Executive summary

A. Introduction
1. The Independent Office of Evaluation of IFAD (IOE) prepares evaluation synthesis reports (ESRs) with the aim of capturing knowledge and experiences on a selected theme. Infrastructure was selected as a topic for the 2020 ESR because of its interest to both IFAD Management and the Executive Board. Investments in infrastructure constitute a significant share in IFAD’s portfolio. Between 2001 and 2019 about 30 per cent of all approved IFAD funding went towards the construction of new or rehabilitation of existing infrastructure and the related capacity-building. In many cases these investments have been possible because of cofinancing arrangements with other international development partners.

2. The ESR objectives were to: (i) provide a conceptual framework clarifying the contribution of infrastructure to IFAD’s strategic objectives; (ii) review IFAD’s strategic positioning, comparative advantage and partnerships in the provision of infrastructure; (iii) assess relevance, coherence, effectiveness, efficiency and impact of IFAD infrastructure investments; (iv) examine the extent to which IFAD-supported infrastructure addresses issues of sustainability, climate resilience and innovation; and (v) identify good practices and lessons learned.

3. Scope. The synthesis covers the period from 2001 to 2019 (from the Fifth to the Eleventh Replenishment of IFAD’s Resources [IFAD5 to IFAD11]), which coincides with the broader shift from community-based to value chain approaches. The review covers all categories of IFAD infrastructure investments. It pays specific attention to themes that were of strategic importance for IFAD during the review period, such as infrastructure for smallholder access to markets and value chains, natural resource management (NRM) and climate change adaptation (CCA), and infrastructure in states with fragile situations.

4. The synthesis drew its evidence from evaluations of infrastructure-heavy projects (35 projects)1 conducted between 2001 and 2019. In addition, 10 projects were selected as case studies to provide an in-depth review of the infrastructure results and the factors contributing to them. The case studies included ongoing and completed projects with significant infrastructure components. They drew from a wider range of evidence, including project documents and impact assessments from the Research and Impact Assessment Division, where available. The ESR also identified the 10 country portfolios with the highest investments in infrastructure and reviewed the related country strategy and programme evaluations to understand the partnerships and strategic considerations driving those investments. Interviews and focus groups with IFAD technical staff and consultants provided additional insights into the factors contributing to success or failure.

B. Findings

IFAD strategy, safeguards, data systems and capacities

5. Strategy. Infrastructure is omnipresent in IFAD’s strategies and operations, although it has received relatively little attention as a distinct investment instrument. For example, IFAD does not have an infrastructure policy or a dedicated infrastructure strategy other than the Social, Environmental and Climate Assessment Procedures (SECAP) safeguards. Nor does IFAD have sector-specific policies or strategies, for example on water. However, infrastructure is a key ingredient to achieve IFAD’s strategic objectives. IFAD sees its comparative advantage in the provision of small-scale, “last-mile” and community-driven infrastructure. In the context of the Sustainable Development Goals (SDGs), last-

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1 “Infrastructure-heavy” meaning that more than 30 percent of the project budget was allocated to infrastructure.
mile infrastructure and services reaching out to the remotest places and those at risk of being left behind have received particular attention.

6. **Demand-driven approach.** IFAD’s approach to infrastructure is demand driven. The strongest drivers for infrastructure investments by IFAD are government and beneficiary demand. IFAD’s long history of cooperation and institutional support for infrastructure users’ associations and farmers’ groups in client countries have led to direct demand by governments and beneficiaries for IFAD infrastructure investments, particularly when cofinanciers are not available. Partners appreciate the long-term expertise and comparative advantage IFAD has gained from working with infrastructure users’ associations, mostly in community infrastructure planning and operation and maintenance (O&M), and its presence in the agricultural sector.

7. **IFAD’s Strategic Framework 2016-2025** suggests prioritizing productive rural infrastructure, in particular irrigation, roads, energy, communication, networks, storage and markets. It specifically mentions farm-to-market roads, storage facilities and marketplaces and infrastructure support for the rural financial sector. Drinking water, once a basic ingredient in community-based projects, has almost disappeared from IFAD’s strategies. Under IFAD8 (2010-2012), the need to address water scarcity was still an area of focus, and this was re-emphasized in IFAD9, in the context of environmental degradation and climate change. Since then IFAD’s focus on productive and market infrastructure has diverted attention away from “social” infrastructure, such as drinking water.

