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Infrastructure at IFAD (2001–2019) Evaluation Synthesis Report

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For: Review

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Executive summary

I. 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 a sample of 35 projects evaluated by IOE during the period. 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.

II. Findings

A. 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-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.

B. 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.

C. 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.

III. Conclusions

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.

IV. Recommendations

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.

Main Report

Infrastructure at IFAD (2001–2019)

Evaluation Synthesis Report

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¹ Appendices are case studies on the following countries: Bangladesh, Brazil, Burundi, Chad, China, Gambia, Georgia, Madagascar, Philippines, and Sri Lanka. They are available online at the following link: <https://bit.ly/3qrs7sm>

Abbreviations and acronyms

AMMAR	Agriculture Modernization, Market Access and Resilience Project (Georgia)
AD2M	Project d'appui au développement du Menabe et du Melaky [Development in the Menabe and Melaky Regions]
ADB	Asian Development Bank
AFD	Agence française de développement [French Development Agency]
AfDB	African Development Bank
APR	Asia and Pacific Division of IFAD
BOA	Bureau of Agriculture (China)
CCRIP	Coastal Climate Resilient Infrastructure Project
CDC	Community Development Committee (Burundi)
CDP	Community Development Plan
CIS	Community Irrigation System (Philippines)
CLE	corporate-level evaluation
CMPO	County Project Management Office (Philippines)
COSOP	Country Strategic Opportunities Paper
CPE	country programme evaluation
CSP	Commissions for the Surveillance of the Ponds (Chad)
CSPE	country strategy and programme evaluation
CWM	Committees for the Wells' Management (Chad)
DANIDA	Danish International Development Agency
DP	Development Partners
DTS	Decentralised Technical Services (Chad)
ECG	Evaluation Cooperation Group
ESA	East and Southern Africa Division of IFAD
ESIA	Environmental and social risk impact assessment
EU	European Union
FGD	Focus group discussion
GAC	Georgian Amelioration Company
GEF	Global Environmental Facility
GIADP	Guangxi Integrated Agricultural Development Project
GRIPS	Grants and Investment Projects System
IAR	Impact Assessment Report
IFAD	International Fund for Agricultural Development
IFI	International Financial Institution
IPDMIP	Integrated Participatory Development and Management of the Irrigation Sector Project (Indonesia)
IOE	Independent Office of Evaluation of IFAD
IS	Infrastructure
KfW	Kreditanstalt fuer Wiederaufbau [German credit institute for reconstruction]
LAC	Latin America and the Caribbean Division of IFAD
LCS	Labour Contracting Society
MTR	Midterm report
NEMA	National Agricultural Land and Water Management Development Project
NEN	Near East, North Africa and Europe Division of IFAD
NGO	Non-Governmental Organization

O&M	Operation and Management
OFID	OPEC Fund for International Development
PCR	Project Completion report
PDR	Project Development Report
PMU	Project Management Unit
PPA	Project performance assessment
PPE	Project Performance Evaluation
PPP	Public-private partnership
PROHYPA	Projet d'Hydraulique Pastorale en Zone Sahélienne (Pastoral Water Project in the Sahel Zone)
RIA	Research and Impact Assessment
RIDE	Report on IFAD's Development Effectiveness
RTT	Rural Roads, Travel and Transport
SECAP	Social, Environmental and Climate Assessment Procedures
SKD	Strategy and Knowledge Department of IFAD
UNDP	United Nations Development Programme
US\$	United States Dollar
WCA	West and Central Africa Division of IFAD
WFP	World Food Programme
WUA	Water Users' Association

Infrastructure at IFAD (2001–2019)

Evaluation Synthesis

I. Introduction

A. Background

1. The Independent Office of Evaluation (IOE) prepares evaluation synthesis reports with the aim to capture accumulated knowledge and experiences from IFAD and other IFIs for a theme selected through consultations with IFAD's evaluation committee and management. 'Infrastructure' was selected as a topic for the 2020 ESR because it reflects the mutual interest and engagement of these stakeholders. Furthermore, infrastructure constitutes a significant share of IFAD's investment (around 30 per cent), and there is a growing demand for IFAD's support in this area.
2. **The Sustainable Development Goals (SDGs)** include a specific goal related to infrastructure: SDG 9 "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation". But infrastructure also contributes – directly and indirectly - to the achievements of all SDGs.² Significant investments into infrastructure will be needed to achieve the SDGs. A 2019 World Bank report³ found that low- and middle-income countries (LMICs) would have to spend from \$637 billion (or 2 percent of their GDP) to \$2.74 trillion (8 percent of their GDP) in new SDG-related infrastructure depending on the spending efficiency and the quality of services delivered. In addition, LMICs would need to spend between 1.9 and 3.8 percent of GDP per year to maintain their existing and new infrastructure. Improving the efficiency of infrastructure investment is an important element that will facilitate meeting the SDGs, especially in low-income countries where resources are limited.⁴
3. In the context of the SDGs, "last mile" infrastructure and services, reaching out to the remotest places and those at risk of being left behind, has received particular attention.⁵ This is also the type of infrastructure traditionally supported by IFAD, in addition to community-based infrastructure (see below)

Box 1

Infrastructure definitions and terms

Infrastructure is broadly defined as the "provision of basic systems and services that a country or organization uses in order to work effectively" (Cambridge Dictionary).

Hard infrastructure refers to key physical networks for the functioning of advanced economies, particularly in energy, transport/logistics, water and communication.

In contrast, **soft infrastructure** refers to support systems that are more driven by institutions, services, regulations and public governance systems. The 'soft' infrastructure elements include all essential institutional and governance aspects required to make the hard infrastructure functional, effective and sustainable.

Last mile (or first mile from farmers' perspective) refers to the infrastructure by connecting poor and remote communities to larger networks (e.g. to telecommunications, roads, irrigation or electricity).

Community-based infrastructure refers to local infrastructure, often collectively planned, managed and owned (e.g. village water supplies, rural roads and tracks, village grain banks, roofed markets, meeting halls, schools, clinics, etc.). Community-based

² Infrastructure is required for SDG6 (clean water and sanitation), SDG7 (affordable and clean energy), SDG3 (health) and SDG4 (education). Infrastructure contributes to SDG1 (no poverty), SDG 2 (no hunger) and SDG 5 (gender equality), which are at the core of IFAD's mandate.

³ World Bank Group. 2019. Lifelines: The Resilient Infrastructure Opportunity.

⁴ The International Finance Corporation (IFC). 2019. Closing the SDG Financing Gap – Trends and Data.

⁵ See, for example: UNCDF. 2016. Getting to the last mile in the least development countries.

infrastructure requires up-front investments in building capacities for O&M, but the benefits include enhanced social capital and community organisations.

Green infrastructure refers to natural systems such as forests, floodplains, and soils that can contribute to clean, reliable water supply, protect against floods and drought or provide other ecological/ecosystem services.

Combining this “green infrastructure” with traditional “**gray infrastructure**,” such as dams, levees, reservoirs, treatment systems, and pipes, could provide next generation solutions that enhance infrastructure system performance, better protect communities and ensure resilience

Source: ESR compilation

4. **Infrastructure in IFAD.** While infrastructure has always been an important part of IFAD’s portfolio, its role has become even more significant in IFAD’s latest strategy. The IFAD strategic framework 2016-2025 sees ‘enormous potential’ in infrastructure investments. Investments into rural infrastructure are seen as key in supporting IFAD’s increasing focus on agricultural commercialisation and market access. Rural infrastructure is listed as a specific area of ‘thematic focus’ for SO2 (to increase poor rural people’s benefits from market participation) in the framework. However, infrastructure (indirectly) also contributes to the other strategic objectives. Social and productive infrastructure helps to increase poor rural people’s productive capacities (SO1). Investments into land and water conservation structures and climate-proof infrastructure help to strengthen the environmental sustainability and climate resilience of poor rural people’s economic activities (SO3). Basic infrastructure definitions, terms and sector categories as used at IFAD and in this ESR are summarized in Box 1.
5. Investments into infrastructure constitute a significant share in IFAD’s portfolio. Between 2001 and 2019 about 30 percent of all approved IFAD funding went towards the construction of new or rehabilitation of existing infrastructure, primarily into irrigation, drainage and water management, roads and other transport infrastructure, and post-harvest and market facilities (see Chapter II.B). In addition, IFAD has invested into institutional development and capacity building to ensure that smallholders are able to manage and maintain the infrastructure built, for example through the support of water user associations. In many cases these investments have been possible because of the cofinancing partnerships with other international development partners.

Box 2

IFAD Infrastructure categories⁶

Production infrastructure includes irrigation and drainage; livestock shelters, water points and fishery ponds; post-harvest storage; and other production related infrastructure (such as water harvesting).

Access to market infrastructure covers marketplaces and market storage; processing facilities and value addition infrastructure; and access roads and transport services.

Social infrastructure mainly refers to investments in health, drinking water, sanitation, education and energy.

Natural Resource Management and Climate Change Adaptation infrastructure covers soil and water management structures and climate-smart infrastructure investments.

Source: see Annex IV (footnote below).

B. Lessons from international development partners

6. The levels of engagement in agriculture and rural development and the types of infrastructure provided by other development partners, particularly IFIs, differ significantly from IFAD’s support. They are commonly larger-scale, more sector-

⁶ See Annex IV for details on infrastructure categories and definitions.

wide and less community and target-group oriented. Yet there are a number of similar experiences and lessons that provide important context for IFAD and this ESR.

7. **IFI engagement in agriculture.** With the increasing importance of other sectors over time, agriculture has fallen a bit by the wayside in other IFIs even though several re-engaged in the sector after the food price crisis of 2007/08. But staffing, skills and resources were hardly sufficient (ADB 2018 and IDB 2015) and resulted in relatively low, scattered and often non-satisfactory agriculture infrastructure investments. IDB limited its agriculture infrastructure to some public and private sector support for warehouses and processing plants and to irrigation in poorer countries, such as Haiti (IDB 2015). The African Development Bank (AfDB) saw its largest decline of investments in agriculture (AfDB 2016 CEDR), with most infrastructure now going to transport, energy and water and sanitation.
8. **Stronger complementarities.** For ADB (2018) a sector as complex as agriculture, rural development and natural resources warranted a more holistic approach, to be supported by greater resources and staff skills that could contribute more fully to the complete agriculture value chain. This also meant expanded collaboration and partnerships with recognized centers of excellence to complement current staff resources and supplement skills shortages, and with organizations as IFAD and FAO. A recent report on Future of Food at the World Bank (World Bank 2018) emphasized complementary investments into people, institutions and research, including engagement across multiple ministries and agencies, covering water, energy and other infrastructure sectors.
9. **Consistent application of safeguards.** Recent ADB (2020), AfDB (2019) and IDB (2018) evaluations of safeguards all reported problems for safeguards at design and during implementation, with environmental and social risk and impact assessments (ESIA) and ESIA management not being well integrated into overall design and project management, incomplete assessments, and failure to consult with affected communities. Follow-up of safeguards during project implementation was found to be particularly lacking. Most safeguards systems have been heavily front-loaded, with lots of effort and resources spent before Board approval, and little staff and time to ensure supervision support with required skills. Safeguards issues can be adequately addressed during project implementation, even if not all ESIA analyses and related consultations were completed to required standards before loan approval— if a clear framework and timetable are established to guide remaining work, sufficient project funds are set aside to handle safeguards issues and there is close follow-up by the Bank during implementation. (IDB 2018).
10. **Stronger capacities for water management.** For ADB the poor performance of its large irrigation subsector with a 47 per cent successful rate is a concern (ADB 2018). A recent independent evaluation by the World Bank (World Bank 2019) on service delivery in the irrigation sector showed weak results as investments continued to focus too much on hard infrastructure and problems continued with sustainability despite years of efforts to transfer management responsibility from public to private organizations. The inadequate capacity of water user associations, in terms of adequately managing water resources and claiming ownership, was emphasized by AfDB (2020). Reasons included the low financial base, poor organization and management of service charges and revolving loans, and take-over by individuals or groups of individuals of critical water supply and subsequent destabilization of systems. Technically, low performance and outcomes were mainly caused by insufficient development of tertiary canals, incomplete land development for irrigation, quality of preparatory studies and design, and lack of complementary production inputs.
11. **More attention to strategic market issues.** For market infrastructure, insufficient ownership, poor planning and limited functionality often led to low

support by local producers and private sector actors. Facilities ended up being underutilized, with no clear sustainability mechanism in place (AfDB 2019). ADB (2013) emphasized that infrastructure would have to be very specific to the value chain needs and that the placement of markets and storage facilities was critical for value chain development. Rural roads could be helpful for competitive value chains if attention is paid to linking high-value crop production areas to strategic commercial markets of both outputs and inputs.

12. **Better sustainability.** Financial and economic viability was the main factor limiting infrastructure sustainability at the AfDB (2016). Sustainability was also the lowest rated criterion of agriculture projects in the Asian Development Bank (ADB 2018). The World Bank irrigation service delivery evaluation (World Bank 2019) was very critical of the adequacy of policy reforms in many countries to promote financial sustainability of irrigation schemes and to ensure adequate operations and maintenance (O&M) and a service delivery perspective. Neglect of system O&M for public irrigation schemes has led to what is appropriately described by the practice as “design, neglect, and rebuild”. Some international development agencies introduced more or less detailed concepts and check-lists for better sustainability of infrastructure, such as IDB⁷.
13. **Stronger M&E.** The importance of quality and functional monitoring and evaluation systems to support project development effectiveness and capture lessons for replication and scaling-up of innovative solutions was reiterated and prioritized as one of five key lessons in the AfDB cluster evaluation of water management. (AfDB 2020).
14. **Performance and impacts.** Poorly executed infrastructure projects will not achieve the intended poverty reduction results, a point made by a report by the United Nations Development Programme (UNDP) that is still valid 15 years afterwards: *“The links between infrastructure, growth and poverty reduction are not automatic and numerous infrastructure projects have been affected by poor rationale, lack of proper feasibility studies or cost-benefit analysis and inadequate provision for operations and maintenance. Infrastructure benefits have often not been translated into improvements in the lives of poor people - partly because of design problems, partly because of the non-participation of poor people in formulation and implementation, partly because of adverse social and environmental impacts and largely because the initiatives were not local and community-based.”*⁸
15. **Lessons presented in the ESR.** The ESR will refer to these and other lessons and findings throughout the report. The findings from other IFI evaluations are more comprehensively presented in Annex X.

C. Objectives and scope

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

⁷ IDB 2018 Guide to sustainable infrastructure.

⁸ UNDP 2005. “Making Infrastructure Work for the Poor”.

(v) To identify good practices and lessons learned.

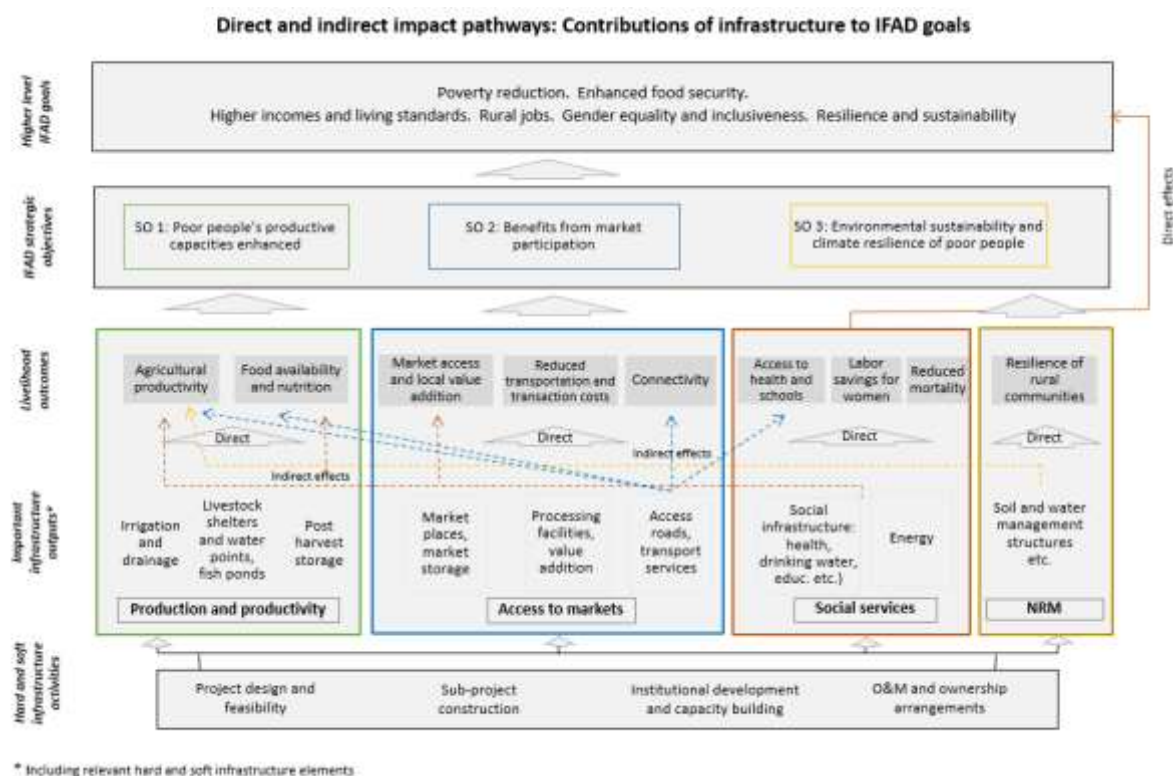
17. **Scope.** The synthesis covers the period since 2001 (IFAD 5-11), which coincides with the broader shift from community-based to value chain approaches.⁹ The review covers all categories of IFAD infrastructure investments, including production, markets, NRM and social infrastructure. In addition to the overall review of infrastructure performance in IFAD (Chapter III - V), the synthesis 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, NRM and climate change adaptation, and infrastructure in states with fragile situations (Chapter VI).

D. Analytical Framework

18. **Theory of change.** The theory of change developed for this synthesis is shown below. It illustrates two main assumptions for impact that have informed the analysis in this report: First, infrastructure directly and indirectly contributes to poverty reduction and other IFAD goals. Second, (hard) infrastructure needs to be complemented by institutional development and capacity building in order to achieve the desired poverty impact.
19. The theory of change (see Fig. 1 below) links infrastructure outputs and outcomes to IFAD's strategic objectives and higher-level goals. It can be summarised as follows: Well-implemented infrastructure sub-projects result in effective physical structures and permanent installations alongside functioning management and institutional arrangements (outputs); the improved access to markets and/or to health and social welfare leads to improved livelihoods, thus contributing to IFAD's strategic objectives. The impact that these structures have on IFAD's target groups, women and men, would vary.

Figure 1

Theory of change for IFAD infrastructure impact (as developed by this ESR)



⁹ The ESR on CDD (2019) has extensively covered the previous period, where infrastructure was mainly provided through community-based approaches.

Source: ESR.

E. Methodology

20. The main review questions are:
- (i) How well is IFAD set up (strategically, institutionally and capacity-wise) to address the demand for infrastructure by providing (or leveraging) the financial and technical support required to properly plan, manage and supervise projects with significant infrastructure investments?
 - (ii) How does infrastructure, within project-level theories-of-change, contribute to higher-level outcomes and impacts, such as poverty reduction and inclusive development? How can impact be most effectively, efficiently and sustainably achieved through special attention to smallholder commercialisation, markets and value chains in infrastructure design and operations?
 - (iii) What is required, in terms of funding, capacity building and institutional arrangements, to make IFAD-funded infrastructure effective and sustainable for rural poor people in the longer term?
21. The detailed review questions are included in the review framework in Annex I.
- Review sample**
22. The synthesis drew its evaluative evidence from the following samples:
- (i) A sample of 35 projects evaluated by IOE was used to review the portfolio performance of infrastructure interventions. During IFAD 5-11 the IFAD portfolio included 379 projects with at least one infrastructure sub-component, out of which 166 had been evaluated by IOE at the time of this synthesis.
 - (ii) In addition, 10 projects were selected as case studies, which included ongoing and completed projects with significant infrastructure components. These projects were identified in consultation with the regional divisions.
 - (iii) In order to cover the strategic and partnership issues at country level, the ESR also identified the ten country portfolios with the highest investments in infrastructure.
23. **Project sample for performance review.** The project sample selection focussed on projects that had a significant share of their budget allocated to infrastructure (30 per cent). The final sample included 35 projects that had been evaluated by a project or country evaluation.¹⁰ Table 1 shows the sample composition across regions; it also indicates the sample projects in states with fragile situations.

Table 1

Sample of projects covered through IOE evaluations, by region¹¹

Type of evaluation	APR	ESA	LAC	NEN	WCA	Total	Covering states with fragile situations
Project Evaluations ¹² ,	5	5		7	4	23	2
Country Evaluations (CPE/CSPE)	9	1		2	2	15	0
Total	14	6	0	9	6	35	2

¹⁰ The sampling methodology is described in the approach paper for this synthesis.

¹¹ IFAD regional departments: Asia and Pacific Division (APR); East and Southern Africa Division (ESA); Latin America and the Caribbean Division (LAC); Near East, North Africa and Europe Division (NEN); West and Central Africa Division (WCA)

¹² Includes Impact evaluations (IE), Project Evaluations (PE) Project Performance Evaluation (PPE).Project performance assessment (PPA)

Source: ESR.

24. **Case studies.** Case studies for in-depth review of selected issues were selected in consultation with the regional divisions.¹³ The case study selection considered projects in countries with fragile situations as well as various types of infrastructure and regional distribution. The case study exercise included in-depth documents review (evaluation reports, studies, Project Completion reports [PCRs]) complemented by interviews with resource persons (CPMs etc.) where further information was required. The case studies covered contextual and strategic aspects, such as infrastructure intervention strategy, implementation arrangements, ownership, operation and maintenance (O&M) models, infrastructure performance and results, as well as sustainability and scaling up.
25. **CSPE sample.** A sample of CSPEs of the “top ten countries” of infrastructure investments (see Table 2 below) provided additional information on IFAD’s strategic approach in these countries, in particular the rationale for the strategic focus on infrastructure, the contextual factors and the main partnerships (with government and international partners) driving this focus.

Table 2

“TOP TEN Countries” for IFAD’s investments in infrastructure (2001-2019)

<i>Country</i>	<i>Amount of Infrastructure Investment (US\$ million)</i>	<i>% of Total Portfolio Investment</i>
Indonesia	620.2	9.0
Bangladesh	488.8	7.1
Uganda	318.8	4.6
Nigeria	263.8	3.8
Egypt	207.9	3.0
China	189.0	2.7
Niger	181.2	2.6
Afghanistan	175.0	2.5
Cambodia	172.7	2.5
Congo, The Democratic Republic	160.1	2.3

Source: ESR.

Additional sources of evidence

26. **Interviews and focus group discussions.** Interviews and focus groups with (former) CPMs and technical advisors/consultants provided additional insights into the factors contributing to success or failure. The discussions informed the elaboration of the theory of change. The process for this synthesis included six focus group discussions on selected topics, which included two stakeholder discussions in countries where IFAD has sizeable infrastructure investments (Nigeria and Indonesia). The Focus group discussion (FGD) provided feedback on selected issues of strategic importance, such as IFAD’s comparative advantage, safeguards and partnerships. There was also a joint IOE/RIA FGD to explore the impact of infrastructure supported by IFAD.

¹³ The IOE team working on the ESR had first requested the regional divisions and the infrastructure technical specialists to propose closed or ongoing projects as case studies. Once this information was received, the nominated (25) projects were screened for their potential to yield informative case studies for the ESR. projects were prioritised for which evidence of results was available (e.g. evaluations, PCRs, MTR reports, RIA impact assessments). The final list of 10 case studies appears Annex II.

27. **E-survey.** The synthesis review also comprised an e-survey, which was implemented from 18 May to 1 June 2020 using the online platform SurveyMonkey. Some 300 persons¹⁴ responded to questions and assigned ratings regarding IFAD's support for rural infrastructure, including IFAD's comparative advantage for infrastructure investments, cofinancing partnerships, common issues and sustainability, and climate, pro-poor and gender impacts. Around 40 per cent of respondents were consultants, 23 per cent IFAD staff, 18 per cent government officers, 11 per cent staff of NGO partners and nine per cent international development partners. The outputs of the survey were used as inputs for the FGDs and stimulate discussions around the various topics of interest. The survey provided ample space for qualitative feedback, which is presented in various parts of this report. The key results are provided in Annex III.
28. **Evidence from other development agencies.** The synthesis reviewed key lessons from other IFIs and development partners (DPs). These were approached – and presented – in a selective manner, focussing on key lessons that relate to the findings and observations emerging from the synthesis. Chapter VII presents the lessons from IFIs according to the themes reviewed in the different chapter of this report. Among IFIs' independent evaluation departments, most synthesis reports or thematic/meso-level evaluation of immediate interest for this ESR can be found in regional IFIs (see Annex X). The World Bank Group's IEG has done some limited synthesis evaluations over the past decade (for agriculture mainly on irrigation services, and some broader infrastructure evaluation in other sectors) and planned an evaluation on 'Agricultural Transformation' for 2020. In addition, useful information for this ESR was found in reports by UNDP, the CGIAR system and FAO.

Method for sample analysis

29. The sample of 35 projects was carefully and systematically reviewed in line with relevant lead questions in the evaluation matrix (see Annex 1). The analysis defined a number of structural, explanatory and performance indicators, with a focus on results indicators. Detailed scoring criteria and prompting questions were developed for each of the performance indicators. For each of the 35 projects, the analysis identified all infrastructure activities and their shares in total costs by macro-category (the major four infrastructure sectors) and sub-categories, based on information in the evaluations, and compared them with the summary statistics in the ORMS.
30. The relevant information obtained from PPEs and CSPEs was coded and entered into a portfolio review matrix, for each infrastructure activity (by sub-category as far as possible). Performance was scored for each activity, or for groups of activities, depending on available information. Detailed background information and justifications were recorded for the scoring of infrastructure activities, for each project. Information was analyzed both at activity and project level, across projects. For some variables, activity level information was aggregated to project level to facilitate analysis, weighted according to its share in total project infrastructure costs. Summary statistics were produced mostly as frequencies and averages, with particular attention being paid to outliers in performance, both on the positive and the negative end.

Limitations

31. The synthesis specifically focuses on the complementarity between hard and soft infrastructure, the institutional arrangements required to make infrastructure perform and achieve infrastructure impact. The extent to which these are described in IOE evaluations varies. Therefore, additional information had to be collected

¹⁴ From among 1,664 external addressees to whom the request for survey participation had been sent in addition to all IFAD employees of its Programme Management Department (PMD), Strategy and Knowledge Department (SKD) and all country offices via the respective unit email lists; furthermore, the link to the survey was also posted on IFAD's intranet.

through case studies, drawing from interviews and project documents. Other sources of information that complemented the IOE evaluations were in particular the RIA impact assessments and the PCRs or Midterm reports (MTRs).

32. Small infrastructure interventions are a common feature in IFAD's infrastructure portfolio, but they are often "hidden" within the subcomponent classification and therefore difficult to identify. The case studies proposed by the divisions are therefore a useful way to identify small, but significant infrastructure interventions that might provide important lessons for this synthesis (e.g. Chad, Brazil).
33. The review of evaluations and studies conducted by other IFIs yields some important insights and lessons. A major limitation is that the types of infrastructure provided by other IFIs are different. Findings were therefore extracted in a selective manner and as deemed relevant for the typical IFAD-supported interventions.
34. The synthesis therefore made extensive use of virtual focus groups and online surveys for stakeholder feedback and engagement. These formats have enabled broad-based feedback from IFAD staff and other stakeholders, including those based in partner countries (see Annexes III and IX).

F. Overview of sample projects

35. **Project types.** The ESR has sampled 35 projects that included more than 30 percent of project funds committed to infrastructure. Seven projects were classified as "small" (less than US\$20 million). Three projects were classified as "very large" (more than US\$65 million).
36. The review sample includes seven CDD projects,¹⁵ ten community-based projects, and 12 projects with a focus on production and markets. In addition, five projects were classified as infrastructure heavy because of their exceptionally high share of infrastructure (> 70 per cent) (see Table 1 on project types in Annex IV).
 - (iv) **CDD projects** usually were fully under the control of communities. The projects typically included a community-development fund, which finances a range of activities, including infrastructure, as prioritized by the communities.¹⁶
 - (v) **Community-based projects** also had a strong focus on community development (e.g. a dedicated component on community development), but Project offices (e.g. based in local government) were usually more involved in the planning and management of the infrastructure.
 - (vi) **Production and market focused projects** focussed on a more narrow set of – production and market oriented - infrastructure activities. They usually targeted farmers groups and other stakeholders involved with certain types of land use or commodities.
 - (vii) **Heavy infrastructure projects** were identified because of the high share of infrastructure (70 per cent) included in the budget. They may overlap with the above types, but are characterized by their almost exclusive focus on infrastructure.
37. **Infrastructure activities.** The review covered a broad range of infrastructure activities. Transport provides the largest share of infrastructure activities in the project sample (29 per cent of activities), followed by drinking water and sanitation (20 percent) and irrigation (19 per cent). CDD and community-based project included the largest range of infrastructure activities, including social and

¹⁵ Within the sample of this ESR, seven projects were identified as CDD: #16 Pakistan; #13 Mauritania; #24 Cambodia; #35 Vietnam; #17 Rwanda; #15 Nigeria; #27 Nepal. In addition #43 Brazil was a classical CDD project covered through a case study.

