] Despite significant efforts with customized forms and questions provided, the evaluation team could not receive the problem loan data. The interviews with the four banks (Mikrokredit, Ipoteka, Khamkor and Halk Bank) allowed for only general qualitative assessment of the issue.

[62] It should be noted that all of the loans issued to *dehkans* in 2014-2016 were in local currency. There were only four loans issued for *dehkans* in 2019 and they were all in United States dollars. There was no loan activity for *dehkans* in 2017-2018, possibly due to complications with the exchange rate fluctuation following the currency exchange liberalization in 2017 (see Table 10, annex VI.).

and capacity constraints. Severe delays in irrigation and rootstock enhancement activities reduced the effectiveness of these activities. On balance, effectiveness is rated *moderately satisfactory (4)*.

Efficiency[63]

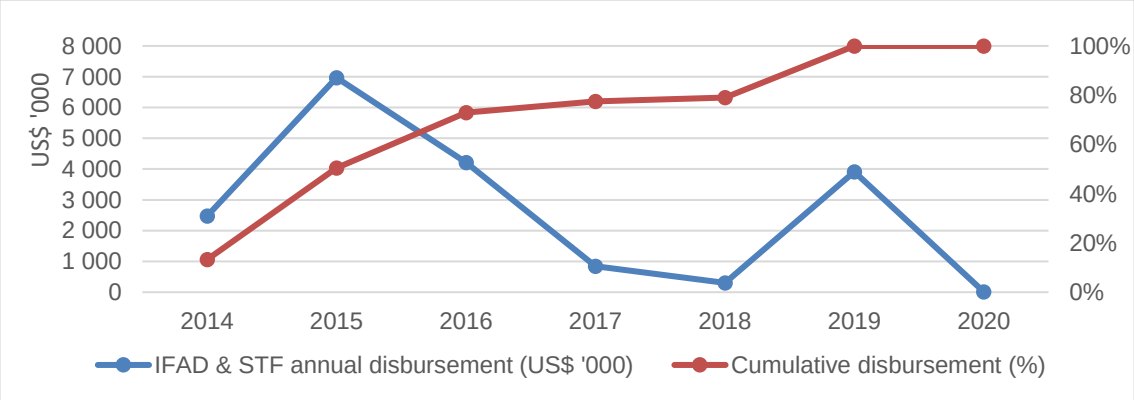
Timeliness

74. **The project experienced delays, but loan extensions were not necessary.** The project was approved on 3 April 2012 and became effective only on 17 December 2013, i.e. 20 months from approval to effectiveness, well above the regional average of 11.2 months and the IFAD average of 11.7 months.[64] [65] During implementation, there were significant delays in procuring contractors to undertake the irrigation works, while support to the Central Nursery for the propagation of new varieties only took place in the final year of implementation. As a result of these delays, the project could not demonstrate the "multiplier effects" of combined support across the project components, as had been the design intention.

Disbursement performance

75. **There was a spike in disbursement in early years, as agrofirms and larger farms quickly took loans; however, disbursement slowed mid-project, with a rush to disburse remaining funds in the final year.** After the initial prolonged effectiveness lag, disbursement in the first two years was rapid.[66] This was mostly due to strong uptake by larger farms and agrofirms of the refinanced credit from PFIs. In the next two years, disbursement suffered a setback (due to the currency exchange rate concerns) and stood still until early 2019. The uneven pace of disbursement meant that the delivery of some key outputs was delayed, thus jeopardizing the expected synergies among the various project components.

Figure 1
IFAD loan and grant disbursement record



Source: IFAD Database (Oracle Business Intelligence).

76. Most of the initial disbursements were for loans through the refinancing facility. The logical approach would have been to focus on developing capacity and constructing infrastructure first, then issue loans. This would have allowed farmers to use the funds more effectively. However, the PPE was informed that government staff are evaluated on their disbursement performance and were therefore reluctant to slow

[63] Efficiency is a measure of how economically resources and inputs (such as funds, expertise and time) are converted into results. Here, efficiency is examined in relation to the following aspects: (i) timeliness; (ii) disbursement performance; (iii) programme management; (iv) financial management; (v) cost per beneficiary; and (vi) economic and financial impacts.
[64] IFAD, Near East, North Africa and Europe Division. Portfolio Performance Report. Annual Review July 2014 – June 2015. Volume I.
[65] The HSP was conceived as lasting for a period of six years from the entry into force and was therefore completed in December 2019 rather than December 2017 (on account of the 20-month effectiveness lag), with no need to extend the original project duration.
[66] IFAD and Spanish Trust Fund financing were disbursed at 61 per cent and 89 per cent, respectively, by the end of 2017.

this down. The MTR did not pick up on this trend, and instead noted the "satisfactory" disbursement performance.

Programme management

77. **The division of programme management and oversight responsibilities was clear, but institutional changes caused some upheaval.** The MAWR was appointed as the lead implementing agency, while daily supervision of project management remained with a PMU embedded in the Rural Restructuring Agency (RRA), accountable to the MAWR.[67] The RRA was disbanded in February 2018 as part of internal restructuring, and the responsibility for project implementation was handed to the newly established UZAIFSA. This handover caused some delay in decision-making during the transition.

78. **HSP was the first project implemented by IFAD in Uzbekistan, with a consequent lack of sufficient knowledge by the PMU of certain organizational procedures and requirements.** It took a lot of time for project staff to become familiar with the "IFAD rules", and the project was slow in putting in place all the procedures required by the Fund, with particular regard to procurement. IFAD, meanwhile, did not conduct a detailed assessment of the institutional capacities and government requirements prior to the approval of HSP. Nor did IFAD provide sufficient support to the PMU during project implementation (see Section D. Performance of partners). This had an impact on the timeliness in delivering key investments/activities (e.g. in-vitro laboratory). Moreover, project management performance was weakened by continued staff turnover in some key positions (e.g. M&E), with no system in place for orienting new staff for easy and rapid insertion in the PMU.

79. **Project management costs were reasonable and below the IFAD average.** At completion, programme management costs (i.e. component 4) accounted for 5.9 per cent of total project costs, lower than the appraisal estimate of 6.6 per cent, and below the IFAD benchmark value of 10 per cent. These costs were generally in line with other IFAD projects in the region.[68]

Financial management

80. **Financial management and internal control systems were generally adequate, but more support was needed to bring these in line with IFAD requirements.** The annual workplans and budgets (AWPBs) were prepared by component specialists and consolidated by the project manager and the chief Accountant in line with IFAD requirements.[69] Actual disbursements under project components were lower than forecast in the AWPBs (see Figure 6, annex VI). Although the scope of internal audit was not fully in line with international best practice standards (focusing mostly only on compliance with local regulations of individual financial transactions), IFAD supervision missions concluded that UZAIFSA had a reliable internal control system, and no illegible expenditures were detected.

Cost per beneficiary

81. **Costs per beneficiary were found to be lower at completion compared to design estimates**, meaning that the project spent less to achieve the set targets. Overall, HSP reportedly reached 18,242 households, against a target of 11,000. At project closure, total costs amounted to US$18,717,702, which results in a cost per

[67] The design document had envisaged that the overall management oversight of the HSP was with a Project Steering Committee (PSC) chaired by MAWR and joined by several stakeholders including: the Ministry of Finance, the Ministry of Economy; the Central Bank of Uzbekistan; and the Women's Committee.

[68] When comparing the HSP management costs with other projects in the region, they result higher than in Kyrgyzstan Agricultural Investments and Services Project, 2009-2013 (3.6 per cent) and Moldova Rural Financial Services and Agribusiness Development Project, or IFAD V, 2011-2017 (2 per cent), but lower than Georgia Rural Development Project, 2006-2011 (5.85 per cent) and Tajikistan Khatlon Livelihoods Support Project, 2009-2015 (16.4 per cent). All the percentages of management costs provided in this paragraph are taken from IOE Project Performance Evaluations Reports of the respective projects.

[69] The RRA, and subsequently UZAIFSA, was responsible for ensuring the HSP financial management, through a project Finance Unit composed of a chief accountant and a finance specialist with sufficient skills and experience.

beneficiary of US$1,403, lower than the appraisal estimate of US$2,686. These costs are lower than the other IFAD projects in Uzbekistan: the Dairy Value Chains Development Programme (DVCDP) and the ADMP at US$3,284 and US$1,581 per beneficiary, respectively.

Economic and financial impacts

82. **The benefit-cost ratio of the project**, as calculated by the PCR, is equal to 1.24, indicating a return of US$1.24 for every dollar invested in the project. The ex-post economic internal rate of return (EIRR) is estimated at 23.8 per cent, and the Net Present Value (NPV) at US$13.3 million; this is above the EIRR of 22 per cent and the NPV of US$7.4 million estimated at appraisal.[70] It should be noted that the findings of the economic and financial analysis in the PCR were not based on primary sources/data such as actual production and income data collected from farmers.[71] Meanwhile, given the delays in implementing some key outputs, it was not possible for the PCR economic and financial analysis to take into account the expected outcomes of these investments (e.g. laboratory and central nursery). Overall, notwithstanding the aforementioned caveats, the project is still expected to have positive economic returns on farmers' livelihoods.

83. **In summary,** project cost and economic and financial indicators were generally positive. However, as HSP was IFAD's first project in the country, there were understandably some initial challenges in aligning project management and procurement procedures with IFAD requirements, and as a result there were knock-on delays in project implementation. Overall efficiency is rated *moderately satisfactory (4).*

Rural poverty impact

84. Impact is defined as the changes that have occurred or are expected to occur in the lives of the rural poor (whether positive or negative, direct or indirect, intended or unintended) as a result of development interventions. In this section, changes in four areas are discussed: household income and assets; human and social capital; food security and agricultural productivity; and institutions and policies. The PPE has further assessed the plausibility of impact, given the mixed achievement of outcomes along all the theory of change impact pathways.

85. **There was a lack of robust quantitative data in the impact study, which mostly relied on qualitative data.** In assessing HSP's rural poverty impact, the PPE has drawn on the findings of the 2019 HSP impact assessment. The main sources of data for HSP impact assessment were structured interviews, focus group discussions and semi-structured interviews conducted over a stratified sample of 800 project beneficiaries and a control group of 100 beneficiaries, as requested by IFAD. Female representation in the sample was unsatisfactory, as only five women were interviewed. Furthermore, the comparability of baseline data and the impact study data was compromised due to sampling discrepancies.[72] Certain indicators were assessed solely on the basis of subjective perception by participants.[73] The PPE has sought to triangulate and validate the impact study findings to the extent possible.

Household income and assets

[70] However, since the ex-ante economic and financial analysis had intentionally reduced all benefits by 20-30 per cent to account for uncertainty surrounding their realization, the adjusted appraisal estimate for EIRR is more likely 28 per cent and NPV appraisal estimate more likely US$13.7 million.

[71] The economic and financial analysis in the PCR was carried out remotely due to the travel restrictions related to the COVID-19 pandemic. For this reason, the analysis is based on pre-existing models and information included in the appraisal document. The key indicators used to carry out the analysis were NPV and the internal rate of return calculated over the project duration (6 years) and its capitalization phase (another 14 years).

[72] For example, the sample proportion was based on the entire population of Surkhandarya rather than on the project beneficiary population (as per the baseline), which affected the comparability of the two sample groups (before and after the project).

[73] For example, the impact study reported on the percentage of project beneficiaries who "believe that over the past five years their irrigation systems have improved" as a primary metric for reporting impacts of irrigation rehabilitation.

86. **A decrease in the poverty rate of Surkhandarya was observed during HSP's implementation period but cannot be solely attributed to the project.** The 2019 HSP impact assessment has used the data of the State Statistics Committee to show a decrease in the poverty level in Surkhandarya from 20.5 per cent in 2014 to 14.7 per cent in 2019. However, considering that HSP targeted only about 7 per cent of the *dehkan* households in the entire region, and given that the poorer *dehkan* households, youth and women faced barriers in accessing HSP benefits, these results can hardly be attributed to the project's intervention. In addition, the baseline study of the project reported a poverty rate of 16.1 per cent in 2014. If assessed against the baseline rate, the decrease in poverty level is still positive, but more modest.

87. **According to the impact assessment, the targets of increasing asset ownership and incomes were achieved**. In particular: (i) the value of assets increased by 28 per cent (target 20 per cent); (ii) the total household income by 26.6 per cent; and (iii) the average per capita income increased by 30.1 per cent. Through refinanced credit, HSP directly contributed to the increase in productive assets (greenhouses) in the primary production and the market distribution segments of the value chain (though to a relatively small number of beneficiaries). Regarding the 1,500[74] new jobs to be created through project support, these were estimated either at 1,235 by the PCR or at 1,720 by the final impact assessment (based on beneficiaries' estimations). Most of the jobs were seasonal and created for workers employed during the harvest and in preparation for storage. In any case, concrete data on the actual number of jobs were not collected and therefore project impact in this respect cannot be properly assessed. During the PPE field visit, the respondents mainly suggested that they were reinvesting the profits in their businesses or expanding into other areas.[75]

Human and social capital

88. **Laboratory training.** Training was delivered through specialized courses (for instance, the chief of the laboratory attended two training courses: (i) four months in the Mirzaev Scientific Research Institute of Horticulture and Viticulture in Tashkent, and (ii) four months in Turkey) and courses to the rest of the staff by an international consultant. During the field visit, it was apparent that the staff were confident in carrying out the tissue culture procedures.

89. **Training for beneficiaries** was put into practice by 45 per cent of respondents, according to the impact assessment. This is supported by the interviews conducted during the field visit. Beneficiaries commented on having new knowledge of reducing crop losses and of production techniques (such as choosing better seeds or cultivating new plant species) in particular. However, the project's approach to capacity development generally revolved around one-off training sessions on technical capacities, with little attention to the development of functional capacities (e.g. management skills).

90. **No evidence of development of social capital.** There was no evidence of organizing producers into cooperatives or other types of association, most likely due to a lack of trust after the long period of central management in Uzbekistan. The cluster concept was still nascent during HSP's implementation and not yet fully operational in the horticulture subsector. As noted, water management operations and organization was not an activity of the project, despite the clear need for this. It is not recorded whether there was any significant change in: awareness and uptake of rights and entitlements; household decision-making; and participation in local governance. However, there is no evidence of HSP having addressed these issues; therefore, it is unlikely.

[74] This target was decreased from the initial 2,000 jobs planned.

[75] For example, one respondent reported that her family had bought a second car. Income generated from her business also helps with education for their children, and they have renovated their house. Interviews with loan beneficiaries indicated that they were eager to expand their existing small-scale horticulture businesses.

Food security and agricultural productivity

91. **Reported increases in production are unclear as yield data were not monitored.** An increase by 30 per cent in the volume of fruits produced was planned at appraisal; the PCR (logframe) reported an increase of 65 per cent in agricultural productivity at completion, but no evidence is provided in this regard. The Annual Outcome Survey of 2018[76] indicates that almost 90 per cent of a sample of beneficiaries recorded an increase (from medium to high) in crop productivity compared to 2017, but the sample size is not clear. The impact survey states that due to the improved water availability, an additional 6,670 tons of fruit and vegetables are produced annually, but this figure is unreliable as it is an estimation that 2 tons were produced on the estimated 3,335 hectares of land benefiting from improved irrigation. About 80 per cent of the loans granted (for investments in greenhouses and intensive gardens) were provided for the introduction of water-saving irrigation technologies on an area of more than 314 hectares. It is reported that modern greenhouses were built on an area of 47.4 hectares. Moreover, intensive orchards were established on an area of 266.8 hectares with the installation of a drip irrigation system. However, the project has not systematically documented the data on increase in yields; as a result, the PCR lacks documentary evidence underpinning the assumption of higher productivity. Geospatial analysis conducted by this PPE suggests there has been an increase in vegetation index, as a proxy for increased agricultural productivity – although this analysis was based on a limited time series and is therefore not conclusive (see annex VIII).

92. **No data have been collected to assess project impact on food security;** for this reason, the alleged contribution to the decreasing trend in child malnutrition is difficult to measure. Uzbekistan has recorded a declining trend in child stunting over the past two decades,[77] and while this same declining trend was also observed in Surkhandarya, the province has continued to show higher rates of stunting than the national average.[78] In light of the nationwide improvement in child stunting, HSP's contribution is likely to be minimal, given the very small proportion (7 per cent) of households reached by project services.

93. Concerning **access to markets**, the project: (i) put into operation eight facilities for processing fruits and vegetables and three packaging lines; (ii) built 33 refrigerated storage facilities with a capacity of 10,750 tons; and (iii) equipped 38 vehicles with refrigeration units. However, no data related to the actual increase in marketed production and in the value of sales from horticulture were collected by the project. It was clear that few linkages were developed along the value chain, thereby limiting the potential for accessing markets.

Institutions and policies

94. **Following their experience with HSP, the PFIs are enthusiastic regarding loans to the horticulture subsector; however, they are unlikely to loan to *dehkans*** in the future outside of another targeted programme, as they report that the operational costs (especially the time to process the documents) are too high. It is important to note that the planned capacity development and sensitization of bank staff for providing targeted loans for horticulture did not take place.

95. **HSP did not address enabling environment constraints of the financial system and was solely targeted at the "micro" level of the financial system** (i.e. focusing on individuals and financial service providers) – as described in the 2009 IFAD Rural Finance Policy. There were no activities in support of the meso level (i.e. building effective financial markets, second-tier institutions) or the macro level (dealing with governments, policy dialogue and sector strategy formulation). There

[76] Quoted in the PCR.
[77] From 39.5 per cent in 1996 to 8.7 per cent in 2017, representing a 78 per cent reduction in 21 years. Source: UNICEF (2019). Uzbekistan Nutrition Survey Report. Available at: https://www.unicef.org/uzbekistan/media/2066/file/UNS%20-%20Full%20Report.pdf.
[78] Stunting was prevalent in 13.9 per cent of children age 0-59 months in Surkhandarya in 2017. Source: UNICEF. Ibid.

were implicit assumptions in HSP's design that meso and macro levels of the financial system were adequately supported by other actors, and that shortcomings in these levels of the system would not undermine HSP's support. These assumptions did not play out in practice, as the enabling environment remained challenging for most of HSP's intervention.

96. **The State Guarantee Fund was developed in response to the currency devaluation, initially for HSP borrowers, but later scaled up nationwide.** While the fund has been a success, there appears to be insufficient transparency and unclear rules on who can benefit from it. The fund's objective was not to bail out the problem loans, yet some delinquent borrowers reportedly used it for this purpose. According to one source dated 2019,[79] the maximum loan size eligible for a guarantee was US$250,000. For larger loans, the eligibility criteria are quite complex and only established companies could access it (according to interviews with IFAD consultants and the banks).

97. **Regulatory aspects and export barriers were not directly addressed by HSP and remain significant challenges for horticultural producers.** Export barriers were clearly outlined in a 2012 marketing study commissioned by HSP, which highlighted government bans on the export of fresh produce, trade regulations and other post-harvest and logistical constraints. According to the PCR, there was an assumption at the design stage that regulatory aspects would be addressed by other development partner projects; however, this PPE could find little evidence that these aspects have been addressed by other projects – certainly not with regard to HSP beneficiary farmers in Surkhandarya. The PCR also notes that these aspects were overlooked as they were not prescribed in the feasibility study, which became the blueprint for project implementation.

98. **The Government has taken some initial steps towards improving the regulatory environment**, with the introduction of the Presidential Decree No. 2505, dated 5 March 2016, "*On measures to further develop the raw material base, expansion in processing of horticulture, meat and dairy products, increasing foodstuffs production and export within 2016-2020*". The Decree focused on supporting improved logistics and processing and developing an export market for high-value crops. More recently, the Government issued a Presidential Decree No. 5853 on 23 October 2019 outlining its long-term vision for the development of the agriculture sector for the period 2020 to 2030. The main vision is to develop a competitive, market-oriented, private sector-led, and export-based agrifood sector that will increase farm incomes, improve food security, and ensure sustainable use of natural resources. However, policy and regulatory constraints still pose barriers for more efficient horticulture product exports, including high trade-related taxes, deficient transport facilities, cumbersome and onerous customs declaration procedures, and insurance costs.[80]

99. **In summary,** the overall rural poverty impact of HSP was mixed. Incomes and assets have increased among borrowers, but the impact on poverty rates remains unclear. There were indications of impacts related to agricultural productivity, food security and human capital, but reliable data are lacking. Policy and institutional impacts were few, while there was no evident impact on social capital and empowerment. On balance, the impact of HSP on rural poverty is rated *moderately unsatisfactory (3).*

Sustainability of benefits

100. **PFIs have developed considerable experience in horticulture lending through HSP, but it is unclear whether they will continue lending to *dehkans***

[79] Tadjibaeva, D. (2019). *Small and Medium-Sized Enterprise Finance in Uzbekistan: Challenges and Opportunities*. Asian Development Bank Institute, No.997, September 2019.