8. **IFAD’s infrastructure investments.** About 30 per cent of all IFAD funding goes towards the construction of new or rehabilitation of existing infrastructure. Of all infrastructure investments, 42 per cent went towards production and 42 per cent to market access infrastructure. Roads and irrigation were the main types of infrastructure funded by IFAD during the review period (IFAD5-11). IFAD investments in drinking water declined from 8 per cent during IFAD5 to close to zero during IFAD11. About 40 per cent of infrastructure investments were realized through cofinancing in IFAD projects. The Asian Development Bank provides the highest share of international cofinancing for infrastructure, close to 22 per cent, followed by the OPEC Fund for International Development at 18 per cent. Governments have contributed altogether 18 per cent in domestic cofinancing for infrastructure.

9. **Social and environmental safeguards.** IFAD adopted the first environmental and social safeguards in 2009, but application has been less stringent than in other international financial institutions (IFIs). The SECAP were introduced in 2015 and, after their revision in 2017, thresholds for infrastructure risk categorization were included for the first time. The revised version also distinguishes between “do no harm” (risk assessments) and “do good” (mainstreaming of social, environmental and climate issues). After another revision in 2020, the SECAP moved from providing guidelines to serving as standards. They now require advanced screening of social, environmental and climate standards, and coverage of emerging and social risks and mainstreaming themes, and improve the balance between application of safeguards during project design and implementation. SECAP 2020 also integrate the procurement process, to mitigate risks and provide projects with the tools to effectively manage, monitor and enforce compliance of contractors with all social and environmental standards. The SECAP are seen as an excellent policy and basis for safeguarding IFAD infrastructure against climate change risks. How to apply SECAP for infrastructure has been spelled out in the “how-to-do climate-resilient rural infrastructure” toolkit.

10. **IFAD in-house capacity for technical support** of infrastructure planning, implementation and supervision is low. There is currently only a small unit of two technical staff members at IFAD headquarters (the “water and rural infrastructure desk”) that provide cross-cutting infrastructure support services and guidance. The
number of staff seems low, given the need to coordinate knowledge management and follow-up on the safeguards and design for infrastructure-heavy projects (category A projects).

11. **Corporate data systems.** Infrastructure investments were either not clearly defined or not categorized in IFAD systems. Many IFAD infrastructure subprojects are only designed and developed during implementation and are not properly recorded in corporate data systems. This makes monitoring and evaluation (M&E) and safeguards follow-up at corporate level difficult. Tracking of infrastructure is particularly hard for cofinanced projects as parallel implementation is not regularly updated in IFAD supervision and corporate systems throughout the project cycle. There is no information on whether infrastructure investments are mainly focused on rehabilitation or construction of new infrastructure. M&E of infrastructure mainly focuses on counting outputs, mostly on the hard infrastructure side, and mainly for corporate reporting purposes. There is little emphasis on monitoring the “soft” dimensions of infrastructure, which are harder to measure, such as ownership, capacities and governance. Much of the M&E is done in a piecemeal way, with little value added for managing infrastructure-heavy projects and does not inform Management on the value added and ultimate benefits of infrastructure and related investments.

**Performance and impact of infrastructure**

12. **Overall performance.** Analysis of sample projects found that infrastructure subprojects overall achieved the set output targets. However, technical quality was not high and arrangements for sustainability were often unsatisfactory. Drinking water infrastructure overachieved its targets on average and had high utilization, indicating that this type of infrastructure responded well to the needs of poor households and women. Irrigation infrastructure overall achieved its targets, but technical quality and sustainability were unsatisfactory in the majority of cases. Transport infrastructure on average did not achieve its output targets; technical quality and sustainability were mixed, but roads had high utilization and benefited the poor. Community-driven development projects had high levels of user participation and overachieved their targets. Production and market-oriented projects generally performed less well.