¹⁶ This ESR follows the definition used by the ESR CDD (2019). This defines CDD as those projects which had a community development fund (CDF), managed by communities.

productive infrastructure. Almost all CDD project include drinking water, irrigation and roads. Energy was also more frequently found in CDD and community-based projects than in other project types. In production and market focussed projects transport and irrigation were most common. Other common activities included markets, livestock/fishery and post-harvest infrastructure. This project type does not include social infrastructure (except drinking water). Infrastructure-heavy projects included a mix of economic and social infrastructure (but no health infrastructure; see Annex IV, Table 2 on presence of infrastructure activities in project types).

38. **Project financing.** The average project size ranges between US\$29 million and US\$44 million. CDD projects are the largest on average and include a larger share of domestic cofinancing (on average 37 per cent). The projects classified as infrastructure heavy (>70 per cent infrastructure) have a similar size, but a slightly lower share of domestic cofinancing. The average share of international cofinancing is between 22 per cent and 24 per cent, except for the CDD projects, for which it is only 7 per cent (see Table 3 below).

Table 3

Total project costs and percentage IFAD, domestic and international cofinancing

	<i>CDD</i>	<i>Community-based</i>	<i>Production & Markets</i>	<i>IS-heavy</i>
Total project cost (as average; in US\$ million)	44.58	33.96	29.89	43.55
IFAD financing (as average; in %)	56%	48%	56%	45%
Domestic cofinancing (as average; in %)	37%	29%	22%	32%
International cofinancing (as average; in %)	7%	24%	22%	24%

Source: Grants and Investment Projects System (GRIPS).

39. **Case studies.** The 10 case study projects were selected, with the coverage of the main typologies of infrastructure being the main selection criterion. Only two of the 10 projects are ongoing (#44 Georgia, #46 Gambia). Three of the countries are in the "fragile" category: Burundi, Gambia and Chad. During the analysis it became clear that the sample does not have projects where private sector plays an important role in financing and/or O&M of infrastructure. All the 10 projects are Category B in terms of environmental risks. A number of projects had Basic Social Services IS, often supporting safe drinking water and sanitation. Only one project with pastoral hydro-structures (#45 Chad).
40. **List of projects.** The following table 4 (below) lists the projects sampled for qualitative review or case studies. The reference number (#) is used throughout the report to refer to the projects. A table with basic data for each project is included in Annex II.

Table 4

List of projects sampled for qualitative review (QR) and case study (CS), by region (with reference numbers)

<i>IFAD Region</i>	<i>Country</i>	<i>Project Name</i>	<i>QR/CS</i>	<i>Ref.No.</i>
APR	Bangladesh	Coastal Climate Resilient Infrastructure Project (CCRIP)	CS	#40
APR	Bhutan	Agriculture, Marketing and Enterprise Promotion Programme (AMEPP)	QR	#3
APR	Cambodia	Rural Poverty Reduction Project (Prey Veng and Svay Rieng) (RPRP)	QR	#24
APR	China	Sichuan Post-Earthquake Agriculture Rehabilitation Project (SPEARP)	QR	#26
APR	China	Guangxi Integrated Agricultural Development Project (GIADP)	CS	#41
APR	Laos	Oudomxai Community Initiatives Support Project (OCISP)	QR	#9
APR	Laos	Rural Livelihoods Improvement Programme in Attapeu and Sayaboury (RLIP)	QR	#10

IFAD Region	Country	Project Name	QR/ CS	Ref.No.
APR	Madagascar	Project to Support Development in the Menabe and Melaky Regions (AD2M)	CS	#47
APR	Nepal	Western Uplands Poverty Alleviation Project (WUPAP)	QR	#27
APR	Pakistan	Community Development Programme (CDP)	QR	#16
APR	Pakistan	North West Frontier Province Barani Area Development Project (NWFP BAPD)	QR	#28
APR	Philippines	Irrigated Rice Production Enhancement Project 2009-2015 of the Rapid Food Production Enhancement Programme 2009-2016 (RaFPEP)	CS	#49
APR	Sri Lanka	Dry Zone Livelihood Support and Partnership Programme (DZ-LiSPP)	QR	#30
APR	Sri Lanka	Post-Tsunami Livelihoods Support and Partnership Programme (PT-LiSPP)	QR	#31
APR	Sri Lanka	Iranamadu Irrigation Development Project (IIDP)	QR	#32
APR	Sri Lanka	Iranamadu Irrigation Rehabilitation Project (IIDP)	CS	#48
APR	Vietnam	Rural Income Diversification Project in Tuyen Quang Province (RIDP)	QR	#35
ESA	Kenya	Smallholder Horticulture Marketing Programme (SHoMaP)	QR	#8
ESA	Burundi	Rural Recovery and Development Programme (PRDMR)	CS	#42
ESA	Madagascar	Project to Support Development in the Menabe and Melaky Regions (AD2M) ¹	QR	#11
ESA	Malawi	Rural livelihoods economic enhancement programme (RLEEP)	QR	#38
ESA	Mozambique	Sofala Bank Artisanal Fisheries Project (SBAFP)	QR	#36
ESA	Rwanda	Kirehe Community-based Watershed Management Project (KWAMP)	QR	#17
ESA	Rwanda	Umutara Community Resource and Infrastructure Development Project (PDRCIU)	QR	#29
ESA	Tanzania	Agricultural Marketing Systems Development Programme (AMSDP)	QR	#19
LAC	Brazil	Rural Communities Development Project in the Poorest Areas of the State of Bahia (Gente de Valor)	CS	#43
NEN	Armenia	Rural Areas Economic Development Programme (RAEDP)	QR	#1
NEN	Azerbaijan	North East Rural Development Project (NDP)	QR	#2
NEN	Georgia	Agricultural Support Project (ASP)	QR	#7
NEN	Georgia	Agriculture Modernization, Market Access and Resilience Project (AMMAR)	CS	#44
NEN	Morocco	Rural Development Project in the Eastern Middle Atlas Mountains (PDRMO)	QR	#14
NEN	Sudan	Gash Sustainable Livelihoods Regeneration Project (GSLRP)	QR	#18
NEN	Tunisia	Programme for Agro-pastoral Development and Promotion of Local Initiatives in the South-East (PRODESUD)	QR	#33
NEN	Tunisia	Integrated Agricultural Development Project in the Governorate of Siliana-Phase II (PDAI Siliana II)	QR	#34
NEN	Turkey	Sivas – Erzincan Development Project (SEDP)	QR	#20
NEN	Turkey	Ardahan-Kars-Artvin Development Project (AKADP)	QR	#37
WCA	Burkina Faso	Sustainable Rural Development Programme (PDRD)	QR	#22
WCA	Burkina Faso	Small-scale Irrigation and Water Management Project (PIGEPE)	QR	#23
WCA	Cameroon	Community Development Support Project (PADC)	QR	#25
WCA	Chad	Projet d'Hydraulique Pastorale en Zone Sahélienne (Pastoral Water Project in the Sahel Zone) (PROHYPA)	CS	#45
WCA	DR Congo	Agricultural rehabilitation programme in orientale province (PRAPO)	QR	#6

IFAD Region	Country	Project Name	QR/ CS	Ref.No.
WCA	Gambia	National Agricultural Land and Water Management Development Project (Nema)	CS	#46
WCA	Mauritania	Poverty Reduction Project in Aftout South and Karakoro (PASK)	QR	#12
WCA	Mauritania	Oasis Sustainable Development Programme (PDDO)	QR	#13
WCA	Nigeria	Community-based Agricultural and Rural Development Programme (CBARDP)	QR	#15

Source: ESR.

G. Structure of this report

41. Findings from this synthesis are presented in five chapters. Their sequence follows the different levels of the ToC, from the bottom upwards (Chapters II-V). The final Chapter VI before the conclusions and recommendations presenting important issues that cut across those levels. At the end of each chapter, there are lessons or conclusions emerging from the particular chapter as well as the key points summarizing the more important findings.
- (viii) Chapter II presents the findings on corporate-level issues, which are related to IFAD's strategic approach to infrastructure, the infrastructure portfolio and the corporate capacity, knowledge and M&E systems in relation to infrastructure. Chapter II concludes with an overview of the key factors driving investments into infrastructure at IFAD and the emerging demand for infrastructure focus in line with IFAD's mandate and comparative advantage.
 - (ix) Chapter III discusses the performance of (hard and soft) infrastructure found in the project sample, using standard evaluation criteria (effectiveness, efficiency, targeting and gender, O&M and sustainability). The chapter specifically looks at user participation and ownership, and how stakeholder roles perform in different institutional arrangements.
 - (x) Chapter IV further discusses the performance of government partners and international cofinancing partners. It highlights some of the institutional challenges and bottlenecks that need to be addressed in order to improve the performance.
 - (xi) Chapter V presents findings from RIA and the ESR case studies on rural poverty impact and gender equality. It emphasizes the interconnectedness of infrastructure interventions and complementary (soft) activities, such as training and capacity building, for more sustainable and transformative impact.
 - (xii) Chapter VI discusses the main themes that are of strategic concerns for IFAD and were also highlighted as priority interests during the ESR FGDs and interviews. These are infrastructure for smallholder market access and value chains; infrastructure for NRM and climate change adaptation; and infrastructure in countries with fragile situations.
 - (xiii) The report closes with the conclusions and recommendations (Chapter VII).

Key points (Chapter I)

- The **main review questions** are:
- *How well is IFAD set up (strategically, institutionally and capacity-wise) to address the demand for infrastructure by providing (or leveraging) the financial and technical support required to properly plan, manage and supervise projects with significant infrastructure investments?*
- *How does infrastructure, within project-level theories-of-change, contribute to higher-level outcomes and impacts, such as poverty reduction and inclusive development? How can impact be most effectively, efficiently and sustainably achieved through special attention to smallholder commercialisation, markets and value chains in infrastructure design and operations?*
- *What is required, in terms of funding, capacity building and institutional arrangements, to make IFAD-funded infrastructure effective and sustainable for rural poor people in the longer term?*
- The synthesis covers the period since 2001 (IFAD 5-11), which coincides with the broader shift from community-based to value chain approaches.
- The synthesis draws evidence from a sample of 35 projects (with more than 30 per cent of the budget allocated infrastructure) and 10 case studies. Several of the case studies had used evidence collected through RIA impact assessments. Two case studies covered ongoing projects.
- Additional evidence comes from 10 CSPEs for the countries where IFAD had most of its infrastructure investments over the review period.
- The synthesis includes stakeholder feedback obtained through interviews, focus group discussions and an e-survey.

II. Findings on corporate-level strategies and capacities

A. IFAD strategic approach and positioning

Strategic approach

42. Infrastructure is omnipresent in IFAD's strategies and operations, although - as a distinct investment instrument - it has received relatively little attention. For example, IFAD does not have an infrastructure policy or a dedicated infrastructure strategy other than the SECAP Safeguards. IFAD also does not have sector-specific policies or strategies, for example on water¹⁷. However, infrastructure is referred to as a key ingredient to achieve IFAD's strategic objectives.
43. The **IFAD strategic framework 2016-2025** suggests to direct priorities to 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 to infrastructure support for the rural financial sector. This underlines the increasing importance IFAD pays to infrastructure as a way to achieve better market access, beyond other objectives.
44. **Earlier strategic frameworks were less explicit about infrastructure.** The main themes of IFAD's strategic framework 2011-15 are value chains, resilience and private sector, but it has no direct reference to the topic of infrastructure. The 2007-10 strategic framework had a strong focus on community-driven development (CDD). It specifically mentions social infrastructure which should be supplied, but only in response to community demands. There are also some relatively unspecific references to 'financial infrastructure' and 'infrastructure for market access.' The 2002-06 strategic framework is mainly concerned with achieving the Millennium Development Goals, among others through the provision of basic rural infrastructure and partnerships, but again referred to rather generally.
45. **Unclear strategic positioning in infrastructure collaboration and cofinancing.** The IFAD strategic framework 2016-25 acknowledges the need to collaborate with others in large-scale rural infrastructure to achieve IFAD objectives and to combine public and private financing: "*IFAD will partner with the public sector and other donors who will provide the bulk of investment, with IFAD focusing on complementary projects to ensure that smallholder farmers and other poor rural people are able to take advantage of the opportunities presented by these investments.*" Yet, while acknowledging the comparative advantage of others IFAD does not have a comprehensive approach to these mostly sector- or infrastructure-type specific partnerships at corporate level; they are approached and realised on a project-by-project basis.¹⁸ (see Chapter IV on cofinance below).
46. **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 user associations and farmer groups in client countries leads to direct demand by governments and beneficiaries for IFAD infrastructure investments, particularly when cofinanciers are not available (see Figure 2 in Annex III on e-survey).

¹⁷ See ESR on Water Conservation and Management (2014)

¹⁸ See IFAD Partnership Framework (2019.).

Box 3

E-survey responses on IFAD's comparative advantage

Respondents of the ESR e-survey gave high marks for IFAD's community-based and small-scale infrastructure, somewhat lower ones for last-mile infrastructure (see Figure 3 in Annex III). According to the e-survey IFAD has carved out a clear niche for water for agriculture infrastructure investments as compared to roads and market access whose performance is seen less favourably. NRM and social infrastructure also have weaker scores.

In most areas, **e-survey respondents from governments, IFAD staff and consultants** see IFAD's niche and comparative advantage relatively similar. Some differences were found in the importance of NRM infrastructure which was scored higher by IFAD staff than by Government officials (see Figures 5.a and 5.b in Annex III). Government has also high 'don't know' responses for NRM (>30%). Secondly, and interestingly, last-mile infrastructure receives fewer strong scores from Government and consultants (35-40%) than from IFAD staff (67%). This could be related to the unfamiliarity with the term 'last-mile infrastructure' among these groups.

As far as **regional differences** are concerned, the community-based infrastructure is particularly appreciated in APR, and least in NEN (see Figure 6 in Annex III). Water infrastructure investments are more strongly scored in ESA, NEN and APR than in LAC and WCA; the differences for small-scale infrastructure are very similar in all regions, with scores in LAC and APR being slightly higher than in the others, and those in NEN being lowest.

Source: ESR e-survey.

47. **COSOPs on infrastructure.** Country Strategic Opportunities Programmes (COSOP) are expected to provide the strategic link between corporate-level priorities and country-level demands and opportunities. However, they often do not lead to greater clarity on how IFAD would approach infrastructure within a specific country context. The review of CSPEs for the top 10 infrastructure countries showed that only three COSOPs specifically had infrastructure among its objectives or strategic threads (Bangladesh, Cambodia, and Egypt). Recent COSOPs have higher-level strategic objectives (e.g. market access) and do not specifically refer to infrastructure. The CSPEs often noted government preference for (hard) infrastructure investments, for example for Egypt, Uganda and Cambodia. In other cases, there were emergencies driving the demand for infrastructure (e.g. Tsunami in Sri Lanka) or the need for basic infrastructure construction or rehabilitation in fragile and post-conflict situations (e.g. Uganda, Afghanistan, DRC, Niger, and Sri Lanka) (see Chapter VI on countries with fragile situations).
 48. **Cofinancing partnerships and opportunities** are important drivers of IFAD's investments in infrastructure, where available. The IFAD strategic framework 2016-25 regards co-finance for infrastructure as a critical way to leverage IFAD funds and to build on IFAD's comparative advantage in the provision of agricultural services and social and community development. Cofinancing partnerships are important to reduce the large rural infrastructure finance-gap on rural medium- and large-scale infrastructure and to link IFAD infrastructure up with broader infrastructure systems. Cofinanced infrastructure investments would also support IFAD's partnership outcome objectives of (i) country impact at scale; (ii) influencing agendas for equitable and sustainable rural development; and (iii) support of organizations representing IFAD's target groups (IFAD Partnership Framework 2019). Participants in the FGDs saw clear complementarities of IFAD technical agricultural and rural expertise on the ground and IFI strength in country management through their experts in country offices. The ESR provides more information on cofinancing scope, trends and performance in Chapter IV B.
- IFAD's comparative advantage and strategic focus**
49. **Types of infrastructure financed by IFAD.** IFAD sees its comparative advantage in small-scale, 'last-mile' and community-driven infrastructure. Very few

of the 35 ESR sample projects had infrastructure that could be regarded as large-scale under the definition of the IFAD infrastructure unit. Another exception are IFAD's large-scale irrigation infrastructure investments in Sri Lanka (#48) that were not cofinanced. On the second point, IFAD's infrastructure is indeed often the 'last-mile', or 'first mile' from a farmers' perspective, for larger networks, systems or country wide basic infrastructure, such as of tertiary rural roads or government-run schools and health centers.¹⁹ In other cases investments into IFAD infrastructure are more locally driven and determined, e.g. bottom-up through beneficiary and community demand for agricultural inputs, storage, processing and marketing; or for decentralized local networks and services for water, irrigation and energy.

50. **Water as an area of strategic focus.** As part of IFAD's commitment to the Millennium Development Goals (MDGs) the 8th replenishment (2010-2012) highlighted the need to address water scarcity (see Box 4 below). The food price crisis (2008/09) drew attention to the need to develop, effectively manage and efficiently utilize water resources if agricultural production is to be increased. Pressures on renewable water resources for irrigation were expected to increase substantially, since at least 70 per cent of water in developing countries goes to agriculture, even if water use efficiency increased over time²⁰ (ESR Water). The need to see water availability and its development for agriculture and other purposes more broadly, particularly as a resource threatened by environmental problems and climate change, was re-emphasized by IFAD 9. Ground water depletion, salinization of irrigation and effects of deforestation all impact directly on agricultural productivity and availability of drinking water.

Box 4

IFAD08 re-affirming attention to water for agriculture

The MDG 1 targets, including those of food security and nutrition, required structural and market failures to be addressed, which included inequality and access to control of land and water and underinvestment in smallholder agriculture. The 8th Replenishment documents recognized that water was becoming increasingly scarce because of unsustainable rates of groundwater extraction and heightened competition from other users and observed that "globally, the amount of water available for agriculture may have already peaked". It also emphasized the need for natural resources protection not only from the perspective of environmental services provisioning but also in order to enable communities, especially the poor to adapt to climate change. It recognized that climate change would affect water availability due to increased variability in precipitation and rainfall and increased temperatures thus leading to more frequent and intense droughts, floods, and reduced availability of water for irrigation; this would in turn affect the predictability of food production in all countries.

Source: ESR Water.

51. **NRM, CCA and infrastructure.** Natural resource management, environmental protection and climate change adaptation (CCA) – and to a lesser extent mitigation (energy) – have many infrastructure implications for agriculture and rural development, with potential additional benefits for preventive disaster risk reduction. The most recent IFAD strategy and action plan on climate change and environment (2018) suggests an integrated: "Climate change as an environmental phenomenon is interrelated with a host of other environmental processes, [to be] addressed in an integrated manner" (IFAD Environment and Climate Change

¹⁹ IFAD has, however, remained committed to filling this 'last mile gap' especially for the smallholders in developing countries (see for example: IFAD Vision; (2020); IFAD targeting policy (2018); IFAD10 Programme of work (2014;); IFAD Comprehensive review of IFAD rural roads, travel and transport experiences (2008)).

²⁰ The urgency of the situation was highlighted at the L'Aquila Summit which declared that, "many developing countries, particularly in Africa and Asia-Pacific, are still far from achieving sustainable access to water and sanitation and integrated water resource management, indispensable for sustainable development" and pledged themselves to supporting the G8 Evian Water Action Plan and the Global Agriculture and Food Security Programme (GAFSP) by pledging US\$20 billion over three years for this purpose.

Strategy and Action Plan 2019-2025). The ultimate goal is climate resilience of beneficiary populations, which in turn will be supported among others through resilient infrastructure, natural resources and biodiversity (long-term resource sustainability).

52. The 2012 ENRM policy²¹ summarized the best ENRM practices for infrastructure in terms of (i) generating synergies between rural infrastructure construction and sustainable NRM and context-specific and climate-resilient technologies; (ii) ensuring that all new infrastructure investments are climate-smart; (iii) social and environmental mitigation measures; and (iv) community-driven approaches and local employment, especially the creation of green jobs.²²
53. Environment and climate change, and to a lesser extent NRM, are classical cross-cutting issues that affect all infrastructure categories. At the same time, infrastructure for natural resource management is a separate infrastructure category to capture various forms of (semi-)permanent land(scape) infrastructure: terraces, bunds and other erosion control, water reservoirs and ponds, rainwater harvesting etc. often combined with climate resilient agricultural technologies for better soil and water management (for more examples see Table 3 of Annex IV).

Environment and social safeguards

54. **The evolution of safeguards at IFAD.** IFAD adopted environmental and social safeguards some time ago, but their application has been less stringent than in other IFIs. In 2009, comprehensive Environment and Social Assessment Procedures (ESAP) replaced IFAD's former 'Administrative procedures on environment in the project cycle' and brought in new elements, such as resettlement and social issues. By all accounts, ESAP was not rigidly implemented. Environment and Social Management Plans were often not prepared, implemented and monitored, partly owing to the application of own procedures of cooperating institutions in supervision (such as UNOPS and IFIs) before IFAD took on direct supervision. Another reason was that the type of small-scale infrastructure commonly implemented at IFAD was internally considered to have few risks that would trigger safeguards.
55. A new generation of SECAP was introduced at IFAD in 2015. In its first version, SECAP paid more attention to climate change risks and mainstreaming environment and social issues ('do good') in addition to classical safeguards ('do no harm'). SECAP was revised in 2017 when, for the first time, thresholds for risk categorization were introduced. The version also distinguishes more clearly between 'do no harm', or risk assessments, and 'do good', or mainstreaming of environmental, climate and social issues. SECAP is most important for infrastructure projects but also touches on non-infrastructure project activities through social and labor questions, grievance procedures, and climate change. Where infrastructure investments and sub-projects are not clear at design – as their specific form or location would only be decided during implementation – IFAD requires that an Environment and Social Management Framework (ESMF) be developed, as an umbrella to guide the application of safeguards in sub-projects.
56. Another SECAP draft version has been developed for information of the Board in late 2020, updating the 2017 version. SECAP 2020 moves from guidelines to standards. It requests advanced screening of these environmental, social and climate standards; coverage of emerging and social risks; mainstreaming themes; and more balance between application of safeguards during project design and execution. It also strives to enhance stakeholder engagement and grievance redress mechanisms. The new system has four instead of three risk categories, and

²¹ IFAD ENRM Policy (2012) – Annex 1: Best practice statement on infrastructure.

²² There is no specific reference to infrastructure in the IFAD Strategy and action plan on environment and climate change (2018), similar to the one in the IFAD Environment and natural resource management policy (2012).

with revised thresholds for categorization. Furthermore, SECAP 2020 is mainstreaming SECAP standards along with the implementation of the procurement process,²³ to mitigate risks associated and provide projects with the tools to effectively manage, monitor and enforce compliance with all SECAP standards. This approach is aligned to international standards amongst IFIs.

57. **Institutionalizing safeguards/SECAP in IFAD and in countries.** SECAP responsibilities spread across three IFAD departments/units which leads to inefficiencies and potential conflict of interest (particularly for ECG staff). Financial and human resources for conducting safeguard assessments and monitor enforcement are scarce. The SECAP *compliance* ('do no harm') and the *mainstreaming* ('do good') parts at IFAD are institutionally split between ECG and OPR. Safeguards are to be dealt with by ECG, in addition to their other tasks of designing and managing CCA projects. IFAD capacity is particularly low to deal with applying SECAP in sub-projects that are developed not at design, but during implementation. Reasons include low awareness on SECAP among IFAD staff and the lack of tracking (monitoring) systems for actual or potential safeguards.
58. IFAD support for Governments and cooperating ministries and early engagement to enhance their safeguard/SECAP planning and supervision capacities is currently minimal. The capacities for SECAP planning and enforcement differ by country. Yet, government follow-through with SECAP during is seen as instrumental by IFAD safeguard experts. Experiences from other evaluations (e.g. AfDB 2019 on Safeguards) shows limited results from efforts to build national safeguard capacities in general; scarce resources would be better spent on project specific safeguards activities such as implementation follow-up.
59. **Application of safeguards.** Safeguards have not been systematically and effectively pursued in IFAD projects before 2015 as capacities were low and IFAD infrastructure was regarded as commonly below the size to have significant negative environmental and social effects. This ESR found only scarce references to safeguards in evaluation, project and supervision documents prior to 2015, when the new SECAP was introduced. Since 2015, safeguards have been included more systematically in project cycle formats and reports. Handling SECAP in cofinanced projects can be challenging, particularly with cofinanciers with less demanding safeguards requirements (such as OFID). When safeguards differ by cofinancier cofinanced projects customarily try to apply the most stringent safeguards,²⁴ or, if possible, safeguards could differ by project component when no agreement can be reached among cofinanciers on common safeguards standards. As stressed by staff during this ESR the implementation of SECAP in co-financed infrastructure projects can be difficult, for instance in Malawi where IFAD is partnering with the AfDB in an irrigation scheme (see also Ch. IV B and Box 17).
60. A recent OPR portfolio review of 24 projects with high risk in terms of SECAP found several cases where risks were not well defined as ESIA studies were still missing; there was insufficient time for SECAP studies before Board approval; there were major gaps between national legislation and SECAP that affected how safeguard risks were addressed; and large infrastructure projects done by cofinanciers paid insufficient attention to IFAD specific safeguards. Altogether the OPR review rated 8 (or one third) of 24 projects as still having substantial risks. For seven projects there was no data submitted.

²³ This has implications for the design, tendering and supervisions of IFAD projects – especially of those that contain an infrastructure component. The soon-to-be-released Standard Bidding Documents require compliance with the nine SECAP standards. Through these documents, IFAD will ensure that the contractor/supplier is responsible to the borrowers/recipients for managing environmental and social risks arising from infrastructure works and for delivering the expected outcomes. The borrower/recipient will require that all contractors engaged in the project operate in a manner consistent with the SECAP in their respective contracts.

²⁴ Of the closed projects classified as Category A, 13 were supervised by IFAD and 16 by cofinanciers.

61. IFAD's attention to the rights of smallholders, such as on land and water security, and its focus on the poorest and indigenous peoples should actually suggest conducting more formal SECAP assessments for a larger proportion of its projects.²⁵ This would particularly apply for the impact of infrastructure on land ownership, distribution and resettlement, and compensation mechanisms, or the distribution of benefits in out-grower schemes. Land compensation cannot be left with communities, as one staff observed. It rather needs to be regulated and enforced by national governments, possibly mediated by local governments where they are available and mandated.

Towards better integration of climate change goals and risks

62. **Emerging priorities for future IFAD infrastructure.** An ongoing IFAD-financed ODI study in the Strategy and Knowledge Department of IFAD (SKD) identified strong demand for rural investments in three areas: infrastructure, value chains and climate-smart agriculture. The latter includes micro-grid investments, bio- and other green energy. The study also suggested to engage more strongly with national rural development strategies at country level in all these areas. ESR focus group participants perceived an increasing demand for innovative and climate-smart infrastructure, such as for climate-smart 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. These might be considered for future knowledge products.

Box 5

A summary of open-ended responses to ESR e-survey on climate action

E-survey responses. For a large number of respondents to the e-survey the strengthening of climate resilience of infrastructure starts with building on SECAP, but requires to follow-through and enforce SECAP more effectively and update safeguards where necessary. 65 out of 150 open-ended responses on this issue saw the priority in better institutionalizing climate resilience in IFAD design and risk mitigation, building in climate-smart practices and including climate scenarios in design. For these respondents, design is where climate action needs to happen. They request better technical advice, and innovative and best practices at all stages. Continued research during implementation and flexible design could ensure that projects are more organic and adjustable to changing situations on the ground.

Building IFAD basic capacities on climate change was less considered to be an issue than the operationalization and clarification of basic concepts for project designers and to put these into practice. This includes, for instance, developing plain language guidelines.

Another set of comments called for better incentives within IFAD and more awareness raising in partner countries to increase demand for climate-resilient infrastructure and develop long-term national and local resilience plans.

A last concern by respondents was to ensure that potentially higher incremental costs for climate-smart solutions are covered and that they are not deterrent climate action. 13 respondents suggested to attract more climate finance and grants for this purpose, as well as for experimental purposes, and to seek out sympathetic and knowledgeable technical and implementation partners (climate finance and technical agencies such as the Global Environmental Facility (GEF), the Green Climate Fund and the Climate Investment Fund, FAO and certain civil society organizations). It was also suggested by respondents to spread the money not too thinly and allocate specific contingency funds in each project to ensure fast climate change action, repair damages and ensure post-project funds.

For 40 out of 150 responses activities related to country awareness and capacity building among government, beneficiaries and other stakeholders were most important for better climate action. This would include location specific infrastructure designs that are manageable and getting buy-in from all users, taking into consideration the capacities of implementing agencies. It would mean above all being mindful of the local context,

²⁵ This was debated in an FGD.

participatory approaches and drawing on indigenous knowledge through documentation and awareness raising for good practices and consultations with all partners.