[80] For example, due to logistical constraints as well as procedural delays, more than 10 tons of melon and pomegranate were spoiled upon reaching Switzerland in October 2020 https://kun.uz/uz/news/2021/01/12/eksportdagi-yashirin-muammolar?q=%2Fnews%2F2021%2F01%2F12%2Feksportdagi-yashirin-muammolar.

outside of projects. The interviews with the PFIs showed that they generally understood the underlying business risks and were aware that any cases of non-repayment of HSP sub-loans arose almost exclusively from the unjustified US$ exchange rate exposure by borrowers. The continuing financing of horticulture by PFIs in ADMP is another demonstration of the realization of this experience. At the same time, there is still a lack of regulatory incentives by banks to lend from their own resources to horticulture. According to some PFI staff respondents, it is still not sufficiently financially attractive to provide loans to the horticulture subsector and to *dehkans* in the absence of project credit lines. The PFI's own funds are much more expensive than IFAD resources, and banks are strongly motivated to use them in less risky and more profitable sectors.[81] For most of the outstanding loans issued in 2019 by PFIs, the principal repayments have not yet started, which means the revolving funds are not yet sufficient to issue new loans.

101. **Variations in markets and prices for fruit and vegetables remain a threat (particularly for export-oriented production), although there is continued and expanding interest in horticulture among small producers.** Uzbekistan regularly faces barriers to trade due to weaknesses in food quality and laboratory standards, as well as sanitary and phytosanitary certification measures.[82] Horticultural producers and agrofirms interviewed by the PPE team noted constraints in reaching export markets, although for most, the domestic market remains their main outlet. During the field visit, farmers commented on low prices for cabbage and onions in 2021, but nearly all were continuing to work in horticulture. There also appears to have been a replication effect among neighbours.[83]

102. **A lack of linkages between value chain actors jeopardizes longer-term sustainability.** HSP provided no support to creating linkages or to functional upgrading within the value chain. As such, there is no vertical integration to ensure that producers have continued access to markets or remunerative prices. Meanwhile, there have not been supports given to the organization of farmer groups – for instance, encouraging associations or cooperative-type arrangements – or to contractual relationships between the value chain actors. It is understood that there is some unease with communal ways of working, due to the troubled legacy from the Soviet period. The cluster system may eventually be a way forward, though it is still unclear how this model will apply to the horticulture subsector (to date, it has been trialled mainly with cotton).

103. **Further technical advice is needed through agricultural extension**. There is a notable lack of extension services in Uzbekistan, and this was not included in HSP design. Providing funding without extension services is a risk for sustainability. Subsequent development efforts are beginning to address this gap. For example, the World Bank has committed to support the Agricultural Knowledge and Innovations Service (AKIS) going forward, which will provide one-stop shop service centres for agricultural needs, including extension.

104. **For irrigation works, aspects relating to the collection of user fees and maintenance costs were not clear upon completion.** Payment for water services is limited and threatens sustainability. Lack of funds leads to a lack of options for significant rehabilitation of the irrigation system, as well as carrying out regular O&M,

[81] It was not possible to gain access to data on banks' lending to horticulture from their own funds. Without access to data on banks' lending from their own sources to horticulture activities, it is unclear if banks will use (or whether they have already used) their own funds to lend to *dehkan* farmers, or to horticultural ventures.

[82] For instance, Russia banned the supply of selected fruit and vegetables from Uzbekistan in December 2020, while Kazakhstan introduced a ban on plum imports from Uzbekistan in August 2020. '*Full stop – Russia bans the supply of selected fruits and vegetables from Uzbekistan, Armenia, Azerbaijan, and Turkey*'. Available at: https://east-fruit.com/en/news/full-stop-russia-bans-the-supply-of-selected-fruits-and-vegetables-from-uzbekistan-armenia-azerbaijan-and-turkey/; and Ban on plum imports from Uzbekistan to Kazakhstan. Available at: https://east-fruit.com/novosti/kazakhstan-vremenno-priostanovil-import-slivy-iz-uzbekistana/.

[83] For instance, in the village near the airport of Termez, two women received loans initially and many neighbours became interested and have also moved into horticulture.

leading to problems with long-term sustainability. There was an assumption that water users would be supported by other projects to ensure adequate O&M capacity and collection of user fees, and that irrigation activities would be implemented on time. Neither of these assumptions proved true.

105. **Frequent institutional changes and staff turnover pose a threat to sustainability and could lead to a loss of institutional memory and implementation capacity**. During HSP's implementation, several important institutional changes took place including the disbanding of RRA, handover to UZAIFSA, and the splitting of the MAWR into two separate entities:[84] (i) the Ministry of Agriculture and (ii) the Ministry of Water Resources.[85] There have been significant changes in the structuring of irrigation management in Uzbekistan. With the splitting of MAWR, WCAs have been consolidated such that each district now has only one WCA, and they are now primarily responsible for ensuring water delivery and no longer responsible for maintenance of the canals. Many of the previous WCA staff have moved on to other roles. HSP did not adjust or revise its O&M plans, despite the severely constrained and stretched capacities of the newly consolidated district-level WCAs.

106. Furthermore, in 2021, UZAIFSA is being dissolved and IFAD project implementation is moving to line ministries.[86] This could mean a loss of institutional memory and potential loss of implementation capacity. It will be important to ensure that the new implementing organizations are well aware of the lessons learned from HSP. On the other hand, having future projects more directly embedded in line ministries does enhance the potential for deeper policy debate.

107. **Overall**, sustainability is rated *moderately unsatisfactory (3).*

B. Other performance criteria

Innovation

108. **The use of loan financing to support horticultural development and *dehkan* farmers was innovative in the Uzbekistan context.** Not only was HSP IFAD's first engagement in Uzbekistan, but it was also the first time that loan financing was used for horticultural support, in a context where cotton and wheat have dominated the Government's agenda for decades. Likewise, the use of loan financing to provide support to *dehkan* farmers had not been done before, and this was a significant shift in approach for the Government – albeit with some initial reluctance.

109. **There were missed opportunities for technological innovations in HSP**. There was no evidence of a sophisticated approach to innovation in the design or implementation of HSP. For instance, the use of solar energy for greenhouses would be an obvious choice, but beneficiaries appear to be using fossil fuels. The design of HSP included plans to introduce tissue culture and modern varieties via the Central Nursery, and training of staff took place; however, due to the delay in the procurement of the equipment and establishment of the system, the full impact of this innovation was not evident by the completion of the project. The field visit did confirm that in-vitro micro clonal propagation methods are now being practiced, but in much smaller quantities than planned. The space allocated for the acclimatization process (stage #2) is not enough to produce 600,000 plants per year (only 200,000 would be possible with the current space available). The adoption of drip irrigation was also somewhat new in the Uzbekistan context.

110. **There was no scope for introducing innovations into the irrigation rehabilitation works**. As noted by the PCR and by supervision missions, the design

[84] With Decree No. 5330 on 12 February 2018.
[85] The 2021 performance evaluation of the ADB Uzbekistan: Land Improvement Project noted that the splitting of MAWR "*may have an impact on crop planning, in terms of water allocation and synchronization of activities. It remains to be seen whether the division of MAWR will affect sustainability; in the meantime, the agencies appear to be well coordinated despite their different functions.*" ADB (2021). Performance Evaluation Report Uzbekistan: Land Improvement Project. Available at: https://www.adb.org/sites/default/files/evaluation-document/525756/files/in32-21.pdf.
[86] Specifically, to the Ministry of Agriculture (for the ADMP) and the State Veterinary Committee (for the DVCDP).

of the irrigation component was constrained by the government requirement to adhere to a standardized approach and national technical specifications. It would therefore, reportedly, have been "impossible" to obtain approval for any technical solutions that were different from those of the state expertise commissions. There is no evidence, however, of IFAD having sought for policy change in relation to this requirement. The final supervision report (October 2019) recommended several elements to improve water management and canal operation (e.g. provision of pressurized and filtered water, introduction of long crested weirs, improved gate structures, flow control and monitoring structures), while the MTR recommended that technical solutions be introduced to respond to climate change adaptation needs. These technical improvements were not introduced during HSP's implementation – the irrigation works were solely on rehabilitating existing structures and did not seek to modernize the irrigation systems, despite this being a key challenge to water use efficiency – and it remains unclear whether or how they would be introduced in the future.

111. **HSP did not introduce any institutional innovations.** Despite the need for institutional capacity strengthening – for example with regard to WCAs, the rural finance system, agricultural extension, or indeed to farmer organizations and horizontal linkages – HSP did not introduce new ways of working for the institutions and actors along the horticultural value chain. However, the PPE notes that this aspect has been picked up in the design of subsequent IFAD projects in Uzbekistan.[87]

112. **In summary**, HSP's main innovation was to target *dehkan* farmers and to apply loan financing to horticultural development – a first in the Uzbekistan context. Otherwise, there were missed opportunities to introduce technical innovations, particularly with regard to irrigation works. On balance, innovation is rated *moderately unsatisfactory (3)*.

Scaling up

113. **Although designed as a pilot project, HSP did not demonstrate the model for upscaling that was intended at design.** It was envisaged in the design of HSP that "the private sector" would be the primary agent in scaling up HSP model, once it was demonstrated as being effective.[88] In practice, given that HSP did not achieve the objective of demonstrating the "multiplier effect" of providing joined up and comprehensive support at different axes of the value chain, there was little scope for such scaling up to have taken place.

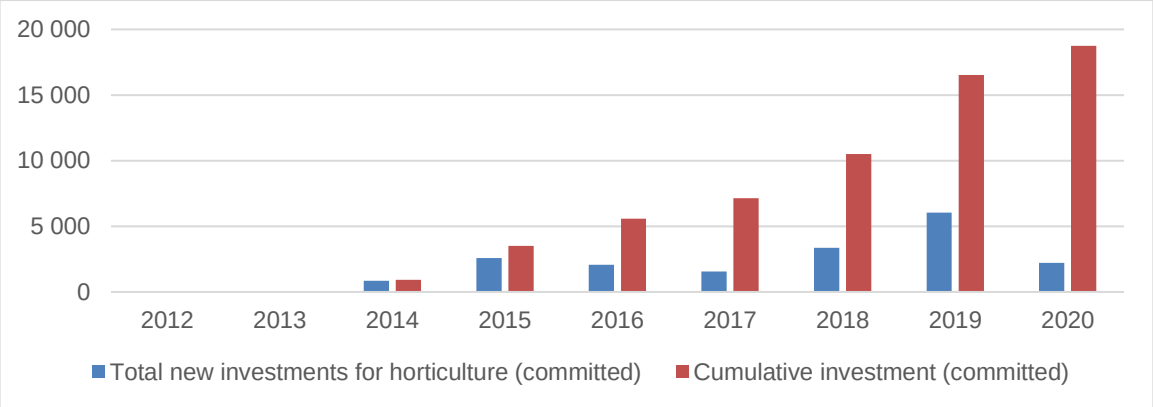
114. **Nevertheless, there was substantial investment in the development of the horticulture subsector following the conception of HSP.** HSP was the first loan-financed horticulture project and was swiftly followed by much larger investments (see Figure 7, annex VI for a timeline of horticulture investment projects in Uzbekistan). For example, the World Bank-financed Horticulture Development Project, approved in 2014, has a combined total budget of US$820.57 million (including additional financing approved in 2018). Similarly, the Asian Development Bank has financed a suite of horticultural projects, including the Horticulture Value Chain Development Project (US$326 million), approved in 2016, and the Horticulture Value Chain Infrastructure Project (US$244.75 million), approved in 2018, albeit targeting larger farmers. To date, nearly US$2 billion has been committed to horticultural development projects since the approval of HSP in 2012 (see Figure 2, below). The many interviews conducted with development partners as well as the Government confirmed the pioneering role of IFAD in horticulture, as well as the focus on *dehkans*. Other donors noted that they had learned from some of IFAD's

[87] E.g. the ADMP includes multistakeholder platforms to encourage linkages among value chain actors.

[88] The PDR did not clarify what private sector agents were expected to replicate the HSP interventions, or which interventions in particular they would replicate. The PDR states, "*There are no requirements for post-project funding by Government in that scaling up and replication would be, subject to Government policy, feasible and attractive for the private sector."*

experiences (e.g. with regard to incorporating the Government's mandatory feasibility study more fully into the initial project design process).

Figure 2
Investment in horticulture support through development projects post-2012 (US$ '000)



Source: PPE team analysis.

115. **Subsequent IFAD projects in Uzbekistan have drawn lessons from HSP and have scaled up and improved the value chain development approach with substantial cofinancing.** For instance, the planned value chain activities have been strengthened in the ADMP, which includes support to multistakeholder platforms to strengthen value chain governance and vertical and horizontal linkages along the value chain. With total project financing of US$364 million, the ADMP has significant World Bank cofinancing of US$200 million, and a government contribution of US$27 million. In addition, the DVCDP learned from the challenges faced by HSP with regard to gender mainstreaming and has included dedicated project staff to support gender.

116. **The targeting of *dehkan* farmers is now a central tenet of the Government's strategy for agricultural development, although the link to HSP is unclear.** Whereas *dehkans* previously received limited attention compared to larger state-run cotton and wheat farms, the Agriculture Development Strategy of Uzbekistan for 2020-2030, and a recent law on "*dehkan* economy" demonstrate a shift in government focus, such that *dehkans* are now central to the future development of the agriculture sector. HSP was one of the first projects to target *dehkans*, although it is difficult to demonstrate a clear link between HSP and these recent policy changes, given that there was no direct policy engagement as part of HSP.

117. **In general, however, the approach to knowledge management and policy engagement has been ad hoc.** Knowledge management and sharing are critical in order to promote innovations. However, IFAD's limited country presence in Uzbekistan constrained the opportunities for sharing lessons learned with other donors and the Government. Only brief and somewhat ad hoc exchanges were possible following monitoring/supervision missions. Government respondents consistently commented on the preference for IFAD to establish a local office and participate more in strategy development discussions. The project does not appear to have prepared a knowledge management plan,[89] despite regular urging from IFAD.[90] Both internal and external communications appear weak, and there were many missed opportunities to use M&E data and case studies from the field, to adjust implementation and promote project learning. There was also very little information available online regarding IFAD's activities in Uzbekistan. IFAD could learn from the communication and outreach efforts of other projects in Uzbekistan, most notably the USAID Agricultural Value Chains Activity, which created a Telegram platform for

[89] The IFAD PDR had described the plan for scaling up and knowledge management: *"A communications strategy will document the technical content of project activities and the institutional arrangements for their delivery…[materials] will be disseminated to project stakeholders and used for subsequent scaling up*."
[90] For instance, the February 2019 Supervision Mission report notes that there has been inadequate action in this area.

horticultural producers to share information with each other, and created a YouTube channel with instructional videos (in the Uzbek language) promoting sustainable horticultural production techniques and practices.[91]

118. **In summary**, HSP was the first loan-financed project focused on horticultural development through directly targeting *dehkan* farmers. While HSP did not achieve its objective of demonstrating a "comprehensive" model of support for horticultural development, the targeting of *dehkans* has now been taken up by other development partners and integrated into government policy. However, knowledge management and policy engagement have generally been weak, and it is therefore difficult to attribute these subsequent investments directly to HSP. On balance, scaling up is rated *moderately satisfactory (4).*

Gender equality and women's empowerment

119. The prevailing cultural attitudes towards women in Uzbekistan are conservative, with limited opportunities available for women to attend training or work outside the home. This has constrained women's access to opportunities and resources. In relation to agriculture, in the prevailing farming model men are the owners, while wives and other family members usually provide unpaid agricultural work on the household farm. As a result, rural women represent only a very small fraction of the heads of private farming enterprises[92] and for this reason are often overlooked by development projects typically targeting land and farm owners.

120. **Gender mainstreaming was not given priority during project implementation, partially due to discrepancies in the project documents, but also due to a lack of a gender focal point/expert in the PMU.** To ensure that project interventions would reach rural women, the PDR of HSP introduced a minimum female quota of 30 per cent applied to beneficiaries of project-supported trainings, loans and employment opportunities. Interviews with IFAD stakeholders suggest that this target was somewhat aspirational, with the intention that having a relatively high target would provide the impetus to achieve higher participation. However, the feasibility study and the project implementation manual did not take into any consideration the gender targets of the IFAD PDR or the gender indicators of the logframe, and as a result gender was not mainstreamed into project activities.

121. The overall responsibility for assuring adherence to project targeting criteria as well as for achieving the gender quota was incumbent on the M&E officer, who was supposed to act as gender focal point/coordinator in coordination with the Women's Committees, *mahalla* (local) committee members, and the deputy governors (*hokims*) responsible for women's affairs at regional and district levels. However, since the project never had a gender focal point, this interaction did not take place for most of the project's duration.

122. **Project outreach to women remained below targets throughout the project's life**. For this reason, IFAD supervision missions made various recommendations aiming at increasing women's participation – either under component 1, by involving local NGOs/women councils to identify suitable trainees; or under component 2, by including more appropriate selection criteria in the SLAs (e.g. 50 per cent of lending to women). Because of the involvement of Women's Committees, the percentage of women trained increased, and gender targets under component 1 were achieved (33 per cent of women trained at completion). However, since the final project survey did not look into the gender aspects, the impact of these trainings was not documented.

[91] Development Alternatives Incorporated (2017). "The Viral Success of Horticulturalist Chat Groups: An Uzbek ICT4Ag Case Study". 5 June 2017. Available at : https://dai-global-digital.com/horticulturalist-chat-groups-and-youtube-q-and-as-an-uzbek-ict4ag-case-study.html?utm_source=daidotcom.

[92] According to the FAO Country Gender Assessment of Uzbekistan, women represent around 4 per cent of the heads of private farming enterprises in the country as a whole.

123. **In particular, it proved difficult to include women in international study tours.** Three women out of 35 beneficiaries participated in two study tours in Turkey and Georgia, during which the participants were exposed to international experiences/practices related to fruit and vegetable production. Only one woman out of 27 managers and specialists from agricultural enterprises, *dehkans* and smallholder farmers participated in seven international exhibitions/fairs organized in Azerbaijan, Kazakhstan, Latvia and Russia. Women reportedly could not travel without the permission of their husbands, which might explain the low rate of participation of women in the study tours.

124. **Women's participation in rural finance activities was low**, with a rate of 18 per cent female loan takers at completion, despite a reallocation of US$2.7 million to the Rural Finance component aiming at increasing the number of women borrowers (see Table 11, annex VI). Such limited participation is mainly due to fact that HSP applicants were required to have a property title to be eligible for lending activities; however, rural women are seldom registered property owners in Uzbekistan and as a result, they lack the collateral required by the banks for obtaining loans. Moreover, rural women lack the financial education needed to effectively handle loan applications, business planning and repayment options, which makes them feel insecure and reluctant to approach the banking system. It worth mentioning that women beneficiaries interviewed during the completion mission considered that the investments made through the project-supported loans have benefited the entire family, regardless of whether the loan recipient is the man.

125. **Gender equality-related outcomes were not measured by the project.** The PCR estimated that 796 out of 1,620 new jobs created (mostly short-term labour) went to women; yet any possible impact on the economic empowerment of newly employed women was not measured, nor was the project impact on their decision-making role in local communities and institutions. Similarly, if the project had any impact on the reduction of women's workload, such as through improved access to irrigation facilities, this was not documented.

126. **Lessons from HSP have served to improve gender mainstreaming in subsequent projects.** Other international financial institutions (IFIs) have faced similar challenges in reaching out to women farmers/rural entrepreneurs and in engaging them in credit activities. Based on lessons learned also from HSP, they are now targeting women under non-agricultural activities with high female presence, such as handicrafts and textiles as well as backyard farming and food processing, which are typical "women's jobs" in the context of rural Uzbekistan. Under this dedicated window, funding is provided through grants supporting women's capacity-building and mobilization, and investments in micro and small-scale women's businesses. The outreach is guaranteed through participatory community engagement and the mobilization of low-skilled and low-income rural women into Women Development and Enterprise Groups. In the IFAD-financed DVCDP, there is a plan to apply household methodologies to assess gender equity at family level – an approach that has proved successful in Kyrgyzstan.

127. **In summary**, there was little effort made to increase gender equality in rural institutions, nor to address equitable workloads. There were some changes with regard to assets and income sources. By setting quotas, even if they were aspirational, the number of women accessing loans or having jobs in the supported investments was increased. However, there were missed opportunities to better involve women to break out of stereotypes and improve their economic position. Gender equality and women's empowerment is therefore rated *moderately unsatisfactory (3).*

Environment and natural resources management

128. Uzbekistan is facing significant water scarcity/waterlogging, pesticide residues (especially from cotton), and the likely impact of climate change. An environmental impact assessment was not a requirement from IFAD at the time of HSP design. At

design, HSP was classified as a Category B operation as few, if any, negative environmental impacts were expected to result from its activities. Investments in improved irrigation and drainage networks and structures were expected to result in positive outcomes only. The project was expected to reduce pressure on natural resources by introducing more environmentally sound natural resources management practices and by diversifying livelihoods. It was also anticipated that environmental assessment of all the investment proposals would have to be undertaken/approved by the State Environmental Expertise (Glavgosecoexpertiza) of the State Committee on Natural Protection. An Environmental and Social Review Note was provided as an annex to the PDR.

129. **There is no evidence of HSP having had a negative impact on the environment.** Three project districts in particular have problems with soil salinization and high groundwater table: Kumkurgan, Kizirik and Sherabad. The same districts have problems with waterlogging. Horticultural producers met by the PPE team from Kumkurgan *makhalla* noted that waterlogging is a local problem, and increasing irrigation may lead to a higher water table (Kumkurgan). In any case, HSP irrigation works were limited in size (in most cases only damaged parts of the canal were repaired) and focused solely on the rehabilitation of existing schemes on already cultivated agricultural land, and therefore did not involve a spatial expansion of farming.[93]

130. **Water losses have been reduced in HSP rehabilitated irrigation canals, but the longer-term outlook remains unclear.** The PCR estimated total volume of water losses decreased from 17.75 million m^3 to 4.4 million m^3, but it is not clear how this estimate was calculated, and no source is given.[94] The PPE could not validate the quantitative estimate of water loss reduction, although PPE field visits and interviews with beneficiary farmers confirmed a positive perception of greater water availability and decreased water losses.