13. **Market-related infrastructure.** The most common and generally satisfactory market infrastructure was the construction of roads, bridges and other forms of transport to and from markets. These ubiquitous roads were often among the most appreciated and successful investments of IFAD projects. The construction of enhanced marketplaces, stalls, warehouses and other storage facilities assumed significant market infrastructure resources. The main problems in their design and planning were the limited know-how of executing agencies about markets, public-private partnerships and required investment costs and efforts; and lack of strategic attention to markets within broader project contexts. Difficulties in market infrastructure planning and capacity support were often underestimated. Support for expanded and new forms of product aggregation and processing, producers’ organizations and public-private partnerships was less frequent, and was seen mostly in projects and project components specialized in livestock, fisheries or horticulture. Expansions into markets sometimes emerged out of village users’ associations that tried to add value to their production activities.

14. **Energy infrastructure.** Energy has received less attention in IFAD, but the ESR shows that it has the potential to yield significant benefits. Energy infrastructure activities had positive impacts for women. Women were actively involved in the planning and construction of the biogas systems, and utilization of this technology was closely related to a reduction in women’s workloads. Performance of renewable and other energy sources varied. Those activities that were doing well usually were based on locally known technologies (hydroelectric or biogas) that were scaled up, occasionally with some technical and social improvements. Projects provided
mostly decentralized, small-scale and often household-based technologies. Other projects clearly suffered from poor analysis, planning and O&M, resulting also in low demand, particularly solar-panelled pumps and other installations.

15. **Water management and NRM.** Water infrastructure included domestic water supply, crop and horticulture production (including rainfed and irrigation), livestock drinking water and rangelands, fisheries and aquaculture, markets, and soil and water conservation. In most cases, there was no (evident) common framework for water resource planning and infrastructure provision and related services. Usually these initiatives were implemented separately. More integrated management of water resources would have addressed competing and peak demands, or hygiene questions around livestock water facilities also used by people. NRM projects showed some good results in increasing upland soil fertility and water efficiency and in reclaiming and stabilizing lands and forests, but they were often not linked with other water-related interventions, such as irrigation. A watershed-based approach worked only in a few countries (e.g. Rwanda). Integrated management of water and other resources can be complex since it involves different agencies with specific mandates and jurisdiction.

16. **Irrigation infrastructure.** Irrigation accounts for the lion’s share of IFAD’s infrastructure investments, amounting to US$1,417 million (IFAD5-11), including cofinancing. The experience has been rather mixed. IFAD’s investments mainly focused on the construction or rehabilitation of secondary and tertiary canals and capacity-building for water users’ associations (WUAs) and to a lesser extent also on the institutional strengthening of government irrigation managers for river offtake and main canals (e.g. Sudan). However, the institutional effectiveness of WUAs was often limited. Few resources were invested in WUA and communal management for rehabilitating small-scale irrigation infrastructure and ensuring economies of scale in these schemes (e.g. Niger). Other IFIs also learned that the classic small-scale irrigation schemes performed considerably below expectations. Studies have suggested paying more attention to technical, social and governance aspects, such as tertiary channel management. The widespread government disengagement from irrigation finance, decentralization and irrigation management transfers remains a challenge. WUAs and the private sector will need to better manage their new responsibilities and broader partnerships with government, and non-government stakeholders will also be required.

17. **Poverty impact.** Infrastructure linkages with poverty reduction are direct and indirect, and are mutually reinforcing. Studies of the Research and Impact Assessment Division found that focused projects with interlinked activities and objectives could generate larger impacts than projects that had a large number of unrelated and small interventions spread across project areas. The ESR case studies also found that infrastructure interventions had to be linked for poverty impact. Notably, projects that had linked agricultural productivity infrastructure, such as irrigation, livestock and fisheries infrastructure, with marketplaces or roads had a better poverty impact. Large and small-scale irrigation infrastructure can contribute significantly to food security when well managed and coupled with market access. However, irrigation projects carried a high risk of excluding people with less access to land. The combined effort of small-scale irrigation rehabilitation and interventions to increase soil productivity contributed to expanded cultivated land and productivity. Social infrastructure contributed to improved livelihoods through safe water supply and sanitation, community health centres, schools and libraries, and household biogas units, digesters and eco-stoves.

18. **Gender focus in sample projects.** Social (education and health), energy, livestock and fisheries infrastructure investments were the most successful in reaching women. Transport, market, post-harvest and value addition infrastructure were less supportive of women in the majority of cases reviewed. The case studies draw attention to special measures that were needed to facilitate women’s
representation in infrastructure projects. Projects focused on value chains and on specialized infrastructure tended to make few provisions for women and largely failed to engage them. The extent to which women were able to benefit from access to water, be it drinking water or for productive purposes, varies. The most obvious benefit, which is consistently noted in evaluations, is related to the time saved as a result of the closer proximity of water sources. The often insufficient quality of drinking water in community-operated facilities limits those benefits.