Several respondents also suggested to build on existing national policies for climate proofing and adaptation of infrastructure and involving or coordinating with the necessary ministries and agencies primarily mandated for climate change

Source: ESR e-survey.

63. **SECAP** is widely seen as an excellent policy and basis for ensuring environmental safeguards in IFAD projects and protecting infrastructure against climate change risks. The 2018 Climate change strategy describes SECAP as 'state-of-the art' for identifying climate and other risks. For all projects with a "moderate" climate risk classification, a basic climate risk analysis must be conducted during the project design stage and included in the SECAP review note. Adaptation and mitigation measures must be mainstreamed into the project design and project design report. For all projects with "high" climate risk classification, an in-depth climate risk analysis must be conducted during project design and adaptation, and risk-mitigation measures must be mainstreamed into the project design and project design report. How to apply SECAP for infrastructure has been spelled out in the How-to-do rural infrastructure climate resilient toolkit.
64. **Climate action plan.** Many of these suggestions are fully in line with the priority actions planned by the 2018 Climate change strategy and the proposed refinement of SECAP in this Strategy. According to the Strategy they would provide a comprehensive set of tools for assessment and decision-making to address technical issues and needs, concerning environmental risks and trade-offs; identifying interventions with the greatest benefits, integrating green technology, green value chains, and cooperating with national systems and programme partners. There would be actions on capacity development, knowledge management and horizon scanning, and resource mobilization. The extent to which this action plan has already been realized is beyond the scope of this ESR but is likely to be evaluated in the ongoing IOE CLE on Smallholder farmers' climate change adaptation.
65. **Water-related infrastructure.** Drinking water has been an essential part of IFAD supported projects and it remains in high demand. Against this background it is hard to comprehend that IFAD's investments into drinking water have plunged to almost zero in recent replenishments. The need for clean water, often for human and livestock consumption, remains a top-priority of women and very poor people in most communities. There is scope to improve the efficiency and sustainability of water-related interventions. Water management and irrigation would benefit from closer attention to natural resources and climate risks (climate-smart design), within landscape and watershed approaches. Stronger efforts should be made to apply more integrated and multiple water use approaches, improve water use efficiency and incorporate climate resilience. This could lead to alternative, innovative and more sustainable types of productive water use and irrigation systems, for crops and livestock.

B. IFAD Portfolio on infrastructure (since 2001)

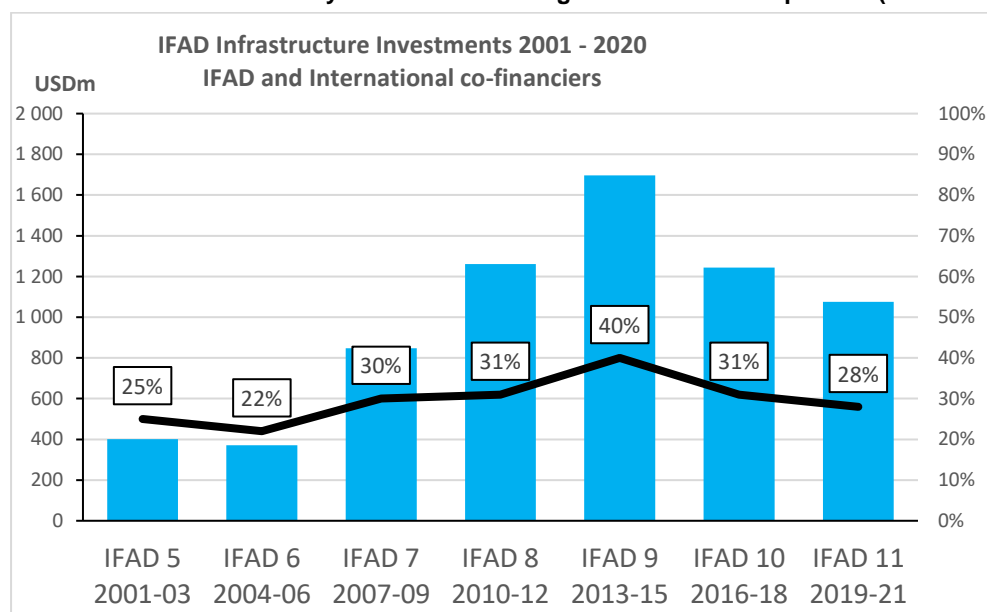
Infrastructure portfolio trends

66. **Overall investments.** The overall 30 per cent of IFAD's project investments since 2001 that went for infrastructure can be broken down into IFAD's own funds and those cofinanced by international partners²⁶. From IFAD loans and grants alone, 25

²⁶ The ESR defines infrastructure investments as the sum of IFAD and international cofinancing costs (GRIPS). This includes all costs associated with 27 infrastructure-heavy sub-categories (out of 68 sub-categories total) in the new PMI IFAD categorization matrix. Definitions for each sub-category were used for the ESR to determine infrastructure-heavy sub-components. This includes two sub-categories that only refer to soft infrastructure, irrigation and drainage management and asset-user group development.

per cent were dedicated to infrastructure. They covered a total of 53 per cent of all internationally financed infrastructure costs in IFAD's projects, with international cofinanciers taking on 47 per cent of these costs.²⁷ IFAD's overall amount for infrastructure also masks some important regional differences. The highest amount of IFAD's infrastructure investments went to sub-Saharan Africa, with 44 per cent of all resources going to WCA and ESA (23 and 21 per cent respectively), followed by APR (38 per cent), NEN (14 per cent), and trailed by Latin America (4 per cent) (see Figure 1 in Annex V).

Figure 2

Infrastructure Investments by infrastructure categories from 2001 to present (IFAD 5-11)

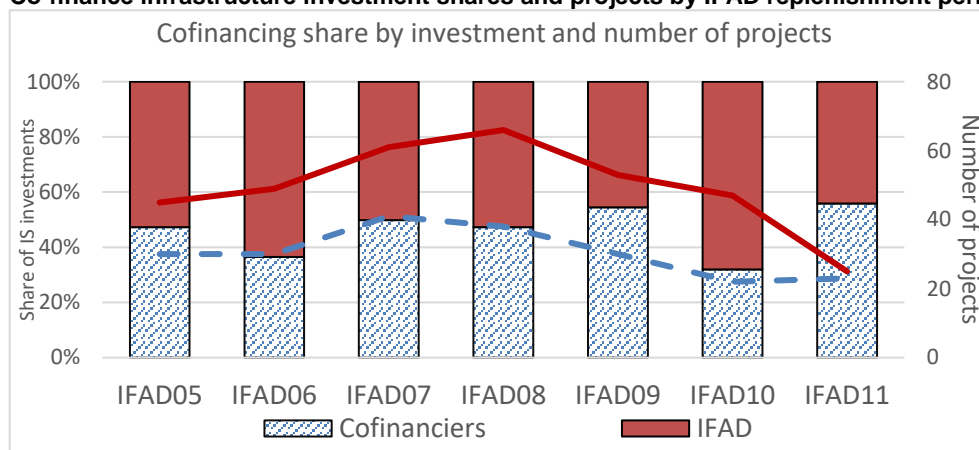
Source: GRIPS.

67. **Trends over time.** IFAD infrastructure investments increased significantly with IFAD07 (2007-09) (see Figure 2 above). This was partly the result of overall increases in IFAD budgets during the 2007/09 food price crisis and HIPC debt relief in the mid-2000s (debt sustainability framework, DSF). Still, the share of IFAD infrastructure costs moved from around 22-25 per cent in IFAD05-06 up to 30 per cent in IFAD07 and remained relatively stable since then, between 28 and 30 per cent. A spike in IFAD09, including of the infrastructure share, is fully explained by the outlier Indonesia IPDMIP²⁸ irrigation project (US\$ 600m, including cofinancing).
68. **International cofinancing.** The share of cofinancing for infrastructure investments has been around 40 per cent. The number of cofinanced projects with infrastructure has gone down overtime, following a similar trend in the number of IFAD projects (see Figure 3 below). In IFAD11, 23 out of 25 newly approved projects with infrastructure so far were cofinanced.

²⁷ Source: GRIPS. All cofinancing figures are planned, not necessarily actual costs. Cost numbers are updated during the project cycle as necessary. GRIPS or other IFAD statistics do not track actual infrastructure disbursements.

²⁸ Integrated Participatory Development and Management of the Irrigation Sector Project (Indonesia).

Figure 3
Co-finance infrastructure investment shares and projects by IFAD replenishment period



Note: Only IFAD projects with at least 1 infrastructure component are included.

Source: GRIPS.

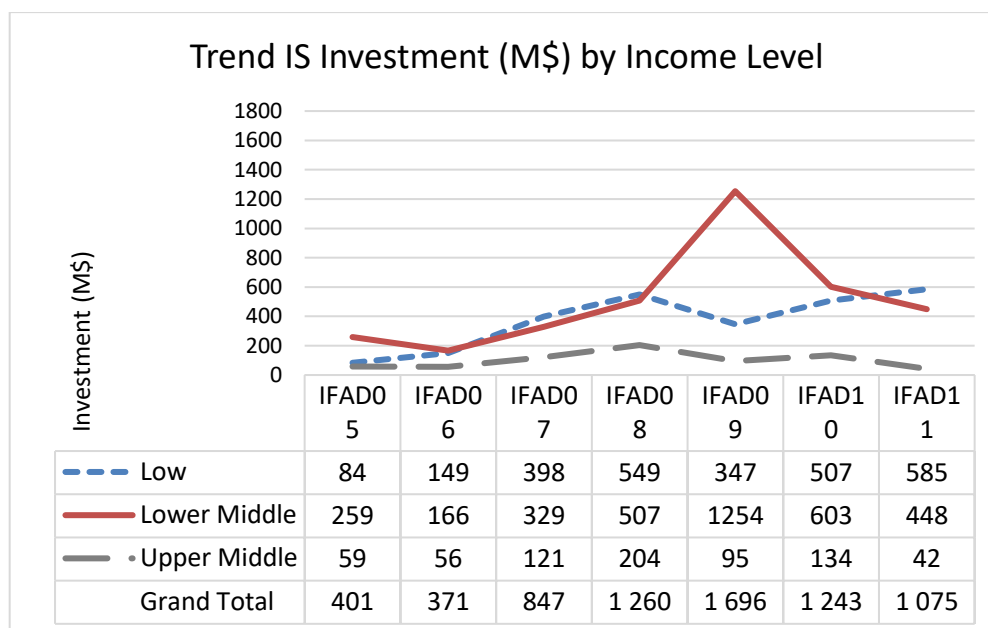
69. ADB provides the highest share of international cofinancing for infrastructure, close to 22 per cent, followed by OFID at 18 per cent. IFIs (World Bank, Regional Banks, GEF etc.) cover 68 per cent, bilaterals and NGOs another 8 per cent, and other UN Agencies 7 per cent. In Asia, cooperation with ADB on infrastructure is perceived as far more advanced and performing better than with IFIs in other regions.²⁹ In 2010, IFAD signed cooperation agreements (memoranda of understanding) with ADB and AfDB. Since then, the total amount of ADB co-financing for infrastructure increased from US\$101m for 2001-09 to US\$753m out of which US\$600 million came from the Indonesia IPDMIP.
70. For AfDB, infrastructure cofinancing went up to US\$192m, from US\$140m for the 2001-09 period. AfDB cofinance was concentrated in IFAD08 and IFAD11, with almost none for IFAD09-10. International Finance Institutions together including the World Bank, regional international development banks, GEF etc., provide 68 per cent of all cofinancing *for infrastructure*, with an increasing share since IFAD07 (see Figure 2 in Annex V). UN agencies are cofinanciers of another 7 per cent of infrastructure investments and other international partners, such as bi-laterals and NGOs, for 8 per cent.
71. **Domestic cofinancing.** Governments have contributed a total of 18 per cent³⁰ in domestic cofinancing for infrastructure between 2001 and 2020. The highest government cofinancing share is found in APR (22%), followed by LAC and NEN (20% each). It is lowest in WCA and ESA (16 and 11%, respectively) (see Figure 3 in Annex V).
72. **Trends according to country types.** The total percentage of IFAD infrastructure investments over the period 2001-20 is highest for the lower MICs (52 per cent), followed by LICs (38 per cent) and upper MICs (10 per cent) (see Figure 4 in Annex V). The share of infrastructure investments increased for the LICs over time, most likely related to the increased finance volume for LICs after the 2008/09 food price crisis and HIPC DSF, as noted for instance in Gambia and Burundi (case studies). IFAD's infrastructure investments have also increased for the lower MICs, but not for the upper MIC countries (except for a small peak in IFAD08) (see Figure 4 below). The spike in lower middle countries in IFAD09 is almost fully explained by the Indonesia project (US\$ 600m). Infrastructure categories are similar for different country types, except for significantly higher social expenditures in upper

²⁹ Source: Focus group discussion.

³⁰ Government costs are given as a share of the sum of infrastructure costs financed by IFAD and international cofinanciers.

middle countries, and a higher percentage for NRM/CCA in lower income countries (see Figure 5 in Annex V).

Figure 4
MICs and LICs: Trend of infrastructure investments over time



Source: PMI database accessed April 2020.

73. **Countries with fragile situations** have received a relatively high infrastructure share of ENRM/CCA investments (16 per cent vs. 8 per cent for non-fragile countries), and a much lower share of market access infrastructure (see Figure 6 in Annex V). This indicates that NRM/CCA infrastructure may be a way to support basic infrastructure investments at farm level in these countries, partly also with the help of food or cash for work (see Chapter IV on countries with fragile situations and NRM/CCA).

Infrastructure categories

74. **Typology for infrastructure at IFAD.** The newly released IFAD corporate project categorization by PMI (July 2020) aggregated 12 out of 68 thematic sub-categories at IFAD as rural infrastructure in the corporate dashboard.³¹ There is broad agreement on the main categories and sub-categories of production and market infrastructure. There is less agreement on social infrastructure and infrastructure concerned with natural resource management and climate change adaptation (also sometimes referred to as 'green infrastructure' see Table 6 of Annex IV). For its review of infrastructure trends over time this ESR uses the broad categories of production, market access, social and NRM/climate change adaptation.³² In addition, specific infrastructure activities, e.g. irrigation, roads and drinking water, are discussed in various parts of the report.
75. **Investments by infrastructure category.** Of all infrastructure investments 42 per cent went into production and 42 per cent to market access infrastructure. About 10 per cent were allocated to NRM/CCA infrastructure and 5 per cent to social services. There was a noticeable increase in ENRM/CCA and decrease in social sector investments over time (see Figure 7 of Annex V). Most likely social sector infrastructure investments are underestimated but the extent is not clear. The reason is that they were often included in the previous 'catch-all' IFAD

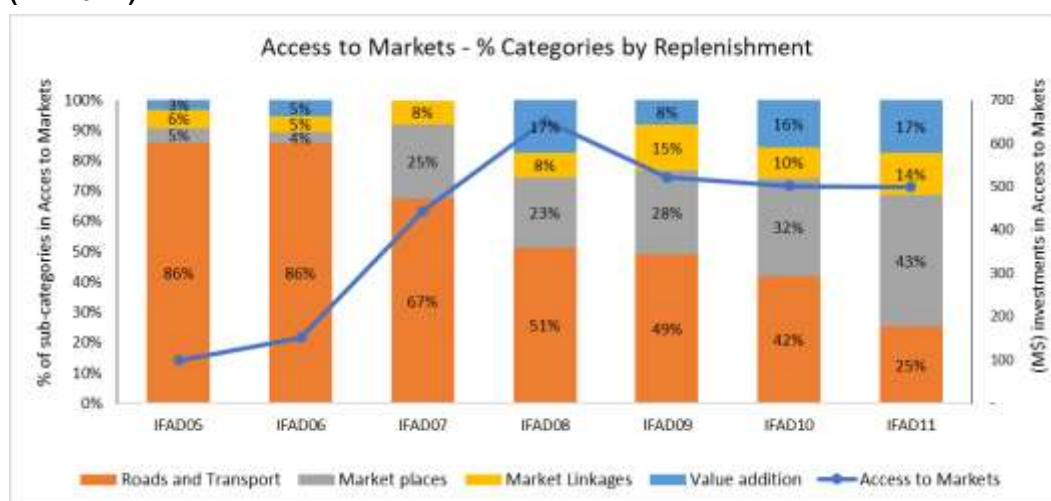
³¹ Please refer to Annex 2, Table A2.2 for the sub-categories used by the PMI in the dashboard for rural infrastructure, compared with those used by this ESR.

³² The soft infrastructure categories of irrigation management and development of asset user groups are also included in the following analysis of infrastructure development at IFAD.

category of 'rural infrastructure' and subsumed in other sub-categories than 'social' in the latest PMI categorization.

- 76. Between IFAD05 and IFAD11 overall IFAD infrastructure investments in market infrastructure more than tripled (blue line) (see Figure 5 below). The share of market access infrastructure funds going to roads and transport declined from 86 per cent in the early years to around 50 per cent in IFAD 08-10, and even less in IFAD 11, so far (25 per cent). Market places and market linkages (representing the hard and soft components) became the investment area of choice, covering more than 57 per cent of all market access infrastructure in IFAD11. Value addition increased, too, particularly since IFAD08 (2010) or even IFAD07.

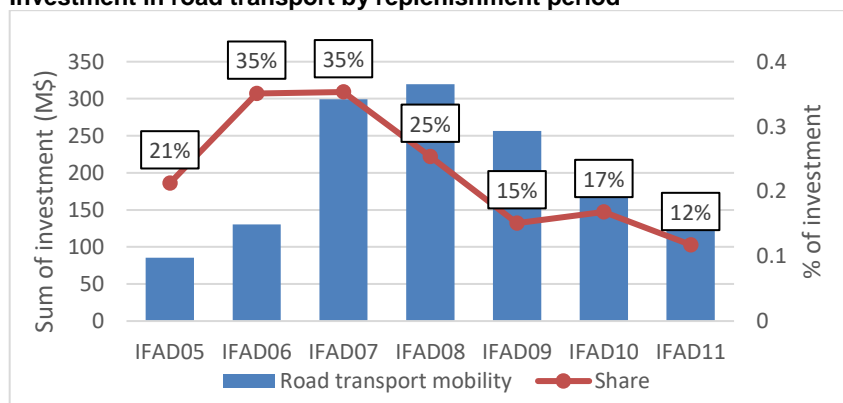
Figure 5
Market access over time: Per-cent investments by IS sub-category from 2001 to present (IFAD 5-11)



Source: PMI database accessed April 2020.

- 77. ESA and WCA had a much higher share of market-related infrastructure than the other regions (see Figure 7 of Annex V). APR and NEN focussed more on production-related infrastructure, and LAC had a relatively high share of ENRM/CCA infrastructure (but at a rather low absolute level).
- 78. **Main infrastructure investments.** Roads and irrigation were the main infrastructure investment sub-categories for the review period. Total IFAD investments from IFAD5 to IFAD11 were US\$1,427m for roads and US\$1,417m for irrigation, including cofinancing. Roads constituted the lion's share of infrastructure investments from 2006-2012 (IFAD6, IFAD7 and IFAD8) between a quarter and a third, but they went down to a low of 12 per cent in IFAD 11.

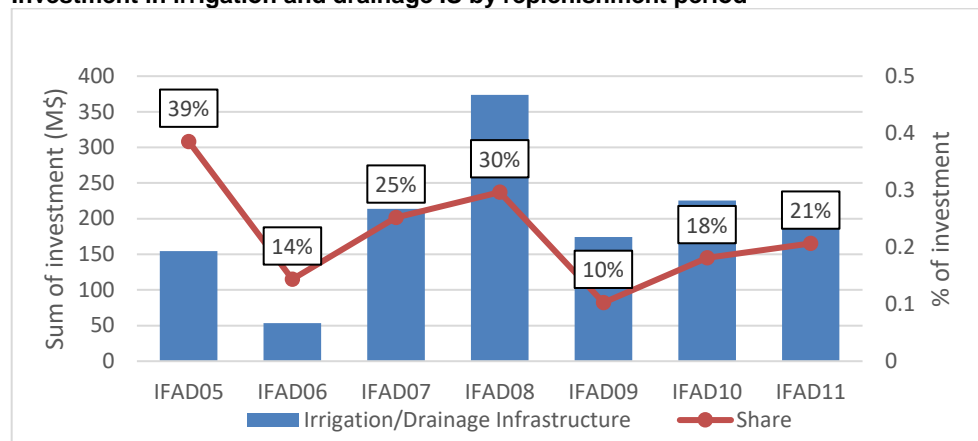
Figure 6
Investment in road transport by replenishment period



Source: PMI database accessed April 2020.

79. Investments into irrigation (not including irrigation management) have been fluctuating over time, from a low 14 percent in IFAD 06 to a more recent high of 30 percent in IFAD 08 in the wake of the 2008/09 food price crisis (apart from the earlier high of 39 per cent in IFAD 05, but with much lower total investment costs). It stood at 21 percent of all investments into infrastructure in IFAD 11.

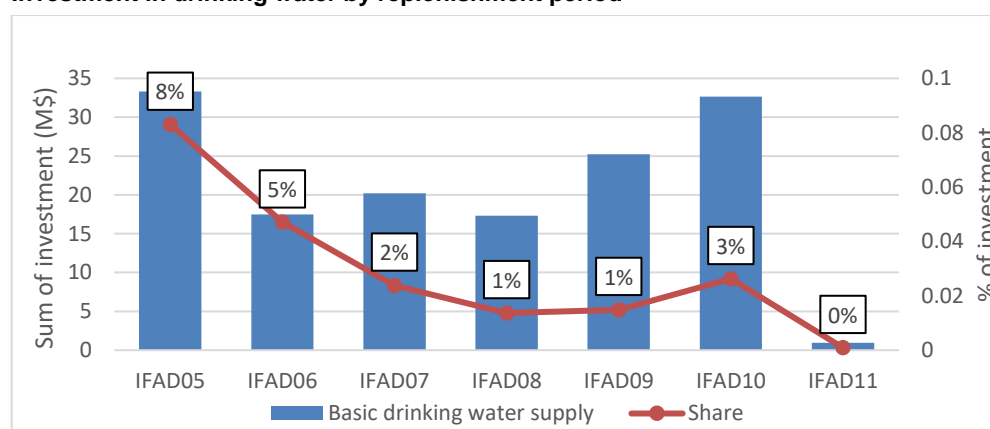
Figure 7

Investment in irrigation and drainage IS by replenishment period

Source: PMI database accessed April 2020.

80. On the other hand, drinking water, once a bread-and-butter ingredient in IFAD's community projects, has come down from 8 percent in IFAD 5 to 3 percent in IFAD 10. Investments into drinking water arrived at less than a million dollars in IFAD 11 (half-way into the replenishment period).

Figure 8

Investment in drinking water by replenishment period

Source: PMI database accessed April 2020.

C. Corporate capacities, knowledge and M&E

Corporate technical support capacities

81. IFAD in-house capacities for technical support of infrastructure planning and implementation support and supervision are low. There is currently only a small unit of two technical staff at IFAD headquarters ("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). The staffing situation has not changed significantly over the last two decades.³³

³³ Efforts to recruit a technical expert for a vacancy for rural infrastructure and renewable energy expert are currently underway.

82. This technical unit is supposed to give technical support for interventions that make up between 20 and 30 percent of the IFAD portfolio, the majority recently being Track 1 projects (relatively high volume and potential SECAP category A projects). This includes project design and implementation support missions, of which the unit carries out about 8-10 annually. For other projects, the support may involve identification of suitable infrastructure experts. The demand for such support comes from CPMs.³⁴
83. The tasks of the infrastructure desk also include the development and implementation of technical grants on infrastructure topics, the production of knowledge and learning products, responses to corporate requests, and partnerships with external organisations. IFAD's participation in external networks reflects its focus on water for agriculture. IFAD is member of UN-Water, where members of the infrastructure desk join in knowledge sharing and coordination.³⁵ IFAD is also a member of several other water related groups and task forces, for example the Global Framework on Water Scarcity in Agriculture (WASAG).
84. As in headquarters, there are only few IFAD in-house capacities to support infrastructure investments in the regions. There are no technical expert positions among the decentralized regional staff. The regional decentralization was a missed opportunity to establish regional positions for infrastructure experts as had been requested for Africa and for NEN (the latter was a request for a water infrastructure specialist). And there is no professional network of infrastructure experts or staff with extensive infrastructure experience, similar, for instance, to the IFAD economists' network.

Knowledge products, guidance and studies

85. Over the years, IFAD developed a number of knowledge products on infrastructure for project design and implementation. The topics responded to the strategic needs and priorities at a given time. The selection is not comprehensive and several of the notes are only available in a draft form. The strategic guidance and knowledge products was not systematically updated and disseminated across the organisation.
86. **Knowledge products and guidance.** The knowledge products prepared in 2007 and 2008 reflect IFADs focus on water and roads (see above) and pro-poor targeting. While water has remained a priority for knowledge management, value chains and climate resilient infrastructure have become a new area of focus more recently. For commodity value chains this includes a comprehensive toolkit with regular references to production and market access infrastructure, including the role of private sector and PPPs. The PMI Division also came up with a more recent 'How to do' summary guidebook on rural infrastructure investments (2018). A toolkit on irrigation is available as a draft (2020).

³⁴ From ESA, APR, NEN and WCA, in order of frequency.

³⁵ UN-Water is the United Nations inter-agency coordination mechanism for all freshwater related matters, including sanitation. UN-Water was formalized in 2003 by the UN System Chief Executives Board for Coordination. It provides the platform to address the cross-cutting nature of water and maximize system-wide coordinated action and coherence.

Table 5
Guidance and learning notes on infrastructure

TITLE	YEAR
Agricultural water infrastructure and management (3.2)	2007
Food security and productive sanitation systems (7.3)	2007
Rural water supply (7.4)	2007
Institutional, partnership and empowerment dimensions of pro-poor rural infrastructure investments (7.5)	2007
Local participation in pro-poor rural infrastructure investment projects (7.6)	2007
Procurement of goods and services for pro-poor rural infrastructure projects (7.7)	2007
Pro-poor irrigation water charging and cost recovery (7.8)	2007
Learning Notes Series (All)	2008
IFAD_ILO_IFRTD Workshop on Rural Roads, Transportation and Travel – RTT	2008
Commodity Value Chain Development Projects	2014
Public-Private-Producer Partnerships (4Ps) in Agricultural Value Chains	2016
Climate Resilient Rural Infrastructure toolkit: Rural Infrastructure Investments	2018
Water and Rural Infrastructure: Design and Implementation of IFAD-assisted Irrigation Investment Projects	2019

Source: ESR compilation.

87. **Thematic studies.** Some infrastructure categories have been well covered by studies, such as the comprehensive study on rural roads in 2008. Again, water and roads were areas of focus in the earlier part of the review period. Studies on climate resilience and value chains, the latter with focus on soft infrastructure aspects, are more recent. Overall, given the size of the investments, systematic studies of infrastructure-related themes remain scarce.

Table 6
Thematic studies on infrastructure

TITLE	YEAR
Gender and water Securing water for improved rural livelihoods: The multiple-uses system approach	2006
Comprehensive Review of IFAD Rural Roads, Travel and Transport (RTT) Experiences, 1994-2007	2008
Assignment Report – Implementation support for IDPPE, Mozambique; establishing a mechanism for social development	2010
Delivering public, private and semi-private goods	2015
Fostering Inclusive and Sustainable Agricultural Value Chains: The role of climate-resilient infrastructure for SMEs	2019
A new categorization framework for IFAD-supported project interventions	2019

Source: ESR compilation.

88. Several IFAD publications lay out the set of relevant activities and concerns for climate-smart investments and infrastructure, such as the 2012 Occasional Paper no. 3 on Climate-smart smallholder agriculture: What's different? and the 2019 ASAP/BRACED report on climate-smart infrastructure for value chain SMEs. The latter puts emphasizes among other the consideration of local context, equitable access, buy-in of all stakeholders, capacity building and consistency with countries national and local priorities.