131. **It is too early to say if there has been an impact on soil salinization and/or waterlogging.** At design, HSP was expected to contribute to soil and water conservation by decreasing the amount of irrigation water and hence stabilize the groundwater level[95] and improve soil conditions. However, given the small scale of irrigation rehabilitation works, this contribution was not expected to be significant. As many of the irrigation works were completed only in late 2019, an analysis of government data for all HSP districts is inconclusive in determining if there has been a change in either soil salinity or groundwater table indices in the seven project districts (see Figure 8, Figure 9 and Figure 10, annex VI). No works were undertaken for improvement of the drainage network, but in some areas this was not seen as a priority; for instance in the Sariosiyo (Sufiyo canal) area, where groundwater is located quite deep (more than 10 metres) due to the high elevation.

132. **HSP sub-loans were not required to undergo environmental screening prior to being approved.** While it is understood that the Government of Uzbekistan has undertaken environmental impact assessments for large public infrastructure, there is no evidence that the PFIs required environmental impact assessments prior to issuing a loan. Sub-loan selection conditions did not include criteria for environmental screening. The PFIs did not require a submission of Positive Conclusion for national environmental assessment. Non-inclusion of the environmental requirements in the selection process may lead to financing of production located in natural protected areas, uncontrolled use of chemicals or unsafe handling and further disposal. Monitoring of issued sub-loans conducted by officers of the monitoring department

[93] Irrigation construction contractors obtained "Positive Environmental Conclusion" statements for all rehabilitated canals in accordance with relevant national requirements (issued by the Termez branch of the State Committee on Ecology and Environmental Protection). However, the PPE notes that compliance with environmental requirements was not monitored during project implementation, as this was not explicitly prescribed in the feasibility study or in the project implementation manual.

[94] HSP PCR.

[95] By reducing seepage from the damaged irrigation canals and applying less water more efficiently via drip irrigation.

of PFIs did not include monitoring of environmental aspects. It should be noted that currently a Positive Conclusion is required under other projects of UZAIFSA financed by IFIs, including in the horticulture value chain (e.g. ADB, World Bank).

133. **HSP included some trainings on environmentally sensitive production techniques, but field visits indicate that more is needed, particularly for water use efficiency.** One of the trainings in horticulture – "Selection of high-yielding, adapted to the soil and climatic conditions of the Surkhandarya region, varieties of seeds of vegetable crops and the timely implementation of agrotechnical measures" – indirectly supported good environmental management and the selection of more drought-tolerant varieties. The PCR reports that about 16 per cent of beneficiaries were using plastic wraps and/or drip irrigation when watering their plots; however, the PPE field visits indicate that much more training is needed in efficient water use. The 2016 COSOP Social, Environmental and Climate Assessment Preparatory Study recommended that HSP PMU incorporate awareness-raising and education activities on the value of water-saving measures, although there is no evidence that this recommendation was implemented. It is also unclear whether the producers received any training in environmentally sustainable pesticide and fertilizer management.[96]

134. **There were missed opportunities to promote renewable energy sources.** For instance, it is noted in that the Central Laboratory in the Mirzaev Institute in Surkhandarya there were some design problems. The heater purchased by the project has a high demand for electricity, which the laboratory cannot afford. There is a plan to provide additional energy from gas; however, it seems likely that in fact the laboratory will switch to coal supply. Similar issues were seen in other greenhouses. This would have been a good opportunity to establish solar power generation.

135. **In summary**, there is no evidence of negative environmental impacts as a result of HSP. Irrigation improvement activities have reduced water losses, but the scale of activities was small and more attention needs to be given to water-saving measures. On balance, environment and natural resources management is rated *moderately satisfactory (4).*

Adaptation to climate change

136. **Climate change adaptation was not directly addressed in the design of HSP.** HSP was designed prior to the adoption of IFAD's Social, Environmental and Climate Assessment Procedures (SECAP) in 2015. It was only under IFAD 10 (i.e. in 2015) that IFAD introduced a target of 100 per cent climate mainstreaming for all new projects by 2018. However, climate change was still a clear corporate priority under IFAD 8 and IFAD 9, at the time of HSP's design (as outlined in Table 12, annex VI). Moreover, the likely impacts of climate change in Uzbekistan were well understood prior to the design of HSP,[97] and environmental catastrophes such as extreme droughts have been a major concern for the country for several decades due to the shrinking of the Aral Sea. Disaster preparedness or risk reduction were not considered in the design.

137. **Recommended adjustments to incorporate climate-smart agronomic practices were not implemented.** IFAD supervision missions, including the 2016 COSOP Social, Environmental and Climate Assessment Preparatory Study, recommended that HSP take advantage of the climate-resilient agronomic practices and technologies developed and tested by Bioversity and the IFAD-supported grant to the International Center for Agricultural Research in the Dry Areas (ICARDA).[98]

[96] Although the PCR states, "*The project has provided training on water-saving technologies (such as drip irrigation), fertilization based on crop needs, and safe use of pesticides and establishment of efficient cold chains*."

[97] Lioubimtseva, E. and G.M. Henebry (2009). Climate and environmental change in arid Central Asia: Impacts, vulnerability, and adaptations. Journal of Arid Environments. 73:963-977.

[98] For the project Integrated natural resources management in drought-phone and salt-affected agricultural production landscapes in Central Asia and Turkey (CACILM-2).

These practices included conservation agriculture (rainfed and irrigated), efficient and modern irrigation technologies, alley intercropping and the promotion of investing in no-till drill equipment (tested by ICARDA). These recommendations came late in HSP implementation, and the PPE could find no evidence of these practices having been promoted. This represents a major missed opportunity of HSP in contributing to the climate resilience of horticultural producers.

138. **Agricultural diversification, away from cotton and wheat, is likely to contribute to enhanced climate resilience.** The consequences of climate change in Uzbekistan are anticipated to be water shortages, heat waves, and changes in annual precipitation distribution, with consequent impacts on agriculture. Climate change is expected to bring frequent droughts, which will negatively affect agricultural (particularly cotton) production, increase already extremely high water demands for irrigation, and exacerbate the already existing water crisis and human-induced desertification in Uzbekistan.[99] In diversifying agricultural production, away from a near-exclusive focus on cotton and wheat, producing diverse and more efficient crop varieties and utilising improved water management techniques, HSP was expected to enhance the resilience of agricultural producers.

139. **Irrigation improvements have contributed to local-level climate resilience by enhancing water availability and reducing water losses; however, the scale of such achievements is small.** The improvements to the irrigation network were expected to provide a pilot demonstration model for replication, thereby contributing to climate resilience in the agriculture sector. However, demonstration multiplier effects were not realized, as the irrigation works were seriously delayed and only served to rehabilitate existing canals. While there are direct water savings from the rehabilitated canals, and water losses have been reduced in these areas, the scale is too small to have any meaningful impact on the agriculture sector, and the PPE could find no evidence of replication of HSP approach to irrigation improvement, as had been envisaged at design.

140. **The introduction of drip irrigation allows for more efficient use of water, but more training is needed to improve water use efficiency.** It was planned that producers would be supported to adapt to climate change by being introduced to drip irrigation. Drip irrigation technologies were applied mainly in greenhouses, allowing more efficient use of scarce water resources, and fertilizers – although uptake has been limited.[100] Further training is also important for applying larger-scale irrigation water at the best time of the day and in appropriate quantities. It was assumed that training would be delivered to the farmers and *dehkans* on a range of topics to support adaptation strategies, but the PPE could find no evidence of such training having taken place.

141. **In summary**, adaptation to climate change was not a priority at the time of HSP's design. The project has made an indirect contribution to climate resilience, in particular through water savings from irrigation improvements. However, there were missed opportunities to introduce climate-smart production techniques, despite recommendations of supervision missions. On balance, adaptation to climate change is rated *moderately satisfactory (4).*

C. Overall project achievement

142. HSP was IFAD's first investment in Uzbekistan and the first loan-financed project supporting horticultural development in the country. The support to *dehkan* producers and horticultural production was clearly relevant to the burgeoning shift towards agricultural diversification, after decades of near-exclusive investment in cotton and wheat production. HSP has been followed by subsequent investments by other development partners and IFIs in the horticulture subsector, some of which

[99] Hijioka, Y., E. Lin, J.J. Pereira, R.T. Corlett, X. Cui, G.E. Insarov, R.D. Lasco, E. Lindgren, and A. Surjan (2014). In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

[100] The PPE team did not see any drip irrigation technologies during the field visit.

have learned from the experiences of HSP. Although HSP was conceived as a value chain development project, over 80 per cent of HSP's budget was disbursed through a refinancing facility for sub-loans via commercial banks. The primary focus of HSP was on horticultural production and the supply side, and there was insufficient focus (or budget allocation) on strengthening linkages between producers and buyers/traders, and regulatory aspects affecting the trade and export of horticultural produce.

143. Outreach among women beneficiaries was limited, and gender mainstreaming was generally weak. It is likely that poorer households were excluded, given the high collateral requirements for accessing finance and the generally high average value of loans taken by borrowers. IFAD underestimated the level of support needed to ensure IFAD requirements for M&E, procurement and financial management were adhered to. As a result, the poverty/wealth profile of beneficiaries was not adequately recorded, and procurement delays meant that some activities were only conducted and completed in the final year of implementation, which affected the sequencing of activities.

144. The intended piloting of a comprehensive approach never took place, as sub-loans were disbursed years before many of the other project activities even commenced. The implementation setbacks were somewhat understandable given that HSP was the first IFAD project with a new client country undergoing significant political and economic reforms; but HSP did not introduce sufficient implementation support and institutional strengthening. Overall project achievement is rated *moderately unsatisfactory (3).*

D. Performance of partners

IFAD

145. **IFAD's supervision and implementation support was not sufficient for orienting a new client in IFAD requirements**. HSP was directly supervised by IFAD through four official supervision (plus some follow-up) missions carried out by the same team of specialists for key project activities – rural finance and irrigation infrastructure – thus allowing for closer monitoring of recommendations.[101] However, there were no official missions between February 2013 and July 2015, during the start-up. Government respondents noted that they would have needed more guidance initially when learning the requirements. For example, allowing *dehkan* farmers to be exposed to the foreign exchange risks for US$ loans was a serious oversight which should have been foreseen by IFAD. The MTR was conducted one year later than expected, i.e. at the end of the fourth year of implementation in a project with an expected duration of six years.

146. **There has been a high turnover of IFAD staff.** Four IFAD staff members have served as country programme manager of Uzbekistan (and one additional staff member in an acting role), with an impact in terms of fragmentation of the institutional memory and lack of continuity in ensuring dialogue with the Government and other development partners.

147. **IFAD did not fully take into consideration the institutional and policy context, or the requirements and mandatory procedures of the Government.** In its design of HSP activities, IFAD overestimated the institutional capacities and policy context in Uzbekistan. This resulted in limited prospects for sustainability of irrigation investments – for example, the lack of WCAs' requisite capacities for ensuring continuing operation and maintenance. Similarly, the policy and institutional environment of the financial system, and the capacities of PFI, did not

[101] In the PDR, it was stated that there would be "risk-based financial management supervisions, initially after every six months for the first two years of project implementation and thereafter at appropriate intervals based on IFAD's assessment of risk". However, it is noted that there was no specific supervision mission during 2014 (though there were two missions for the preparation of the Dairy Project; hence some discussions were possible). There was one mission per year from 2015 onwards.

receive sufficient attention and support to allow for the inclusion of poor smallholder *dehkan* horticultural producers.

148. As this was the first operation in the country, and there was no COSOP in place outlining IFAD's strategic focus and targeting strategies for the country, more attention could have been paid to the analysis of existing national procedures and regulations for the implementation of IFI-funded operations before granting non-objections to documents not clearly understood. In particular, the Government's requirement to undertake a feasibility study was not foreseen by IFAD, resulting in an effectiveness lag of 20 months. Moreover, discrepancies between the feasibility study and the original IFAD PDR were not detected by IFAD until implementation was well underway, despite their significance to the project's relevance. The feasibility study was not translated to English, further adding to the confusion.

149. **Coordination with other development partners was mostly ad hoc, and policy dialogue was limited.** Interviews with development partners suggest that there was a good level of informal interaction among the development partners, and IFAD representatives often held ad hoc, informal meetings – for example, with the World Bank and ADB, during supervision missions.[102] Interviews indicate that there were attempts to carry out joint monitoring with World Bank staff, and even a possible joint project; however, this was not pursued. The lack of a country office, combined with high turnover in the country programme manager position, also reduced the chances to conduct any type of policy dialogue with the Government within HSP framework.

150. **Overall,** IFAD's performance is rated *moderately unsatisfactory (3).*

Government

151. **HSP implementation and oversight arrangements underwent several institutional changes and restructurings, but the implementation support was not greatly affected and the revised arrangements remained relevant**. The MAWR was responsible for formulation, implementation and coordination of policies related to agriculture and water resources until 2018, when it was split into two ministries: the Ministry of Agriculture and the Ministry of Water Resources. Following this restructuring, the RRA, which was previously responsible for implementing agricultural investment projects financed by IFIs, was replaced (UZAIFSA), initially placed under the Cabinet of Ministers and then moved under the Ministry of Agriculture in 2019. The disbanding of the RRA, and the related establishment of UZAIFSA as the main implementer of large investment projects financed by the IFIs, did not adversely affect the implementation of HSP, as the Government ensured clear lines of responsibility assigned for the project. The PCR noted that there were some (unspecified) delays in the decision-making process during this transition period.

152. Starting from 2018, the project reported directly to the Cabinet of Ministers and coordinated its activities with the State Committee on Investments rather than the MAWR as it did before. The PDR had envisaged a steering committee consisting of representatives from ministries, regional authorities and other relevant stakeholders, which would have ensured overall management oversight. However, the steering committee as such never existed, as its role was actually played by the Cabinet of Ministers.

153. **There was a limited technical capacity, partly due to staff turnover.** As noted by the COSOP, the implementing agencies were constrained by limited institutional capacity, particularly in attracting and retaining qualified local personnel, and a lack

[102] There are no formal government donor coordination mechanisms in place in Uzbekistan, but there are sector-level groups such as the coordination group on agriculture, of which IFAD was a member together with the World Bank, ADB, and Agence Française de Développement until 2018, when the MAWR was divided into two ministries and the group ceased to exist. In any case, these meetings did not result in any formal collaboration established with the other members, or with other UN agencies.

of knowledge and technical expertise in project management. This was evident in the procurement stages of HSP, as well as the development and implementation of the monitoring system. It was also noted that the location of the main PMU in the capital meant that direct interaction with stakeholders and beneficiaries was limited. The PMU capacities were adequate overall, especially in terms of financial management and procurement. However, management and oversight continuity was disrupted by frequent staff turnover due to a huge demand for qualified specialists from other donor-funded projects. HSP was never staffed with a Gender Focal Point, as was intended in the PDR. This provision was dropped from the feasibility study, with a resulting impact on the PMU's capacity to mainstream gender into project activities and to define and implement an effective gender strategy/action plan.

154. **Monitoring was not sufficient beyond financial disbursements**. The M&E function was also affected by staff turnover, resulting in data fragmentation and data gaps in field-level information. While data were disaggregated by gender, double-counting of beneficiaries was an issue over the years. The baseline survey was completed only in April 2016, i.e. two years after the date of effectiveness, and it lacked various key indicators for component 2 (e.g. value of the loan portfolio, portfolio at risk over 30 days) which were already present in the logframe. This led to an inadequate monitoring of the activities implemented, with no collection of information on the issues faced by borrowers. Data were not collected on key issues such as yields or changes in access to markets, with the focus mainly being on reporting expenditure and activity level, rather than results.

155. **Monitoring data were also not used to improve implementation**. Overall, while it is clear that the project management did not use the monitoring function to inform decision-making and planning (partly due to the inability to adjust implementation), it is also true that IFAD requirements for M&E were entirely new to the PMU and to government counterparts in general. The creation of an M&E culture that is adequate to IFAD standards and needs requires more effort and resources than those allocated to HSP.

156. **The Government has shown a reasonable level of ownership of the investment**, as evidenced by the subsequent commitments and policies to scale up support to *dehkan* farmers and invest in horticultural development. Similarly, the establishment by the Government of a fund to support borrowers burdened with repaying US$ loans was a positive step in response to the currency devaluation in 2017, although exposing borrowers to currency exchange risk should not have happened in the first place. Counterpart funds were provided in a timely manner, but the final government contribution was less than initially agreed in US dollars mainly due to the significant devaluation of the local currency in 2017, and it amounted to US$1,042 million.

157. **In summary**, government performance was marked by institutional changes and staff turnover as well as understandable challenges in becoming acquainted with IFAD regulations and M&E requirements. At the same time, the Government has shown a strong commitment to furthering support to horticultural development and demonstrated a reasonable level of ownership of HSP investments. On balance, government performance is rated *moderately satisfactory (4).*

E. Assessment of the quality of the Project Completion Report

158. **Scope.** The PCR covered the core evaluation criteria of relevance, effectiveness, efficiency and sustainability. In addition, the PCR addressed rural poverty impact and criteria such as gender, innovation, potential for scaling up, environment and climate change, targeting, and access to markets. Finally, it assessed the performance of IFAD and the Government. The scope of the PCR is rated *satisfactory (5).*

159. **Quality.** The PCR faced the limitation of the COVID-19 pandemic, and it was necessary to carry out the mission remotely. As a consequence, it was not possible to visit the beneficiaries, including the irrigation and laboratory operations that had

only been completed at the very end. As noted earlier, the monitoring data from the project were inadequate. The PCR relied heavily on the 2019 supervision report, and on the impact evaluation conducted by an external company; however, the latter also relied on mainly qualitative reports from beneficiaries. The PCR quality is rated *moderately satisfactory (4).*

160. **Candour.** Some ratings of the PCR are more positive than reality, given the delays, the narrative and the verbal feedback from both IFAD and government respondents. This is understood to be a reflection of the fact that the project was the first operation of IFAD in Uzbekistan (hence a learning process), and it was believed necessary to evaluate it in light of the context at the start. In some cases, while the narrative itself is balanced and considers positive and negative aspects, this is not always reflected in the ratings (e.g. rural poverty impact). Moreover, some important shortcomings of the project were downplayed by the PCR – such as IFAD's oversight in allowing the borrowers to be exposed to currency exchange risks. The candour of the PCR is rated *moderately unsatisfactory (3)*.

161. **Lessons.** The lessons learned are valuable and it is hoped that they have been considered in the current and future projects in Uzbekistan. The PCR recognises the weaknesses in IFAD support, however there is less reflection on the Government's weaknesses. The lessons of the PCR are rated *satisfactory (5).*

162. **Overall,** the quality of the PCR is rated *moderately satisfactory (4).*

IV. Conclusions and recommendations

A. Conclusions

163. **HSP results were predominantly linked to rural finance activities, with limited complementarity with other project activities.** In general, given the delays and lack of appropriate sequencing of activities, HSP did not effectively pilot or demonstrate the "comprehensive programme of support" that had been planned; as such, results were limited to a small scale and primarily observed among the borrowers of refinanced credit. There was limited complementarity or sequencing of rural finance activities with other HSP activities (e.g. irrigation improvements, rootstock and planting materials).

164. **HSP did not adequately address the institutional capacity constraints that continue to limit the potential of the horticultural subsector in Uzbekistan.** The Government was reluctant to use loan financing for capacity development, with the emphasis being primarily on loan disbursement performance. Meanwhile, sub-loans were disbursed prior to any capacity development activities, undermining the sequencing logic of the project's activities. HSP offered one-off trainings to individuals but did not address capacity gaps at the institutional or enabling environment levels. Limited presence of technical advisors, a weak agricultural extension system, and generally weak capacities for value chain development remain barriers for realizing the potential of horticultural development in Uzbekistan.

165. **HSP made insufficient efforts to link farmers to processors and other value chain actors, and little attention was paid to regulatory constraints such as export rules, or the rural finance policy environment.** The emphasis on improving horticultural production was understandable as this was one of the first projects on horticulture. However, the sustainability of benefits and the scale of impact have been undermined by the lack of market access and vertical linkages between value chain actors, while regulatory constraints continue to pose barriers for the export of horticultural produce.

166. **As HSP was the first partnership between IFAD and the Government, it took time for the partners to understand each other's rules, procedures and requirements, leading to delays in implementation**. There was, understandably, a learning process for both IFAD and the Government of Uzbekistan, as IFAD's first engagement with a new partner country. However, IFAD underestimated the amount of support that would be needed in a new country, and due to staff changes and no country office, IFAD was unable to provide continuity in support. IFAD also misunderstood the administrative hurdles, such as the feasibility study (as did other donors), leading to delays in execution. The Government struggled to understand IFAD's requirements for budget planning, audit and procurement, and M&E was generally weak.