19. **User capacities and participation.** Community mobilization and participation in subproject identification and planning are a common feature in most IFAD-supported projects. The main purpose is to enhance local ownership of the infrastructure built. The strengthening of community-level organizations through a long-term empowering approach was often a key feature of community-driven development projects. The formation and strengthening of users’ groups was a common approach to involve users in the governance/O&M of infrastructure. In the successful cases, the users’ groups were able to prepare their organizational O&M and financial plans. However, capacity-building was often insufficient to ensure the sustainability of the infrastructure. Users’ groups were stronger in community-driven and community-based projects but often were not strong enough to perform their roles in production and market access projects.

20. **Government capacities.** Implementation capacity was frequently found to be insufficient. The complexities and novelties of infrastructure design and participatory processes with high capacity requirements reportedly slowed down start-up and delivery. Local capacity for construction contract work by service providers was often low, as was project management unit capacity to procure and supervise such work, which is often undertaken in distant target areas. Project management units frequently lacked the required expertise to oversee the infrastructure subprojects. Ongoing decentralization of infrastructure services affected performance in sectors such as irrigation and roads where staff and financial resources were scarce. The case studies highlighted IFAD’s limited engagement in broader institutional issues and policy frameworks related to infrastructure.

21. **Coordination in cofinanced projects.** Combining financing from different sources or complementary activities from parallel operations creates massive challenges in terms of synchronization and linkages. Reconciling different donor cycles, the alignment of timing of funding and delayed cofinancing were common problems. These were compounded by different policies, procurement processes and administrative rules for procurement and financial management that led to complexity and delays. Infrastructure subprojects were often not synchronized with the overall project cycle, and the various hard and soft infrastructure elements, and the complementary capacity-building or marketing activities were often weakly linked, diluting project results. Complex activities following different timelines were often not completed within a single project cycle, leading to unfinished structures, ineffective institutional arrangements and low sustainability. Joint supervision with other IFIs was difficult to organize and IFAD found it hard to follow up on priority issues and concerns. Last, different monitoring and reporting requirements may lead to difficulties in IFAD capturing project results.

**Governance and institutional arrangements**

22. **Infrastructure ownership and governance.** The institutional and ownership arrangements for infrastructure define levels of user participation and access, responsibilities for operations and maintenance, and ultimately the sustainability of the infrastructure built or rehabilitated. Centralized governance has been most common for irrigation and drainage infrastructure. Decentralized governance arrangements, where local government was the public entity owning and managing infrastructure, often together with users, were the most common model for transport, drinking water and sanitation infrastructure. However, the sustainability
depended on local governments’ ability to raise O&M funds. Governance was fully
decentralized in community-driven development, where communities on their own
were in charge of managing local wells, water tanks, small-scale irrigation or
feeder roads, and sometimes also social infrastructure. Because users were fully
responsible for financing O&M and replacements, sustainability was an issue for
public goods where insufficient fees were raised to cover the costs of O&M and
replacement parts. This problem was less obvious for revenue-generating
productive and market infrastructure.

23. In some cases, the private sector participated in governance, particularly in market
and value added infrastructure. Here, the presence of functioning farmers’
organizations, cooperatives and small and medium-sized enterprises was
important, and clear rules had to be in place to ensure that access remained
inclusive. Revenue from the use of infrastructure enhanced the prospects of
sustainability, but there were cases where user fees created barriers for the poor
and for women. Inter-community governance was advantageous for NRM, such as
watershed infrastructure, and for larger soil and water conservation schemes
where more than one community or group were involved. While these
arrangements were participatory, they also required awareness-raising, capacities
and knowledge to deal with the technical options and issues at stake; mediation of
diverging interests was often needed. This model worked well for the sustainability
of drinking water and sanitation and for sustainable land management.