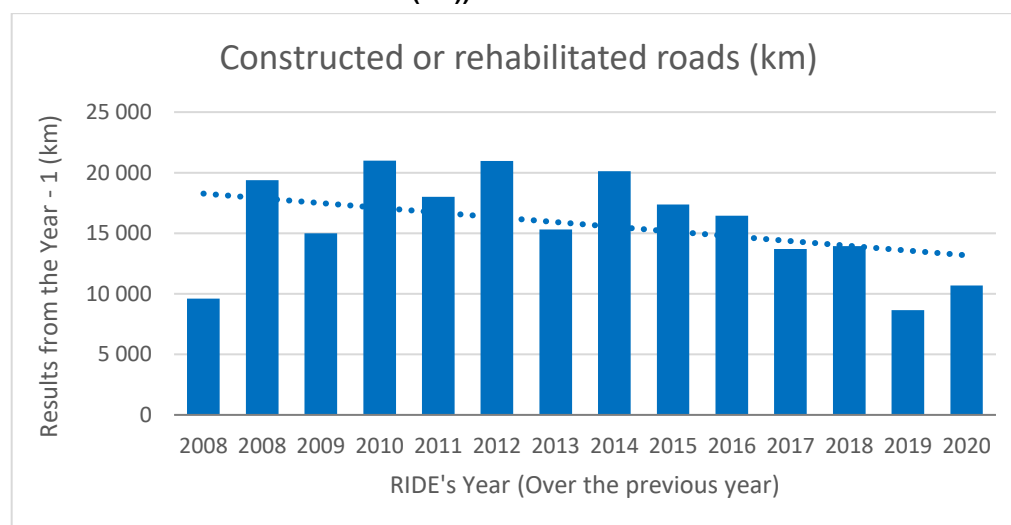
M&E of infrastructure-related operations

89. **Corporate data systems.** Identifying infrastructure in IFAD data systems and documents is not straightforward as the categories are either not clearly defined or investments are not clearly categorized as infrastructure as earlier mentioned. Many IFAD infrastructure sub-projects are only designed and developed during implementation without being properly recorded in corporate data systems. This makes M&E and safeguards follow-up at corporate level difficult. Tracking of infrastructure is particularly hard for cofinanced projects with parallel implementation that is not regularly updated in IFAD supervision and corporate systems throughout the project cycle. There is no information whether infrastructure investments are mainly focused on rehabilitation or construction of new infrastructure.
90. **At project and country level** there are few project design and monitoring systems in place to identify and monitor necessary planning and supervision requirements over the project cycle for infrastructure technical feasibility and safeguards; to adequately phase, implement and monitor soft and hard

infrastructure activities; and, third, to track and assess infrastructure investments from a comprehensive technical and social point of view, not only for quantitative targets achieved, but also their technical quality (according to common standards), country locations (GPS), infrastructure utilization, operation and maintenance, and access for IFAD's key target groups.³⁶

91. **The IFAD results management framework (RMF)** that was last updated in 2017 provides two key performance indicators for measuring IFAD's infrastructure results (tier 2): newly constructed and rehabilitated roads and irrigated land.³⁷ Progress on these indicators is reported in the replenishment documents and in the annual Report on IFAD's Development Effectiveness (RIDE) based on project supervisions and monitoring in countries.
92. The annual RIDEs show declining trends for both indicators (see Figure 9 below).³⁸ For irrigated lands the trend was reversed in recent years. A decrease in road construction is fully explained and in line with the decreasing investments over time as reported above. For irrigated lands, the strong gyrations of results are less plausible. Irrigation investments were more stable (and without a clear trend) over time and their strong increase in IFAD08 (2010-2012) should actually have born fruits around 2016 and 2017, the years for which the decline was most marked (down from around 300,000 hectares in previous years to around 50,000 hectares).
93. Below are the updated graphs of the infrastructure indicators over time:

Figure 9.a

Constructed or rehabilitated roads (km)

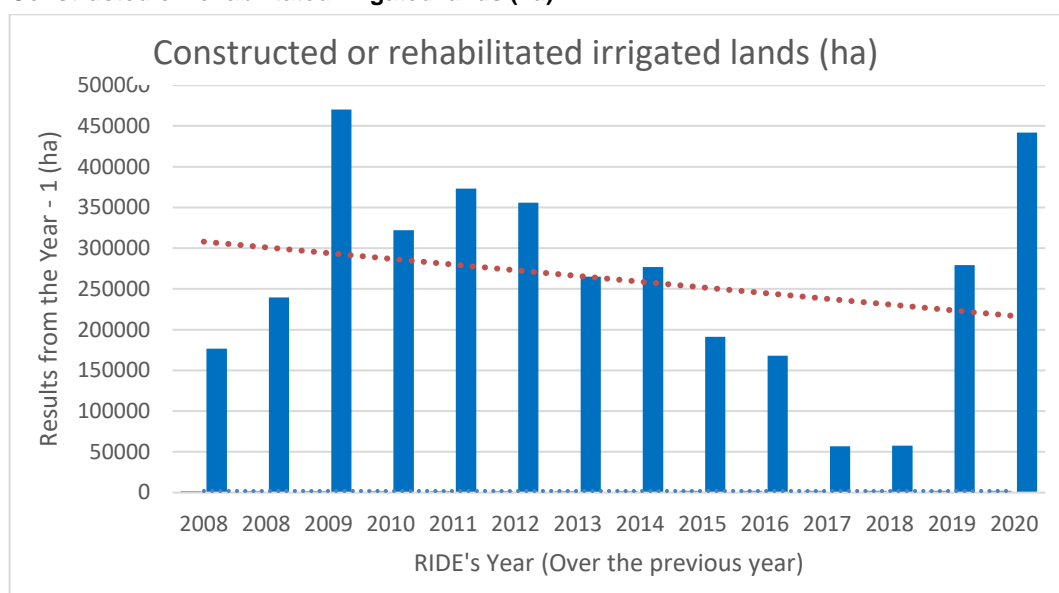
Source: PMI database accessed April 2020.

³⁶ This finding is mainly based on perceptions conveyed in ESR focus group discussions and from reviews of relevant project design and supervision reports, as well as the limited amount and variety of information provided by evaluations on several of the indicators mentioned in the text.

³⁷ These are a subset of the 21 core indicators approved by the Executive Board in April 2016 in the context of the revision of the 2007 Results and Impact Measurement system (RIMS).

³⁸ The 2008 RIDE report has only one indicator for rehabilitated irrigated land. The 2009 RIDE report has two values: one from the respective infrastructure projects that actually reported (176,000ha for irrigation 9,500km for roads), and one that extrapolates the numbers for those projects not reporting (based on relative project costs). This increased the total figures for the year to 240,000 ha for irrigation and 19,300km for roads.

Figure 9.b
Constructed or rehabilitated irrigated lands (ha)



Source: PMI database accessed April 2020.

94. At the time of this review, the ORMS still had core indicators that were not well defined and broadly interpreted. Some projects use other indicators for irrigation and water management outputs, for other projects the indicator includes acreage of watershed development which is quite different from irrigated lands. The bottom-up approach from project log-frame reporting introduces all types of noise in the formulation of variables, through missing values and errors into the aggregate database.³⁹ Last, the irrigation indicator sums up project activities that are very different: from new irrigation schemes through rehabilitation of main canals in old ones to cleaning up of secondary and tertiary canals; from relatively small vegetable gardens over fodder production to large cofinanced irrigation schemes. While some of this is unavoidable for key performance indicator reporting, their interpretation needs to be done with caution, the more so since such output reporting does not give any indication to what extent the schemes are actually functioning, being used by target groups and provide incremental benefits and outcomes (assumptions that need to be questioned based on a closer analysis of outputs project-by-project in the ESR sample). There is also no reference to soft infrastructure indicators.
95. **Monitoring infrastructure outcome performance beyond outputs.** There are no indicators in the corporate IFAD RMF system for reporting on actual infrastructure performance, its outcomes in terms of functionality and utilization, sustainability and the number of groups and people benefiting. How key RMF impact indicators of people with improved production and market access are related to improved infrastructure is not clear. The RMF indicators reported by the RIDEs measure outcomes in ratings for overall project achievements (PCR and IOE) and certain broader indicators. The Results and Impact Management System (RIMS) offered several indicators that would be useful for the purpose of outcome reporting. They were, however, never defined as core indicators and widely adopted and aggregated⁴⁰. This includes for instance the likelihood of sustainability of infrastructure and the groups managing infrastructure (e.g. after three years of operation); group functionality; and water delivered and farmers with secure access. Focusing M&E on a few infrastructure categories and their physical outputs distracts from what IFAD considers as its corporate strength, which is a variety of

³⁹ This was evident when the ERS attempted to reconstruct reported numbers over time which turned out to be impossible.

⁴⁰ IFAD. 2007. Results and Impact Management System (RIMS). First and Second Level Results Handbook.

demand-led small-scale infrastructure with a strong emphasis on soft infrastructure support.

96. **Impact of infrastructure.** The IFAD Research and Impact Assessment Division (RIA) managed to shed light on IFAD infrastructure outcomes and impact and to address part of the knowledge gap. RIA conducted a series of rigorous impact assessments in selected projects with strong infrastructure investments. These projects cover different infrastructure categories and regions (see Table 7 below). In this commendable effort RIA identified several beneficiary outcomes of these projects around IFAD's three strategic objectives (production, market access and resilience) and identified a number of constraints and lessons for enhanced impact. The studies also discussed methodological issues and complications of impact assessment in a limited project context. There has been no systematic review (or synthesis) of these studies yet, which would be the next logical and valuable step.⁴¹

Table 7:

RIA Impact assessments of projects with significant infrastructure share

TITLE	YEAR
Impact Assessment of the Irrigated Rice Production Enhancement Project, Philippines	2018
Impact assessment report (IAR): Guangxi Integrated Agricultural Development Project, China	2018
IAR: Participatory Small Irrigation Development Programme I, Ethiopia	2018
Impact Assessment of the Cereal Banks Intervention in the Programme d'Appui au Développement Rural dans le Guéra (PADER-G), Chad	2018
IAR: Coastal Climate Resilience Infrastructure Project (CCRIP), People's Republic of Bangladesh	2019
Gente de Valor – Rural Communities Development Project in the Poorest Areas of the State of Bahia, Brazil	2019

Source: ESR compilation.

97. **In sum**, monitoring and evaluation of infrastructure at IFAD is, by and large and with the exception of the RIA studies, not looking at the right places. It mainly relies on counting some 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 hard to measure, such as ownership, capacities and governance.⁴² Much of M&E is done in a piecemeal way, with little value-added for managing infrastructure-heavy projects and not suited to inform management on the value-added and ultimate benefits of infrastructure and related investments. Management is not well informed on where and how to invest in infrastructure.

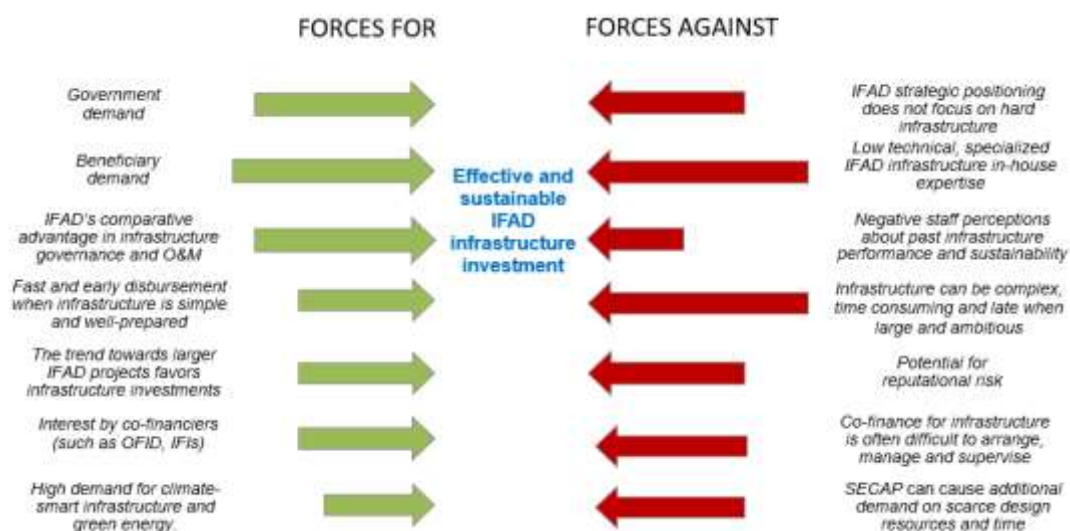
D. Driving forces for infrastructure investments

98. Based on above findings and observations from surveys and focus groups, the most important drivers for IFAD infrastructure investments and its major obstacles can be summarized as a field of forces for and against infrastructure as follows (see Figure 10).

⁴¹ RIA impact assessments have informed the ESR case studies, where available. Findings are synthesised in Chapter V of this report.

⁴² Although RIMS initially included a number of related indicators.

Figure 10

Force field: Positive and negative factors driving infrastructure investments at IFAD

Source: e-survey and FGD.

99. Among the supportive forces, the strong demand by governments and beneficiaries for rural infrastructure is further reinforced through IFAD's long-term expertise and comparative advantage from working with infrastructure user groups, mostly in community infrastructure planning and O&M. Infrastructure is also perceived as disbursing fast when sufficiently and well prepared and allows to show early project results in such cases. The tendency towards larger IFAD projects favours infrastructure investments, as their fund absorption capacity is high. And last, interest from cofinanciers in infrastructure cooperation and related positive co-benefits are another major positive driver, and so is the current high demand for climate-smart infrastructure and green energy.
100. In contrast, several negative forces work against more infrastructure investments at IFAD. These are particularly the relatively weak high-level strategic emphasis of infrastructure at IFAD and its corporate and project level technical support mechanisms and capacities. In-house incentives and capacities for planning, managing and supervising infrastructure are relatively low; and when they exist, they are more tacit and embodied in staff than explicit and with functional responsibilities. Perceptions on performance and sustainability of IFAD infrastructure in the past are mixed which limits the enthusiasm for the infrastructure instrument. As a result, the potential for reputational risks are considered as high, such as through poorly implemented schemes and neglect of safeguards. Safeguards can cause additional demand on scarce design and time resources, particularly for more ambitious and demanding infrastructure projects. In general, the complexity and frequently delayed implementation of many infrastructure projects are a major potential negative force working against more infrastructure at IFAD. In addition, despite the generally positive expected effects associated with cofinancing, cofinanced projects are often difficult to synchronize and implement which can limit their potential usefulness for infrastructure (see Chapter IV).

Key points (Chapter II)

- Strategy. IFAD does not have an infrastructure policy or a dedicated infrastructure strategy. However, infrastructure is referred to as a key ingredient to achieve IFAD's strategic objectives. IFAD acknowledges the need to collaborate with others in large-scale rural infrastructure to achieve IFAD objectives and to combine public and private financing.
- IFAD sees its comparative advantage in small-scale, 'last-mile' and community-driven infrastructure. Survey respondents see IFAD as having a niche for water for agriculture infrastructure investments as compared to roads and market access whose performance is seen less favourably.
- Key drivers for infrastructure investments are demand from government partners and target groups. Cofinancing partnerships and opportunities are also driving investments into infrastructure where they are available.
- Safeguards. Application of environment and social safeguards has been less stringent than in other IFIs. Safeguards have not been systematically and effectively pursued in IFAD projects before 2015 as capacities were low. SECAP responsibilities spread across three IFAD departments/units, which leads to inefficiencies and potential conflict of interest (particularly for ECG staff).
- IFAD's attention to the rights of smallholders, such as on land and water security, and its focus on the poorest and indigenous peoples should actually suggest conducting more formal SECAP assessments for a larger proportion of its projects (FGDs). This would particularly apply for the impact of infrastructure on land ownership, distribution and resettlement, and compensation mechanisms, or the distribution of benefits in out-grower schemes.
- Portfolio. IFAD infrastructure investments increased significantly with IFAD07 (2007-09), partly as a result of the overall increase in IFAD budgets during the 2007/09 food price crisis and HIPC debt relief in the mid-2000s. The total percentage of IFAD infrastructure investments over the period 2001-20 is highest for the lower MICs (52 per cent), followed by LICs (38 per cent) and upper MICs (10 per cent).
- The share of cofinancing for infrastructure investments has been around 40 per cent. The number of cofinanced projects with infrastructure has been reduced overtime, following a similar trend in the number of IFAD projects.
- Of all infrastructure investments 42 per cent went into production and 42 per cent to market access infrastructure. Roads and irrigation were the main infrastructure investment categories for the review period. On the other hand, drinking water, has come down from 8 percent in IFAD 5 to 3 percent in IFAD 10.
- Capacities and Knowledge. IFAD in-house capacities for technical support of infrastructure planning and implementation support and supervision are low, on the technical, governance and safeguards sides of infrastructure. There are no technical expert positions among the decentralized regional staff.
- M&E. The corporate data systems for infrastructure M&E and follow-up are weak. Infrastructure sub-projects are designed and developed during implementation without being properly recorded in corporate data systems. Information on cofinanced projects with parallel implementation is not regularly updated and there is no information on rehabilitated or newly constructed infrastructure.
- There are no indicators in the corporate IFAD RMF system for reporting on actual infrastructure performance, its outcomes in terms of functionality and utilization, sustainability and the number of groups and people benefiting. The RIA studies provide the only comprehensive assessment of outcomes and impact in infrastructure-related projects to date.
- Future direction. IFAD Management sees a high likelihood of significantly increasing future demand to IFAD for hard infrastructure investments, particularly in MICs and with decreasing availability of concessional loans and grants for these countries. Any IFAD niche in infrastructure and increased future borrowing for infrastructure needs to stay closely linked to IFAD's mandate to facilitate better access and sustainability.

III. Findings on infrastructure performance

101. This chapter reviews the performance of infrastructure in sample projects, using the IFAD evaluation criteria of effectiveness, efficiency, pro-poor targeting, gender equality and sustainability. Rural poverty impact is reviewed in Chapter V.
102. In this chapter, Section A refers to the performance of "hard" infrastructure, while Section B reviews the "soft" parts of infrastructure, such as user participation, ownership and capacities. Section C analyses the institutional arrangements for ownership and maintenance of infrastructure in view of the prospects for sustainability.

A. Performance of infrastructure in review sample

103. This assessment mainly draws from the structured review of 35 sample projects and the qualitative evidence gathered through the 10 case studies. Infrastructure activities in these projects were assessed through sub-criteria specifically tailored to infrastructure, e.g. infrastructure output targets and quality (effectiveness), unit costs (efficiency), operation and maintenance (O&M) and sustainability, apart from targeting and gender criteria.⁴³ The case studies provided additional insights on performance issues in relation to these criteria.
104. **Overall performance.** Analysis of sample projects found that infrastructure sub-projects overall achieved the set targets. However, technical quality was not as high and arrangements for sustainability were often unsatisfactory. The most frequent infrastructure activities in the review sample - in terms of their numbers, not total amounts - were drinking water (and sanitation), irrigation and transport. Drinking water infrastructure overachieved its targets on average and had high utilisation, indicating that this type of infrastructure responded well to the demand of poor households and women. However, technical quality was often mixed and sustainability in the majority of cases unsatisfactory. 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 targets and the technical quality was mixed. While roads had high utilisation and benefitted the poor, their sustainability was mixed.
105. The review notes some difference in the performance of infrastructure by project types.⁴⁴ For example, CDD projects that are characterised by highest levels of user participation overachieved their targets on average; however infrastructure quality was mixed. Production and market oriented projects generally performed poorly. They underachieved the set targets and their quality was overall more negative. Infrastructure-super-heavy projects overachieved their targets, but the quality was found insufficient. The two latter project types also performed relatively poorly in targeting women and poor people.

Effectiveness

106. **Achievement of output targets.** Overall, output targets for building or rehabilitating infrastructure were fully achieved or overachieved in half of the projects reviewed (see Figure 11 below). The sample included five projects (14 per cent) that achieved their infrastructure by 150 per cent on average.⁴⁵ Three projects achieved less than 50 per cent of the infrastructure targets on average.⁴⁶

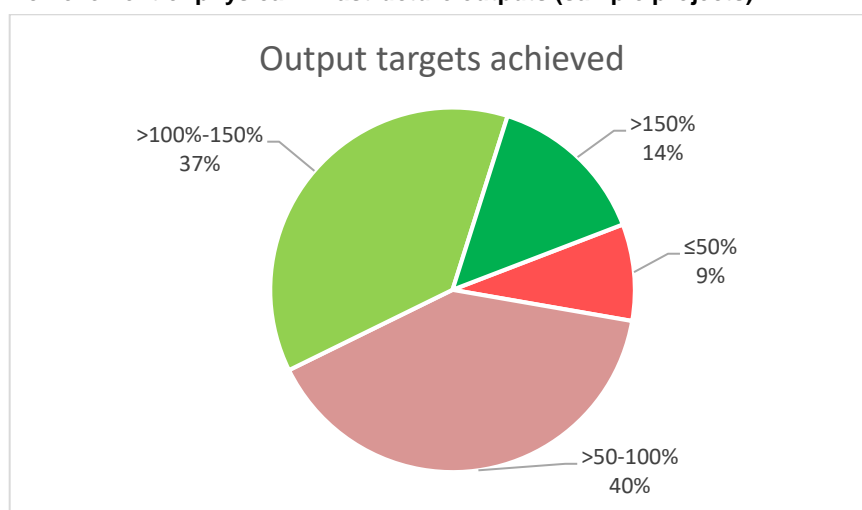
⁴³ See Annex VI for details of the review criteria.

⁴⁴ See Chapter I F for the definition of project types.

⁴⁵ #8 Kenya, #22 Burkina Faso, #27 Nepal, #33 Tunisia, and #37 Turkey

⁴⁶ #20 Turkey, #23 Burkina Faso, and #32 Sri Lanka

Figure 11
Achievement of physical infrastructure outputs (sample projects)



Source: ESR portfolio sample (35 projects).

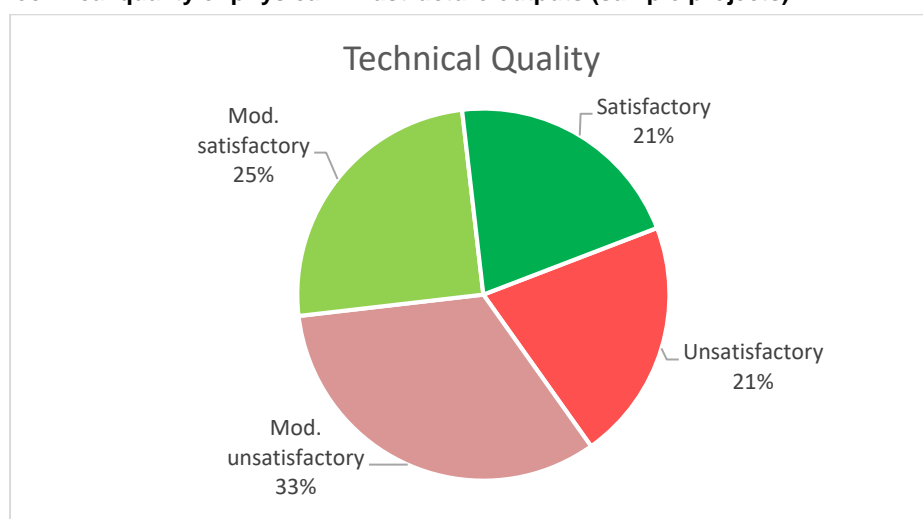
107. CDD projects on average overachieved their targets (115 per cent). For example, in Nepal (#27) infrastructure projects over-achieved their targets.⁴⁷ Laos stood out as a community-based project with consistently high achievements (#9). Results in production & market focused projects were more mixed. Market infrastructure was found ineffective in several projects.⁴⁸
108. Drinking water and sanitation scored well in the sample, with an average of 131 per cent achievement of targets. Production infrastructure was at an average of 108 per cent achievement slightly below the overall sample average of 115 per cent, while NRM infrastructure scored above at 143 per cent.
109. Irrigation, transport and marketplaces recorded a large number of low achievements (less than 75 per cent), although there was significant variation between the projects. Irrigation projects were successfully implemented in Armenia (#1). However, large irrigation activities failed in achieving their output targets in in Mauritania (#12) and Burkina Faso (#23), and also in in Sri Lanka (#31 and #32) and Tunisia (#34). In Sri Lanka case study (#48) 85 percent of the field canals were not rehabilitated.
110. **The technical quality** of infrastructure according to agreed, contractual standards is often not mentioned in the reviewed project documents.⁴⁹ For 31 per cent of projects the ESR did not find any information on the quality of constructed and rehabilitated infrastructure, and for an even larger number of infrastructure sub-components/activities in these projects the data was missing. In more than half of the remaining projects infrastructure quality was assessed as not satisfactory (54 per cent), and for one fifth as unsatisfactory (see Figure 12 below). This did not affect infrastructure utilization in one way or the other, which in general was high and above 90 per cent.

⁴⁷ Except for a 'green road' that was not built at all since WFP pulled out of funding

⁴⁸ For example in #8 Kenya, #25 Cameroon, and #3 Bhutan

⁴⁹ For ratings criteria and guidelines on assessment of technical quality of infrastructure see Annex VI.

Figure 12
Technical quality of physical infrastructure outputs (sample projects)



Source: ESR portfolio sample.

111. With regard to the technical quality of the infrastructure provided, the majority of production and market projects were found to be unsatisfactory. For the other project types it was more mixed. For example in Bhutan (#3) the quality of roads was sacrificed for their quantity. Technical quality was also mixed in a number of CDD and community-based projects. In Nepal (#27) technical quality of infrastructure was very low, although outputs achievements were very high. Poor quality of infrastructure was also found in Mauritania (#12), as well as in Cambodia (#24). Low quality may be related to weak technical supervision (e.g. #38 Malawi) or low unit costs (see efficiency section below).
112. Irrigation overall scored relatively poorly for technical quality, with 43 per cent in the lowest category.⁵⁰ Larger projects often provided better quality, such as irrigation in Turkey (#20), drinking water in Pakistan (#28) and biogas in China (#26). In Tanzania (#19) it was the post-harvest and market infrastructure activities that were noted positively.

Efficiency

113. **Implementation of infrastructure sub-projects** requires a number of well sequenced steps. These are well-known and include sub-project design and construction, timely participation of key institutions and beneficiaries, and putting in place institutional arrangements and capacity building for O&M well ahead of infrastructure and project completion (see Figure 9 in Annex V). All these activities require sometimes complex and lengthy procurement procedures for recruiting construction companies and other service providers. Participatory processes required for the identification and planning of infrastructure sub-projects also require time. In the better performing projects the high level of beneficiaries' participation was coupled with effective engagement and coordination with the various levels of the governments (see Section B). Other key factors affecting the performance of infrastructure sub-projects were the adequate project preparation, with feasibility studies in advance of project kick-off; and effective co-funding arrangements and coordination with partner IFIs (see Chapter IV B). The key lessons on infrastructure performance are summarised in Box 6 below.

⁵⁰ The quality of irrigation structures was scored poorly for example in Georgia (#7), Burkina Faso (#23), and Sri Lanka (#30, #32).

Box 6

IFAD key lessons on infrastructure performance

The IFAD 'How to do' toolkit for rural infrastructure investments of 2018 summarizes six lessons from infrastructure experience at IFAD (p.6ff)

Implementation readiness is key for successful rural infrastructure. This refers particularly to efficient and participatory infrastructure design, SECAP and procurement processes.

Identification and involvement of key stakeholders in decisions, which includes not only users but also owners of infrastructure, as well as regulatory authorities, financiers of routine maintenance and market partners with a stake in infrastructure.

Community-based management of rural infrastructure and CBOs need the support of a wider institutional system.

Incomes from construction labour should be targeted to specific IFAD target groups or categories, but attention needs to be paid to works that require advanced skill sets and use of machinery to ensure infrastructure standards and quality.

Appropriate choice of technology, including their cost-effectiveness and maintenance requirements, size of environmental footprint etc.

Smart procurement distinguishes timely and qualitative realisation infrastructure, including the preparation of sound terms of reference and bidding documents for consultants and contractors early on in the process.

Source: IFAD 2018 'How to do' Toolkit for rural infrastructure investments.

114. **Implementation delays.** For most of the reviewed infrastructure projects, the ESR found relatively slow and more or less inefficient sub-project implementation, specifically in 21 out of the 35 sample projects.⁵¹ Four of these projects ended up with very low disbursements for infrastructure.⁵² Evaluations reported significant delays in start-up, slow project delivery and procurement. The time it takes for delivery, including infrastructure, is usually predictable at appraisal but rarely well respected.
2. Fast project start-up and timely disbursements helped with efficient infrastructure activities in at least seven out of the 35 projects in the ESR portfolio sample.⁵³ Reasons for fast implementation included good PMU management and outsourcing of contracted work (Azerbaijan #2) and effective NGO service providers that helped with technical and socio-organizational efficiency (Madagascar #11). In recent years IFAD has started to provide 'Faster Implementation of Project Start-up' (FIPS) funds to advance technical feasibility and safeguards studies to mitigate infrastructure delays and increase quality.
115. **Unit costs.** Infrastructure unit costs need to be seen in view of infrastructure quality, generated benefits and the number of targeted beneficiaries using this infrastructure. Assessments are not always straightforward, as quality varies and the remote and marginal locations where IFAD often works have conditions under which simple comparisons with other areas are not justified. By and large, infrastructure unit costs in most places were reasonable in comparison with the construction of other infrastructure of similar quality standards in project areas. However, there were also exceptions of cost-overruns as detailed below.
116. In several projects reviewed by this ESR, infrastructure unit costs were found to be comparable to similar other Government contracts or IFAD projects and have been well budgeted.⁵⁴ In community-driven projects beneficiaries' labor inputs often

⁵¹ #3 Bhutan, #6 DRC, #7 Georgia, #8 Kenya, #9 Laos, #12&13 Mauritania, #14 Morocco, #15 Nigeria, #16 Pakistan, #20 Turkey, #23 Burkina Faso, #27 Nepal, #30,31,&32 Sri Lanka, #33 Tunisia, #35 Vietnam, #36 Mozambique, #37 Turkey and #38 Malawi.