B. Recommendations

167. **Recommendation 1. Investments in the horticulture subsector should be climate-smart and focus more on regulatory aspects, value chain dynamics, and the creation and strengthening of horizontal and vertical linkages among value chain actors.** HSP experience shows that the scale of future irrigation investments should be larger and include modern technology and innovations, such as drip irrigation and other water-saving methods, so as to maximize the potential for impact and adaptation to climate change (which in turn would increase the resilience of farmers). As horticultural production increases, greater focus is needed on the marketing and demand sides for Uzbek horticultural products, particularly with regard to export barriers and international trade standards. This could include greater support for sanitary and phytosanitary measures, policy support for easing regulatory barriers to trade, and support for organic certification. Creating linkages and formalizing contractual agreements between producers, wholesale buyers and traders would enhance efficiencies in production and guarantee demand for

horticultural producers. Meanwhile, supporting *dehkans* and farmers to create and join associations would enhance technical knowledge-sharing and strengthen the bargaining power of producers in negotiating prices.

168. **Recommendation 2: Future projects should pay greater attention to institutional capacities and frameworks, knowledge-sharing, and ongoing support from technical advisors.** Training and capacity development activities should be better sequenced, ideally conducted prior to the disbursement of sub-loans. Capacity development activities should not be one-off events, but rather involve sustained coaching and mentoring, coupled with support to knowledge sharing, networking and twinning, focusing on both technical as well as functional capacities (i.e. soft skills, managerial skills), targeting individuals, organizations and the enabling environment. In the context of the horticultural value chain, this could include: capacity development for forming partnerships between the different value chain actors; organizational strengthening for WCAs and newly formed clusters; policy and normative capacity development for policymakers; and awareness-raising and sensitization of rural bank staff with regard to the needs of horticultural producers. Future activities could link more closely with the emerging AKIS service centres for extension support;[103] while the use of Telegram and YouTube offers great potential for knowledge-sharing.

169. **Recommendation 3: IFAD should maintain its comparative advantage by allocating sufficient resources and focus to target poorer *dehkans*, women and youth**. As more development partners bring investments to horticultural development centred on larger farms and the eventual shift to a cluster system, IFAD has created a niche in line with its comparative advantage, and in line with recent Government decrees, in targeting small *dehkan* farmers who may otherwise be left behind. However, poorer *dehkan* farmers also need targeted and differentiated support in the form of business planning and loan applications, capacity-building and market linkages. Household methodologies could be applied to address the role of women in the family economy, empowering them to be more socially and economically active in future projects. Job creation for rural youth should be a priority in future projects.

[103] AKIS centres are a one-stop shop for agricultural services, including extension, and the model is being incorporated into new and upcoming agricultural projects (e.g. World Bank).

Basic project data

				Approval (US$ m)[1]		*Actual (US$ m)*	
Region	Near East, North Africa & Europe		Total project costs	31.69		25.6	
Country	Uzbekistan		IFAD loan and percentage of total	9.63	30%	8.34	33%
Loan number	1000004209 1100001606		IFAD grant	1.0	3%	0.8	3%
Type of project (subsector)	Credit and Financial Services		Spanish Trust Fund	11.37	36%	9.42	37%
Financing type	F: IFAD-initiated and cofinanced		Government	1.96	86	651	0%
Lending terms	Highly concessional[2]		PFIs	2.59	8%	0	3%
Date of approval	03/04/2012		Beneficiaries	5.14	16%	6.38	25%
Date of loan signature	17/12/2013						
Date of effectiveness	17/12/2013						
Loan amendments	none		Number of beneficiaries (direct)	11 000		18 242	
Loan closure extensions	none						
Country programme managers	Vrej Jijyan; Lenyara Fundukova; Mohamed Abdelgadir; Frits Jepsen; Omer Zafar; Henning Pedersen		Loan closing date			30/06/2020	
Regional director(s)	Dina Saleh (Current); Khalida Bouzar (2011-2020); Nadim Khoury (2008-2011), Mona Bishay (2004-2011)		Mid-term review			15/11/2017	
Lead evaluator for project performance evaluation	Eoghan Molloy		IFAD loan disbursement at project completion (%)[3]			Loan: 100% Grant: 100%	
Project performance evaluation quality control panel	Johanna Pennarz; Prashanth Kotturi; Fabrizio Felloni		Date of project completion report			29/09/2020	

Source: HSP project completion report; IFAD's Operational Results Management System (ORMS).

[1] Approval amounts as per the 2012 IFAD project design report. Adjusted amounts were calculated in table 2 of the main report to reflect changes in currency exchange rates.
[2] Special loan on highly concessional terms, free of interest but bearing a service charge of three fourths of one per cent (0.75 per cent) per annum and having a maturity period of 40 years, including a grace period of 10 years.
[3] IFAD loan and grant were fully disbursed in special drawing rights, although the US$ value was less than foreseen at design.

Definition and rating of the evaluation criteria used by IOE

Criteria	*Definition* *	*Mandatory*	*To be rated*
Rural poverty impact	Impact is defined as the changes that have occurred or are expected to occur in the lives of the rural poor (whether positive or negative, direct or indirect, intended or unintended) as a result of development interventions. *Four impact domains* • Household income and net assets: Household income provides a means of assessing the flow of economic benefits accruing to an individual or group, whereas assets relate to a stock of accumulated items of economic value. The analysis must include an assessment of trends in equality over time. • Human and social capital and empowerment: Human and social capital and empowerment include an assessment of the changes that have occurred in the empowerment of individuals, the quality of grassroots organizations and institutions, the poor's individual and collective capacity, and in particular, the extent to which specific groups such as youth are included or excluded from the development process. • Food security and agricultural productivity: Changes in food security relate to availability, stability, affordability and access to food and stability of access, whereas changes in agricultural productivity are measured in terms of yields; nutrition relates to the nutritional value of food and to child malnutrition. • Institutions and policies: The criterion relating to institutions and policies is designed to assess changes in the quality and performance of institutions, policies and the regulatory framework that influence the lives of the poor.	X	Yes No No No
Project performance	Project performance is an average of the ratings for relevance, effectiveness, efficiency and sustainability of benefits.	X	Yes
Relevance	The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, institutional priorities and partner and donor policies. It also entails an assessment of project design and coherence in achieving its objectives. An assessment should also be made of whether objectives and design address inequality – for example, by assessing the relevance of targeting strategies adopted.	X	Yes
Effectiveness	The extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance.	X	Yes
Efficiency	A measure of how economically resources/inputs (e.g. funds, expertise, time) are converted into results.	X	Yes
Sustainability of benefits	The likely continuation of net benefits from a development intervention beyond the phase of external funding support. It also includes an assessment of the likelihood that actual and anticipated results will be resilient to risks beyond the project's life.	X	Yes
Other performance criteria			
Gender equality and women's empowerment	The extent to which IFAD interventions have contributed to better gender equality and women's empowerment – for example, in terms of women's access to and ownership of assets, resources and services; participation in decision-making; work load balance; and impact on women's incomes, nutrition and livelihoods.	X	Yes
Innovation	The extent to which IFAD development interventions have introduced innovative approaches to rural poverty reduction.	X	Yes
Scaling up	The extent to which IFAD development interventions have been (or are likely to be) scaled up by government authorities, donor organizations, the private sector and other agencies.	X	Yes
Environment and natural resources management	The extent to which IFAD development interventions contribute to resilient livelihoods and ecosystems. The focus is on the use and management of the natural environment, including natural resources (defined as raw materials used for socio-economic and cultural purposes), and ecosystems and biodiversity – with the goods and services they provide.	X	Yes
Adaptation to climate change	The contribution of the project to reducing the negative impacts of climate change through dedicated adaptation or risk reduction measures.	X	Yes

Criteria	*Definition* *	*Mandatory*	*To be rated*
Overall project achievement	Overall project achievement provides an overarching assessment of the intervention, drawing upon the analysis and ratings for rural poverty impact, relevance, effectiveness, efficiency, sustainability of benefits, gender equality and women's empowerment, innovation, scaling up, as well as environment and natural resources management, and adaptation to climate change.	X	Yes
Performance of partners			
• IFAD	This criterion assesses the contribution of partners to project design, execution, monitoring and reporting, supervision and implementation support, and evaluation. The performance of each partner will be assessed on an individual basis with a view to the partner's expected role and responsibility in the project life cycle.	X	Yes
• Government		X	Yes

* These definitions build on the Organisation for Economic Co-operation and Development/Development Assistance Committee (OECD/DAC) Glossary of Key Terms in Evaluation and Results-Based Management; the Methodological Framework for Project Evaluation agreed with the Evaluation Committee in September 2003; the first edition of the Evaluation Manual discussed with the Evaluation Committee in December 2008; and further discussions with the Evaluation Committee in November 2010 on IOE's evaluation criteria and key questions.

Rating comparison[a]

Criteria	*Programme Management Department rating*	*Project Performance Evaluation rating*	*Rating disconnect*
Rural poverty impact	5	3	-2
Project performance			
Relevance	4	4	0
Effectiveness	4	4	0
Efficiency	4	4	0
Sustainability of benefits	4	3	-1
Project performance[b]	4	3.75	-0.5
Other performance criteria			
Gender equality and women's empowerment	4	3	-1
Innovation	4	3	-1
Scaling up	4	4	0
Environment and natural resources management	5	4	-1
Adaptation to climate change	5	4	-1
Overall project achievement[c]	**4**	**3**	**-1**
Performance of partners[d]			
IFAD	4	3	-1
Government	4	4	0
Average net disconnect			**-8/12=-0.67**

[a] Rating scale: 1 = highly unsatisfactory; 2 = unsatisfactory; 3 = moderately unsatisfactory; 4 = moderately satisfactory; 5 = satisfactory; 6 = highly satisfactory; n.p. = not provided; n.a. = not applicable.
[b] Arithmetic average of ratings for relevance, effectiveness, efficiency and sustainability of benefits.
[c] This is not an average of ratings of individual evaluation criteria but an overarching assessment of the project, drawing upon the rating for relevance, effectiveness, efficiency, sustainability of benefits, rural poverty impact, gender, innovation, scaling up, environment and natural resources management, and adaptation to climate change.
d The rating for partners' performance is not a component of the overall project achievement rating.

Ratings of the project completion report quality

	Programme Management Department rating	*IOE rating*	*Net disconnect*
Scope	n.a.	5	n.a.
Quality (methods, data, participatory process)	n.a.	4	n.a.
Lessons	n.a.	5	n.a.
Candour	n.a.	3	n.a.
Overall rating of the Project Completion Report	n.a.	4	n.a.

Rating scale: 1 = highly unsatisfactory; 2 = unsatisfactory; 3 = moderately unsatisfactory; 4 = moderately satisfactory; 5 = satisfactory; 6 = highly satisfactory; n.a. = not applicable.

Theory of change

1. The PPE reconstructed the theory of change (see Figure 3) mapping out the pathways through which HSP's inputs were expected to achieve outcomes, and has examined where the links at the various results levels were present or missing.[1] HSP's theory of change can essentially be understood as support to product and process upgrading within the horticulture value chain in Uzbekistan, leading to greater investments in the horticulture subsector overall, and increased incomes and assets of farmers and other value chain actors, thereby improving living standards and economic welfare of the rural population. The project approach was built on four assumed impact pathways towards the achievement of this goal:

   (i) **Enhanced access to factors of production**, including improved crop varieties and rootstocks developed by nurseries and the central laboratory; and public irrigation and drainage infrastructure, sustainably and efficiently used and managed by WCAs;

   (ii) **Modern production techniques and enhanced agricultural skills**, introduced through trainings and exposure visits, enabling farmers to use their resources more efficiently;

   (iii) **Enhanced capacity of agrofirms** for processing, aggregating, post-harvest handling, marketing and export of horticultural produce. Exposure visits, trainings, and capital investment provided by the project;

   (iv) **Enhanced access to inclusive financial services** for horticultural value chain actors, including poor *dehkan* farmers. Commercial banks are facilitated in providing refinanced loans to horticultural value chain actors, including small-scale producers, agrofirms and service providers, as a means to develop the horticulture subsector and expand banking services.

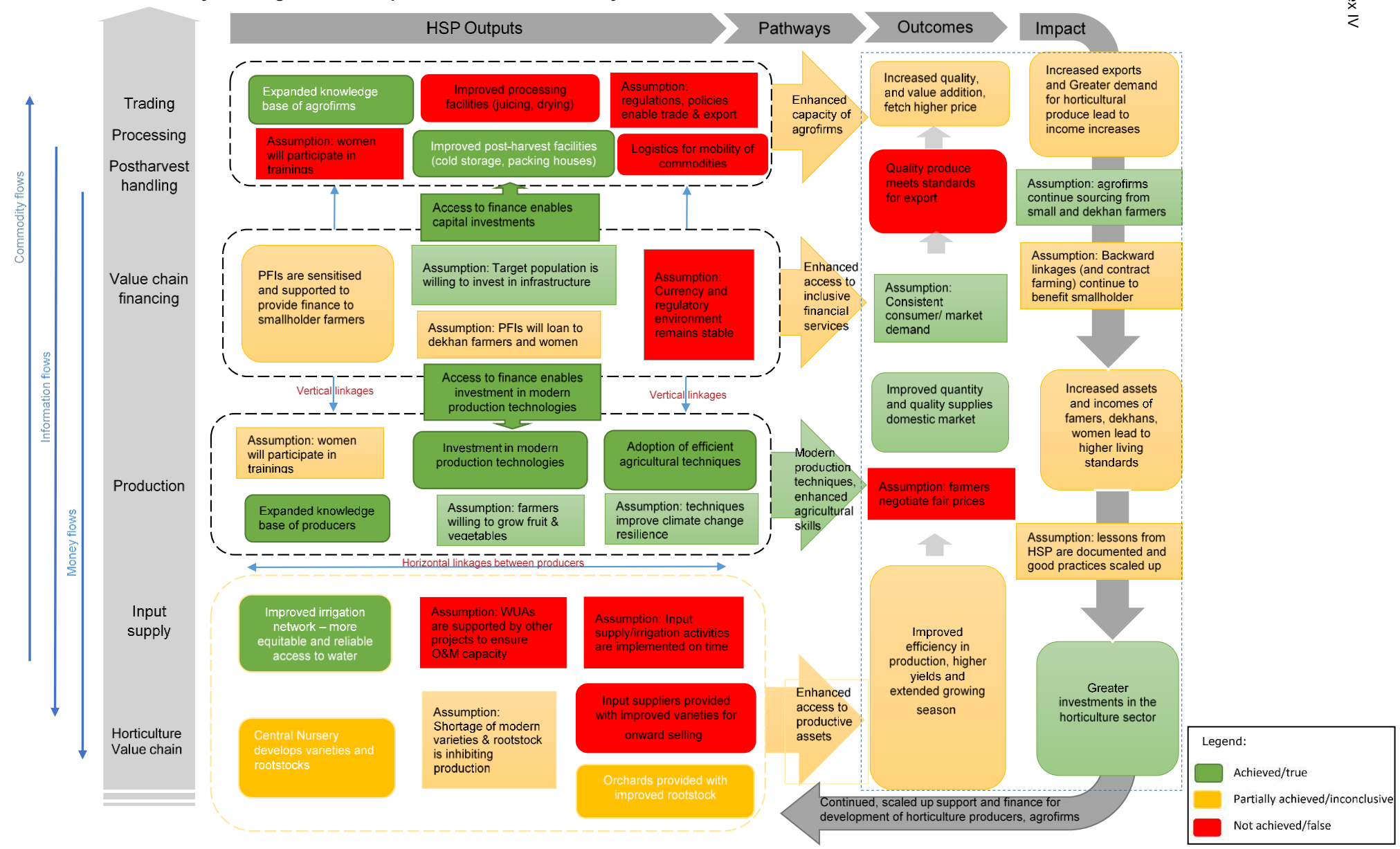
2. The impact pathways outlined in the theory of change relied on several critical assumptions, the validity of which were tested during the PPE:

   - There is sufficient and increasing market and consumer demand for horticulture produce, domestically and internationally;
   - Farmers and *dehkan* households are willing to invest in horticultural production;
   - Agrofirms are willing to invest in the horticultural value chain;
   - Vertical linkages between producers, aggregators, processors and exporters enable flows of commodities, money and information;
   - WCAs are supported by other projects and have sufficient capacity to ensure the continued O&M and collection of user fees;
   - Women have the opportunity to participate in project activities and are eligible to access finance;
   - Growers have the capacity to negotiate fair prices;
   - Increases in downstream profitability, demand and value accrue to smallholder producers through backward linkages and job creation;
   - Value chain governance – consisting of the business linkages, relationships and power distribution among stakeholders – is conducive to pro-poor outcomes.

3. A "traffic light" colouring of the theory of change elements has been applied to indicate where the links at the various results levels have been achieved or not: green indicates "achieved"; yellow indicates "partially achieved" (or evidence is inconclusive); and red indicates "not achieved".

[1] The appraisal report did not include an explicit theory of change. The PCR included a basic theory of change based on the project's logframe, with the three project outcomes described as "pathways", and several assumptions listed as underpinning the theory.

Figure 3
HSP reconstructed theory of change with actual performance as assessed by the PPE



Source: PPE team. Elaborated on the basis of HSP logframe, PCR theory of change, and analysis of HSP design report.

Evaluation framework

Criteria and evaluation questions	*Indicators*	*Data gaps in the PCR and 2019 impact study*	*Sources of evidence for this PPE*
Rural poverty impact			
Household income and assets	• Changes in physical assets (e.g. farmland, housing, irrigation infrastructure) • Changes in the composition and level of household income • Changes in financial assets and/or debts	• There are no data available on poverty rates at the level of the districts targeted by the project. • Project impact results on poverty have been assessed against the data provided by the State Statistics Committee, which are different from the data presented in the Baseline Survey. • Poverty/wealth status of borrowers is unknown, and neither the PCR nor the 2019 impact study could report on the level of inclusion of poor households or the impact of finance activities on poor households.	• National and region-specific poverty data (to understand general trends in the project area over the project period, as compared to changes in the wider context) • Telephone survey (among borrowers) to assess changes in household assets • Data from PFIs on poverty/wealth profile of borrowers (if available) • Impact study and PCR, to the extent that changes in income were assessed • Visits by the national team members of the PPE will provide an opportunity for spot-checking through individual and group interviews and direct team observation.
Human and social capital and empowerment	• Activity of farmers' associations and cooperatives during the project and now • Access to information • Access to financial services • Changes in functional literacy and numeracy	• No clear data on uptake/adoption of techniques in the PCR • Impact study estimates "it is highly likely that the recommended agricultural technologies and methods for water conservation were implemented in 1,500-1700 households on an area of at least 544 hectares", based on 41 people having stated they put knowledge into practice (out of a sample of 92 respondents) • No information on why some participants did not put the training into practice • Some double-counting evident in how training participants were recorded – some participants attended several trainings • No data on the inclusion or exclusion of youth • No information on the organization of farmers into groups	• Telephone survey (among borrowers) to assess changes in household assets • Data from PFIs on poverty/wealth profile of borrowers (if available) • Impact study and PCR • Visits by the national team members of the PPE will provide an opportunity for spot-checking through individual and group interviews.