24. Infrastructure governance in fragile situations. An extremely weak
institutional environment in countries with fragile situations creates difficulties for
the management of procurement processes that follow the normal procedures of
international development agencies. This has contributed to implementation delays
because of fiduciary risk aversion. Bypassing normal procurement and
management processes can fuel corruption – which may itself have been a driver
of conflict and undermined peacebuilding and state-building efforts. Equally,
bypassing government systems in order to reduce the risk of corruption can lead to
a lack of local ownership and hence affect sustainability and future maintenance
arrangements. Sustainability of all forms of infrastructure is clearly the weakest
link in countries with fragile situations where institutional and technical support,
beneficiary capacity and financial resources for keeping infrastructure operational
are in particularly short supply.

25. IFAD infrastructure investments were relevant and overall effective in
their contribution to poverty reduction. Overall, infrastructure subprojects
achieved the set targets but technical quality and arrangements for sustainability
were often unsatisfactory. Outcomes and impact were better when different
categories of infrastructure activities were combined and when they were matched
with adequate capacity-building and stakeholder engagement early on.
Infrastructure was more effective when designed at the right and manageable
scale, integrated with complementary activities, and carried out with broad
community participation. The provision of infrastructure has been demand-led but
requires more attention to institutional delivery, governance and ownership
arrangements for sustainability and impact.

26. Ownership and multi-stakeholder capacity-building were important
preconditions to ensure that infrastructure is well taken care of. User
participation has been critical for operation and sustainability but the engagement
of local administrations was important, too. There has not been enough dedicated
technical know-how, and sometimes insufficient priority, among IFAD’s traditional
government partners to support the ongoing transition from government-owned
(and -maintained) infrastructure to more inclusive and stakeholder-owned models.
Users’ groups – the trademark IFAD model – tended to be too weak to fulfil the
expected functions, and private sector participation in operation and maintenance
has been rare. Institutional governance and capacity-building of users’ associations and farmers’ groups at the community and local levels require longer-term engagement, incentives and clear transition and exit strategies. Last but not least, the transition from largely publicly provided storage to more market-oriented storage and processing facilities will require better engagement with private sector stakeholders.

27. **Water-related infrastructure has been an area of focus for IFAD; greater efforts are required to address efficiency and sustainability issues.** Drinking water has long been an essential part of IFAD-supported projects and it remains in high demand. The need for clean water remains a top priority of women and very poor people in most communities. Yet IFAD’s investments in drinking water have plunged to almost zero in recent replenishments. Provision of water for crops and livestock is in high demand too, but innovative and more sustainable types of productive water use and irrigation systems are required. There is much scope to improve the efficiency and sustainability of water-related interventions, including irrigation. Water management and irrigation would benefit from closer attention to NRM and climate risks (climate-smart design) within landscape and watershed approaches. Integrated and multiple water use approaches would improve water use efficiency and climate resilience, and enhance the sustainability of productive water use and irrigation systems.

28. **Innovations and climate-smart infrastructure are important forward-looking and innovative themes** to contribute to the “next generation infrastructure” and related technologies, also in view of contributing to SDG 9 on innovation and infrastructure. There is increasing demand for this type of infrastructure – such as higher-quality submersible, concrete-reinforced roads, a larger variety of technical irrigation models to enhance water use efficiency in climate crises, renewable energy and more applications of digital infrastructure solutions. Climate-smart infrastructure includes broader watershed and landscape planning and complementary climate-smart technologies, and works for positive NRM/CCA objectives and related externalities. Renewable energy infrastructure decentralized to communities or households, mainly executed as pilots, deserves more attention for its multiple social and economic benefits, particularly for women, and its importance for NRM and climate resilience.

29. **In countries with fragile situations, infrastructure solutions require particularly long-term perspectives** in working with target populations over time; testing and advancing institutional capacities and concepts; and building-up reliable partnerships. In such situations, cofinanciers, the identification of new development partners (particularly civil society organizations), advocacy for IFAD’s target groups and solutions are even more important as IFAD lacks the resources and traditional partners to address many infrastructure issues on its own. Policy dialogue with the government and other parties is often critical to facilitate enabling policies on ownership and land security; legal status and responsibilities of groups; institutionalizing government support services; and markets. In the end, sustainability of much of the rural infrastructure in fragile situations can only be achieved through increased government contributions, including those by local governments.