⁵² Georgia #7, Mauritania #12, Morocco #14, and Burkina Faso #23

⁵³ #2 Azerbaijan, #10 Laos, #11 Madagascar, #17 Rwanda, #22 Burkina Faso, #24 Cambodia, #26 China

⁵⁴ For example in Bhutan #3, #11, Nepal #28, Mozambique #36

contributed strongly to low unit costs. In #15 Nigeria the effective mobilization of community members in providing labour was an offsetting factor that reduced the cost of infrastructure works below appraisal estimates. Pakistan (#16 and #28) also reported good value for money with a tendency of lower infrastructure costs and better quality than in comparable government schemes owing to the strong community ownership and good technical oversight. To some extent such infrastructure cost efficiency gains came at the cost of the poor who lost out on other income generating work. This led to changes when new projects were designed (see Box 7 below).

Box 7

Moving from unpaid community contributions to investments into the poor and future village infrastructure (ETIGB Pakistan)⁵⁵

Unlike the prevailing practise in community executed schemes, where over 20 per cent community contribution is expected, the schemes under ETI Pakistan will not require any community contribution of labour or materials (Project Development Report, PDR 2015). The rationale is based on two important lessons. The contribution largely came at the cost of the poor who end up working for free and losing wage-labour opportunities on the scheme. Second, it is most often a disincentive for the community to develop the larger irrigation systems with high beneficiary contributions. The (new) ETI programme will pay the full cost, as approved by PCU, for labour and materials, but communities will agree to pay back 50 per cent cost of the scheme into a community based account for future investments on their own social and economic development priorities in the village. This approach is expected to have two-fold benefit. First, the programme will pump almost half of the sub-component cost (around US\$22 million) into the economy of 200 plus villages in the shape of wages and local materials. Second, the recovered 50 per cent cost (again around US\$20 million) would be reinvested in the local social and economic development bringing further economic benefits for the village economy.

Source: Pakistan CSPE Desk Review Note (2020).

117. For some other projects, unit costs were significantly higher than planned. In DRC (#6) costs were about 60 per cent above those planned for infrastructure rehabilitation which doubled the unit costs per beneficiary. In Tanzania (#19) there were very high warehouse construction costs during the first phase of the project that were somewhat reduced in its second phase. For the Kenya market project (#8) major cost overruns were caused by the required change of design of market facilities which increased the cost of planning and construction. Additional costs were covered through Government contributions. In Malawi (#38), the milk-bulking centres were oversized, lacked critical equipment and were too far away from many producers, particularly women. Their planning was poor, existing farmer organizations were not well involved, and private sector involvement was limited.

Box 8

Infrastructure delays and trade-offs in Vietnam and Turkey

In **Vietnam (#35)** the model of decentralizing the construction of infrastructure and selection of contractors seems to have been working reasonably well but required time and a high degree of coordination by local authorities with line ministries, particularly since projects were generally multi-component.

For **Turkey (#37)** the project was delayed for almost four years and led to a significant trade-off between efficiency and targeting. Delays were caused by difficulties of delivering the project in targeted remote villages, partly due to project staffing problems and by the absorption capacity of poor farmers in these communities. During its last three years, the project redirected benefits to farmers leaders and smallholders in other areas which made the project more efficient but largely reduced the impact on poor farmers.

⁵⁵ This project is not part of the portfolio sample or case study sample. The case study of a lesson learnt in a relatively recently approved project (2015) is meant to illustrate a good practice.

Source: ESR case studies.

118. Efficiency in terms of unit costs is relative to quality and it is important to be seen in terms of effectiveness and sustainability of generated infrastructure. There certainly can be a large trade-off between low-unit costs on one hand and effectiveness and sustainability on the other. An example from Uganda demonstrates that higher unit costs may indeed lead to longer lasting roads (see Box 9 below).

Box 9

Higher unit costs have improved impact and sustainability – Roads in Uganda⁵⁶

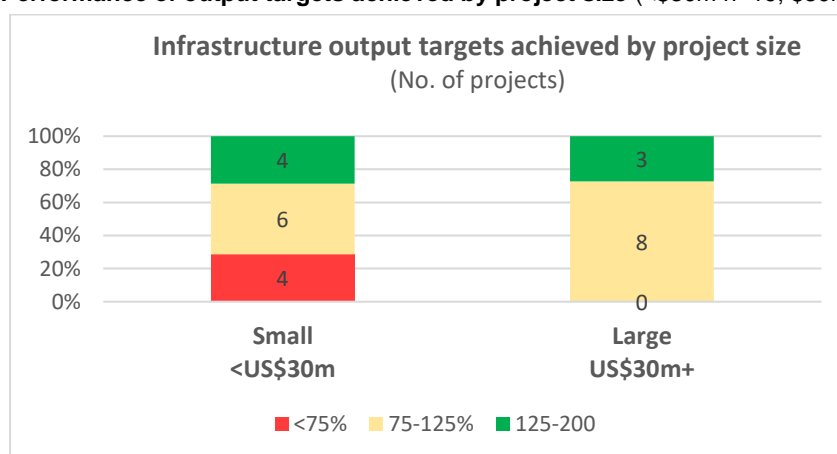
Roads are prominent in the IFAD Uganda portfolio. In recent years IFAD supported roads in line with Class 3 districts roads standards (all weather). This has been a key element in building more sustainable roads though costs are (up to 76 per cent) higher and require higher design standards and environmental safeguards. These changes have led to delays in construction and reduced length compared to design however access to the Government's road fund and better efforts by local maintenance committees have helped in maintaining road quality. The use of geo-mapping of agricultural potential has helped place roads in the most appropriate locations and the limit of 12 km to road length has also helped reduce excessive political interference. The recent CSPE has rated sustainability as high due to the upgraded design to all weather standard, and therefore inclusion in the Road Fund for maintenance. Community satisfaction was found to be high across the seven roads visited during the CSPE field mission. There are good results in terms of reduced travel, higher farm gate prices, and based on CSPE field mission evidence the roads have been generally maintained and kept in all year-round operation.

Source: CSPE Uganda 2020.

119. The ESR portfolio analysis also showed that infrastructure delivery and quality to some extent increases with project size. Economies of scale are an important part of the efficiency of infrastructure as they ultimately reduce unit costs. Larger projects in the sample generally performed better in delivering infrastructure targets (Figure 13) which indicates economies of scale in infrastructure. Larger projects also often provided better infrastructure quality, such as irrigation in Turkey (#20), drinking water in Pakistan (#28) and biogas in China (#26). In Tanzania (#19) it was the post-harvest and market infrastructure activities that were positively noted.

Figure 13

Performance of output targets achieved by project size (<\$30m n=19; \$30m and more n=16)



Source: ESR portfolio sample.

120. **Economic internal rates of return (EIRR).** For many projects economic internal rates of return (EIRR) were calculated but the independent evaluations that this ESR is based on were mostly sceptical about assumptions made in the calculations.

⁵⁶ Example taken from the 2020 CSPE Uganda, which was not part of the project sample selection.

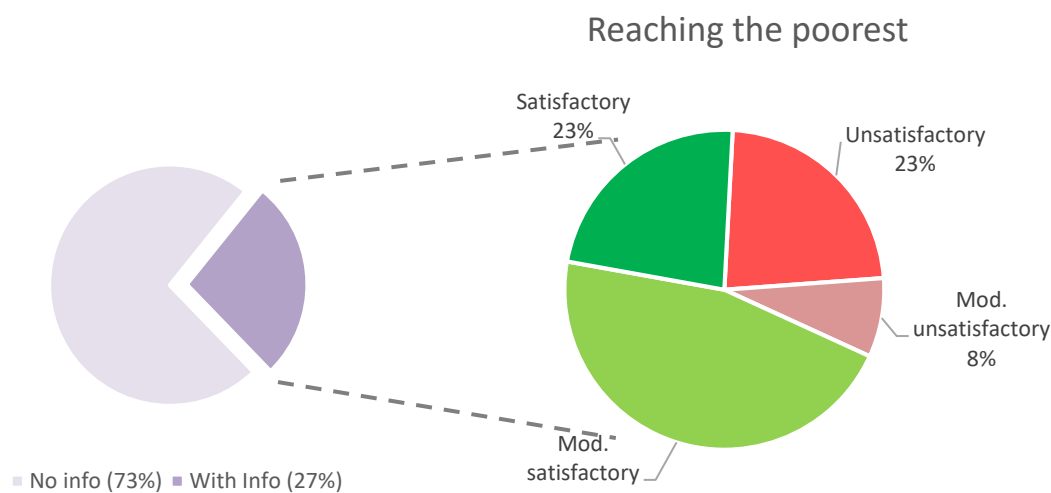
There were only very few projects in the ESR sample with validated positive EIRRs. For instance, PCRs overestimated incremental yields, data based on impact assessments turned out to be unrealistic, or costs for own farm labor were not considered. There also were EIRR overestimations due to changing timelines, increased project costs that were not incorporated, lower actual outreach numbers than planned and changes of product prices that were inadequately considered. For Malawi (#37), the EIRR at completion was high but considered as grossly overstated due to the estimate of outreach, poor infrastructure effectiveness (outsized warehouses and limited beneficiary utilization), and missing baseline data. The EIRR calculation was also found to be too complex for the sample project in Laos (#10), given the large range of infrastructure components and few comparable project experiences.

Pro-poor targeting, gender and youth

121. **Targeting.** Projects in the ESR portfolio sample showed generally positive targeting of the poor, but there was very little information in the reviewed reports to what extent the poorest segments of the communities were actually reached with infrastructure. Information on this topic was missing for in 63 per cent of the projects. But where it was reported it was mostly positive, 69 percent of these projects showed moderately or fully satisfactory results for reaching the poor (see Figure 13 below). This was particularly the case for social and NRM infrastructure that were particularly pro-poor, in contrast to some of the markets and production infrastructure (see Table 6 of Annex VII).

Figure 14

Reaching the poorest - performance in sample projects



Note: Score percentages in above chart are referring to the 27 percent of all sample projects where information was available in the reviewed reports on reaching the poorest. For 73 per cent of projects no information was found for this variable.

Source: ESR portfolio sample

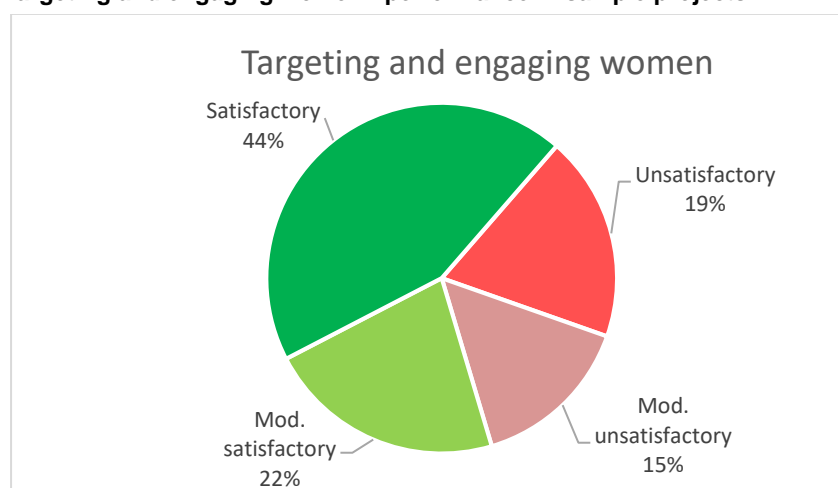
122. **The pro-poor focus** of the infrastructure provided was rated satisfactory for all CDD and community-based projects, e.g. Pakistan (#16), Rwanda (#17). This highlights the close link between community participation and pro-poor focus, also found by the ESR CDD. Pro-poor focus was mixed in the remaining project types.
123. **Landless people.** Irrigation projects carried a high risk that those with less access to land were excluded. For example, #48 (Sri Lanka) failed to reach small farmers, poverty groups and women because land holding was largely skewed toward the larger landholders and the tenure situation was not sufficiently reflected in the design. Madagascar (#47) targeted primarily the landless and those farmers that

owned land but excluded the whole category of pastoral households. The #40 (Bangladesh) reached at least some of the poorer households farther from the connecting roads whose incremental incomes from the project were higher than those located closer to the roads. In Georgia (#44) there is a large gender gap for irrigation access and secure land tenure; fewer women own irrigated land and use water services: only 38 per cent of landowners or co-owners in the irrigated areas were female vs. 42 per cent of the national average for this indicator. Only 3.7 per cent of the female water users entered into irrigation service contracts⁵⁷

124. **Gender focus**, the portfolio analysis found very positive results for women's access to infrastructure. The indicator for targeting and engaging women was scored satisfactorily in 66 per cent of all reviewed projects (see Figure 14 below)⁵⁸. The focus on women was overall judged satisfactory for CDD and community-based projects, mainly because they included a mix of infrastructure activities, including social infrastructure that benefited women.⁵⁹ It was unsatisfactory for the majority of production & market projects and infrastructure-heavy projects.⁶⁰ Women were actively engaged in all IFAD infrastructure categories, particularly social infrastructure, and most prominently energy, literacy and housing, and drinking water (with above average ratings and average scores), but also some of the production infrastructure. In contrast, there was a high frequency of low ratings for women's participation in certain other production activities and markets, including post-harvest. This once again demonstrates the need for particular sensitivity to women in these important infrastructure macro areas.

Figure 15

Targeting and engaging women - performance in sample projects



Source: ESR portfolio sample.

125. **Youth**. For IFAD, engaging and impacting young people through its projects has become an important objective. For the reviewed projects, both case studies and sample portfolio, the impact on youth of infrastructure investments was rarely mentioned in the documents, including PDRs. Where it was, youth was often lumped together with women. #46 (Gambia) and #43 (Brazil) are notable exceptions, but the results achieved in these two projects with youth are very modest.⁶¹

⁵⁷ According to the 2020 World Bank PAD, quoting from the 2019 NAPR.

⁵⁸ Noting that for 8 of 35 projects there was no information on this topic.

⁵⁹ Projects were women benefitted well from infrastructure include #10 Laos, #11 Madagascar, #16 Pakistan, #18 Sudan, and #24 Cambodia.

⁶⁰ Projects that scored particularly low included #29 Rwanda, #33 Tunisia, #36 Mozambique, and #38 Malawi.

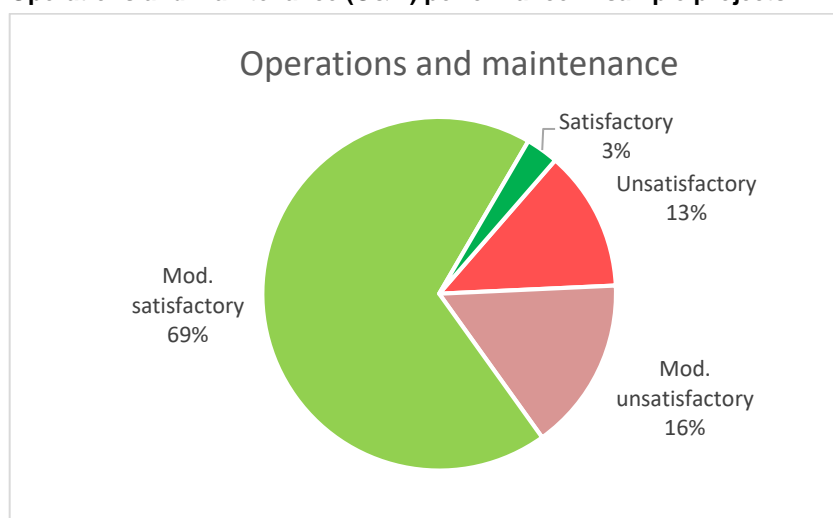
⁶¹ Under #43 (Brazil), young people were mobilized to become local Development Agents and implement project activities at the community level (PCR, PPA and RIA). Under #46 (Gambia), the shortage of young people in rural areas was a concern as most of them migrate to urban areas or abroad.

O&M and sustainability

126. **Overall**, the review shows that most IFAD projects do put in place some form of operations and management arrangements to put the infrastructure to use at least as long as the projects last.
127. Institutional arrangements for O&M were found to be satisfactory in more than two-thirds of the sample projects of the ESR review (a total of 72 per cent, with 3 per cent assessed as excellent) (see Figure 15 below). There were no major differences in average scores across the major infrastructure categories and activities (see Table 4 of Annex VII). But irrigation and transport infrastructure show more unsatisfactory O&M arrangements than the rest of infrastructure activities, while drinking water and sanitation, energy and marketplaces have better arrangements.

Figure 16

Operations and maintenance (O&M) performance in sample projects



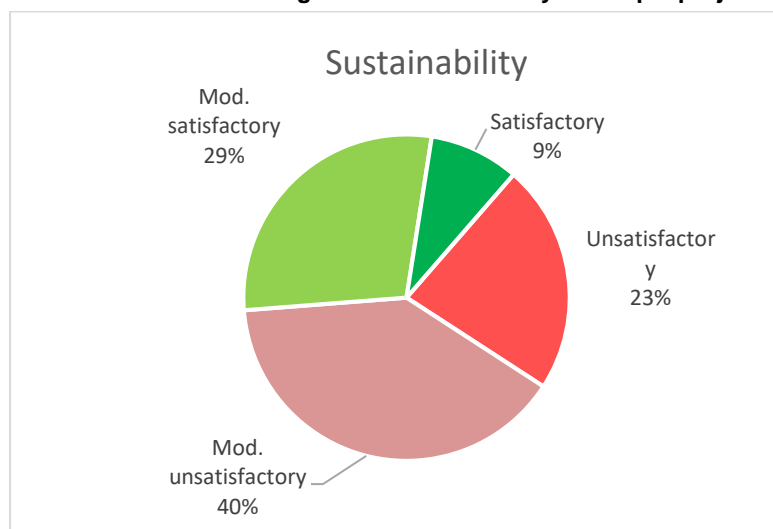
Source: ESR portfolio sample.

128. O&M arrangements for infrastructure were found to be satisfactory for the majority of CDD and production & markets projects. Examples with overall satisfactory arrangements for O&M include the irrigation project in Armenia (#1), infrastructure activities supporting marketplaces and village bakeries in Turkey (#20). For the other categories, it was mixed.⁶²
129. Available funds are the biggest problem for operating and managing the infrastructure schemes as shown by the portfolio sample review. This includes procuring or financing some simple equipment when groups are supposed to maintain infrastructures. Evaluations reviewed by this ESR do not provide a clear picture of the extent of beneficiary fees and contributions to O&M and reasons for non-payment that range from group financial management, disputes over fair contribution amounts, requests of payment for work contributions, and lack of market access to afford cash payments. Roads are most successful where handled by local authorities with budgets for O&M. Social infrastructure is often well utilised but inadequately maintained due to low capacity of beneficiaries and local administration and often due to unresolved questions about roles, responsibilities and infrastructure ownership. Almost nothing was found in the sampled portfolio and case studies on the actual capacity and willingness-to-pay by beneficiaries for infrastructure O&M.

⁶² O&M arrangements were not satisfactory, for example in #32 Sri Lanka or #6 DR Congo. Very poor O&M was found in Cambodia (#24), Cameroon (#25), Rwanda (#29) for all infrastructure activities, and in Sri Lanka (#32) for irrigation. O&M for market places did not work well in Mauritania (#12), for literacy and housing in Nigeria (#15) and for transport in Malawi (#38).

130. **Sustainability** was not satisfactory in more than 60 per cent of projects in the sample, with 23 per cent found to be very poorly sustained over the long run (see Figure 16 below). Only three projects out of 35 had satisfactory sustainability. In terms of infrastructure macro categories, social infrastructure was found to be least sustainable, with both below average scores and higher frequencies of very unsatisfactory ratings (see Table 5 of Annex VII). This is particularly visible in the relatively poor sustainability of health-related infrastructure. Market places also tend to be among those that perform below average in sustainability. In contrast, post-harvest infrastructure is doing quite well, with only 17 per cent being unsustainable (i.e. one out of six projects).
131. The sustainability of infrastructure was found unsatisfactory for the majority of projects, regardless of the project type. Positive outliers with very good performance on exit strategies and sustainability were found for irrigation activities in Armenia (#1), Rwanda (#17), Pakistan (#16) and Sri Lanka (#30) and for market systems in Tanzania (#19).
132. Projects in Cambodia (#24), Cameroon (#25), Rwanda (#29) and Sri Lanka (#32) were characterized by particularly poor exit strategies and sustainability, fully aligned with their very poor scores for O&M reported above. The oasis project in Mauritania (#13) had weak sustainability for its irrigation and drinking water activities, more related to the poor quality of the infrastructure work than problems with O&M. Marketplace infrastructure was found unsustainable in the Kenya market project (#8) and for milk in Azerbaijan (#2), and there were no exit strategies or good sustainability for roads infrastructure activities in Laos (#9), Mozambique (#36) and Malawi (#38).

Figure 17

Performance of exit strategies and sustainability in sample projects

Source: ESR portfolio sample.

133. **Reasons for poor sustainability** include insufficient consideration of infrastructure ownership and maintenance at design and the poor technical quality of infrastructure (see efficiency section). Project design elements that would ensure infrastructure sustainability are not necessarily elaborated upfront as part of the project design, and hence challenges arise later (for instance reported in #46, Gambia). Infrastructure handover arrangements and ownership are insufficiently addressed in project documents. Ownership rights, for example for post-harvest infrastructure provided by projects, are often resolved in time (see #38 Malawi). Government ownership and contributions to O&M beyond project end are critically important for sustainability in many of these projects. Such support is often there - maybe not to the extent necessary - but where it is not at all infrastructure sustainability is very weak or non-existent as in #45 (Chad) and #46 (Gambia).

Insufficient attention to capacities for O&M throughout also contribute to weak sustainability. O&M committees were frequently set up too late to be fully ready and capacitated to carry on after project completion. Complex infrastructure, such as an irrigation system, was more difficult to run and maintain, technically and management-wise, and also required appropriate institutional and policy frameworks to be sustainable.

Box 20

Community ownership and sustainability in CDD projects

“Community ownership has enhanced the sustainability of community infrastructure”. World Bank evaluations found that in CDD projects there are often insufficient resources from the government and communities to ensure their operation and maintenance. Pressure to meet short-term targets often detracts attention from institutional reforms necessary to make service delivery systems sustainable in the longer term. The ESR CDD (2019) found that the participatory processes fostered community ownership of NRM and physical asset investments, which then helped to ensure their sustainability. However, larger capital investments, such as the expansion of irrigation schemes, could not be covered by the communities on their own without government support.

Source: ESR CDD

B. User participation, ownership and capacities for O&M

134. **User participation and ownership.** Community mobilisation and participation in sub-project identification and planning is a common feature in most IFAD-supported projects. The main purpose is to enhance local ownership for the infrastructure built. However the extent and depth of participation may differ. Strong user participation and ownership are a key feature of CDD projects, and they are expected to translate into enhanced capacity and responsibility for O&M of infrastructure. Community mobilisation usually aims to strengthen demand orientation and ownership in infrastructure-subprojects. Participation in construction is mainly focussed on short-term employment benefits, without longer-term ownership. There were also cases without any user participation, resulting in a lack of ownership.
135. **Community-driven approaches. (“full participation”)** Strong user participation through entire project cycle is a key feature of community based projects. Moreover, the ESR CDD identified those projects where communities had been given full responsibility to decide over the use of community development funds (CDF) and manage the implementation process. A significant share of these funds was usually allocated for community infrastructure. #43 (Brazil) used a participatory demand-driven approach to support a range of project activities that contributed to improved household and community welfare, including access to drinking water, improved agricultural productivity and social empowerment - particularly for women (2018 IAR).
136. **Community mobilisation (case studies).** User participation in other (non CDD) projects mainly focussed on needs identification and planning and participation in construction activities. In #42 (Burundi) and #46 (Gambia) there was a clear agenda to promote social mobilization with the aim of supporting participatory planning, of which IS a part. In a number of other projects (#49 (Philippines), #41 (China), #48 (Sri Lanka), #45 (Chad)) social mobilization was done, but no participatory plans prepared. In #45 (Chad) the *participatory pastoral assessment* secured the buy-in of the transhumant population and ensured participatory decision making with regards to water structures, in line with the communities’ needs, as well as access rights for pastoralists. It also helped to identify women and youth roles in the pastoral activities, ways of conflict management, wells’ management and enabled assessment of environmental consequences.
137. **Participation in construction.** In a number of cases, users actively participated in the construction of infrastructure projects. Under #42 (Burundi) *Water user and*

irrigation committees were trained by local NGOs for supervising the construction of IS and managing their maintenance. In #40 (Bangladesh) the participation of IFAD target groups in infrastructure sub-projects was limited to their implementation specifically through labour contracting societies, which enlisted destitute villagers in the construction work for small and medium marketplaces and certain types of roads (block roads).

Box 31

Labour contracting societies in Bangladesh

The Labour Contracting Societies (LCS) hired destitute women (79 per cent), as well as men (21 per cent), to construct road and market infrastructure under the CCRIP (#40). The LCSs promoted the principle of equal pay for equal work between men and women, although in some instances women beneficiaries still felt that the payment system was unfair. Payment delays of wages were also reported, with women having to resort to borrowing money at high interest rates. Further, accidents occurred involving LCS members and their children, where after the project made provisions for work-related insurance for LCS members.

LCS employment improved the economic status of some of the poorest households and enhanced the skills and confidence of poor and vulnerable groups of women to some extent. However, the effects were mostly short-term due to difficulties finding further employment and a lack of complementary support for income-generating activities. Further, a RIA impact assessment found that the conservative socio-cultural values and norms and family-related responsibilities were found to be barriers to some women's participation in LCS, and acted as a constraint on women's economic empowerment more generally.

A country-wide policy study on LCS commissioned by IFAD in 2017 found that women often lacked a clear plan for investing the capital from LCS profits and needed more capacity building and mentoring in order to make best use of the money; at times LCS members subcontract skilled workers for tasks they are unable to do, frequently having to pay higher rates than allowed for in LCS contracts; and their contracts do not include provisions for price adjustments when material or labour costs increase as a result of project delays and seasonal or climatic factors, particularly common in the coastal region, which affects profit margins and can occasionally lead to LCS incurring financial losses.

Source: ESR case studies.

138. **No user participation:** There were also cases where users did not participate sufficiently; in these cases the infrastructure was government-led only. For example in #40 (Bangladesh) identification and planning of the infrastructure sub-projects were undertaken at central level, with activities pre-selected and pre-approved by the Ministry of Local Government, Rural Development and Co-operatives in support of the Government's infrastructure investment planning. Similarly, in the case of #44 (Georgia), rural infrastructure projects were selected in accordance with the Government (Ministry, Municipalities and the Georgian Amelioration Company (GAC)) priorities/preferences, and did not include at least 50% determined based on the value chain choices, as was planned.⁶³
139. **Capacity building.** Project allocations for capacity building are hard to quantify. Some projects may have a dedicated capacity-building component, but often training and capacity building is also included in other components. The ESR identified budget allocations to capacity building for sample projects, where possible.⁶⁴ For projects that had an allocation for capacity building, it appeared that CDD projects had allocated up to 46 per cent of the project budget (15 per cent on average), followed by production and markets (up to 23 per cent; 15 per cent on average) and community-based projects (up to 22 percent, 13 per cent on

⁶³ Insufficient user participation was also noted for #7 Georgia (irrigation), #9 Laos (roads), and #10 Laos (social infrastructure). Women did not participate sufficiently in social infrastructure #14 Morocco and #37 Turkey.

⁶⁴ No budget allocations were found for 2 CDD projects, 4 production & market projects and 3 infrastructure heavy projects.

average). The lowest allocations were found in the infrastructure heavy projects (up to 10 per cent, 6 per cent on average).

140. The strengthening of community-level organisations through a long-term empowering approach was often a key feature of CDD projects.⁶⁵ In other cases capacity building was noted as insufficient (e.g. #48 (Sri Lanka), thus casting doubt on sustainability prospects. The same was noted in the case of the predecessor project to #46 (Gambia), which led to the need for the continued support to the FOs, women and youth kafos on managerial, governance and technical skills. The same happened under #47 (Madagascar) where the project was extended for several reasons, one of them being the realization that the users' groups were not strong enough to ensure the sustainable management of the infrastructure.
141. **User groups.** The formation and strengthening of users' groups (e.g. WUAs) is an important mechanism for the involvement of the users in the governance/O&M of infrastructure. Support to the WUAs/FOs helped the farmers to mobilize and tackle common issues, providing also a mechanism for IFAD to channel through the capacity building assistance. Within the sample of 35 projects, 25 projects were supporting user groups. In the successful cases the user groups were able to prepare their organizational O&M and financial plans (#49 (Philippines)) and were capable of keeping books and ensuring supervision of their activities (#45 (Chad)). WUAs are an important way of organising farmers for sustainable water management. However, IFAD's experience with WUA is mixed, as summarised by the ESR water (below).

Box 42

IFAD's experience with WUAs

Water User Associations (WUAs) as an instrument of representative and participatory governance is something that IFAD has strongly and consistently promoted since many years now and can be justifiably proud of this successful and widely adopted institutional innovation. WUAs are the preferred institutional arrangement for management of group or canal based irrigation projects. IFAD's experience in regard to WUAs is mixed. IFAD has learned that for a WUA to function effectively and sustainably, several key factors must come together, such as a reliable and adequate supply of water and energy that is fairly distributed; adequate social capital and good leadership; technically sound design with easily manageable technologies deployed; long-term security of land tenure and water rights; viable returns on agriculture; women actively participating in decision-making; value addition and efficient farm-to-market value chains; an enabling legal framework; and availability of sound technical and managerial skills.