Criteria and evaluation questions	*Indicators*	*Data gaps in the PCR and 2019 impact study*	*Sources of evidence for this PPE*
Food security and agricultural productivity	• Availability and affordability of food • Land productivity, yields return to labour • Nutrition status	• No data have been collected or reported in the PCR to assess project impact on food security • The project has not systematically documented the data on increase in agricultural yields • Data of the annual outcome surveys are incomplete both in terms of beneficiary sample size and productivity growth rates	Visits by the national team members of the PPE will provide an opportunity for spot-checking through individual and group interviews. Impact study Geospatial data may be analysed to assess changes in agricultural productivity.
Institutions and policies	• Local governance (decentralization) • Rural financial institutions • Farmers' organizations • Agricultural cooperatives • Private sector organizations, including micro, medium and small-scale enterprises • Other service providers	Not clear what role IFAD played in the Government's decision to establish a Guarantee Fund to help borrowers meet their collateral obligations No information on HSP support to farmers' organizations No information on HSP support to meso and macro levels of financial system	Discussion with national and local government officials. Review of project design Interviews with national authorities and implementing agencies. Interviews with development partners Interviews with PFIs, agrofirms, service providers and exporters
Relevance of project design			
Policy alignment How well did the project design align with IFAD and the country's Sector Policy and strategies? Were the Government's priorities as well as the priority needs of smallholder farmers adequately reflected in the project design?	• Extent to which IFAD analysed and aligned HSP to national policy in design and strategy documents, and incorporated new policies through supervision documents. • Alignment of project goal and objectives to national and sectoral policies at design • Modification of project goal and objectives in line with contemporary changes to national and sectoral policies • Alignment of rural finance activities with IFAD's 2009 Rural Finance Policy	PCR does not assess relevance of HSP rural finance activities vis-à-vis IFAD's 2009 Rural Finance Policy	Review of project design Interviews with national authorities and implementing agencies Discussion with local government officials. 2009 Rural Finance Policy
Quality of technical design - Adhering to recognized good practices (e.g. rural finance) - Quality of analysis of problems to be solved and logical coherence between analysis and design - Were activities designed and informed by a detailed value chain analysis? - Relevance of value chain development approach	• Technical content of projects • Presence/absence of analysis of problems and analysis of risks and proposals made to palliate risks • Follow-up made to address implementation problems • Comparison of the PDR and the feasibility study and project implementation manual	PCR ToC analysis does not include assumptions relating to marketing, prices and the "demand" side of the value chain, focusing on supply-drive factors. PCR indicates there was a disconnect between the PDR and feasibility report – but does not provide details of what the differences were.	Review of project design, marketing study, feasibility study, project implementation manual, supervision, MTR report Validation with project staff and through field visits Telephone survey of borrowers/clients Interviews with value chain actors (producers, agrofirms, exporters)

Criteria and evaluation questions	*Indicators*	*Data gaps in the PCR and 2019 impact study*	*Sources of evidence for this PPE*
- Are resources commensurate to the objectives? - Was the design adjusted between PDR and feasibility study/project implementation manual, and during implementation? - Relevance of HSP's implementation arrangements for the irrigation activities - Relevance of the financial products made available to horticultural producers and agrofirms	• Value chain and market analysis (e.g. pricing, policies, regulation, market information systems, horizontal and vertical linkages, power dynamics) • Loan collateral requirements, repayment schedules adapted to horticulture calendar and beneficiary needs • Ex-ante analysis of risks and implementation capacity of national agencies	Relevance of technical design of irrigation component is not discussed in PCR relevance section.	IFAD Technical notes on Value Chain Finance
Relevance of targeting - To what extent was HSP's design tailored to ensure the inclusion of poorer rural households, and women and youth in particular?	• Quotas for engagement of women, youth, poor rural households • Tailored interventions, financial products • Gender analysis and strategy • Analysis of poverty dynamics	The PCR provides a critical analysis of targeting, noting a gap vis-à-vis women and youth, but does not provide detailed analysis of barriers faced by these groups.	Review of project design Interviews with national authorities and implementing agencies Field visits and focus group discussions with rural communities, women and youth
Effectiveness			
Did the project achieve the intended results for the intended target group? What were the main (intended and unintended) results achieved? What were the main factors affecting effectiveness? To what extent have the trainings been put to use and the improved techniques been adopted by farmers and agrofirms? How effective was the technical assistance provided? To what extent were the finance activities linked with other activities and other project components to maximize the effectiveness of these activities? How effective were the irrigation activities in terms of the quality and technical soundness of the rehabilitated structures?	• Comparison of intended vs actual population covered • Whether productive activities are performing as intended • Synergies between components – e.g. were the loans linked to productive activities of HSP? • Quality of works (e.g. feeder roads, irrigation) • Provision of financial services to end-clients, (M/F) • Job creation (M/F) • Linkages to value chain by small producers	• There are no data available on poverty status of borrowers (from banks). • Targets for irrigation were overachieved, but there are indications in the PCR and supervision reports that the quality of work undertaken was lacking.	Review of available reports Spot-verification during field visits Validation in the field
Efficiency			
How efficient was the project? What were the main factors affecting efficiency?	Analysis of project financial data and monitoring reports for key efficiency indicators: • Effectiveness gap	PCR comparison between the ex-ante and ex-post EIRR and the net present value was made by adjusting the values to	Desk Review Financial data from projects

Criteria and evaluation questions	*Indicators*	*Data gaps in the PCR and 2019 impact study*	*Sources of evidence for this PPE*
Were there any overlaps with other projects? Were physical and financial resources adequate for successful execution of project activities?	• Management costs • Levels of staffing • Disbursement rates • Cost/beneficiary • Unit costs (benchmarked against other projects and Government unit costs) • EIRR • Compliance with loan agreements and loan conditions • Implementation delays and the contracting procedures for service providers • Validity of assumptions underpinning EIRR	Ensuring comparability of the results – details on how these values were adjusted need clarification.	Interviews with project finance officers where available
Sustainability of benefits			
Policy and institutional Are policies supporting the continuation of the stream of benefits generated by the project?	• Availability of activities in support to small producers (e.g. technical assistance, extension, training)	PCR does not include analysis of regulatory or policy barriers affecting the sustainability of investments in the horticulture subsector.	Interviews with government staff (national/ local) and with end-clients Interviews with other development partners supporting horticultural value chain development in Uzbekistan
Economic/financial Are project-supported activities generating non-negative net returns?	• Gross margins of farming/non-farming enterprises supported by the projects	PCR includes a detailed economic and financial analysis under the efficiency section.	Interviews with end-clients Review of the assumptions underpinning PCR economic and financial analysis
Technical / organizational Are producers and agrofirms supported by the project able to continue functioning after closure? Are any other projects supporting the activities after HSP closure – for instance, support to WCAs? To what extent are commercial banks likely to continue providing finance to the horticulture and *dehkan* farmers?	• Continuation of horticulture production, sales, marketing • Investment by other partner/actors in the horticulture subsector • Are jobs continuing? • Bank lending to horticulture subsector from own sources	The PCR provides a critical assessment of the limiting factors for sustainability of HSP results, in particular those of irrigation infrastructure activities and the capacity development activities for the in-vitro laboratory. Impact study and PCR could not gain access to banks' data on lending to horticulture subsector from own sources.	Interviews with members and leaders of grassroots organizations; Direct observation in the field and through discussion with WCAs and local government officials Analysis of all horticulture-related development projects Data from banks (if available) Interviews with commercial banks Telephone survey of borrowers/clients

Criteria and evaluation questions	*Indicators*	*Data gaps in the PCR and 2019 impact study*	*Sources of evidence for this PPE*
Gender equality and women's empowerment			
Review of the achievements in terms of the IFAD policy on gender equality and women's empowerment: 1) Gender equality in access to assets and income sources 2) Gender equality in access to and influence in rural institutions' 3) Gender-equitable workloads Inclusion and achievements with regard to disadvantaged groups – for instance, ethnic groups, people with disabilities, elderly, very poor or those from very remote or difficult locations	1) Types of economic opportunities for women (reproducing/breaking stereotypes) 2) Women's position in grassroots organizations and degree of leadership and decision-making 3) Provision of services/infrastructure that reduces women's workload (e.g. time to fetch water, go to health post, banks)	The PCR is critical of the project's shortcomings in terms of gender mainstreaming, particularly with regard to rural finance activities and in trainings.	Project documentation, outcome surveys, interviews with project staff and field visits If possible, disaggregation of effects by age, ethnic group, geographic location; if the monitoring data do not support this, at least interviews and small case studies.
Environment and Natural Resources Management			
Environment and natural resources management – how this was addressed through: • Infrastructure development • Community participation • Water availability/scarcity • Soil quality	• Improved management of resources (land, water) • Uptake of improved practices (e.g. drip irrigation, pesticide use, heat-resistant varieties) • Sustainability of changes (e.g. O&M of infrastructure) • Change in soil salinity and waterlogging in areas serviced by improved irrigation network	The PCR does not provide information on the effect of irrigation activities on soil salinity or water-logging. It is not clear how estimates for water loss reduction were calculated, or the source for such data. The PCR annex on Environment and natural resources management is missing (reported as "not required").	Review of available evaluations, project design, MTR, PCR Field visits and direct observation Interviews with stakeholders (beneficiary groups, local governments, ministries, other development partners with projects in area) Option of using remote sensing data analysis
Adaptation to climate change			
Adaptation to climate change – how this was addressed (and if not, why not): • Climate-smart practices • Sustainable Land Management practices • Disaster preparedness Were there missed opportunities in promoting more innovative climate-resilient irrigation technologies, or in promoting more climate-smart agricultural techniques?	• Extent to which climate change adaptation was incorporated and implemented in the project – for instance, was the infrastructure designed to withstand climate change? • Technology adoption rate • Was any training conducted on climate change adaptation or disaster risk reduction?	The PCR assessment is based on the assumption that diversification away from cotton and wheat (to horticulture) would automatically lead to greater climate resilience.	Field visits and direct observation Interviews with stakeholders (beneficiary groups, local governments, ministries) Option of using remote sensing data analysis Review of design documents, supervision reports, MTR, PCR and impact study
Innovation			

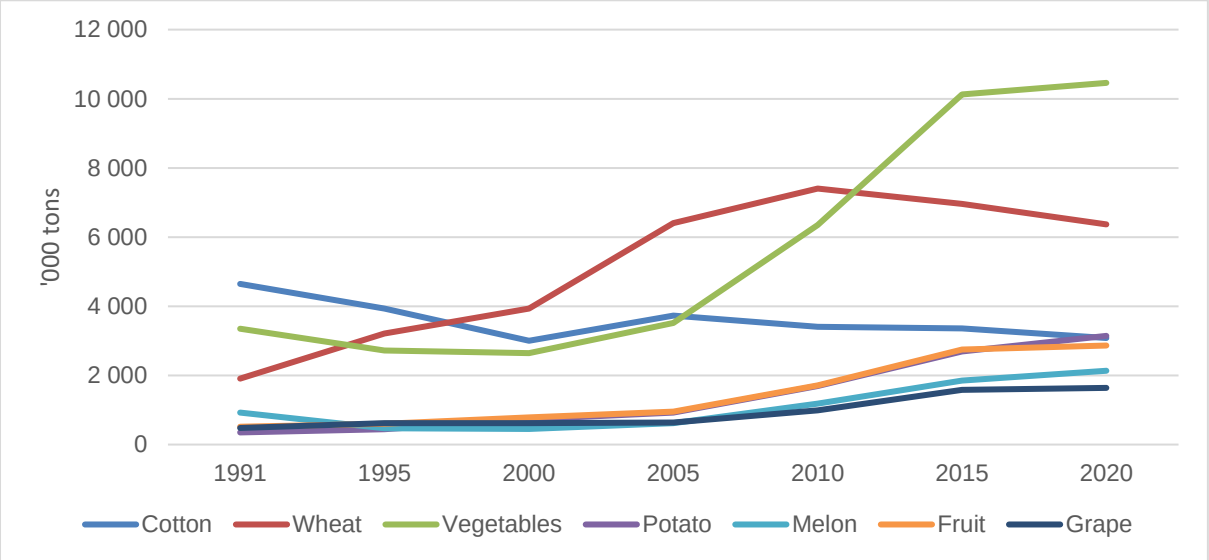
Criteria and evaluation questions	*Indicators*	*Data gaps in the PCR and 2019 impact study*	*Sources of evidence for this PPE*
Were any innovations planned and were they implemented? What evidence is there that practices introduced by the project were innovative? To what extent (and how) were there linkages between the grants and innovations in the loan programme? What are the characteristics of innovations promoted? Are they functional? Were the innovations only piloted, or have they been replicated/scaled up?	• Explanation of innovation's characteristics and their alignment to IFAD definition • Are the innovations proposed free-standing or are they bundled with innovations in other domains (e.g. agricultural production and value chain innovations with social or economic capital innovations)?	The PCR describes the apparent "pilot" nature of HSP as being one of the first loan-financed projects in Uzbekistan to target smallholder farmers in the development of the horticulture subsector.	Project documents and selected development partner projects Key informant interviews (IFAD, local and regional-level staff, former project staff, selected groups) Focus group discussions (selected groups of beneficiaries) IFAD Innovation policy
Scaling up			
What evidence is there that practices introduced by the project have been scaled up? Which partners were instrumental in scaling up innovations? To what extent have subsequent donor-financed horticulture projects taken up lessons from HSP or scaled up any HSP approaches?	Extent to which the Government and other donor partners have incorporated HSP practices into their own projects and strategies: • Government cofinancing ratio of similar practices/projects • Financing of similar practices/projects by other partners and organizations • Engagement/interest of private sector to expand or take over • How scaling up is being facilitated • Recognition of IFAD's role	The PCR does not provide detailed information on which HSP activities/innovations have been scaled up, and/or by whom and at what scale. The PCR lists aspects of HSP that have potential to be scaled up, without providing details on possible pathways for actual scaling up.	Project documents and selected development partner projects Key informant interviews (IFAD, local and regional-level staff, former project staff, selected groups, selected development financiers) Interviews with ADB, IBRD and Japan International Cooperation Agency (JICA) staff regarding follow-up projects IFAD's operational framework for scaling up
Performance of partners			
IFAD			
To what extent did IFAD ensure the design was relevant to the context? Did IFAD have a well-functioning self-evaluation system? Did IFAD exercise its developmental and fiduciary responsibilities adequately? Did IFAD pay adequate attention to further cooperation and dialogue with relevant development partners?	Were the comments and recommendations of quality enhancement and quality assurance processes, including from evaluations, included in the final project design? In particular, was adequate supervision and implementation support provided and an MTR undertaken in a timely manner, and portfolio performance monitored on a continuous basis? Were efforts made by IFAD to ensure that HSP had sound financial management systems, audit reports were submitted in a timely manner, and the required provisions in the financing agreements were fully met?	The PCR narrative assessment is objective and critical of IFAD's role with regard to the high turnover of country directors and certain design limitations.	Supervision reports PDR MTR Audit reports Key informant interviews: project management unit, PSC, IFAD staff, development partners (e.g. ADB, FAO, World Bank)

Criteria and evaluation questions	*Indicators*	*Data gaps in the PCR and 2019 impact study*	*Sources of evidence for this PPE*
	Was there evidence of cooperation and collaboration with the United Nations Rome-based agencies and/or other relevant partners (including the World Bank)?		
Government			
To what extent did the Government ensure that project M&E systems were functioning and utilized to guide project implementation? Were counterpart resources (funds and staffing) provided in line with the agreement at design stage? Were the flow of funds and procurement procedures suitable for ensuring timely implementation? Did the Government have the required capacity at all levels to implement the project as per the schedule?	Whether a baseline survey was done in a timely manner and M&E systems were properly established and functioning Evidence of uptake of recommendations from supervision missions. PCR provided in a timely manner and of the required quality Counterpart financing disbursed in a timely manner, per schedule, and in the agreed amounts Adequate staffing of project management unit Were audit reports done and submitted as needed? The extent to which the project management unit, PSC and relevant government offices provided timely support	The PCR does not report on fiduciary aspects of government performance or adherence to loan covenants.	Audit reports Supervision mission reports MTR PCR Key informant interviews (IFAD staff, government staff, HSP PMU, PSC)

Supporting data for PPE assessment

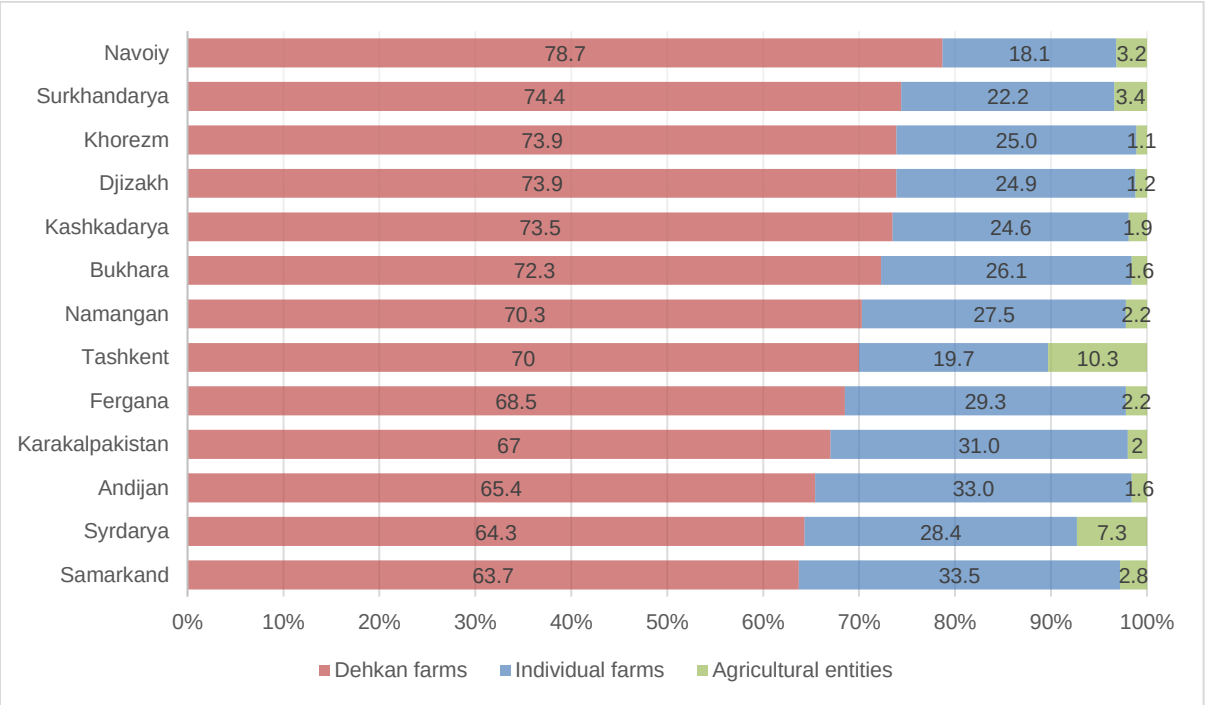
III.A.1 Relevance

[paragraph 31]
Figure 4
Crop production in Uzbekistan in 1991-2020 ('000 tons)



Source: Materials of the State Committee of Uzbekistan on Statistics.[1]

[paragraph 41]
Figure 5
Share (%) of agricultural production in Uzbekistan for 2019, by region and farm type[2]



Source: Uzstat 2019.

[1] Sulaymonov (2020). "Establishment of Agricultural Product Selling Value Chain and Direction of Investment Funds", page 29. Available at: http://agriculture.uz/filesarchive/agrar_vestnik_4_2020.pdf . For 2020, the data was obtained from (i) https://stat.uz/en/quarterly-reports/5868-2020#january-december and (ii) https://kun.uz/news/2020/11/30/tort-viloyatda-paxta-topshirish-boyicha-shartnoma-majburiyatlari-bajarilmadi-jami-hosil-otgan-yilgidan-kop-boldi

[2] Currently, there are three major categories of agricultural growers in Uzbekistan: individual farmers (e.g. previously *shirkats*), *dehkan* (a rural household with a small plot), and plots of various agricultural organizations.

III.A.2 Effectiveness

[paragraph 60]
Table 5
List of trainings conducted under component 1. Support to Horticultural Production and Marketing

Topics of trainings
"Development of horticulture and viticulture: the creation of dwarf and semi-dwarf orchards and high-yielding, in demand on foreign and domestic markets"
"Conducting agrotechnical measures for the cultivation of pome and stone-seed dwarf and semi-dwarf trees in the conditions of the Surkhandarya region"
"Selection of high-yielding, adapted to the soil and climatic conditions of the Surkhandarya region, varieties of seeds of vegetable crops and the timely implementation of agrotechnical measures"
"Determining the cost-effectiveness of modern intensive gardens and grapes"
"Methods and conditions for storage and processing of fruits and vegetables, marketing of internal and external markets for fresh and processed products"
"Using innovative technologies in the field of storage and processing of fruits and vegetables and improving export potential"
"Growing subtropical and citrus crops"
"Cultivation of vegetable crops in protected ground"
"Kinds of fruit tree diseases, timely methods for their detection, as well as methods to combat diseases and pests"
"Growing intensive apple"
"Peculiarities of cultivation of stone fruit crops according to the modern technologies"
"The modern technologies of level, liquidation and wooden fruit and wooden products"
"Growing walnuts"

Source: HSP training materials (reviewed by PPE team).

[paragraph 67]
Table 6
Purpose of loan – HSP borrowers

	Upstream (on farm)			*Downstream (off farm)*	
Target group	*Greenhouses*	*Garden improvement*	*Planting gardens*	*Storage*	*Processing and packaging*
Dehkans	180	1	2	1	0
Small farm production and service units	17	3	19	18	1
Farms	17	21	17	17	0
Agrofirms and private enterprises	17	3	2	35	8

Source: PPE analysis of PFI data.

The total loan financing was equally distributed between the farm and off-farm value chain activities, as shown in table 7 below.

[paragraph 67]
Table 7
HSP financing distribution by value chain (US$ and %)

	Upstream (on farm)			*Downstream (off farm)*	
Target group	*Greenhouses*	*Garden improvement*	*Planting gardens*	*Storage*	*Processing and packaging*
Dehkans	2 620 528	40 208	28 376	19 430	
Small farm production and service units	287 308	48 556	246 135	306 900	19 601
Farms	843 875	1 012 786	686 452	1 746 608	
Agrofirms and private enterprises	1 314 659	162 609	133 214	3 859 413	1 342 459
% by loan purpose	34 %	9 %	7 %	40 %	9 %
% by value chain type			50 %		50 %

Source: PPE analysis of PFI data.

[paragraph 67]
Table 8
Average loan size by borrower and investment type

	Upstream (on farm)			*Downstream (off farm)*	
Target group	*Greenhouses*	*Garden improvement*	*Planting gardens*	*Storage*	*Processing and packaging*
Dehkans	14 558	40 208	14 188	19 430	
Small farm production and service units	16 900	16 185	12 954	17 050	19 601
Farms	49 640	48 228	40 380	102 742	
Agrofirms and private enterprises	77 333	54 203	66 607	110 269	167 807

Source: PPE analysis of PFI data.

[paragraph 71]
Table 9
Number and values of US$ loans by borrower categories

Target group	*# of loans*	*US$*	*% share*
Dehkans	11	294 172	11%
Small farm production and service units	33	585 900	64%
Farms	25	1 095 927	26%
Agrofirms and private enterprises	24	3 068 346	45%
Total loan portfolio	93	5 044 345	34%

Source: PPE analysis of PFI data.