30. **IFAD has a positive track record and added value but it needs to step up its internal technical capacity and guidance** for the provision of infrastructure. IFAD is relatively experienced, mainly through tacit staff knowledge, in water and irrigation, roads/transport and social infrastructure. However, it lacks sufficient support for and attention to infrastructure in terms of specialized technical staff, safeguards, climate risk expertise and resources, and M&E capacity in design, implementation support and supervision. Hence, there is an urgency to reconcile IFAD’s strategic infrastructure approach with its infrastructure support capacity.
31. **Demand for infrastructure investments in partner countries is expected to increase, particularly in middle-income countries** where the decreasing availability of concessional loans and grants drives the demand for productive investments. Such demand has already become visible in some countries that have moved from low- to middle-income status, such as Uganda. There is less willingness to borrow at close-to-market rates for soft infrastructure investments unless these are closely linked with hard infrastructure. IFAD’s mandate and mixed performance in infrastructure suggest that some caution is needed in scaling up these investments. It will also require careful assessment of public and private partnerships and the associated costs and risks. Cofinancing partnerships were instrumental for IFAD to provide infrastructure at scale and to provide complementary hard and soft infrastructure parts. However, these partnerships often increased the transaction costs for both IFAD and its government partners.

32. **Above all, any IFAD niche in infrastructure and increased future borrowing for infrastructure need to stay closely linked to IFAD’s mandate** to facilitate better access and sustainability for IFAD’s core target groups and to minimize elite capture. This could include supporting small-scale irrigation schemes; tapping into larger infrastructure investments and schemes through cofinancing; enhancing access for the poor and for women; connecting to value chains; and effectively linking and phasing hard and soft infrastructure. IFAD’s comparative advantage clearly lies in the provision of small-scale, climate-smart and pro-poor infrastructure in line with its mandate, but this needs to be articulated more clearly at the strategic level. Meeting the demand of IFAD’s core target group also requires balancing the provision of productive and market infrastructure with infrastructure that caters for basic needs, such as drinking water.

33. **Recommendation 1. Prepare a corporate strategy to clarify IFAD’s approach to scaling up pro-poor infrastructure**, including partnerships and systems for tracking the effectiveness and impact of these investments. The strategy would define the kind of infrastructure that IFAD is best placed to support, that is scalable and that would enable IFAD to better achieve its corporate objectives. Rehabilitation of existing irrigation is a common activity in IFAD’s projects, but it is rarely sustainable. IFAD should decide the extent and conditions under which it will continue financing irrigation rehabilitation. The strategy would clarify options for resource acquisition and use, taking into consideration the time and transaction costs for partnership-building at the project level. Finally, the strategy will need to define a better approach to tracking the performance and results of infrastructure investments at the corporate level, including hard and soft infrastructure activities. The strategy should provide a common framework for IFAD; regional differentiations will be required to respond to the demand and capacity on the ground.

34. **Recommendation 2. Adopt a comprehensive approach to strengthening know-how and capacity for infrastructure support**, to cope with the increasing demand for rural infrastructure investments. IFAD infrastructure experts, capacity-building and knowledge management have to be strategically deployed at all levels to adequately support investments. Technical expertise (and staff) needs to be maintained at the headquarters level to oversee the preparation of knowledge products and guide the implementation of corporate policies and priorities at regional levels. IFAD should consider financing and facilitating the recruitment of qualified external assistance, when needed (such as through accredited consultants), and help its partners in countries to gradually build the relevant capacity. The growing demand for green infrastructure will require better alignment of corporate human and financial resources for CCA and SECAP.

35. **Recommendation 3. Strengthen attention to pro-poor infrastructure governance during design and implementation**; establish synergies with
complementary investments, reforms and policy initiatives for enhanced sustainability and impact. IFAD has corporate mechanisms to enhance the quality of infrastructure investments, but these have to be effectively used. Infrastructure requires proper institutional governance arrangements, enabling policy, legal and regulatory frameworks, and capacities to perform and deliver the expected benefits. Exit strategies deserve more attention from the outset. Community-based approaches and capacity-building for users’ groups need to be better linked with existing institutional and policy frameworks for sustainability. Potential conflicts and trade-offs in the provision of public infrastructure goods (land and equality issues) need to be addressed more systematically through safeguards (something to be followed up by the Quality Assurance Group). The inclusiveness of the approach and the sustained benefits for poor men and women need to be monitored and reported through supervision, as do SECAP requirements and management plans.
March 2021