Source: ESR Water.

142. Often capacity building was not sufficient to ensure the sustainability of the infrastructure built (see performance discussed in section A). The project sample includes seven cases where capacity building was found insufficient; in another four cases user groups were found to be inactive or too weak; finally, there were also cases where user groups were not able to access the financial or material resources to become effective. More generally, user groups were stronger in community-driven and community-based projects. They were often not sufficiently strong to perform their roles in production and market access projects.⁶⁶
143. For example in Azerbaijan (#2), support for livestock producer associations through better storage capacities, marketing and packaging facilities and processing outlets has not been working well since the project simply allocated insufficient resources and time to it and saw it more as an added-on sub-component to the main irrigation activities (which also helped, but mainly with

⁶⁵ #16 Pakistan, #13 Mauritania, #35 Vietnam, #15 Nigeria and #27 Nepal.

⁶⁶ In four cases, they were found to perform very poorly (#8 Kenya, #13 Mauritania, #18 Sudan, and #29 Rwanda). In five cases, user groups performed very well (#1 Armenia, #9 Laos, #11 Madagascar, #17 Rwanda, and #27 Nepal).

livestock drinking water). For Turkey (#20 and #37), there had been relatively little attention to support and strengthening farmers and farmer organizations institutionally across a wider range of livestock related activities, which at least partly explains their lack of competitiveness.⁶⁷

Box 53

Strengthening user groups in Burundi

In Burundi producer organizations and collection/processing centres for livestock and milk products show some positive results after several years of support through various IFAD projects. But there are continued concerns about the matching of changing market demands; the legal ownership of collection, storage and processing infrastructure; institutional capacities of producer organizations and cooperatives and regular member financial contributions; and stimulation of and networking with the private sector. One of the more recent developments has been a partnership agreement with a private-sector actor (Modern Dairy Burundi) for milk collection which is currently being evaluated in the ongoing CSPE.

In #42 (Burundi) programme interventions initially showed some signs of sustainability due to the high degree of programme ownership by local populations, participative community development approaches, good financial returns on several activities, and partnerships with NGOs and other IFAD projects. But ultimately, the weak capacity of O&M user groups (and the viability of community groups in general) were seen as limiting infrastructure sustainability. Membership in these groups was often motivated by project incentives (such as payments for work etc.) and their rapidly changing composition was challenging. (This information is based on the PRDMR 2011/12 PPE and Project completion report validation).

After completion of project #42 (Burundi) and similar experiences in other projects the 2016 Burundi COSOP acknowledged that "limited arrangements for infrastructure maintenance do not allow for sustainability" of infrastructure projects. The COSOP identified a number of very specific constraints including institutional and governance challenges and suggested, among others, to embark on a policy dialogue for a stronger enabling policy and regulatory environment. This should support sustainable infrastructure investments through institutionally and legally strengthened user and producer groups and clearer ownership arrangements. Progress on results concerning these and other institutional strengthening objectives will be documented in the 2020 CSPE Burundi (forthcoming).

Source: ESR case studies.

144. Strong (capacitated) users' groups are important prerequisites for sustainability but capacity needs to be understood widely: training, even if on time and enough, is not sufficient. These groups need clear mandates, operational guidelines, clear engagement rules with the governments. They need clear financing mechanisms, aiming at self-sufficiency and cost recovery, but if the government subsidies are needed, they need to be transparent and non-distortionary (better in the form of output-based aid and for connection rather than operation purposes). The role and performance of user groups in the operation and management of infrastructure will be further explored in the following section.

C. Institutional models and sustainability

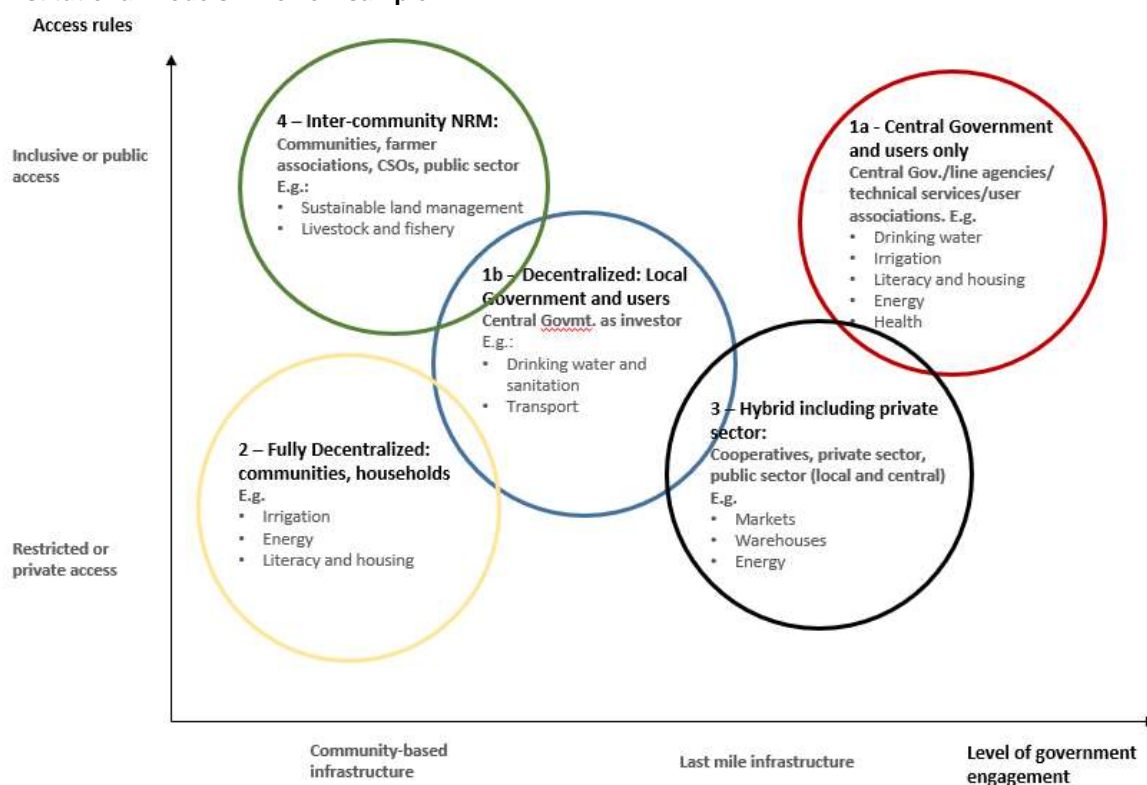
Institutional ownership and management models for infrastructure

145. **Types of ownership and governance.** The ESR identified five basic types of institutional ownership and governance arrangements for infrastructure that have major consequences for its planning, user participation and access, operations and maintenance and sustainability. Each model has a different composition of

⁶⁷). In the AKADP project (#37) the associations established by the project for milk collection could not compete with existing privately-owned milk collectors and four milk collection centers were not functioning at the time of the PPE. Private collectors had the advantage that they made advance payments to dairy producers for 6 months, even though such payments were later offset by lower unit costs for purchased milk. In the AMSDP (#20), the smaller milk tanks supplied to farmers quickly became obsolete as private dairy supply chains and farm-level milk collection became more firmly established and larger tanks substituted for those on-farm.

institutions and users that provide capital for construction, are responsible for O&M and its costs, and who own infrastructure assets in the end. The five models are as follows: Model 1a involves mainly central government and infrastructure users; Model 1b relies on decentralized local governments and users; in Model 2 infrastructure is fully decentralized to communities and households, without major government involvement except for providing the basic capital investment (for instance, in the form of community development funds); Model 3 is a hybrid version with potential actors from various government levels, users and private sector entrepreneurs or cooperatives; and Model 4 includes different actors that join across communities, for common natural resource planning, utilization and related infrastructure ('inter-community').

Figure 18
Institutional models in review sample



Source: ESR.

146. These models have different forms of governance, government involvement and beneficiary participation as well as access rules. The first three models (1a, 1b and 2) covered 88 per cent of all infrastructure activities in the review sample. They were commonly linked to CDD and Community-based projects, but also found in other projects. The hybrid models including private sector and of inter-community arrangements were more common in production/market /value chain oriented projects. A majority of infrastructure activities (68 per cent) were decentralised to local governments and communities (models 1b and 2). (see graph next page).
147. These are explanatory models; they are not prescriptive; and they are also not mutually exclusive. Often several models are found in a single project, depending on the different categories and types of infrastructure. (see frequency of models in Annex)

Strengths and weaknesses of institutional arrangements

148. **Centralised model (Model 1a):** This model has been most common for irrigation and drainage infrastructure; with central government line ministries or agencies responsible for the main canals and water user groups in charge of secondary or tertiary canals. But centralised models were also common for certain social

infrastructure (e.g. education, government operated health centres and housing). Much of social community or district infrastructure is staffed, equipped and maintained by line ministries, such as schools, or set up by central government agencies after emergencies, such as housing. Ownership stays either with the government as a public good, or is shared with users, the same for O&M. Access could be free or may require an obligatory user fee.

Box 64

Government retains a central role in irrigation in Georgia

For #44 (Georgia), the GAC, a government agency, is responsible for O&M of irrigation systems down to the farmer level. Individual service contracts are signed annually with each landowner for water supply. In the absence of formal local water user organizations most irrigation systems rely on informal local arrangements to distribute water and clean ditches. Current local water delivery is scheduled upon demand from farmers, relayed to a ditch-level GAC "regulator" and then aggregated upward.

Source: ESR case studies.

149. Government engagement and the extent of beneficiary participation depend a lot on the governance context. This model often has been top-down in the past, but also could involve community-based approaches and user groups. In terms of performance, this model appeared the most inclusive and had the highest number of satisfactory scores for targeting women in the review sample (see various graphs on model performance in section III of Annex VII). Targeting criteria were often more stringently applied in this set-up. Membership criteria and user fees were sometimes barriers for use, though, especially for the poor. In the review sample sustainability was satisfactory under this model for energy, transport, livestock and fishery, irrigation and post-harvest infrastructure. In other cases government was not been involved in O&M after project completion and sustainability was weak as a result.
150. Central Government has shown strong ownership in some places and taken over an active role in O&M, for example through common guidelines (#47 China), a GIS-based inventory of irrigation systems (#48 Sri Lanka), or extensive technical and thematic training (#47 Madagascar). In the Philippines (#49) the Government invested in infrastructure, in parallel to IFAD, through the Farmers' Equity Fund and facilitated the convergence and horizontal integration of participating agencies in project implementation – thus maximizing resources and ensuring more focused interventions to rice productivity.
151. In some other case studies Government ownership and capacities on the ground reportedly were not strong enough. In #45 (Chad), for example, the mobile schooling stopped even before the end of the project since the Department of Education did not take over operations as planned. Similarly, for #46 (Gambia), the Government did not have the capacity and political will to contribute to long-term technical and financial sustainability of agricultural water infrastructure. While moving to sturdier and durable infrastructure for lowland rice production IFAD so far has not convinced the government to adopt the infrastructure as a public good to ensure its sustainability.
152. **Decentralised model, with local government (Model 1b).** In the case of the decentralised model, the local government is the public entity that owns and manages the infrastructure together with users, to various degrees, depending on its administrative and finance capacities. Typical examples are intra- and inter-community roads, markets and some forms of communal social infrastructure, for instance in health, occasionally with fees being raised to pay for maintenance. In the review sample this was the most common model for transport and drinking water and sanitation infrastructure.

153. In this model infrastructure is directly managed by local governments or potentially by multi-stakeholder governance arrangements, for instance in market management committees or road user associations that are supported through local governments, but also in irrigation (see Box 15 below). Sustainability depends on local government ability to raise O&M funds. Sustainability under this model was scored satisfactory for all infrastructure categories, except for markets and livestock and fishery. The effectiveness of targeting was more variable in this decentralised, local government model and it scored lower on targeting women than model 1a but was overall satisfactory on the latter.

Box 75

Institutional arrangements on markets, roads and irrigation

Markets: In #40 (Bangladesh) the maintenance of marketplaces is ensured through the collection of fees from traders by the local government (Upazila). 25% of these lease fees is earmarked, passed on to market management committees and used for long-term maintenance. Better-managed markets with more participants collected higher rents that were used to operate and maintain the markets in a sustainable manner (RIA study). No major issues were noted about the allocation and use of these funds, other than leases being set at too low a rate in some instances and proving insufficient to cover the costs of maintenance. But there is a trade-off between sustainable financial fees for market stalls and their effective use by IFAD's target groups. Policy measures would be needed to address this trade-off, specifically in view of poorer beneficiaries, e.g. through varied rates, closer collection points etc.. There were instances when the farmers were trading outside the market, and not inside, to avoid paying rental fees.

Roads: Local or provincial Government are usually in charge of O&M, in some case also user association. Local and provincial governments were in charge of the maintenance of the roads and bridges in #44 (Georgia), #48 (Sri Lanka) and #40 (Bangladesh), partly financed through central Government general budgets. Under #47 (Madagascar) the rural roads were under the O&M of Roads Users Associations, which worked in partnership with the communes. The latter collected taxes on market days with associations joining in collecting contributions and tolls, as well as mobilizing the communities to maintain the roads. Beneficiaries preferred to maintain the roads on a voluntary basis rather than through these institutions.

Irrigation. Under #47 (Madagascar) various farmer organizations⁶⁸ are in charge of the O&M of the irrigation network (and roads) under the supervision of local administrations. For the water structures (irrigation and flood control) the local authorities helped establish WUAs before start of construction to manage and maintain on a fee basis. At project completion (the end of Phase I), 55 per cent of user groups were judged as having advanced financial and operational autonomy, and so many of them were still supported by the communes.

Source: ESR case studies.

154. **Fully decentralised model (Model 2)** refers to a situation where users alone own, operate and maintain the infrastructure. This is often the case in community-driven development (CDD projects) and could include local wells, water tanks and small-scale irrigation and feeder roads, but also some social infrastructure where the state is not very present and active. It also refers to household level infrastructure, such as certain forms of water and sanitation or decentralized, renewable energy. In this model, users are usually fully responsible for O&M and replacement. In the review sample, this model was most frequently found for irrigation infrastructure, drinking water and roads.
155. This model usually involves high participation and ownership by community-based organizations (CBO) as well as by households themselves. In certain cases, user fees could be a barrier for infrastructure use as well as elite capture. Sustainability is an issue for public goods that do not charge fees, or fees that are below O&M

⁶⁸ Very diverse, depending on the common interests: "users associations for water, roads, or association of rice producers, vegetables, fishermen, dressmaker, craftsperson and so on" (PDR, page 31, paragraph 109109O. The most documented are the two first ones.

- and replacement costs; or when household owners do not have the resources to take care of such infrastructure. This is less of a problem for revenue-generating productive and market infrastructure than for social infrastructure.
156. The fully decentralised model had a mixed performance on inclusion. It was able to include women in about half of the cases. But women remained, for instance, often underrepresented in water user associations.⁶⁹
 157. Technical quality and achievement of targets have been mixed. Sustainability was scored unsatisfactory for all infrastructure categories, except for land management and livestock and fishery. This is mainly related to insufficient capacities of user groups to maintain the infrastructure and their often incomplete integration into institutional frameworks such as irrigation networks.
 158. In some cases, the decentralized model resulted in insufficient buy-in from government. This was the case in Brazil (#43) where municipal governments were not involved in planning and implementing project activities, nor in infrastructure operation and maintenance. Coordination and sustainability of its infrastructure activities were weak as a result and missed out on synergies.
 159. **Hybrid model, with private sector participation (Model 3).** This model is usually how market and value-added infrastructure is organized and governed, except for roads and other transport links. It often relies on small entrepreneurs (MSME), private sector (SME) and farmers' organizations or cooperatives beyond community level, sometimes in multi-stakeholder and public-private partnerships (PPPP); it could also involve local and central government agencies depending on their capacities, local presence, and mandates. This governance model would typically refer to non-government run storage facilities, local and regional markets, other product aggregation facilities (such as for milk collection) and value-adding processing centres. There could be a wide range of asset ownership and sharing of costs, with assets being publicly or privately held and usage fees being charged. Access and benefits could be limited to group members (e.g. in coops).
 160. This model requires functioning farmers organizations, cooperatives and (M)SMEs that are capable and willing to engage with each other and the project. For market infrastructure, the potential for public-private partnerships depends on the commodity sub-sector, existing private sector operations, and the specific type of infrastructure and linkages. It is more likely where there is no competition and there are mutual benefits for value chain actors (such as in out-grower schemes, processing or dairy industry) or where product quality matters a lot. There could also be public-private partnerships in production, which sometimes happens on the input side, but is relatively rare in infrastructure ownership and management in IFAD projects. Private enterprises are mostly engaged in infrastructure construction, rarely in O&M.
 161. This model relies on clear rules and enforcement of governance and access, often by governments, to offer good opportunities for smallholder farmers and women. Elite capture could be an issue for instance in collection, storage and processing and unfavourable conditions could be generated for IFAD's target groups.⁷⁰ The advantage of this model is that it is revenue generating which increases the likelihood of sustainability. For market access, market fees could be access barriers for the poor and for women as well as distance to markets/processing centers or elite capture (e.g. in #40 Bangladesh).
 162. Only few cases have been found for this model in the ESR portfolio (e.g. #38 Malawi), and none in the case studies, but it seems to work for sustainability of energy, markets, value addition and post-harvest infrastructure. Please also refer

⁶⁹ See 2014 IOE ESR on Water conservation and management

⁷⁰ For example, the #38 Malawi reported that there were still unresolved ownership issues regarding, which prevented community members to use one of the warehouses built.

to Chapter IV.A for a discussion on how market access and value chain infrastructure operated.

163. **Inter-community model (Model 4).** This model is mainly concerned with natural resource management, such as watershed infrastructure, larger soil and water conservation schemes, and access infrastructure that requires inter-community planning and management beyond the individual community. This could involve local and central governments where available, interested and mandated. It often includes specialized CSOs. Generated structures could be community, group, or individually owned. Typical cases for this model are watershed management or NRM projects.
164. This model is potentially highly participatory but requires a lot of understanding and awareness raising of the issues at stake and various technical options for necessary infrastructure and water/soil management investments and their impacts. Different and diverging interests will have to be mediated through establishing and managing multi-stakeholder platforms which local governments are unlikely to have the capacity for. Allocation of investment funds is likely to be difficult. Unless buffered by continued local or regional support technical and financial sustainability are likely to be an issue (see Box 16 below for two examples of this model in Chad and Gambia). In the review sample, this model worked well on sustainability of drinking water and sanitation, and sustainable land management.

Box 86

Example for institutional arrangements on NRM

Under **#45 (Chad)** intercommunity committees ensured the management, technical maintenance and protection of wells, ponds and other hydro-infrastructure that were far from the villages and nomad camps and used by several communities. They ensured the adherence to the transhumant corridors (190 km) marked out by the project by all users, and the management of potential conflicts. The user populations were in charge of day-to-day management. Contributions other than in-kind were not deemed to be necessary; and users took care of buckets and ropes as well as water drawing. O&M management was building on traditional practices.

In **#46 (Gambia)**, the sustainable management of the tidal irrigation schemes as part of O&M was beyond the capacity of farmer organizations since proper drainage required floodgate management according to tides and rains and the intervention of a technician. Community-prepared watershed management plans were a precondition for communities and Water Users Groups (WUGs) to be eligible for project support, but they were done for individual villages and not by watershed involving all communities and beneficiaries of the irrigation scheme. This reduced their usefulness. Similarly, beneficiary contributions for O&M were in the end insufficient to operate and maintain infrastructure without continued government support.

Source: ESR case studies.

3. Some other aspects and examples of this models are being presented and discussed in other parts of the report (Fragility chapter, NRM chapter).
165. **Concluding overview.** Figure 18 below shows the exit strategies and prospects for sustainability for different governance models, as observed in the review sample.⁷¹ It shows that the decentralised model, with local government, worked well for most types of infrastructure. However, the limited (human and financial) resources of local governments were also noted as limiting sustainability in a number of cases (see Chapter IVA) Communities own their own were not able to maintain most types of infrastructure, with the notable exception of some productive infrastructure. Centralised governance models worked for infrastructure, such as transport, energy and irrigation. Private sector participation was beneficial for post-harvest, value addition, market and energy infrastructure. Inter-

⁷¹ For 129 infrastructure categories scored in 35 projects.

community models helped to strengthen the sustainability of NRM and water-related infrastructure.

Figure 19

Exit and sustainability performance by institutional model and infrastructure (sub-) categories

	Centralized model	Decentralized model with local government	Fully decentralized to communities	Hybrid model with private sector	Inter-community model
PRODUCTION					
Irrigation	+	+	-	-	+
Livestock and fishery	+	-	+		-
Post-harvest		+	-	+	
MARKET ACCESS					
Transport	+	+	-		
Markets		-	-	+	
Value addition		+	-	+	
SOCIAL					
Drinking water and sanitation	-	+	-		+
Literacy and housing	-	+	-		
Energy	+		-	+	
Health	-	+	-		
NRM					
Sustainable land management	-	+	+		+
Overall	+	+	-	+	+

Legend:

+	Satisfactory scores
-	non-satisfactory scores
	no case observed

Source: ESR.

Dynamic ownership, management models and sustainability

166. Institutional models for infrastructure ownership and management are not static but dynamic, as already noted for fully decentralized models that usually benefit from some form of local government involvement, particularly for sustainability. Changes or absence of certain institutional players also change the dynamics and affect in particular sustainability. For instance, in #49 (Philippines) the continued operation and sustainability of infrastructure became a concern in recent years when cost recovery switched from "irrigator service fees"⁷² collected through project/Government agents to an "irrigator association management fee" under the responsibility of user groups. This arrangement reduced the fee amounts collected from farmers. In #48 (Sri Lanka) farmer organizations were supposed to be in charge, but were unwilling to take on management of the field canals that were rehabilitated only to 15 per cent.
167. The uncertainties associated with certain de-facto decentralized models, partial government ownership but unclear mutual expectations (and capacities) is apparent in Gambia and Burundi. Sustainability of infrastructure benefits was a challenge in most IFAD interventions in The Gambia, particularly in water and irrigation development (IFAD 2015/16 CSPE The Gambia). This includes with all likelihood case study #46, which is still ongoing. The reasons are found in missing beneficiary ownership, virtual absence of government O&M contributions beyond

⁷² RIA impact assessment: A. Arslan, D. Higgins, P. Winters and F. Bresciani. (2018). Para. 4, p. 33.

project completion, along with poor quality and therefore underutilized water infrastructure.

168. In Madagascar (#47), the importance of land ownership was an issue as it was in other countries. In Madagascar, the project therefore proactively promoted improved land rights, with support to land offices and land certificates' system. But there is lingering uncertainty about the land certificates, as small producers showed low interest in land securitisation in the project's sparsely populated areas and few were willing to pay for them compounded by a slowdown of national land offices and the law on contractual land rights is not yet in force.⁷³

⁷³ Madagascar CSPE 2020, p. 26 para. 85,86 (June Version)

Key points (Chapter III)

- **Effectiveness:** About half of the projects reviewed have achieved or even overachieved their infrastructure targets. CDD projects achieved their targets for all types of (social and productive) infrastructure. Results in production & market-focused projects were more mixed. Market infrastructure was found ineffective in several projects.
- **Technical quality.** With regard to the technical quality of the infrastructure provided, the majority of production and market projects were found to be unsatisfactory. For the other project types it was more mixed. Technical infrastructure quality is often not sufficiently monitored and reported.
- **Efficiency.** Evaluations reported significant delays in start-up, slow project delivery and procurement. The time it takes for delivery, including infrastructure, is usually predictable at appraisal but rarely well acknowledged. Reasons for fast implementation included good PMU management and outsourcing of contracted work and effective NGO service providers that helped with technical and socio-organizational efficiency.
- **Targeting. The pro-poor focus** of the infrastructure provided was rated satisfactory for all CDD and community-based projects. Irrigation and road projects were prone to 'placement biases', with a risk of excluding the very poor.
- **Gender focus,** the portfolio analysis found very positive results for women's access to infrastructure. Focus on women was overall satisfactory for CDD and community-based projects, mainly because they included a mix of infrastructure activities, including social infrastructure that benefited women.
- **O&M.** Available funds are the biggest problem for operating and managing the infrastructure schemes as shown by the portfolio sample review. This includes procuring or financing some simple equipment when groups are supposed to maintain infrastructures.
- **Sustainability** was not satisfactory in more than 60 per cent of projects in the sample. O&M committees were frequently set up too late to be fully ready and capacitated to carry on after project completion. Complex infrastructure, such as an irrigation system, was more difficult to run and maintain. Infrastructure handover arrangements and ownership are poorly described in project documents.
- **User participation, ownership and capacities for O&M.** Community mobilisation and participation has enhanced local ownership for the infrastructure built.
- **Institutional models and sustainability.** The ESR identified five basic types of institutional ownership and governance arrangements for infrastructure:
 - The **centralised model**, with central government in charge of the implementation and (to varying degrees) the O&M, appeared the most inclusive and had the highest number of satisfactory scores for targeting women in the review sample. Sustainability was found satisfactory under this model for energy, transport, livestock and fishery, irrigation and post-harvest infrastructure.
 - The **decentralised model**, with local government owning and managing the infrastructure together with users, was scored satisfactory for all infrastructure categories, except for markets and livestock and fishery.
 - **Hybrid models, with private sector participation** seem to work for sustainability of energy, markets, value addition and post-harvest infrastructure
 - **The inter-community model is** highly participatory but requires a substantial awareness raising and capacity building. In the review sample, this model worked well on sustainability of drinking water and sanitation, and sustainable land management.

IV. Findings on partnerships and cofinancing

A. Government partners and partner performance

Government demand and transaction costs

169. The review of the CSPEs for the Top Ten infrastructure portfolios provided some important lessons on the opportunities and limitations for IFAD to scale up its infrastructure investments. Opportunities are mainly related to Government's demand (and preference) for investments into tangible assets that provide lasting economic returns. The limitations are related to the partnerships required, that often lead to higher transaction costs.
170. The CSPEs noted Government's preference for (hard) infrastructure investments in several cases, e.g. Bangladesh, Cambodia, Egypt and Uganda. In some countries the focus on infrastructure was driven by a long-term partnership with a particular infrastructure-oriented government agency, e.g. the Local Government Engineering Department (LGED), or the Palli Karma-Sahayak Foundation (PKSF) in Bangladesh. In DRC the default partner is the Ministry for Rural Development, which provides specialised technical services, such as the national service for rural hydraulic, the directorate of feeder roads, and the national service for urban and peripheral urban horticulture.
171. Transaction costs are in particular required for dealing with social and environmental safeguards. There is a perception among IFAD staff and management that SECAP discourages regional directors and CPMs from pursuing certain infrastructure investment demands in their projects. For some countries, client governments are reportedly reluctant to engage with IFAD in infrastructure particularly for Category A projects. Category A projects that have the highest standards and requirements for risk assessments and mitigation. This may partly explain why there have been few Category A projects so far at IFAD.⁷⁴ IFAD staff in the field and government clients are also concerned about the additional costs for assessments, possible delays and reputational risks. There may be complications from grievance mechanisms and liability during implementation, particularly in countries with strong civil society.
172. In countries where IFAD maintains long-standing partnerships with other IFIs, safeguards were often taken care of by the cofinancing partners. These cofinancing partnerships were found in all Top Ten countries. The partnership with ADB was the most common one and found Bangladesh, Cambodia, Philippines, Sri Lanka and Afghanistan.⁷⁵ However, engagement with a large number of partners also increased the transaction costs for IFAD and the government, as shown in Box 17. Similar for Uganda, where the CPE (2013) noted the increased transaction costs of the IFAD-AfDB partnership.

Box 97

Cofinancing – experience from the Indonesia IPDMIP project

Lessons learnt from the IPDMIP are instructive. The Indonesia IPDMIP project (Indonesia Integrated Participatory Development and Management of the Irrigation Sector Project), approved in Dec. 2015 by the IFAD Board, is **the largest ever cofinanced project by IFAD, at a total project cost of US\$828m**. The project design was innovative in so far as it built on the past experiences of ADB and IFAD and knowledge generated in Indonesia to strengthen the links between agriculture (IFAD's main intervention area) and the rehabilitation of irrigation systems (ADB's main

⁷⁴ Nine of 236 projects in IFAD's active portfolio are classified as Category A (4 per cent) and 2 of 37 projects in IFAD's current pipeline of projects are classified as Category A (6 per cent). Four ongoing category A projects are in ESA: Uganda, Malawi, Ethiopia, Angola.