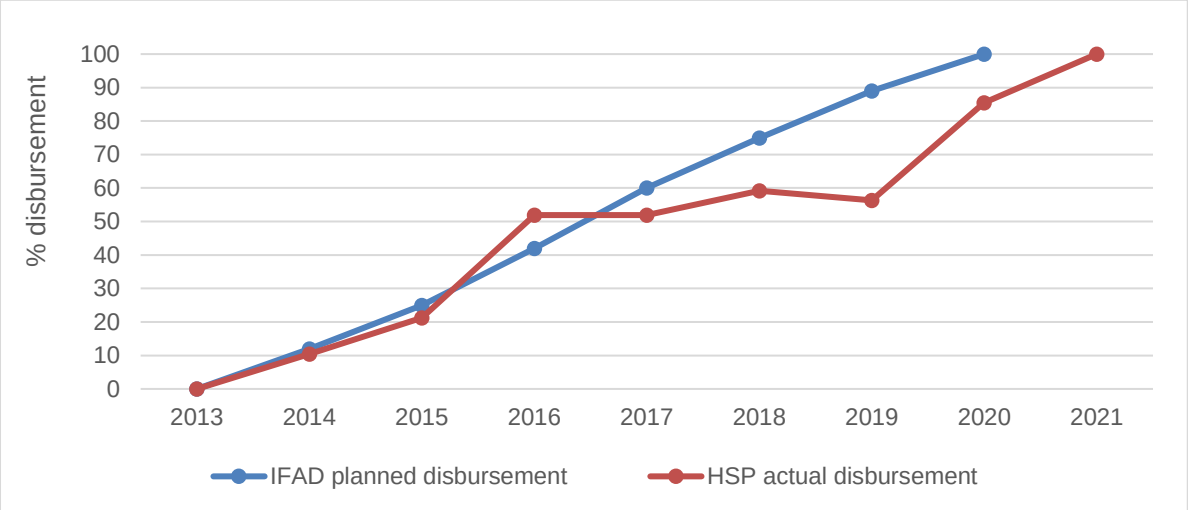
[paragraph 71]
Table 10
Number and value of HSP sub-loans by year and borrower category

	2014			2015			2016			2017			2019		
Target group	*#*	*USD total*	*USD Average*	*#*	*USD total*	*USD Average*	*#*	*USD total*	*USD Average*	*#*	*USD total*	*USD Average*	*#*	*USD total*	*USD Average*
Dehkans	6	50 227	8 371	122	1 770 792	14 515	51	680 023	13 334	0			4*	57 500	14 375
Small farm production and service units	1	9 562	9 562	20	256 023	12 801	4	57 016	14 254	0			33	585 900	17 755
Farms	8	475 159	59 395	33	2 108 255	63 887	12	986 306	82 192	1	100 000	100 000	18	620 000	34 444
Agrofirms and private enterprises	2	192 253	96 126	28	3 079 388	109 978	22	1 985 917	90 269	1	70 297	70 297	12	1 484 500	123 708
Total	17	727 201	42 777	203	7 214 458	35 539	89	3 709 262	41 677	2	170 297	85 148	67	2 747 900	41 013

*Excluding one *dehkan* loan worth US$150,000 *(outlier)*.
Source: PPE analysis of PFI data.

III.A.3 Efficiency

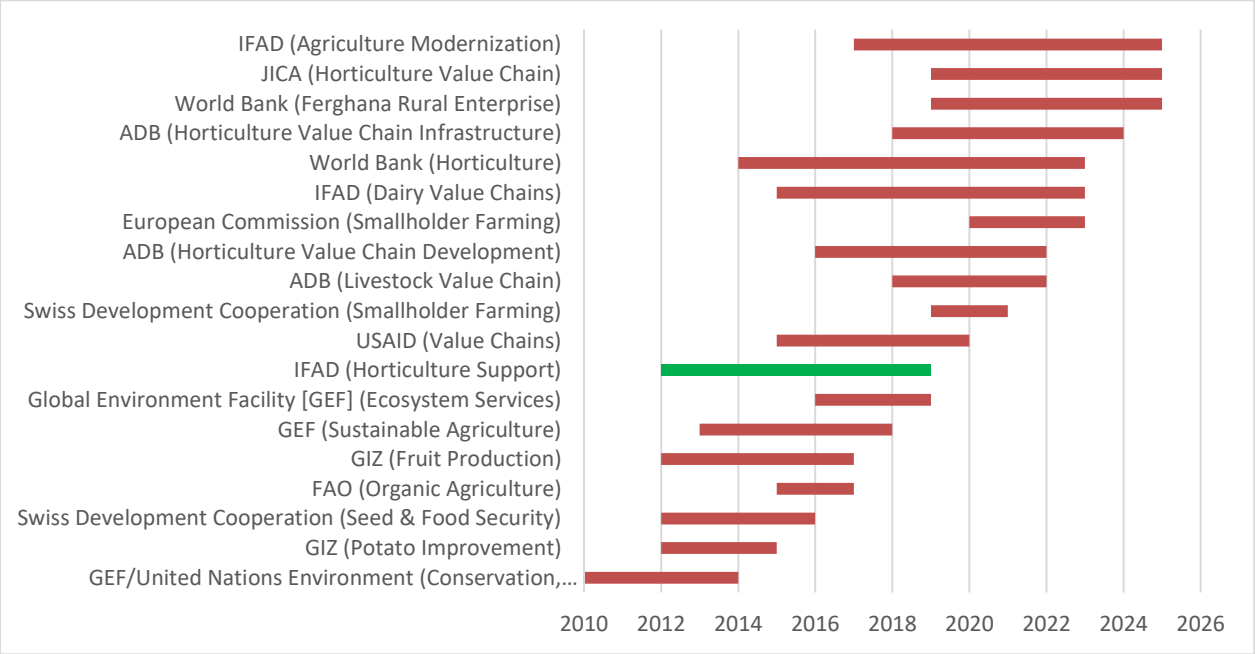
[paragraph 80]
Figure 6
HSP planned loan disbursement from AWPBs vs actual disbursement



Source: IFAD ORMS.

III.B.2 Scaling up

[paragraph 113]
Figure 7
Timeline of horticulture projects in Uzbekistan



Source: PPE team analysis.

III.B.3 Gender equality and women's empowerment

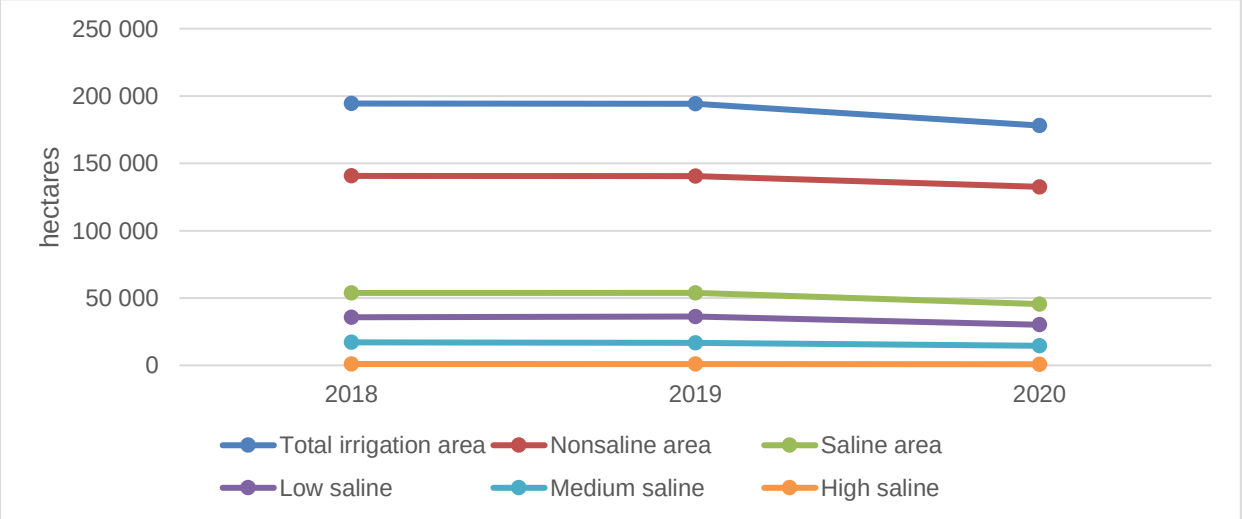
[paragraph 124]
Table 11
HSP sub-loan borrowers by gender

Target group	*Total*	*Women*	*% Women*
Dehkans	184	36	20 %
Small farm production and service units	58	16	28 %
Farms	72	10	14 %
Agrofirms and private enterprises	65	8	12 %
Total loan portfolio	379	70	18 %

Source: PPE analysis of PFI data.

III.B.4 Environment and natural resources management

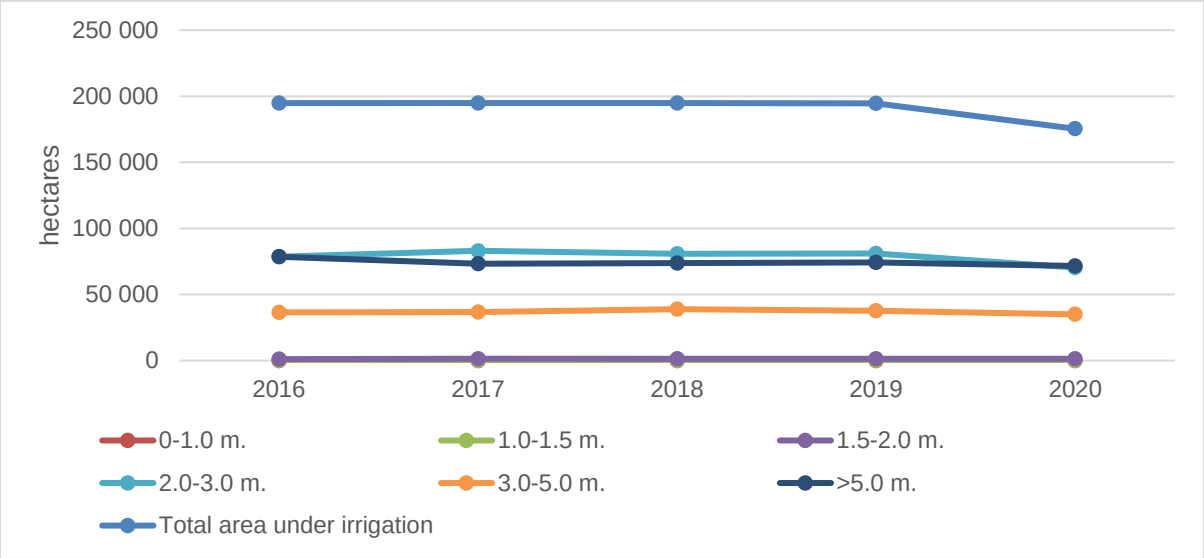
[paragraph 131]
Figure 8
Salinity in the seven project districts of Surkhandarya 2018-2020[1]



Source: PPE team; data from Government of Uzbekistan, Ministry of Water Resources.

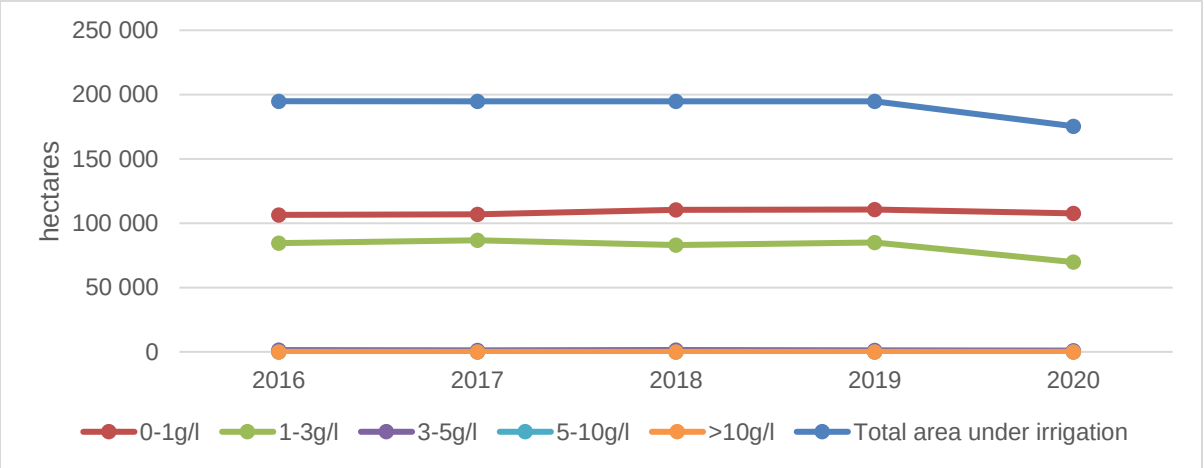
[1] Combined data for Denov, Kizirik, Kumkurghon, Oltinsoy, Sariosiyo, Sherobod, and Uzun.

[paragraph 131]
Figure 9
Groundwater level in the seven project districts of Surkhandarya 2016-2020[2]



Source: PPE team; data from Government of Uzbekistan, Ministry of Water resources.

[paragraph 131]
Figure 10
Mineralization of ground water (g/l.) in the seven project districts of Surkhandarya 2016-2020[3]



*The change in 2020 for areas with mineralization at 1-3g/l is due to an overall reduction in the area under irrigation for that same year.
Source: PPE team; data from Government of Uzbekistan, Ministry of Water Resources.

[2] Combined data for Denov, Kizirik, Kumkurghon, Oltinsoy, Sariosiyo, Sherobod, and Uzun.
[3] Combined data for Denov, Kizirik, Kumkurghon, Oltinsoy, Sariosiyo, Sherobod, and Uzun.

III.B.5 Adaptation to climate change

[paragraph 136]
Table 12
Evolution of IFAD's corporate-level prioritization of climate change adaptation

Year	*Event*	*Reference Document*
2009-2010	IFAD8 declares combating climate change as an operational priority	Report on the consultation on eighth replenishment of IFAD resources
2010	IFAD approves the first climate change strategy.	IFAD Climate Change Strategy 2010
2010	Environment and climate division (ECD) formed	
2011	IFAD Strategic Framework (2011-15) recognizes resilience to climate change adaptation as an objective. IFAD9 commits to address climate adaptation.	IFAD Strategic Framework 2011-15 IFAD 9 resource replenishment consultations report.
2012	Newly approved IFAD9 has three commitments on climate change adaptation.	IFAD9 commitments
2015	Newly approved IFAD10 has 4 commitments related to climate adaptation, including a commitment to mainstream climate adaptation in 100 per cent of project designs. In addition to IFAD9 indicator, two new climate adaptation-related indicators introduced in IFAD10.	IFAD10 commitment document
2015	Social, Environmental and Climate Assessment Procedures (SECAP) replaces IFAD's Environmental and Social Assessment Procedures. Recognition of climate change in the safeguards document. Serves as the primary tool to mainstream climate change adaptation in IFAD operations.	SECAP document 2015
2016	IFAD Strategic Framework (2016-25) recognizes climate change adaptation as one of the three strategic objectives	IFAD Strategic Framework (2016-25)
2017	Updated SECAP document released to account for the mainstreaming commitments of IFAD10	IFAD 2017 SECAP document
2018	Newly approved IFAD11 commits that "*project budgets will be categorized to respond to the Rio markers and, in addition to ensuring that 100 per cent of projects mainstream climate concerns, Management will ensure that at least 25 per cent of IFAD's programme of loans and grants is specifically climate-focused*".	IFAD11 commitment document
2018	New IFAD Strategy and Action Plan on Environment and Climate Change (2019-25) released integrating climate adaptation and mitigation strategies with its environment strategy for the first time	IFAD Strategy and Action Plan on Environment and Climate Change 2019-2025
2018	Environment, climate, gender and social inclusion division (known by acronym ECG) formed to mainstream these areas in IFAD operations	
2020	SECAP updated and provides standards for assessing climate change adaptation interventions; Rural Resilience Programme formulated to bring all IFAD climate responses under one umbrella.	SECAP 2020 document; Guidance on scoring adaptation options

Source: IOE Thematic Evaluation of IFAD's Support for Smallholder Farmers' Adaptation to Climate Change 2021 (forthcoming).

Supplementary boxes for PPE assessment

[Paragraph 35]
Box 1
IFAD Corporate-level guidance for pro-poor value chain development

At the time of HSP's design, value chain development was increasingly viewed as the preferred approach for small-scale agriculture. The 2007-2010 Strategic Framework had a predominant focus on sustainable agriculture and rural development, and although value chain approaches were not yet explicitly at the centre of IFAD's work in 2007, the analysis of value chains was already considered a useful tool to improve access to markets for poor rural producers. By the time of HSP's design, in the 2011-2015 Strategic Framework, the emphasis shifted towards identifying opportunities for incomes, improving access to services, and influencing policies and institutional environments. The Strategic Framework brought attention to the need for value chains to be "pro-poor," including concerns about the gender neutrality of value chain development. In parallel, the IFAD9 consultation report in 2012 stressed that value chains were the future of small-scale agriculture, which should be driven by markets through partnerships with the private sector and supported by policy dialogue.

As noted by the 2020 corporate-level evaluation on pro-poor value chain development, the absence of a more structured corporate approach to pro-poor value chain development has had implications on the clarity of the concept within the Organization. Moreover, although IFAD has developed several toolkits and knowledge products on value chain development, many of these were developed after the design of HSP, and awareness of these among managers of IFAD projects globally remains limited (only 51 per cent of project managers surveyed by the 2020 corporate-level evaluation were aware of them). To date, IFAD has no corporate strategy or policy on value chain development.

Source: IFAD corporate-level evaluation on pro-poor value chain development (2020).

[paragraph 36]
Box 2
History of non-banking financial institutions in Uzbekistan

Non-bank credit organizations. Before 2007, the microfinance sector in Uzbekistan was thriving and actively developing with the significant support from international donor organizations. For example, USAID was one of the significant players together with many others in supporting numerous programmes for the poor (rural and urban) via microcrediting. The Consultative Group to Assist the Poor was actively supporting the Central Bank by providing capacity development with regard to the supervision of microfinance institutions (MFIs). In parallel, the sector of credit unions was actively developing with the support of World Council of Credit Unions, which introduced in Uzbekistan a well-functioning clearing system for the credit unions.

In 2007, the Government revoked the existing law on MFIs and ordered them to close, most of which were internationally funded (including NGO-funded MFIs). All closed MFIs were ordered to re-register according to the new law. Only a small fraction of the MFIs re-started their operations after 2007. A few months before the ban on MFIs, the Government transformed a commercial bank Tadbirkor into the Mikrokreditbank and mandated it to conduct all microfinance operations (including crediting rural agriculture). The interest rate on loans was limited at the unusually and artificially low rate of 5 per cent (with annual inflation at 50 per cent). Despite this, Mikrokreditbank could not compete with the MFIs due to complicated procedures and non-transparent operations. Another key advantage for the MFIs was the fact that they were operating with "live cash" (for both disbursements and repayments), which was very convenient for the borrowers, whereas the commercial banks (including Mikrokreditbank) were not allowed to use cash and the access to the bank accounts funds was problematic. This likely contributed to the subsequent ban of MFIs, which came only several months later when it became clear that the bank could not compete with more flexible and transparent MFIs. At the time of drafting This report (mid-2021), a new law on non-banking financial institutions is being developed with the assistance of the World Bank and involvement of the International Finance Corporation.

The credit unions used to be very effective in attracting savings and also paying interest, as opposed to the commercial banks, where access to the deposits was restricted or almost impossible. The Credit Union Law came into force in 2002 and led to the rapid entry of new institutions into the financial market: the number of credit unions surged from 20 in 2004 to 163 in 2010. However, deposit-taking MFIs ceased existence in 2010 with the reversal of the law; they were all turned into non-deposit-taking financial institutions that lend their own funds.

Currently, the microfinance sector of Uzbekistan is small and underdeveloped. All significant microfinance lending in the country is undertaken by commercial banks, which are mostly state-owned. Non-bank credit organizations include 65 microcredit organizations (MCOs) and 46 pawnshops that work using only their own

funds. By law,[1] MCOs are allowed to disburse loans to natural persons for consumption purposes in the amount of up to 100 minimum wages (about US$3,900) and to micro-entrepreneurs and legal entities for business purposes – up to 1,000 minimum wages (US$39,000). MCOs are limited in terms of their funding sources: they are not allowed to take deposits either from natural persons or legal entities, or to take loans from natural persons (except their founders). Even though they are credit-only institutions working mostly with their own funds, MCOs are subject to several prudential requirements, such as minimum capital, capital adequacy, portfolio at risk, personnel qualification requirements and some others.

As MCOs have no access to subsidized government funding or deposits and are very small and unable to benefit from economies of scale, their interest rates on microloans are much higher than those of banks (exceeding 50 per cent per annum),[2] which makes it hard for the MCOs to compete in the market. In addition, MCOs are required to have official proof of their borrowers' repayment capacity, such as formal income confirmations; like banks, they are required to disburse all loans for business purposes through wire transfers rather than in cash, as well as demand collateral for most of their loans for business purposes. These restrictions limit MCOs' competitiveness and expansion in the market.

Uzbekistan has a credit bureau, established in 2012 – Credit Information Analytical Centre, which was registered after a respective law was adopted in the country in 2011.[3] The credit bureau collects data from banks, MCOs and pawnshops. According to the World Bank, as of 2019, the credit bureau covered 47.8 per cent of the adult population.[4] While the establishment of the bureau has been an important step in increasing access to credit, banks in Uzbekistan still have been relying primarily on collateral – typically of at least 125 per cent of the loan amount.