⁷⁵ Cofinancing partnerships were also with the World Bank (e.g. Niger, Afghanistan), with AfDB (Uganda), and OFID as cofinancing partner in DRC.

intervention area, including hard and soft elements). IFAD provided US\$100m consisting of a US\$98m loan (third party financed through KfW⁷⁶) and US\$1.5m grant. ADB provided US\$600m. The Government's contribution at appraisal was estimated at US\$128m. The main obstacles for effective implementation were the institutional partnership arrangements. IFAD and ADB dealt with two different Ministries (Ministry of Public Works and Housing; Ministry of Agriculture). The synchronization of activities in time and locations did not work out well although a basic agreement on 750 schemes existed. All this led to delays in disbursements. IFAD staff in Jakarta draws three lessons from the experience so far: (i) the need for a stronger practical and flexible partnership approach for cofinancing; (ii) IFAD should have some hard IS itself and not just rely on cofinancing partners; and (iii) timing is key; if there is cooperation in a project of this kind, IS rehabilitation needs to start in year 1, and agriculture services should not come in before year 4 (depending on the pace of rehabilitation).

Sources: Interviews with IFAD and ADB country staff and Government officials in Jakarta; IPDMIP Supervision Report 2018.

173. Partnerships with a broader range of government agencies have created opportunities for infrastructure investments, but also led to higher transaction costs. For Indonesia the 2014 CSPE noted the high transaction costs resulting from interacting with so many government counterparts.⁷⁷ Diverse partnerships with a large number of implementing partners were also noted for the Philippines (2017 CSPE) and Sri Lanka (2019 CSPE) where a dozen ministries or departments have been involved in implementing the post-tsunami projects.
174. Egypt is a notable exception within this group of Top-Ten Infrastructure Countries. Here infrastructure remained a focus despite the almost exclusive partnership with the Ministry of Agriculture and Land Reclamation (MARL).⁷⁸ The Egypt CSPE (2017) noted this rather narrow partnership as the main factor limiting the effectiveness of IFAD's investments into on-field irrigation and WUA capacity building. Here the lack of wider partnership opportunities were clearly limiting the opportunities for IFAD to expand and scale-up its investments into (soft) infrastructure. The CSPE also noted the absence of a meaningful policy engagement with regard to WUAs.

Government partner performance in project sample

175. **Lead agencies in project sample.** MOA was the most prominent implementing partner in the project sample, leading a total of 19 projects. Six projects were led by local governments and 10 were under other ministries. The majority of CDD projects included in the sample were led by local governments (4 projects). MOA has led the majority of projects classified as "community-based" and "production & market".

Table 8

Lead agencies in project sample across project types

	CDD	Community-based	Production & Markets	Infrastructure - heavy
Ministry of Agriculture	2	7	8	2
Local government	4	0	1	1
Other ministries	1	4	3	2

MOA: 19 projects (average domestic cofinancing: 34 per cent)

Local government: 6 projects. (average domestic co-finance: 19 per cent)

Other ministries: 10 projects (average domestic cofinancing: 25 per cent)

Source: ESR.

⁷⁶ Kreditanstalt fuer Wiederaufbau [German credit institute for reconstruction].

⁷⁷ In Indonesia IFAD worked as a partner with several government agencies and a wide range of counterparts in different government ministries and at various levels of government (central, provincial, district and even sub-district). This included the ministries of agriculture, marine affairs and fisheries, home affairs, foreign affairs, finance, and planning (BAPPENAS).

⁷⁸ The Ministry of Water Resources and Irrigation (MWRI) has been added in recent years (since 2012), and mainly through the joint-donor funded platform on on-farm irrigation development (OFIDO).

176. **Government cofinancing (sample projects).** The MOA-led projects had higher than average domestic cofinancing (34 per cent), while those led by local government had lower than average domestic co-finance (19 per cent). Relatively few infrastructure activities were cofinanced by governments. They were mostly for roads and irrigation but also social, NRM and livestock infrastructure investments. Particularly high domestic government cost sharing (>50 per cent) was found for irrigation in Mauritania (#12) and Azerbaijan (#2), livestock in Turkey (#20), transport in Rwanda (#17), energy in China (#26), and social in Nigeria (#15) and DRC (#6).
177. **Institutional arrangements for implementation.** Management of infrastructure sub-components usually has been delegated to local project management units and/or sector departments. For example, in Sri Lanka these were the Provincial Irrigation Departments (in the case of the IIDP) or Department of Agrarian Development (In the case of the DZ LISPP).
178. The institutional arrangements required for the implementation of infrastructure sub-projects were complex and required a certain degree of coordination and oversight. This is where often projects underperformed. In NEMA (Gambia) the PSU did not clarify the roles and responsibilities of the design team, the supervising engineers and the construction company in charge of implementing the civil work. As a result, there were no design plans, equipment or construction management forms at the construction site and the supervising engineer present was not aware of the details of the project under construction. The technical specification were vague.
179. Projects that included a number of different infrastructure activities required more complex implementation arrangements. For example in China (case study GIADP) the provincial PMO (PPMO) played the key role on the management of project implementation. It undertook the overall responsibility of the project planning, coordination, management and guidance to the lower levels. The county PMOs (CPMOs) mainly focused on planning, coordinating, monitoring and evaluation (M&E) and reporting of the project. Implementation of project activities remained with the designated implementing agencies.⁷⁹ A similar arrangement was found in #9 Laos, where at central level, the Department of International Cooperation of the Ministry of Planning and Investment was the contact point for coordination with IFAD. The project was jointly implemented by planning offices and five line agencies at provincial and district levels.
180. **Implementation capacities.** Capacities for implementation were often noted as insufficient. The complexities and novelties of infrastructure design and participatory processes with high capacity requirements reportedly slowed down start-up and delivery. They were related to the number of different infrastructure components in some projects such as #29 Rwanda, unfamiliarity of PMUs with specific infrastructure categories, particularly markets, as in #8 Kenya, #35 Vietnam, #38 Malawi, and general weaknesses in project infrastructure design (#32 Sri Lanka). This led to unplanned and sometimes lengthy design and feasibility studies during implementation.⁸⁰
181. Projects often relied on local consultant companies, for example for the preparation of design documents and the detailed specification for infrastructure projects was usually done by local consulting companies. In some cases, independent engineering consultant groups for technical auditing of designs, bills of quantities and engineer's cost estimates, and construction, which proved very effective in enhancing diligence and cost-effectiveness of designs and quality of the works. In IIDP (#48 Sri Lanka) the PID did not hire an external consultant to supervise the

⁷⁹ Implementing agencies included the Bureaux of Water Resources (BOWR), Bureaux of Transportation (BOT), Bureaux of Agriculture (BOA), Bureaux of Livestock (BOL), and Rural Energy Offices (REOs).

⁸⁰ Noted for #8 Kenya; #27 Nepal; #32 Sri Lanka, #33 Tunisia.

works of the rehabilitation works contracts as proposed originally. The rehabilitation works include a large number of small canal structures which are geographically scattered within large areas of the irrigation system. Works of those structures have to be carried out concurrently and will require large number of supervisory technical staff at site at any given time. The CSPE found the staffing and resources for available for quality assurance of the works inadequate for the large volume of works executed during a five-year implementation period. This may have somewhat compromised the quality assurance of the works.

182. Local capacities for construction contract work by service providers were often low, as well as PMU capacity to procure and supervise such work which is often taking place in distant target areas.⁸¹ These deficiencies were partly dealt with at later project stages through recruiting technical assistance. National procurement norms sometimes were not well adapted to the complexity of the infrastructure tasks (#36 Mozambique) and procurement manuals were inadequate and had to be established first before work could start (#9 Laos). Some projects encountered more generic administrative problems that caused delays for infrastructure, such as the late provision of IFAD funds due to lengthy withdrawal applications (#16 Pakistan, #36 Mozambique).
183. Project management units often did not have the required expertise to oversee the infrastructure subprojects. In NEMA (Gambia) the absence of irrigation and rural infrastructure engineering expertise within the PSU negatively affected the quality of work and the sustainability of infrastructures. The project relies mainly on the Soil and Water Management Services (SWMS) of the MoA and contracted supervising engineering companies to design and review the infrastructure works under this subcomponent.
184. **Performance of implementing partners.** Projects led by MOA scored higher on gender and targeting criteria.⁸² Women were targeted well in the MOA-led projects in #11 Madagascar, #17 Rwanda, #18 Sudan and #20 Turkey. The very poor were well targeted by the MOA-led projects in #17 Rwanda and #20 Turkey. However, the combined effectiveness criteria (achievement of outputs, technical quality) were best achieved by ministries other than MOA or local government.⁸³ The two projects in #9 Laos and #26 China had similar implementation arrangements involving different line agencies, and they were noted for their good infrastructure quality. The performance of local governments was assessed positively only in #35 Vietnam.⁸⁴ Projects implemented by local governments were noted for their weak sustainability in several cases, for example in #32 Sri Lanka and #24 Cambodia.
185. **Institutional and policy issues.** Studies highlight the extent to which the performance of infrastructure is hampered by institutional issues related to decentralisation of services within the sector. Shortcomings with regard to implementation and coordination capacities and the insufficient involvement (and capacity) of private sector service providers and water users have been highlighted in the case studies above. They need to be seen against the background of the more systemic issues affecting performance in the infrastructure sector. The case studies highlighted IFAD's limited attention to and engagement on policy issues in relation to infrastructure, such as irrigation and roads. Notably some of the issues have been highlighted by IFAD and FAO studies prepared more than 10 years ago, and they still remain valid. (see Chapter VII on lessons)

Box 108

⁸¹ #6 DRC, #9 Laos, #12 Mauritania, #14 Morocco, #36 Mozambique

⁸² Altogether six projects scored satisfactory on the targeting criteria (gender and pro-poor): this included four under MoA: #Madagascar, #15 Nigeria, #17 Rwanda and #20 Turkey.

⁸³ E.g. in #28 Pakistan, #26 China and #9 Laos).

⁸⁴ Projects under local government had overachieved their targets in #10 Laos, #28 Pakistan and #36 Mozambique. The poor quality of infrastructure was noted, for example for #27 Nepal, #32 Sri Lanka and #38 Malawi, all led by ministries of local government.

Reform of irrigation sector in Georgia

Georgia has a complex institutional change history in the irrigation and drainage sector. Primary irrigation and drainage canals and most secondary canals (off-farm systems) were owned and managed by the Department for Amelioration Scheme Management of the former Ministry of Agriculture until 2006, when the Government of Georgia abolished and replaced it with four regional state-owned limited liability companies (LLCs). Attempts to privatize these LLCs started in 2010, but did not attract enough interest. In March 2012 these four regional companies were merged into a single state-owned entity called the United Amelioration Service Company for Georgia (UASCG), which in 2015 was renamed to Georgian Amelioration LLC and is currently responsible for irrigation infrastructures' management in Georgia

Source: ESR case study.

B. International cofinancing

186. Cofinancing partnerships have played a pivotal role in IFAD's investments in infrastructure, but they came with their own challenges. While many of these partnerships were built on complementarities as anticipated in IFAD's strategies, they were often difficult to implement at operational level.

International partnerships and cofinance in project sample

187. The 35 sampled projects had internationally cofinanced infrastructure activities in 18, or about half, of them with OFID being the partner of choice in 8 projects, the World Food Programme (WFP) in 6, IFIs in 3 (ADB, AfDB and GEF) and other, mostly bilateral partners, in 7 projects. Three projects had more than one cofinancier. Most international cofinancing was found for roads and irrigation, some for market access, social and soil and land management (see Table 11 in Annex IV).
188. Overall, the evaluations contained little information on the integration of project activities with cofinanciers to achieve better design, safeguards, results and scaling-up. One impression from the qualitative review was that cofinancing for infrastructure is difficult to synchronize and often silo-ed which also was confirmed by the e-survey and the case studies (see below). Joint supervision is not well described in the documents. In a few cases cofinanciers pulled out of projects, mostly for reasons of poor disbursements or general project performance (Morocco #14, DRC #6).
189. **Performance by international cofinanciers.** For OFID as the cofinancier with the largest number of cofinanced projects and relative high infrastructure investment contributions overall positive infrastructure outcomes were found in half of the projects: in Armenia (#1, energy), Tunisia (#33, mainly roads), Turkey (#20, markets) and Burkina Faso (#22, SLM). But OFID cofinanced infrastructure activity outputs did not work out satisfactorily in Mauritania (#12, roads), Burkina Faso (#23, irrigation), Rwanda (#29, roads/drinking water) and Malawi (#38, markets/transport), partly due to overall poor project performances. In some projects where outputs were satisfactory, OFID-financed infrastructure was not well targeted to IFAD target groups (Armenia #1 and Tunisia #33), but then these two projects were not well targeted altogether.
190. WFP cofinanced projects in six countries with mostly positive outcomes, except for some problems in Cambodia (#24). WFP contributions were comparatively small in size, limited to food and cash for work, and half of them were for roads. GEF fared well on soil and land management infrastructure in Burkina Faso (#22) and Tunisia (#34). The number of bilateral cofinanciers was relatively large (8), but their contributions tended to be small (except for Agence Française de Développement in Tunisia #34 and Japan in Sri Lanka #30 where they reached about 10-15 per cent of total) and with mixed results, largely depending on overall project performance.

191. ADB, AfDB and the European Union (EU) cofinanced one project each in this sample all of which performed satisfactorily. In Pakistan (#16), ADB had the lead and supervising function for IFAD in a project that covered multiple infrastructure sub-sectors and was mostly implemented in the '00 years. More recently, AfDB provided significant cofinance with IFAD in Tanzania (#19), a market-oriented project that performed quite well. This project took a sector-wide approach to improve post-harvest and market access, also involving other parallel financiers. In Madagascar (#11), the EU was scheduled to contribute about one-fourth of donor funds to IFAD's successful production and market access project but funds were delayed for political reasons (2009 coup).
192. **Performance of cofinanced vs. non-cofinanced infrastructure activities.** For the 35 sample projects, the ESR conducted a quantitative analysis of the frequency of scores for infrastructure performance compared with infrastructure exclusively relying on loans and grants from IFAD except for the usual government and beneficiary contributions. Some differences were found but they should be cautiously interpreted as some underlying numbers are not very large.⁸⁵ The analysis suggests that project cofinancing as such makes some, but relatively weak differences in the performance of infrastructure activities (see Table 12 in Annex IV). Differences are more apparent when performance of projects with a relatively large amount of international cofinancing of more than 15 per cent were compared with those with less (see Fig. 10 in Annex V). These projects clearly have better performance in sustainability and for reaching women and the poor.
193. The **United Nations Office for Project Services (UNOPS)** provided (partial) implementation and supervision services to seven of the 35 infrastructure projects that were reviewed qualitatively. Projects supervised by UNOPS performed well on technical quality, pro-poor targeting and gender.
194. In the Democratic Republic of the Congo (#6), the main infrastructure works were implemented by UNOPS. In Laos (#9), the supervision and implementation support to the project in the first four years was deemed to be good, with a smooth handover to direct supervision by IFAD. UNOPS project supervision was also done satisfactorily in Tanzania (#19) and Mauritania (#13) until IFAD took over. In a second project in Mauritania (#12), UNOPS supervision was reportedly executed in accordance with the scheduled timeline.
195. In contrast, in Pakistan (#16), the limited frequency and follow up by UNOPS supervision (one mission per year) during the first implementation year was described as constraining project delivery improvement. And in Rwanda (#29), UNOPS supervision missions were generally appreciated by the project coordination units, with good performance in loan administration and fiduciary aspects, but procurement reviews were in some instances not timely. UNOPS performance was generally characterized by limited involvement and ownership and repeated delays in dealing with withdrawal applications and no-objection requirements.

Challenges in cofinancing partnership

196. The e-survey produced some useful open-ended answers on problems and opportunities in IFAD cofinanced projects⁸⁶ that also were analysed in the case studies. Comments and observations covered three topics: (i) the timing and synchronization of activities by cofinanciers; (ii) the question of how safeguards are handled; and (iii) the consequences of IFAD being a junior partner in cofinanced projects as sometimes happens (Box 19).

⁸⁵ For details see Tables 9 and 10 in Annex IV.

⁸⁶ The question had been: 'What is working well, and not so well, in IFAD's cofinancing partnership?'

Box 119

E-survey responses on cofinancing

Timing and synchronisation. The largest number of comments refer to complications of cofinanced projects to plan, coordinate and synchronize activities, to time the flow of funds, and to deal with each institution's own administrative procedures (**n=45+ responses counted**).

Safeguards. Several respondents noted some problems concerning safeguards in cofinanced projects (**n=7+**). Safeguards sometimes differ for cofinanciers, and then it is not always clear which ones to follow. Quote: *'No clear common approach on what is acceptable to both parties- which safeguards would apply to the infrastructure, how the gaps in meeting both IFAD and cofinanciers safeguards requirements will be met, and roles and responsibilities.'* IFAD may also be held accountable for cofinanciers' safeguards that sometimes are more stringent than IFAD's safeguards.

IFAD as a junior partner. 'When IFAD is too small in relation to the cofinancing partner, IFAD's priorities may not carry through as well as they should.' Several respondents see a dilemma when IFAD is the junior partner in IS cofinanced projects (**n=5+**). On one side, IFAD has too few resources to meaningfully carry out major public IS projects on its own, on the other side IFAD may find itself in a junior position with cofinanciers where it does not have sufficient influence and control over the project to pursue its own objectives ('we lose control over outcomes'). In this context, a number of respondents were specifically concerned about beneficiary participation and benefits (**n=5+**). IFAD beneficiaries and specific objectives were not always reached and achieved in cofinanced projects, as partners may not have the same focus. Quote: *'The size and number of experts in IFAD make it difficult to be more proactive in agenda setting, not enough engagement at heads of agency level reduces IFAD's influence and share of the portfolio, greater efficiency and systems in place internally to manage cofinancing would increase efficiency and ability to report.'*

Source: ESR e-survey.

197. **Synchronization and coordination.** The main problems encountered in cofinanced projects are the need to clarify mutual expectations with cofinanciers from the start and the clarity of roles, responsibilities and (donor) leadership in cofinanced projects. This may require a long time for advance planning. A major point raised by several respondents was that, in principle, IFAD investments for soft infrastructure should precede cofinancing of hard infrastructure. However, in design too much attention is often paid to getting the construction moving, partly since cofinanciers may have shorter project durations (such as OFID).
198. Reconciling different donor cycles, the alignment of timing of funding and delayed cofinancing pose another common problem according to many respondents. This is compounded by different policies, procurement and administrative rules for procurement and financial management that can lead to complexity and delays. Cofinanciers have their own administrative culture. Joint supervisions are often difficult to organize, and if they happen, supervision teams may be too big and focus on too many internal administrative issues to allow for meaningful debates of substance, beneficiary interactions and participation. Last, different monitoring and reporting requirements may lead to difficulties in IFAD monitoring and capturing the overall project results, including those achieved through cofinancing.
199. The case studies illustrate the challenges in synchronising cofinanced activities within the same project. In the case of #42 (Burundi), the late release of the OFID and WFP funds led to serious delays in implementation of cofinanced activities. In the case of #47 (Madagascar), the European Union (EU) and the US Millennium Challenge Account (MCA) withdrew (and UNDP provided only half of the planned amount) due to political developments (coup in 2009). In the case of #45 (Chad), the Swiss Development Cooperation and the French Development Agency (AFD) both of these withdrew from the projects, with IFAD having to reallocate some of the funds.

200. Parallel funding of related projects provided their own challenges even when managed by the same government units. In #46 (Gambia) the Islamic Development Bank (IsDB) and the African Development Bank (AfDB) loans and grants run in parallel with the IFAD project, but synergies between the interventions of the three donors remained weak and spread over different sites (MTR).⁸⁷ In the case of #44 (Georgia), the project is affected by the lack of functioning WUOs, which are under the mandate of the World Bank project "Irrigation and Land Market Development Project". Parallel cofinancing seems to have worked well in #40 (Bangladesh) where IFAD's component focused on union and village roads and bridges, and on community and village markets; the Asian Development Bank (ADB) component financed larger scale *Upazila* roads, large markets and growth centres; and KfW provided for cyclone shelters and other climate resilience support.

Key points (Chapter IV)

- **Government partners.** In countries where IFAD programmes have included high shares of infrastructure investments, partnerships with specialised line ministries or agencies have been driving those investments. However, engagement with a large number of partners also increased the transaction costs for IFAD in these countries.
- Within the project sample, the Ministry of Agriculture was the predominant partner. Management of infrastructure sub-components usually has been delegated to local project management units and/or sector departments.
- The institutional arrangements required for the implementation of infrastructure sub-projects were complex and required a certain degree of coordination and oversight. This was where often projects underperformed. Projects that included a number of different infrastructure activities required even more complex implementation arrangements.
- Capacities for implementation were often insufficient. The complexities and novelties of infrastructure design and participatory processes with high capacity requirements reportedly slowed down start-up and delivery. Local capacities for construction contract work by service providers were often low, as well as PMU capacity to procure and supervise such work
- The analysis of performance by lead agencies indicates some trade-offs between the effectiveness of infrastructure provision and the focus on social inclusion. The combined effectiveness criteria (achievement of outputs, technical quality) were best achieved by ministries other than MOA or local government. Projects led by MOA scored higher on gender and targeting criteria. Sustainability was weakest for projects implemented by local governments.
- **Cofinancing partnerships.** Partnerships with ADB were driving cofinancing on infrastructure in the top-ten infrastructure investment countries (Bangladesh, Cambodia, Philippines, Sri Lanka and Afghanistan).
- The review of CSPEs showed that these cofinancing partnerships were critically important for increasing IFAD's support to infrastructure, and they were found in every single case in the top-ten countries.
- Comments from the e-survey refer to challenges of cofinanced projects to plan, coordinate and synchronize activities, to time the flow of funds, and to deal with each institution's own administrative procedures. Parallel funding of related projects provided their own challenges even when managed by the same government units. Safeguards sometimes differ for cofinanciers, and then it is not always clear which ones to follow. Respondents see a dilemma

⁸⁷ The IsDB also suspended its financing for about two years (mid-2015 to mid-2017), because of the government's request to allocate 87% of the budget to procure heavy equipment and machines.

V. Findings on rural poverty and gender impact

A. Infrastructure linkages with poverty reduction

201. **Direct and indirect impacts.** Studies have shown that infrastructure linkages with poverty reduction are direct and indirect and they are mutually reinforcing. Increased agricultural productivity may have a positive impact on food availability and nutrition. Access to water and easy access to health facilities, through improved roads and transportation, help reduce mortalities. School enrolment is also enhanced by better transportation.⁸⁸
202. Investments into soil and water management, livestock shelters, storage and others help to increase productivity. Indirectly, productivity can also be raised through investments in social infrastructure, with the goal of improving living standards in poor rural areas. For example, more efficient and affordable basic household services – water and sanitation, household electricity, access to affordable health care, basic education, public transport services – may improve the productivity of farm workers and managers.⁸⁹ Construction of market facilities and roads directly improve connectivity and market access. In this way infrastructure enhances agricultural productivity, reduces transportation costs and may also generate more jobs.
203. The UNDP report (2005) emphasises the importance of the “soft” elements of economic infrastructure (termed “infrastructure services”) that are particularly important for operation and maintenance; and that are seen as particularly relevant for poverty reduction. Capacity development and governance are necessary in order for infrastructure projects to be beneficial to poverty reduction.⁹⁰
204. **The RIA studies**⁹¹ found that projects with a strong theory of change exhibit stronger impacts. Projects that are focused and consist of interlinked activities and objectives can generate larger impacts than projects with more diversified or unlinked interventions. Infrastructure-based interventions have been found to generate positive impacts; however, impacts are maximized when infrastructure interventions are combined with marketing activities (as in the case of the GIADP project in China). Value chain projects can be very effective and the impacts can be even greater when combined with support for market access, agro-processing and rural finance. The analyses show that projects implementing agricultural production and marketing activities along with infrastructure activities may lead to stronger production and economic mobility impacts.
205. Projects with diverse and unlinked activities were found to have less impact. This could be explained with the potential dilution of project impacts resulting from the high heterogeneity and small scale of interventions across project areas. These are, for example, some of the community-driven development projects, which often address the most pressing and immediate needs as expressed by the communities. However, the approach often translates into clustering needs around similar thematic areas within which stronger impacts could be found.⁹²
206. The detailed findings from the RIA studies are reflected in the case studies presented in the sections below.

⁸⁸ UNDP. 2005. Making Infrastructure Work for the Poor.

⁸⁹ FAO. Market-oriented agricultural infrastructure: appraisal of public-private partnerships. 2008

⁹⁰ UNDP. 2005. Making Infrastructure Work for the Poor.

⁹¹ IFAD 2019. IFAD10 Impact Assessment Report.

⁹² The RIA studies quotes the example of the Plan VIDA-PEEP project in the Plurinational State of Bolivia. The project implemented a majority of activities focused on livestock where impacts were strong for livestock-related activities: a 24 per cent increase in agricultural income per year was registered for the livestock sample whereas no impact was found for the recipients of non-livestock interventions.

Box 20

Lessons from RIA studies of IFAD projects with infrastructure components

- Improved communal irrigation systems do have potential to increase rice yields
- Communal irrigation system management can improve significantly with sufficient training
- Building in ex-ante measures to manage risk of extreme events (weather or other natural hazards) is crucial, especially in highly vulnerable regions
- Irrigation is transformative, making farmers resilient to climatic shocks. It acts as a risk-management strategy by increasing well-being and building resilience.
- To maximize high-value crop production, irrigation needs to be bundled with marketing and market access activities
- Larger impact if infrastructure is combined with marketing and/or production-oriented activities
- An integrated approach covering both production and marketing aspects can specifically target those at the lower end of the income distribution.
- Group membership increased in all where management training for maintenance was at group level
- Infrastructure benefits may accumulate over time through multiplier and long run effects, or decline after a large initial impact for different reasons

Source: RIA presentation during ESR FGD.

207. **Sample performance on rural poverty impact.** For an assessment of project-level poverty impact, the ESR referred to IOE ratings. Within the sample of 35 projects, nine projects had received a “satisfactory (5)” IOE rating on poverty impact;⁹³ six projects had received unsatisfactory ratings⁹⁴. The remaining 19 projects were rated “moderately satisfactory (4)”.
208. Notably projects with a strong focus on agricultural productivity and markets had received higher ratings on poverty impact. Irrigation, livestock and fishery, marketplaces and transport were the most frequent infrastructure activities in these projects rated “5” on poverty impact.⁹⁵ This observation is in line with RIA findings that infrastructure bundled with production & marketing support yields better results, a finding that is also supported by the case studies.⁹⁶
209. Two production and markets focussed projects in the sample also received unsatisfactory ratings on poverty impact. The main issue there was that infrastructure activities were not sufficiently linked to achieve a notable poverty impact.

B. Rural poverty impact in case studies

210. **Agricultural productivity and incomes.** The case studies confirmed that improved community infrastructure of irrigation and market access (particularly roads) led to an increase in the productive capacity, to extended irrigated lands and ultimately higher incomes in #41 (China), #47 (Madagascar) and #49 (Philippines). In #48 (Sri Lanka) the combined effort of small-scale irrigation rehabilitation and interventions to increase soil productivity contributed to expanded cultivated land and productivity. In #42 (Burundi), better swampland, irrigation and watershed infrastructure, combined with socio-economic community infrastructure and better access to improved seeds and fertilizers, helped self-

⁹³ #1, #2, #3, #17, #19, #33, #26, #35, and #36

⁹⁴ This included 4 “moderately satisfactory (3)” projects (#7, #25, #27 and #38) and two “unsatisfactory (2) projects (#15, #23).

⁹⁵ #1 Armenia, #2 Azerbaijan; #3 Bhutan, #19 Tanzania; and #36 Mozambique.

⁹⁶ RIA presentation shared during ESR focus group discussion.

sustaining rural households. Production and incomes improved, but less than expected due to lack of equipment and management problems.

211. **Food security.** Where incomes increased this did not always translate into reduced levels of poverty and better food security, especially undernourishment. For example in #48 (Sri Lanka) the expectation was that higher agricultural productivity and production would improve availability of food and cash income.⁹⁷ In the cases of #41 (China) and #47 (Madagascar) some improvement in food security and assets was noted but this had only marginal impact on undernourishment. In #49 (Philippines) only 7% of the poor managed to move above the poverty line of US\$1.90 a day (RIA).
212. **Social infrastructure** contributed to improved livelihoods, through safe water supply and sanitation, community health centers, schools and libraries, and household biogas units, digesters, and eco-stoves.⁹⁸ The #43 (Brazil) invested a substantial part of its *Social and Cultural Investment Fund* in social infrastructure. Here improved community water supply was linked to better performing productive backyards (and hence food security), as well as better health outcomes, indirectly affecting households' ability to work and provide for their incomes. Energy infrastructure (community and household level) was also linked to better performing backyards.
213. These examples demonstrate complementarities between productive and social infrastructure *in* community-led projects. A similar overlap was found in #45 (Chad) where pastoral wells were used also for domestic purposes.⁹⁹ Pastoral hydro-infrastructure (boreholes, livestock drinking water etc.) led to higher livestock productivity and declining herd losses, with newly accessible pasture lands, more water points and safe transhumant corridors, with positive impact on livelihoods. #43 (Brazil) also supported, inter alia, water reservoirs for animals, which contributed to improved livelihoods.
214. **Market infrastructure.** Improved market access through better roads and marketplaces increased sales and incomes but not necessarily for the poorest/furthest away (#40, #47, #48).¹⁰⁰ The rehabilitated roads led to improved access to agricultural markets and sales, because they were combined *with* productivity and pro-poor measures, contributing to more equitable increases in incomes in the case of #41 (China).