Source: PPE background paper on rural finance. PPE team 2021.

[paragraph 37]
Box 3
Guiding principles of IFAD's Rural Finance Policy (2009)

IFAD's Rural Finance Policy (2009) outlines six guiding principles that should be at the core of IFAD's approach and support to rural finance, and which should be reflected in each rural finance intervention that IFAD undertakes: (i) Support access to a variety of financial services, including savings, credit, remittances and insurance, recognizing that poor rural people require a wide range of financial services; (ii) Promote a wide range of financial institutions, models and delivery channels, tailoring each intervention to the given location and target group; (iii) Support demand-driven and innovative approaches with the potential to expand the frontiers of rural finance; (iv) Encourage – in collaboration with private-sector partners – market-based approaches that strengthen rural financial markets, avoid distortions in the financial sector and leverage IFAD's resources; (v) Develop and support long-term strategies focusing on sustainability and poverty outreach, given that rural finance institutions need to be competitive and cost-effective to reach scale and responsibly serve their clients; and (vi) Participate in policy dialogues that promote an enabling environment for rural finance, recognizing the role of governments in promoting a conducive environment for pro-poor rural finance.

At the time of HSP's design, the Uzbekistan context and extant financial system were not conducive to such principles being applied. More specifically, the following conditions were noted as particularly constraining:

- The financial system of the country was dominated by state-owned banks, with stringent regulations for collateral, borrower registration status defining permitted type of agricultural activities and eligibility for certain state subsidies and benefits, and specific rules of the Central Bank of Uzbekistan determining loan size, loan product, currency and interest rate.
- IFAD had no other options but to work with commercial banks. Non-banking financial institutions were not considered during the design (the history of microfinance organizations is discussed in Box 2).
- There were almost no instruments to directly negotiate with and influence the PFIs' lending policy with respect to: loan currency option; overly stringent collateral requirements (especially limiting women's participation); inclusion of certain desired targeting mechanisms through the SLAs into the sub-loan provisions; borrower socio-economic profile data collection; proper portfolio quality reporting allowing early warning signals to be raised; proper monitoring of the revolving fund and use of bank's own funds; and the post project period collection of data on the subsidiary loan use by the banks.

[1] Law of the Republic of Uzbekistan No. ZRU-50 "On microfinance" of 15 September 2006 http://lex.uz/pages/getpage.aspx?lact_id=1055319 and Law of the Republic of Uzbekistan No. ZRU-53 "On microcredit organizations" of 20 September 2006 http://www.lex.uz/Pages/GetPage.aspx?lact_id=1056518.
[2] IFAD (2015). Working paper 4. Rural finance in Uzbekistan: IFAD intervention proposal. Dairy Value Chains Development Programme. April 2015.
[3] Law of the Republic of Uzbekistan No. ZRU-301 of 4 October 2011 "On credit information exchange."
[4] https://data.worldbank.org/indicator/IC.CRD.PRVT.ZS?locations=UZ.

- There were no available instruments for foreign currency exchange risk hedging with the banks, and, generally, the issue of the exchange rate risk control was not addressed in a systematic manner.[5]

Source: IFAD Rural Finance Policy (2009); PPE team.

[paragraph 43]
Box 4
Differences between the IFAD project design report and the Government's feasibility study

Some of the most significant differences between the original project design report and subsequent feasibility study included the following:

- Absence of gender considerations in the target group in the feasibility study, and the feasibility study dropped the requirement to have a project management unit staff member tasked with responsibility for gender;
- Differences in indicators, which created problems for project M&E and the final impact study. As an example, gender targets and correspondent logframe indicators were missing in the feasibility study, and selection criteria for activities under subcomponents 1.2[6] and 1.3[7] in the project implementation manual did not include thresholds and scoring methods as required by the PDR.[8]
- The project's rationale and approach, as described in the feasibility study, was focused only on economic aspects of the horticulture subsector and missed many of the risks and considerations outlined in the PDR. For example, several risks, such as land availability and land ownership, were missing from the feasibility study.
- Lessons learned and adherence to IFAD policies, as outlined in the PDR, were missing from the feasibility study.
- The feasibility study was overly prescriptive, with tight specifications of most activities and procurement, which was problematic when HSP was aiming to develop demand-driven value chain processes.
- Support to credit unions, and the establishment of contract farming arrangements, did not appear in the feasibility study.

Source: Analysis and comparison by PPE team; HSP project design report; HSP feasibility study 2013.

[5] The State Fund for Entrepreneurship Support was developed as a response to the exchange rate problems, providing a 50 per cent subsidy on interest rates for foreign currency loans; however, this was not widely known and many borrowers were not aware that they could apply (noted from evaluation interviews and the 2019 HSP supervision report).
[6] Subcomponent 1.2 Modernization of agro-industrial enterprises.
[7] Subcomponent 1.3 Modernization of fruit and vegetable production.
[8] The logframe of the PDR and IFAD President's Report also refer to rural roads in an indicator for Outcome 3 (i.e. 'Likelihood of sustainability of the roads constructed/rehabilitated'). In the Russian pre-feasibility logframe, "roads" is translated to "objects constructed", and there is no further mention of rural roads after this – not in the supervision reports or MTR, nor in the Results and Impact Management System. It is unclear if the inclusion of "roads" was an error in the design logframe or if it was in fact originally envisaged that HSP would support the construction/rehabilitation of rural roads, and the activity was lost during translation.

[paragraph 67]
Box 5
Responses to the PPE telephone survey

The PPE undertook a telephone survey in May 2021 among a sample of borrowers. The telephone survey questions were based on the criteria of relevance of the loan, ease of access, loan costs, meeting objectives and market access. The response rate was low and the PPE team struggled to access borrower contact details. In the end, the survey covered only 15 respondents – eight *dehkans*/private farmers and seven representatives of agrofirms. For half of the *dehkans*, and two of the seven agrofirms interviewed, it was their first banking experience.

Dehkans, farms and enterprises used the loans to construct greenhouses for vegetable-growing, and purchase cold storage facilities, special vehicles and other equipment for land cultivation. Agrofirms focused more on cold storage and refrigerated vans, plus greenhouses and garden establishment. All borrowers had to provide personal property as collateral well above the value of the loan, including their personal car, small buildings or machinery, or an external guarantee. All respondents received assistance with the application process if needed (especially from project staff). The low interest rate was very attractive for Uzbek s'om borrowers, but the rate was considered high for US$ borrowers (who later also suffered from the currency devaluation).

Agrofirms reported that the increased volume of production and quality enabled them to bring on new clients. Storage facilities allowed them to expand sales in off-season time and reach new clients. One respondent commented that before the loan he had no employees, but after obtaining the loan he managed to employ 60 to 70 people. *Dehkans* reported that they had increased their mainly retail sales. However, the in-person interviews heard that for most of potential sub-borrowers, the loan procedure is complicated and sometimes not transparent. Most of the applicants give up or their applications are rejected. Some district bank staff were not aware of IFAD loans and requirements. Bank requirements included a long list of documents, and PFIs try to approve loans for those whom they know as a way to avoid any risk with non-payments.

Source: Evaluation team.

Analysis of geospatial data for irrigation improvement

Introduction

The PPE included an analysis of geospatial images to: (i) validate the existence of infrastructure developments; and (ii) ascertain if there had been any changes in agricultural productivity in the areas surrounding the improved irrigation works. The team member who conducted the geospatial analysis also physically visited the same sites that were sampled for validation using geospatial imagery. The site visits were undertaken in May 2021, and photographic evidence of the irrigation canals was gathered, in addition to conducting interviews with local officials, community members, farmers and users of the irrigation canals.

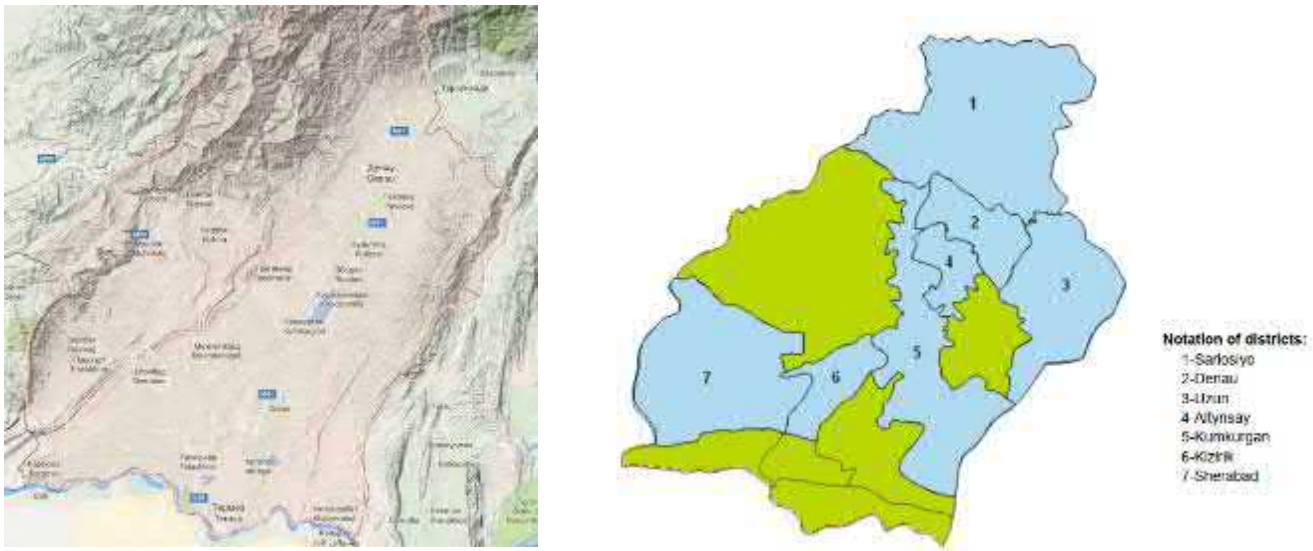
Limitations

Since the irrigation works in many places were not completed until 2019, there has not been sufficient time to discern a trend in changes to agricultural productivity through analysis of satellite imagery before and after rehabilitation of the irrigation canals. The analysis suggests that there has been an overall positive change in vegetation index (indicating increased agricultural production); however, this does not control for weather variability, or a change in rainfall patterns between the two sampled years. Therefore, the analysis of geospatial imagery was mostly useful as a validation exercise and to confirm the observations of the PPE team on the ground.

Sampling criteria

The PPE selected two *rayons* (districts) in the Surkhandarya *oblast* (province), with the intention of focusing in detail on these sampled areas and interviewing multiple levels of stakeholders engaged in HSP activities within these *rayons*. Criteria for selection included: avoiding places that had been visited multiple times through supervision missions; proximity and distance to/from the regional capital, Termez (i.e. one *rayon* close to the city, and one further away); and socio-economic and agricultural conditions (with the intention to include one area with better socio-economic and agricultural conditions, and market access, and one area with less favourable conditions, so as to compare the experiences of beneficiaries under different conditions).

Figure 11
Surkhandarya *oblast* (left) and HSP districts (right) therein



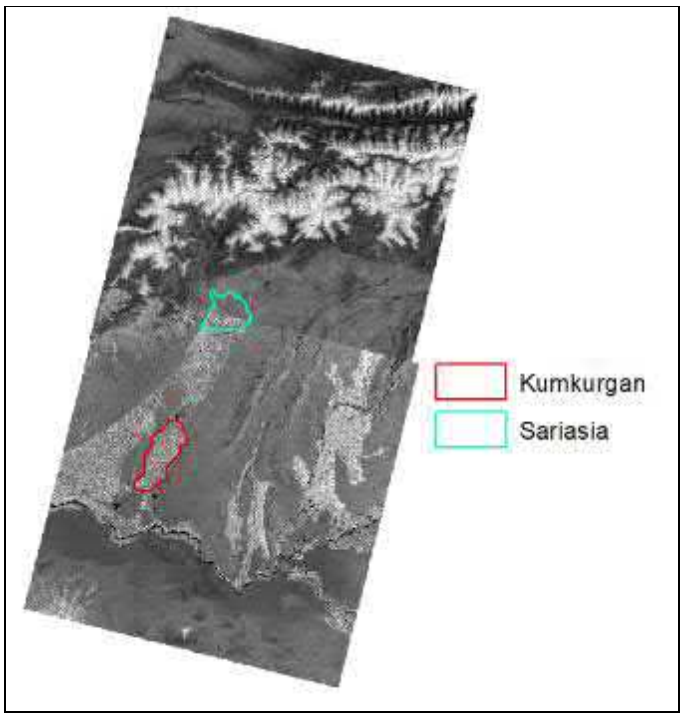
Source: HSP baseline report.

Applying the above criteria, the following two *rayons* were selected:

- Kumkurgan – centrally located, in the valley area, with medium coverage of farms, and with irrigation works that used concrete cladding and pipelines as techniques.
- Sariasia – furthest from Termez (in the north), with a high coverage of farmers, and two irrigation canals that had repairs – with concrete cladding and earth bed as techniques. The *rayon* is in a hilly area. It is close to the border with Tajikistan, on the main road to Dushanbe, which would also allow the PPE to assess whether there had been cross-border trade of horticultural produce.

The selected project sites in the Kumkurgan and Saryasia districts are shown by red and green colors in Figure 12.

Figure 12
Landsat-8 satellite images of the Surkhandarya province showing the two selected *rayons* of Kumkurgan and Sariasia.



Source: PPE team.

Remote sensing and GIS analyses

Visual observation of the completed works at the canals, cropping areas around the canals and interviews with agricultural producers and local household peasants suggested that water supply in the above-mentioned canals has been improved, which resulted in expanding areas under agriculture and even migration of some people into the area served by the Kumkurgan-2 canal (so-called canal command area). The best way to prove that these statements are true is via remote sensing, which allows the vegetation changes within the area of interest to be assessed over time, in our case before and after the completion of the reconstruction works.

The analysis for this PPE applied the Normalized Difference Vegetation Index (NDVI), one of the most commonly used vegetation indices applied for assessing the vegetation status, calculated as follows:

$$NDVI = \frac{(NIR - Red)}{(NIR + Red)}$$

This index is a measure of the difference between near-infrared (NIR) light and red light reflected from plants, normalized by dividing it by the sum of the two wavelengths. This normalization allows us to compare results from different collections at different times or in different areas. The basis for this index is the fact that those two wavelengths (red and NIR) are affected by two important vegetation components: pigments (specifically chlorophyll) and leaf structure. Healthy plants reflect little red light because chlorophyll absorbs light at that wavelength (chlorophyll also absorbs blue wavelengths). And healthy plants have high reflectance in the NIR because a healthy leaf structure strongly reflects NIR wavelengths.

Changes in the vegetated areas in terms of hectares, and share of total sampled area (percentage), have been assessed using the Change Detection method. This method allows the spatial differences in the vegetated areas from the satellite images to be captured by subtracting the corresponding NDVI images at different times – in this case between September 2017 (before the start of the restoration works) and August 2020

(after the works were completed). The tool subtracts the NDVI (hence, vegetated) areas at the same locations in the two images over time from specific dates. Green colours indicate that vegetation cover has increased over the study period, while red indicates a reduction in vegetation cover.

Kumkurgan District

Kumkurgan-2 canal, Kumkurgan District

The Kumkurgan-2 canal was rehabilitated starting in June 2017. The works were been conducted for five months, after which the company stopped activities. Later on, these works were continued by Fakhriddin, Ltd. All works were finished in March 2019. The satellite image of the part of Kumkurgan district and the location of the Kumkurgan-2 canal is shown in the figure 13. The agricultural fields are in the west (at the left of the canal shown in blue).

Figure 13
Location of the Kumkurgan-2 irrigation canal in the Kumkurgan District

Source: PPE team. Image 2021.

The rehabilitation works consisted of concrete lining of the earthen canal, repair works, and construction of an aqueduct in the canal. The canal was also extended through construction of an additional 1.194 km. According to UZAIFSA, the concrete works were carried out on a total canal length of 3.3 km. Photos were taken by the PPE team during physical site visits in May 2021; these were compared to images taken by UZAIFSA at the same locations in 2017 (see Figure 14).

Figure 14
Comparison of the pre-project earthen condition of the head of the Kumkurgan-2 canal in 2017 (left) with the concrete-lined condition in May 2021 (right)

Source: UZAIFSA. Shokir Sokiev, 2017 (left); PPE team field visit, May 2021 (right).

The PPE team's photos were taken on a mobile phone enabled with a "GPS module", which allowed the visited parts of the canal to be located and, later on, the changes to be traced using satellite imagery. The images below (Figure 15) show the visited locations, with satellite images taken in 2017 and 2021.

Figure 15
Comparison of satellite imagery of Kumkurgan-2 canal from its head to a length of 130 m, 2017 (left) vs 2021 (right)

Source: Source: Bing imagery (left), 2017; Spot (Geosys Ltd) imagery (right), 2021.

In the leftmost image (2017), it is evident that the canal was originally not concrete-lined, due to its unclear shape. The image on the right (validated also by PPE physical inspection) shows the newly concrete-lined canal in 2021 (the canal in 2021 has a concrete bed and slopes, judged by its shape).

Similarly, where the canal head was extended, the new construction is evident when comparing satellite images from 2017 and 2021 (Figure 16).

Figure 16
Comparison of satellite images from 2017 (left) and 2021 (right) showing the location of the newly constructed part of the Kumkurgan-2 canal.

2017 2021

2017 (zoomed in)

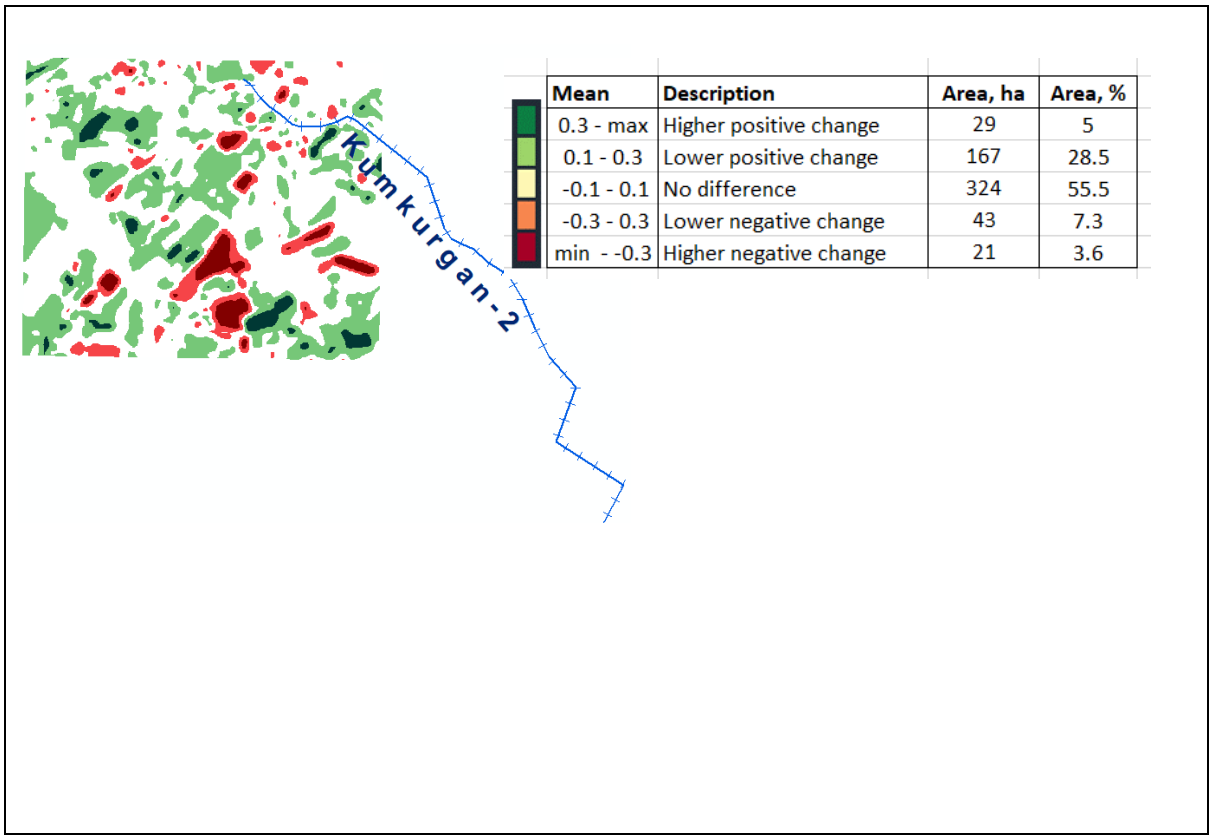
2021 (zoomed in)

Source: Bing imagery (left), 2017; Spot (Geosys Ltd) imagery (right), 2021.

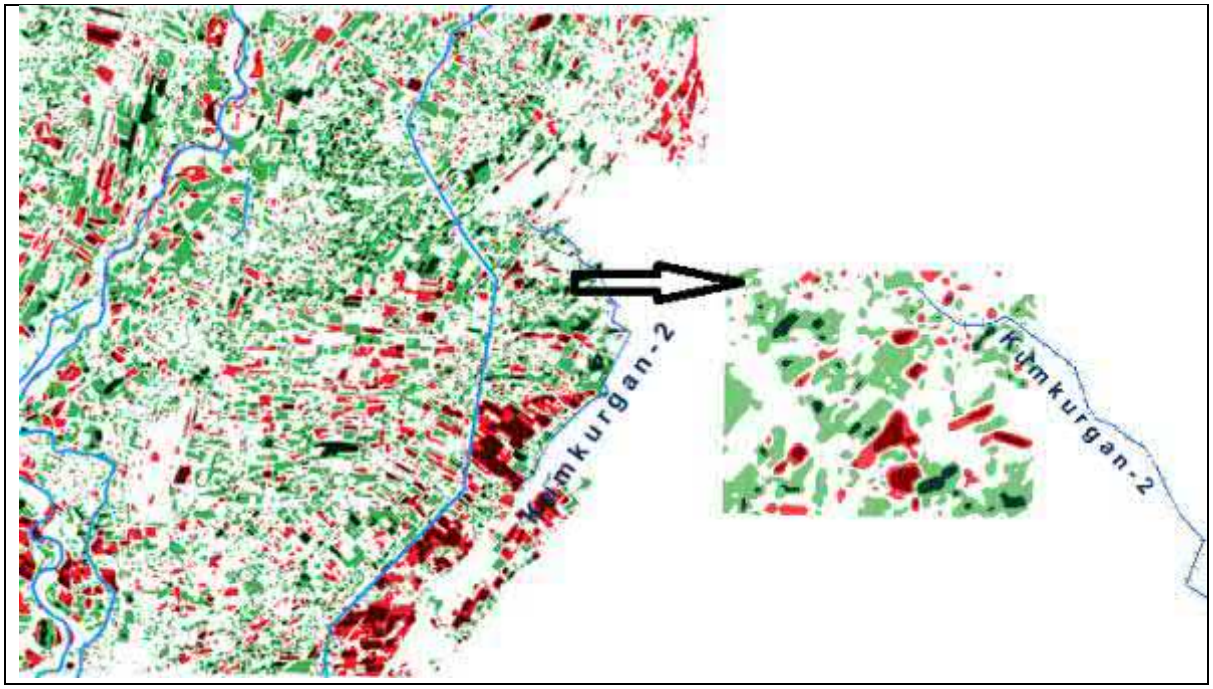
Kumkurgan-2 canal, change in vegetation index (crop cover)

The Change Detection tool was applied to satellite images of the areas actually visited by the PPE team. GPS points of these areas were taken during the field visit and places were located in the satellite image upon analysis. The Change Detection analysis showed positive changes in vegetation cover between 2017 and 2021. In the locations visited by the PPE team, the areas under vegetation increased from 6.5 ha to over 44 ha. The positive change in the areas under vegetation cover was 196 ha (33 per cent), whereas a negative change was observed on 64 ha (11 per cent) – see Figure 17.

Figure 17
The changes of NDVI within the Kumkurgan-2 canal command area at sites visited by the PPE team (green indicates positive change; red indicates negative change)



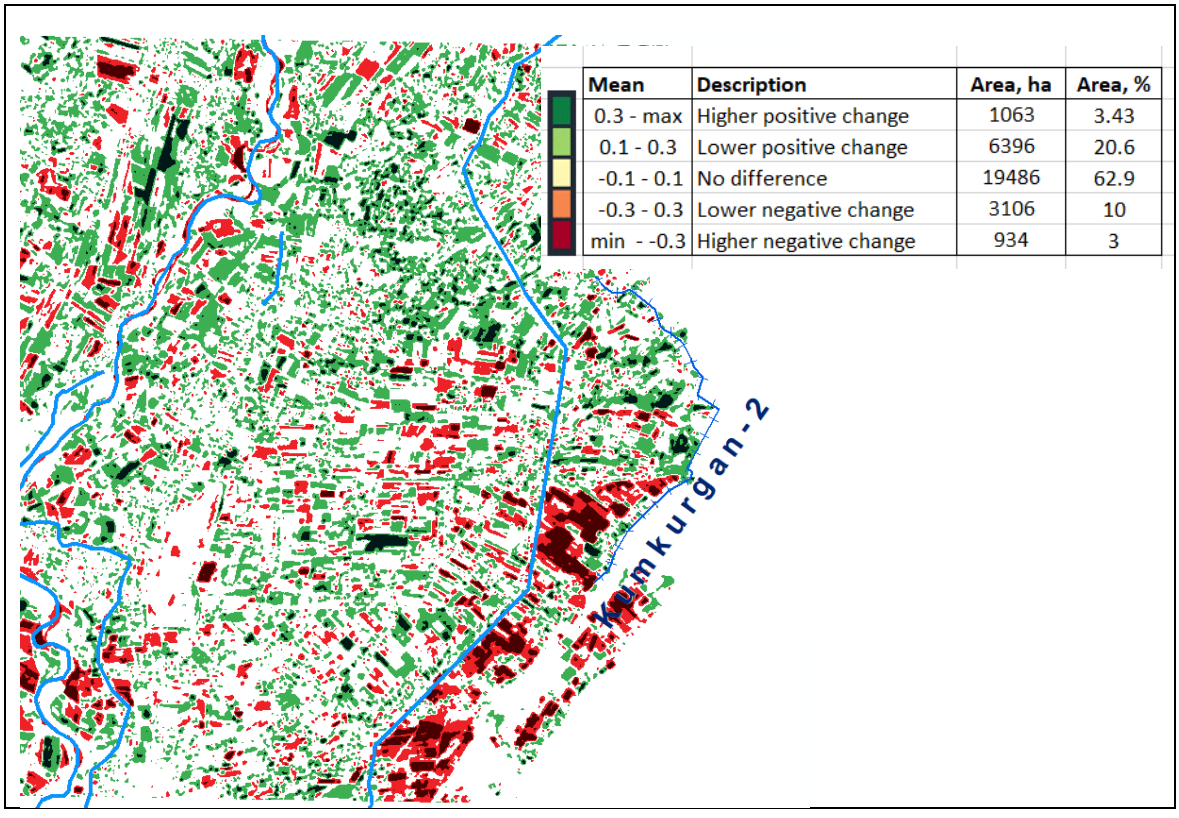
Mean	Description	Area, ha	Area, %
0.3 - max	Higher positive change	29	5
0.1 - 0.3	Lower positive change	167	28.5
-0.1 - 0.1	No difference	324	55.5
-0.3 - 0.3	Lower negative change	43	7.3
min - -0.3	Higher negative change	21	3.6



Source: PPE team analysis.

The image in Figure 18 shows a wider area (the Kumkurgan district is much smaller and located to the west of the Kumkurgan-2 canal), the Surkhandarya River (thick blue line), and the Kumkurgan-2 canal (thin blue line in the far east). Taking this larger frame as a reference, positive change in vegetation index was observed for 24 per cent of the sampled area, while a negative change was observed for 13 per cent. This suggests that the sampled area where HSP rehabilitated the irrigation canal observed a higher positive increase in vegetation index than the average change for the larger surrounding districts.

Figure 18
The changes of NDVI over the entire Kumkurgan district between 2017 and 2020.



Mean	Description	Area, ha	Area, %
0.3 - max	Higher positive change	1063	3.43
0.1 - 0.3	Lower positive change	6396	20.6
-0.1 - 0.1	No difference	19486	62.9
-0.3 - 0.3	Lower negative change	3106	10
min - -0.3	Higher negative change	934	3

Source: PPE team analysis.

Sariasia District

Khasankhan canal, Saryasia district

Similar comparative analysis was conducted for Sayasia district. Rehabiltiation works were undertaken on the Khasankhan canal, Saryosio from May 2017 (start of works) to February 2019 (completed). The rehabilitation works consisted of restoring the broken concrete parts of the canal and reconstructing the head of the canal.

Figure 19
Location of the Khasankhan irrigation canal in the Saryasia district

Source: PPE team. Image 2021.

Comparisons of photos taken prior to HSP rehabilitation and photos taken during the May 2021 PPE field visit clearly show the upgrading and concrete lining of earthen canals undertaken by the project (see Figure 20).

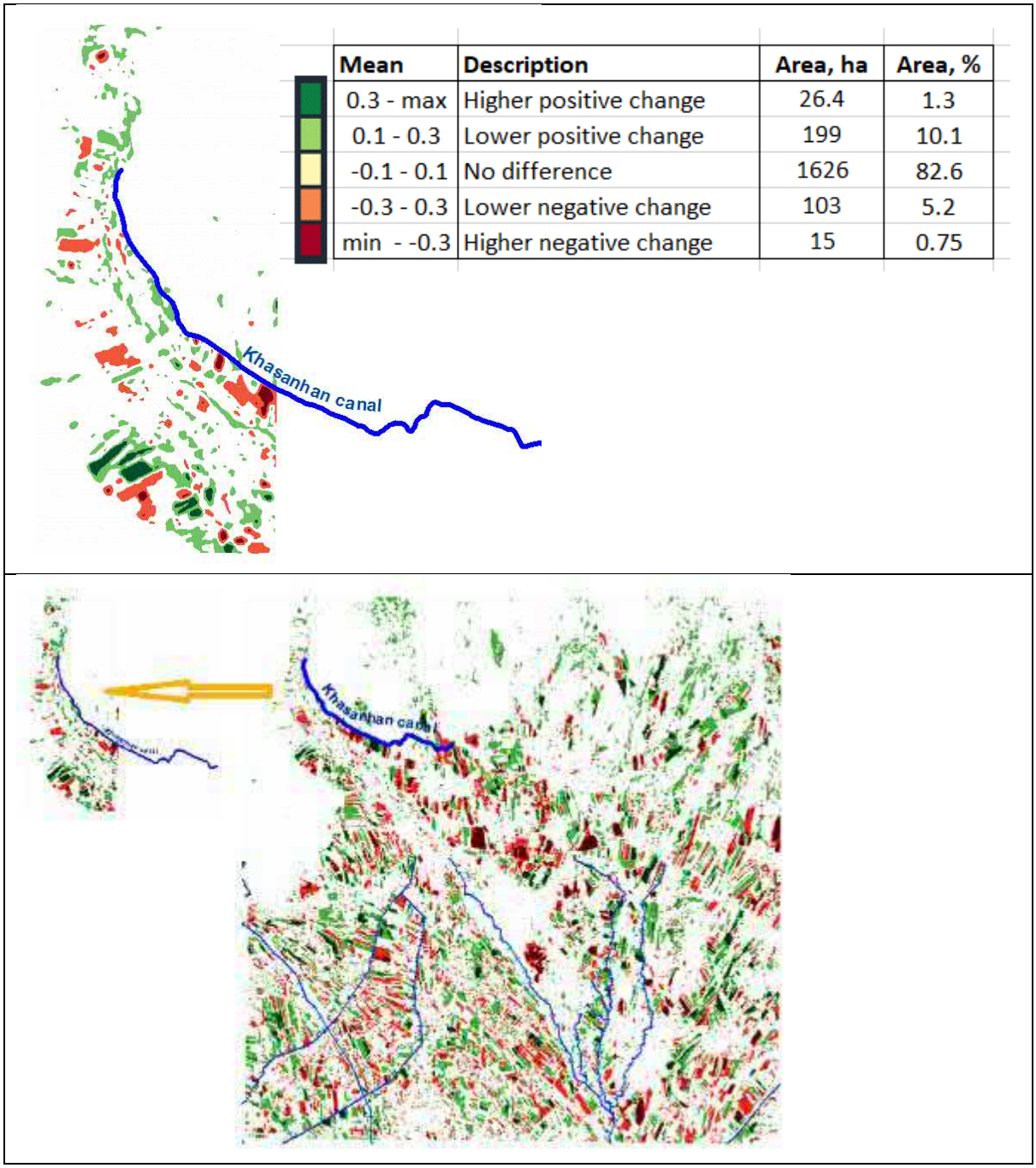
Figure 20
Comparison of pre- and post-HSP Khasankhan canal (at 5,356 m marker)

Source: UZAIFSA. Mr. Shokir Sokiev, 2017 (left); PPE team field visit, May 2021 (right).

Khasankhan canal, change in vegetation index (crop cover)

The changes in vegetation index in the areas immediately around the Khasankhan canal are also positive (see Figure 21). The vegetated areas increased on 225 ha (11 per cent of the total area), while a decrease was observed on 118 ha (6 per cent of the total area).

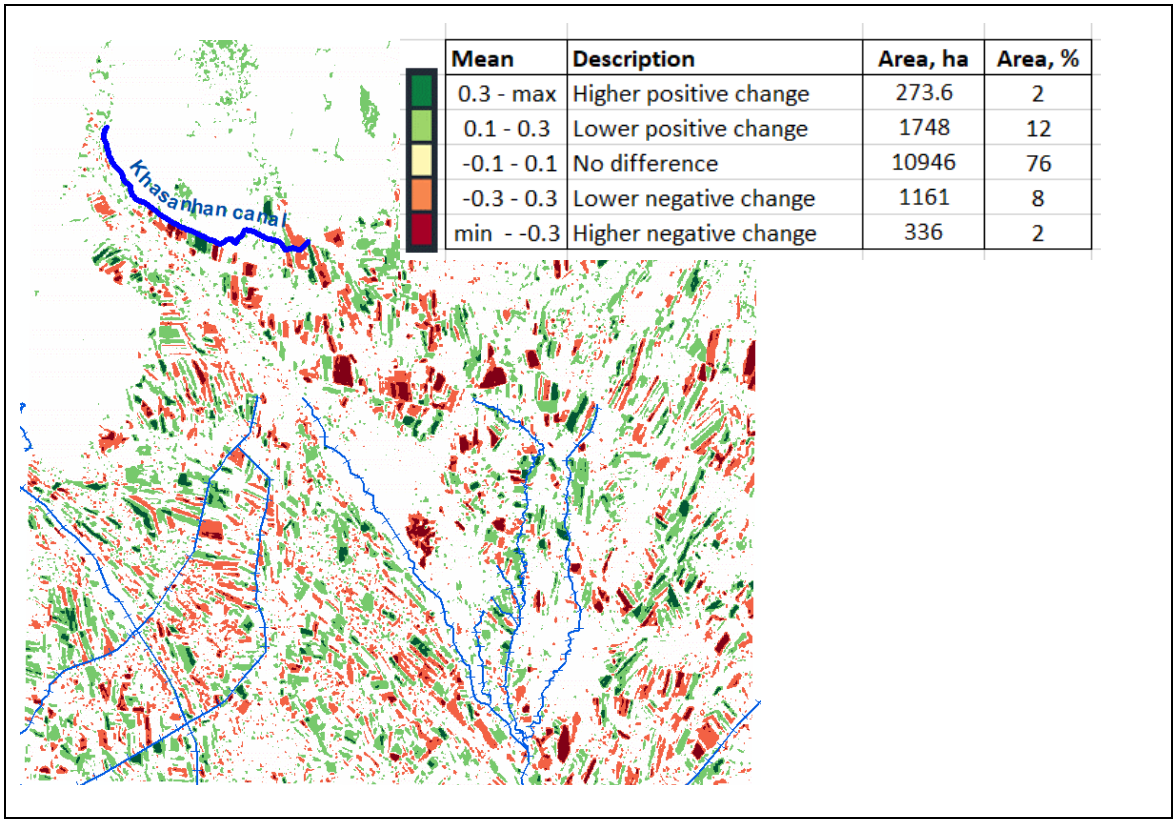
Figure 21
Changes of NDVI around the Khasankhan canal in the Saryasia district



Source: PPE team analysis.

Although the changes observed in the areas surrounding the Khasankhan canal were positive overall, they were lower than the wider surrounding area. Assessment of the NDVI changes in the vegetated areas of the entire Saryasia district, comparing 2017 with 2020, showed that out of 584 ha, the vegetation cover increased on 196 ha (33 per cent), whereas it decreased on 64 ha (11 per cent) – see Figure 22.

Figure 22
Changes of NDVI in the wider Saryasia district around the Khasankhan canal



Source: PPE team analysis.

Summary of findings from geospatial data analysis

The Change Detection analysis of vegetation cover, comparing satellite images from 2017 and 2021 overall showed that there has been a positive change in vegetation index in the areas surrounding the rehabilitated canals. However, there has also been a positive change in the wider districts of Surkhandarya for the same time points, which means that the changes might not be solely attributable to HSP interventions but could also be related to other factors, such as climate variability (rainfall, temperature, weather) between the two reference years, or some other factor that was not accounted for.

Direct observation by the PPE team, coupled with analysis of satellite imagery, confirmed the presence of the rehabilitated works, which were generally of sound quality. Comparison of PPE team photos taken in 2021, with UZAIFSA photos taken in the same locations in 2017, showed a clear change in the physical condition of the irrigation canals, many of which had previously been earthen-lined and therefore prone to leaks and water losses. In 2021, these canals have been concrete-lined. The same was validated through the analysis of satellite imagery.

In summary, the analysis was useful to validate the existence and quality of the rehabilitated irrigation canals. A positive change has been observed in vegetation index, comparing 2017 and 2021, which could indicate increased crop cover and crop productivity. However, the analysis could not control for other variables, and insufficient time has passed since the completion of the works to establish any reliable trend.

List of persons met

Government

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Mirzokhid Yuldoshev, Head of Information Centre, Farmer's Association

Shamsiddin Hudoykulov, Kumkurgan District WCA

Shokir Sokiev, Technical Supervisor of the works in the irrigation canals, Kumkurgan-2 canal

Water users from Sufiyon and Khasankhan canals

Water users of Kumkurgan-2 canal

Water users of Sufiyon canal

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Tolibjon Karimov, Rector, Andijan Agriculture Institute

Zokirjon Bo'stonov, Researcher, Andijan Agriculture Institute

Beneficiaries

Agrofirm (juices and beverages), Termez

Agrofirms (greenhouses and cold storage), Sariosiyo

Arpopoya *Makhalla* leaders and community, Kumkurgan

Bobotog *Makhalla* leaders and community, Kumkurgan

Dehkans, Saliobod *Makhalla*, Bakhoriston village, Termez

Farm (greenhouse), Termez

Farm, Jarkurgan

Farm, Kumkurgan

Farms (greenhouses), Bobotog

Farms (greenhouses, orchard), Kumkurgan

Shokhkishlok *Makhalla* leaders and community, Sariosiyo

Other resource persons

Adrian Neal, Policy Advisor, European Union Agriculture Support and Knowledge (ASK) Facility, Ministry of Agriculture, Uzbekistan

Anton van Engelen, Independent Consultant

Olga Tomilova, Rural Finance Specialist, Independent Consultant

Philip Chamberlain, Independent Consultant

Richard Rozwadowski, Independent Consultant

Ruggero Malossi, Independent Consultant

Victor Sechkin, Evaluation Expert, Aykan Invest

Fieldwork itinerary

Day 1: Monday, 3 May 2021 (Termez)

11:30 Meeting with UZAIFSA engineer, discussing issues related to irrigation component. Collecction of project data (characteristics of irrigation networks improved by project districts, feasibility studies).
12:00 Interview with agrifirm in Termez. Production of juices and beverages.
13:30 Interview with former HSP project staff.
15:00 Focus group discussion with Surkhandarya Region PFI representatives:

1. Qishloq Qurilish Bank;
2. Xalq Bank;
3. Mikrokreditbank;
4. Uzsanoatqurilishban.

Day 2: Tuesday, 4 May 2021 (Sariosiyo)

08:30 Travel to Sariosiyo.
11:20 Meeting with Sariosiyo Khokimiat representatives.
12:00 Focus group discussion with Sariosiyo district PFI representatives:

1. Sanoat Qurilish Bank;
2. Xalq Bank;
3. Qishloq Qurilish Bank

14:30 Interview with agrifirms. Site visit to cold storages.
14:30 Interview with Sariosiyo Irrigation System Authority representative.
15:45 Interviews with medium-sized farmers. Site visit to greenhouse.

Day 3: Wednesday, 5 May 2021 (Sariosiyo)

9:45 Site visit to Sufiyona Irrigation Canal.
10:00 Interview with Sariosiyo district Irrigation System Authority Head.
11:30 Meeting with Shokhkishlok *Makhalla* (Community) leaders.
11:30 Focus group discussion with women residents of Shokhkishlok and Shirinhamkorlik villages.
14:30 Visit offices of Sariosiyo Irrigation System Authrority and "Sariosiyo Suv Istemolchilari" – WCA.
Interview with WCA staff.

Day 4: Thursday, 6 May 2021 (Denau and Kumkurgan)

08:30 Travel to Denau.
10:30 Site visit to Surkhandarya Scientific-Research Station under the Scientific-Research Institute of Horticulture, Viticulture and Winemaking named after academician M. Mirzaev, located in Denau town.
12:30 Travel to Kumkurgan.
15:00 Site visit to Navruz Durdonasi Farm (orchard).

Day 5: Friday, 7 May 2021 (Kumkurgan and Termez districts)

9:30 Meeting with Bobotog *Makhalla* Leader.
10:30 Meeting with Bobotog and Arpopoya Community residents.
12:00 Meeting with farm owner in Bobotog village (greenhouse).
13:15 Meeting with farm owner in Bobotog (greenhouse).
15:00 Jarkurgan district. Visiting Surkhon Jar Baraka Farm.

Day 6: Saturday, 8 May 2021 (Kumkurgan and Termez)

11:00 Meeting with Kumkurgan WCA representatives.
14:30 Meeting with women *dehkan* farmers in Saliobod *Makhalla*, Bakhoriston village, Termez district.

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