Box 212

Lessons on poverty impact of infrastructure from the 10 ESR case studies

Pro-poor results (e.g. food security for the poorest) do not necessarily follow from increases in income and do not imply that. For community development projects, to ensure that improved self-sufficiency matures into increased incomes, more emphasis is needed on boosting income generating activities and small enterprise formation.

For market access projects, agricultural productivity does not necessarily increase with improved access to output markets; further support should be provided to improve agricultural productivity and encourage crop diversification, which can be achieved by providing farmers with training, improved technology, and better access to and more affordable inputs.

⁹⁷ PCR, [#48], para.69, p.16

⁹⁸ Arguably this helped households to have better access to sustainable agricultural practices and to improve their livelihoods, for instance through better health outcomes [#42 (Burundi), #43 (Brazil), #41 (China) and #47 (Madagascar)].

⁹⁹ But the same project (#45) is also a case where the component on social services was not well aligned with the two other components, with limited impact. (PE, page 26 paragraph 85 and 106)

¹⁰⁰ Owing to improved market access, farmers under #40 (Bangladesh) were 11% more likely to sell at markets than at farm gate, sold 5% more of their harvest, and were 8 % more likely to cultivate high-value crops, leading to increased household income by 11 %; these impacts were less pronounced for the farmers too far from the markets/the poorer ones, with the missing link to livelihoods' building as a potential factor.

Barriers to women's empowerment need to be thoroughly analysed and addressed, with an attention to measures to free their worktime. Access to safe water and sanitation is a basic need and priority for many women. Women can be better reached with the right partners.

User groups in charge of infrastructure O&M need sufficient training and capacity building, as well as clear rules of operation, ownership and member bases, with clear identification of the roles of the government (including in terms of financing). Expectations from the users' groups with regard to O&M need to be commensurate with their capacity.

The policy and institutional framework also affects the extent to which the poor are able to access infrastructure. Engagement in policies are needed to ensure that the barriers for the project aims are removed, working jointly with the governments, e.g. related to land rights.

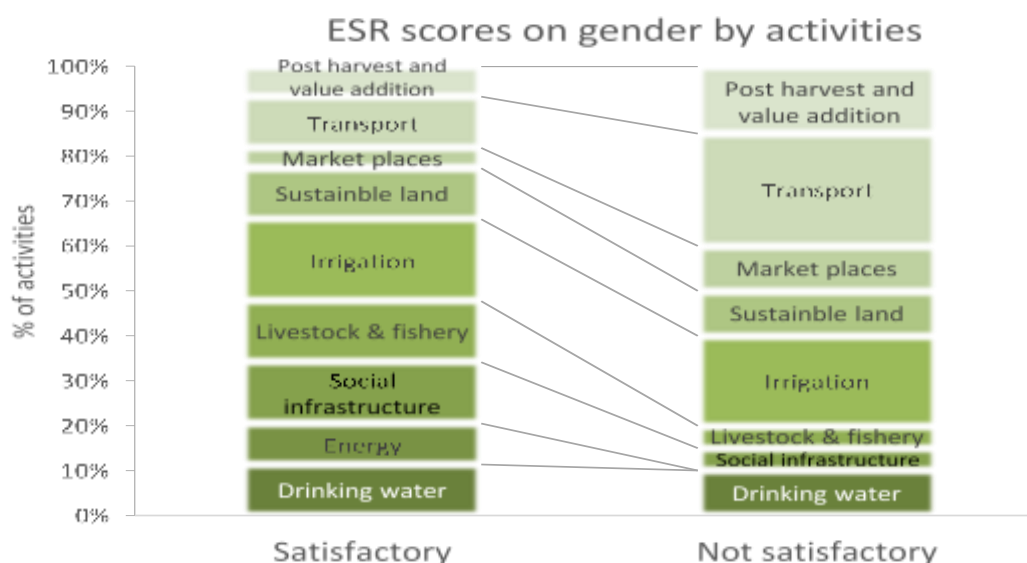
Source: ESR case studies.

C. Gender equality and women's empowerment

215. **Infrastructure targeting women.** The ESR gender synthesis (IOE 2017) found that provision of infrastructure can address some root causes of gender inequality, such as time poverty, and that it can galvanise group action to also empower women. The study identified infrastructure that provides conditions for economic growth and reduces women's time burden simultaneously as important. For example, the construction of roads, decreased the time needed for children to reach school and for household members to reach health services, and improved access to markets and employment (e.g. in Bhutan). Similar impacts were found through the construction of bore wells and water storage tanks (e.g. in Kenya and Ghana). Technological improvements typically have gender dimensions; they can have transformative potential for women, as they can help to simultaneously enhance women's production and reduce their time burden. Freeing up women's time allows them to engage in income generation and decision-making (e.g. in India) and can contribute to poverty reduction.
216. **Gender focus in sample projects.** The review of the 35 sample projects in this ESR showed that social infrastructure (education and health), energy and livestock & fisheries were successful in reaching women. Transport, market places, post-harvest and value addition infrastructure were rated not satisfactory in the majority of cases reviewed. Drinking water and irrigation showed a mixed performance with regard to gender. Women benefited particularly from infrastructure on drinking water and sanitation, energy, literacy and NRM.¹⁰¹

¹⁰¹ E.g. in the community-based projects in Laos (#10), Nepal (#27) and Vietnam (#35).

Figure 20
ESR score on gender by activities



Source: ESR analysis of review sample (35 projects).

217. **Special measures to reach out to women.** The case studies draw attention to special measures that are needed to facilitate women's representation in infrastructure projects. In #42 (Burundi) the engagement of NGOs has helped to correctly identify the target group – farmers – and also include women-headed and doubly-orphaned households managed by children. Community-based projects performed particularly well on engaging women throughout all the different infrastructure activities.¹⁰²
218. Projects that had made very few provisions for women and largely failed to engage them were those in value-chains and in specialised infrastructure projects,¹⁰³ Choosing the existing organized groups of producers has led to the exclusion of some potential beneficiaries in #46 (Gambia). In Mozambique (#36) the drinking water, literacy and housing infrastructure activities showed very disappointing engagement and results for women. In Malawi (#38) women were not benefiting much from post-harvest activities.
219. **Access to water.** Provision of drinking water is a priority for many women. Women and girls are responsible for fetching water in four out of five households where a drinking water source is off premises.¹⁰⁴ Many IFAD projects include the provision of water, as drinking water, for livestock or for irrigation. However, the extent to which women are able to benefit from access to water varies. The most obvious benefit, which is consistently noted in evaluation, is related to the time-savings resulting from the closer proximity of water sources (see below). The often-insufficient quality of drinking water in community-operated facilities limits those benefits.
220. For example, the recent PPE of the KLSP in Tajikistan (2020) found that the quality of drinking water facilities was poor and often did not meet the standards for safe and clean water. Furthermore, the facilities primarily designed and built for drinking water supply systems were often also used for irrigation and livestock as well. As a result, hygienic standards were low and the water often not sufficient to meet all those demands.
221. Where access to water has improved, women also require additional activities to realise the full economic benefits. For example, the #43 (Brazil) led to greater

¹⁰² In Madagascar (#11), Pakistan (#16), Rwanda (#17), and Cambodia (#24).

¹⁰³ For example in Sri Lanka (#32), Tunisia (#33), and Turkey (#37).

¹⁰⁴ World Health Organization. 2019. Water, sanitation and hygiene: measuring gender equality and empowerment.

capacity to meet the household's water needs for household consumption produce more with less land, produce staples for household consumption, and improve dietary diversity. However, only those beneficiaries who also participated in other activities, beyond the provision of a cistern, did experience significant gains in total cultivation value.¹⁰⁵

222. Women's benefits are also limited due to their insufficient participation in water user associations. The ESR on Water (2014) cites as one of the causes for lower participation of women in WUAs is because the issue of multiple uses of water is not adequately addressed by these bodies. Women have clear preferences about how an irrigation system should be operated – irrigation operations and scheduling of water deliveries – constrained as they are by home workload, child care responsibilities and security reasons. Not addressing these concerns effectively disincentivizes them from actively participating in WUA functioning even when representation is statutorily mandated.
223. **Access to energy.** Energy has received less attention in IFAD, but has a potential to yield significant benefits, as the review shows. Eight of the 35 projects implemented energy infrastructure activities; these had primarily positive impacts for women (i.e. in four projects), while for the remaining four projects information available regarding gender-specific project outcomes was not specific to the energy infrastructure.¹⁰⁶ Women were actively involved in the planning and construction of the biogas systems, and utilisation of this technology was closely related with a reduction in women's workloads.
224. **Access to market places.** Market places may exclude women, unless specific measures are taken. The #40 (Bangladesh) the PPE (2020) found that the project had only minimal effects on the multiple barriers to women's equal participation in markets in rural Bangladesh because the benefits of infrastructure development have largely been channelled towards men, as the main users of markets and roads. The ESR gender cites another project from Bangladesh as a good practice, creating safe spaces for women in markets (see Box 22 below).

Box 22

Bangladesh: Market Infrastructure Development Project in Charland Regions (MIDPCR)

Safe spaces in the markets for women and their representation in MMCs enabled more women to trade in market areas and encouraged more women buyers to visit these markets. Women report feeling safe going to the market because the markets are cleaner, better organized and better connected to surrounding villages (after road construction). The volume of trade in markets and trader income are reported to have increased (although data are not disaggregated between men and women). The increased income has been used to improve housing, purchase assets and improve food security. Overall, the increased income and improved job opportunities from all project market development interventions have changed women's status. Decisions in the households, for instance on purchasing food or cleaning products, are now made jointly. In some communities, women participate more than before in community meetings and decision-making.

Source: ESR Gender case study.

225. **Equitable workloads.** There could be potential negative impact from infrastructure on women, particularly in the context of increased labour demand during construction. The 2008 study on Rural roads, travel and transport (RTT) study¹⁰⁷ emphasises that the system for recruitment and remuneration of women and men in RTT works should introduce gender-sensitive criteria for fairness and

¹⁰⁵ RIA impact assessment: Garbero, Alessandra and Neha Paliwal (2019).

¹⁰⁶ For example through micro projects on gas storage in Mauritania (#12), biogas in China (#26) and Rwanda (#17), and water mills in Nepal (#27).

¹⁰⁷ IFAD. 2008. Comprehensive Review of IFAD Rural Roads, Travel and Transport (RTT) Experiences, 1994-2007.

transparency to avoid exploitation of women workers. Experiences from a number of SSA countries including Tanzania and Zambia have shown that in RTT works the ratio of women-to-men is always high where communities are required to contribute unpaid labour as compared to paid works.¹⁰⁸

226. Not putting extra demands on women's time (e.g. through labour contracts) has played a positive role, e.g. #46 (Gambia). Most case studies mentioned only positive impact from freeing time that used to be spent on household chores that could be used for training and community activism. In #45 (Chad), there was a reduction of the workload, on water and wood fetching, which benefited women (arguably better results could have been achieved with a dedicated gender strategy based on solid analysis). Similarly, under #43 (Brazil) women's workloads were reduced by facilitating access to basic rural services (with potable water tanks close to their houses and the introduction of eco-efficient stoves and biodigesters).
227. The #46 project in Gambia shows how difficult a reduction of the workload is sometimes to achieve particularly when women are directly addressed with productive infrastructure that demands actually more of their time. Helping women to reduce household chores with basic infrastructure and more disposable income from small backyards can improve food security, as in the #43 (Brazil), but poverty reduction is not straightforward, due to lack of transformative business impact, unequal access to productive capital, etc.
228. **Empowerment.** Even very high levels of women's participation has not ensured their equal representation in high level management roles in several projects, such as #41 (China) and #48 (Sri Lanka). The #43 (Brazil) enhanced women's social empowerment and increased the number of women in leadership positions as well as the respect for them as sources of influence and local authority. The Rural Recovery and Development Programme (#42 Burundi) had a positive impact on women overall through the emergence of 845 female rural leaders who have become respected personalities in their communities. They play an important role in the management of social conflicts and sensitization of communities about women rights and equality.

¹⁰⁸ IFAD. 2008. Comprehensive Review of IFAD Rural Roads, Travel and Transport (RTT) Experiences, 1994-2007.

Key points (Chapter V)

Rural poverty and gender impact

- **Rural poverty impact.** The RIA studies found that projects with a strong theory of change exhibit stronger impacts. Projects that are focused and consist of interlinked activities and objectives can generate larger impacts than projects with more diversified or unlinked interventions. Projects with diverse and unlinked activities were found to have less impact.
- The case studies confirmed that improved community infrastructure of irrigation and market access (particularly roads) led to an increase in the productive capacity, to extended irrigated lands and ultimately higher incomes. However, where incomes increased this did not always translate into reduced levels of poverty and better food security.
- Social infrastructure contributed to improved livelihoods, through safe water supply and sanitation, community health centers, schools and libraries, and household biogas units, digesters, and eco-stoves. These examples demonstrate complementarities between productive and social infrastructure in community-led projects.
- The need to combine livelihoods and market activities was also noted for the value chain-oriented projects.
- **Gender impact.** The review of 35 sample showed that social infrastructure (education and health), energy and livestock & fisheries were reaching women in a satisfactory manner. Transport, market places, post-harvest and value addition infrastructure was found not satisfactory in the majority of cases.
- The case studies draw attention to special measures that are needed to facilitate women's representation in infrastructure projects. Even very high levels of women's participation has not ensured their equal representation in high level management roles in several projects
- Provision of drinking water is a priority for many women. Yet the extent to which women are able to benefit from access to water varies. The often insufficient quality of drinking water facilities in community-operated facilities limits those benefits. Where access to water has improved, women also require additional activities to realise the full economic benefits. Women's benefits are also limited due to their insufficient participation in water user associations.
- Energy has received less attention in IFAD but has the potential to yield significant benefits. Eight of the 35 sample projects implemented energy infrastructure activities; these had primarily positive impacts for women.
- Infrastructure sub-project may have a potential negative impact on women, particularly in the context of increased labour demand during construction. Not putting extra demands on women's' time (e.g. through labour contracts) has played a positive role in case studies.

VI. Findings on themes of strategic importance

A. Infrastructure for smallholder market access and value chains

229. Better market integration and commercialization of smallholder agriculture have been a long-term IFAD goal. Most projects analyzed in this ESR (portfolio sample and case studies) supported market access of smallholders in different ways, much of it through various infrastructure elements.
230. **Production-only projects.** Several projects included infrastructure for increased commercialization, product diversification and income generation of horticulture and gardening, particularly for women producers. But many of these projects focused more on production.¹⁰⁹ The little attention to market access was often seen as a missed opportunity and one of the main reasons why investments into productive infrastructure were ineffective and beneficiary interest and engagement were low.¹¹⁰
231. **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.¹¹¹ These ubiquitous roads were often among the most appreciated and successful investments of IFAD projects.¹¹² The construction of enhanced marketplaces, stalls, warehouses and other storage facilities assumed many market infrastructure resources.¹¹³ Some projects were particularly dedicated to improving either marketplaces or storage capacities, such as the Bangladesh CCRIP (#40), the Mozambique Sofala fisheries project (#37), investments into Kenya's horticulture (#8), and the Tanzania market programme (#19).¹¹⁴
232. **Value chain approaches.** Only few projects in the sample and case studies took a true value chain approach.¹¹⁵ There were some exceptions, where the focus was on whole value chains, originating from the goal of enhancing producer linkages with the final demand through markets and traders; and with production being mainly supported through improved supplies of inputs, advisory services, crop protection and veterinary services and finance.¹¹⁶
233. **Livestock and dairy value chains.** Many IFAD market-oriented activities in sample projects and case studies supported livestock production, aggregation and processing, for dairy and meat products.¹¹⁷ Often this was coupled with production support and input services for fodder, animal housing and veterinary services. For most projects, support to livestock producer organizations and cooperatives was an integral part of their activities. However, the dairy sector is often highly regulated and it is difficult for producer groups to raise their stakes in the market. For

¹⁰⁹ Eg. fruit and vegetable nurseries (Nepal, #27), micro- and drip-irrigation in Burkina Faso (#23), and watering and fencing in Gambia (NEMA case study).

¹¹⁰ For Armenia (#1) transport infrastructure was necessary but not sufficient for improved marketing, overall project performance and impact. Missing market opportunities and arrangements also affected productivity and efficiency in the Sudan irrigation project (#18).

¹¹¹ Significant transport investments were found in 12 out of 15 CDD projects and 6 of the 10 case study projects [CCRIP (Bangladesh), GIADP (China) and AD2M (Madagascar), AMMAR (Georgia), Iranamadu Irrigation Rehabilitation Project (Sri Lanka); NEMA Gambia].

¹¹² There were also a number of CDD projects that successfully included market access infrastructure, such as livestock slaughter-houses in Mauritania (#12), marketplaces in Vietnam (#35), various market activities for crops and livestock in Rwanda (#17, KWAMP) and processing facilities in Nigeria (#15).

¹¹³ Village-based product processing was found in Nigeria (#15). In DRC (#6) only 32 out of 200 planned processing units (15 per cent) were handed over to beneficiary groups, with low sustainability.

¹¹⁴ In other projects, the role of marketplace infrastructure was relatively small but in high demand (Bhutan #3; China #41).

¹¹⁵ Defined as broad investments in and support of 'a set of enterprises, stakeholders ... [and activities] to bring a product from the initial input supply stage, through the various phases of production, to its final market destination (CPE value chains 2019).

¹¹⁶ The Kenya horticulture (#8), Tanzania marketing (#19) and Mozambique fisheries (#37) projects.

¹¹⁷ Azerbaijan (#2), Turkey (#20 and #37), Tunisia (#33), Malawi (#38), Rwanda (#17 and 29), Burundi (#42) case study.

example in Malawi (#38) farmer groups remain relatively weak vis-a-vis the large (private sector) processors and were not able to raise their incomes accordingly. The more successful projects had integrated production/market approaches with a strong focus on institutional capacities of producer organizations and cooperatives, mostly in situations where the private sector was relatively embryonic.¹¹⁸

Box 23

Success and failure of market infrastructure in Turkey's Ardhan-Kars-Advin project (#37)

Success: "The Ardahan livestock market started functioning in May 2015.¹¹⁹ It was the first one of its kind in Turkey and offered innovative features and services. For instance, it provided temporary accommodation for the livestock that could not be sold, saving the owner the cost of transporting each animal back to the village and again to the market the next day. It offered in-house veterinary services to identify animals with illnesses, initiated the practice of disinfecting incoming cattle to prevent the spread of diseases, and offered parking spaces for the vehicles of users."

Failure: "Four milk collection centres were established by AKADP, yet none were functioning at the time of the mission visit. This was because the project did not recognize the strength of the traditional arrangements that dairy producers had with privately owned milk collectors (*mandiras*). These arrangements enabled suppliers to receive six months of milk provided in advance in cash, and a lower unit sale price. Consequently, the associations that took over the administration of the milk collection in Benliahmet (Kars) and Ardahan could not compete with the existing *mandiras*, and these centres could not become functional."

Source: PPE 2020.

234. **Engaging the private sector.** IFAD has been recognizing the importance of engaging the private sector for better resourcing, management and sustainability of market and other infrastructure since its first Strategy on Private Sector Development and Partnership in 2005 (IOE ESR 2011 on the same subject). IFAD's most recent strategy sees the two important roles for the private sector in crowding in private finance and for IFAD to advocate for and develop inclusive value chains with private sector partners, preferably in public-private-producer partnerships. IFAD also reviewed institutional and 4P implementation arrangements in a number of publications since 2015 and came up with valuable propositions for implementation approaches.¹²⁰ Yet, the ESR found only few cases in the infrastructure portfolio sample where projects successfully managed to engage the private sector as a partner and cofinancier in market operations for smallholder market access. This is partly because most of the reviewed projects were designed, implemented and evaluated before the expansion of private sector instruments and 4P project arrangements at IFAD.
235. One of the notable exceptions was the Sri Lanka DZ-LiSPP project (#30) which established strong linkages between buyers and producers through PPP marketing infrastructure. The project mainly cofinanced the establishment and collection of processing centres (e.g. milk, fruits and vegetables) with private and public companies (Cargills, Nestle and Milco). This reduced transport costs and helped with better information for farmers on production techniques and post-harvest handling of the produce. Partnership with the private sector became a flagship for

¹¹⁸ As seen in Rwanda (#17 and #29) and various projects in Burundi.

¹¹⁹ ¹¹⁹ In Ardahan, 68 per cent of the households relied on livestock sales for their entire income. Prior to the project, 80 per cent of households in this province used the traditional livestock market. Citing unhygienic conditions, poor facilities for users, and poor management among the main reasons, 93 per cent of the users of the traditional market reported dissatisfaction.

¹²⁰ (i) IFAD 2015. Delivering public, private and semi-private goods. Institutional issues and implementation arrangements. IFAD Policy and Technical Advisory Division. June 2015. (ii) IFAD 2016. How to do., Public-Private-Producer Partnerships (4Ps) in Agricultural Value Chains. IFAD Policy and Technical Advisory Division, March 2016. (iii) IFAD 2019. IFAD Private Sector Engagement Strategy 2019-2024. EB 2019/127/R3. Aug. 2019. (iv) IFAD 2019. Fostering Inclusive and Sustainable Agricultural Value Chains: The role of climate-resilient infrastructure for SMEs. Resilience Intel. Issue No. 13. Adaptation for Smallholder Agriculture Programme (ASAP). BRACED. September 2019.

the Sri Lanka portfolio as a whole. There were, however, some questions in the PPE about the additionality in partnering with the private sector in Sri Lanka.¹²¹

Box 24

IFAD definition of private sector

For IFAD, the private sector includes for-profit private business companies, private and institutional investors, commercial banks, investment funds, and certain state-owned enterprises. Private companies can be local, regional or global; they span the spectrum of size, from MSME (including cooperatives, corporate farms and social businesses) to large multinational companies (MNCs). Local MSMEs and rural entrepreneurs are predominately the end beneficiary and target group, as well as a source of knowledge, innovation and additional investments.]

Source: IFAD *Private Sector Engagement Strategy 2019-2024*. EB 2019/127/R3. August 2019.

236. **Strategic design and implementation problems.** A lack of strategic design and planning for better market access and value-addition, limited know-how by design and implementation teams about markets and required investment costs and efforts, and strategic attention to markets within broader project contexts have been among the main problems for improved market infrastructure and systems in many countries (eg. #7 Georgia and #38 Malawi). Difficulties in market infrastructure planning and capacity support were significantly underestimated even in projects that focused fully on markets, such as Kenya #8 and Tanzania #19.

Box 25

Issues of strategic design in market-oriented projects

For #8 Kenya, launch and construction of the critical marketplace infrastructure for local horticulture sales was stalled early on in implementation. Outsourcing of design was required as the PMU in the Ministry of Agriculture was not familiar with the planning for market access. At mid-term there was no evidence that market structures had undergone any rigorous economic and financial feasibility assessment. In the end, only 34 percent of planned marketplaces were fully operational and 18 per cent partially, even after a year of extension, and almost half were not operational or stalled. The evaluation notes the different views of business owners, producers and consumers that were not informed by solid feasibility studies.

For Tanzania, the project (#19) had to reduce its targets significantly downwards from initially 120 to only 24 marketplaces, as they had not been well planned and budgeted for. For IFAD, the main lesson from this project was that facilitating and supporting private enterprises (MFIs, producer/trader groups, agribusiness) and value chains requires special skills and substantial resources. In the end, many marketplaces worked relatively well as they were effectively handed over and managed by local district councils who were adequately trained in O&M, together with beneficiary community groups. Marketplaces were fully integrated into district annual budgets and maintenance programmes.

The sample project in Malawi (#38) evidently designed its warehouse and produce collection centres poorly and many of them ended up unused or underused. Warehouse design was standard across communities ('one size fits all') and not necessarily adjusted to the commodities they were used for. Again, lack of know-how and the late recruitment of value chain and agribusiness advisors caused many problems for the market access component. Structures sometimes led to crowding in of other initiatives and partners working on the ground, but the project did not take an active approach in planning or managing these complementarities.

Insufficient attention to market components is also cited in other projects as the reason for poor performance. In Georgia (#7) enhanced commercialization and the development of associated rural enterprises was a primary project goal, with women being explicitly targeted. But the project developed no strategy for business development and product

¹²¹ 'Additionality' is about whether private investment and associated impact would not have happened anyway, without IFAD support.

diversification and commercialization, except for investing into transport infrastructure hardware (bridges etc.).

Source: ESR.

237. Support for expanded and new forms of product aggregation and processing, producer organizations, and public-private partnerships were less frequent. Often this took place in projects and project components that specialized on livestock, fisheries or horticulture; sometimes expansions into markets emerged out of village user associations that tried to add value to their production activities.
238. **Observations from ESR Smallholder market access and CLE Infrastructure in value-chains.** This ESR confirms many earlier observations by the ESR SAM (2016) and the CLE Value Chains (2019) on the importance of the interplay between production and market infrastructure in value chains and that of physical infrastructure and the building of capacities, institutions and other 'intangibles' for achieve lasting impact and infrastructure sustainability.
239. Infrastructure is not only seen as important for vertical market integration and lower marketing risks but also for upgraded production and reduced production waste and storage losses (CLE Value Chains). Combining a production and market infrastructure approach allows increased revenues for O&M and replace infrastructure (ESR SAM).
240. There is no set combination of infrastructure needs leading to greater smallholder access to markets achievements. This is a challenge for project design and implementation. Effective choice of what should be offered is often the outcome of extensive social and economic analysis of target populations, including the flexibility to adapt fast to market-driven changes (ESR SAM).
241. There are implementation challenges in the choice of infrastructure technology and approaches, sequencing, participation and O&M, and sustainability. This suggests that each infrastructure element is rolled out as required to support the overall programme schedule (ESR SAM).

B. Infrastructure for NRM and Climate Change Adaptation

242. IFAD has a long line of experience with environmental issues, NRM, renewable energy resources and climate change (2020 CLE climate change). IFAD's specific experience and performance of NRM/CCA infrastructure based on the ESR portfolio sample and case studies will be reviewed in the following, concerning climate-resilient infrastructure and renewable energies, and improved natural resources management, with special reference to water.
243. **Climate-resilient infrastructure.** Climate proofing of infrastructure against future climate risks is a centerpiece of smart climate action, based on SECAP assessments.¹²² Given the expected long service life of small-scale infrastructure of one to two decades there is a clear need to redesign and overhaul it to withstand the strain of changing climates, recurrent droughts, floods, wind storms and warming temperatures.

Box 26

Climate resilient infrastructure in Bangladesh and Sri Lanka

The CCRIP Bangladesh (#40) is the only project in the ESR sample that explicitly aimed at climate-proofing infrastructure, specifically coastal roads and market infrastructure to withstand cyclones, heavier monsoon rains and anticipated maximum flood and storm surge levels. This meant raising road levels by 20 cm and more sturdy construction of marketplaces.¹²³ Climate proofing allowed uninterrupted access to markets and contributed to increased incomes for the beneficiaries. The 2020 PPE confirmed through

¹²² IFAD. 2018. "How to do. Rural Infrastructure Investments" Guidelines/toolkit..

¹²³ Interestingly, there is nothing said in the PPE about the technical aspects of climate-proofing for marketplaces, nor for roads beyond the 200 millimeters increased height. Additional costs are not discussed.

spatial imagery and ground observations that the climate smart construction proved effective during the 2020 cyclone.

Another example of protecting infrastructure from climate risks was seen in the IIDP, Sri Lanka (#48). There excess water from heavy rainfalls was channeled through drainage canals, reducing the flood damage risks to constructions and paddy lands and recapturing it for use. Releasing water from water storage places once in two weeks during the off-season helped to maintain ground water levels and protect flora and fauna with longer-term resilience effects.

Source: ESR case studies.

244. **Renewable energy.** Of particular interest in the context of climate change are renewable energies that allow rural communities and households to adapt their energy utilization to climate change and mitigate through the use of low-carbon, renewable energies. The review identified 11 projects that had some form of (mostly) renewable energy, (see Annex VIII).¹²⁴ Performance of renewable and other energy sources in these projects ranged from relatively marginal or ineffective¹²⁵ to those doing well and having clear impact.¹²⁶ Those activities that were doing well usually were based on locally known technologies (hydel or biogas) that were scaled-up, occasionally with some technical and social improvements. Projects provided mostly decentralized, small-scale, and often household-based technologies. Some other projects clearly suffered from poor analysis, planning and O&M, resulting also in poor demand, particularly solar panelled pumps and other installations.^{127 128}
245. **NRM and watersheds.** Eight projects in the portfolio sample and two case studies explicitly included NRM infrastructure activities.¹²⁹ All of these projects also aimed to develop some irrigation and drainage infrastructure, sometimes combined with NRM in a watershed approach, sometimes in more parallel ways.¹³⁰ In general, performance of NRM activities was good. NRM projects often showed some good results in increasing soil fertility, increasing upland water efficiency and in reclaiming and stabilizing lands and forests.¹³¹ Yet, objectives of linking NRM and irrigation management in a watershed approach worked only in some countries.¹³² In other projects it did not work out this way. For example in (Gambia #42) irrigation and most NRM activities took place in different project site locations and were unconnected.
246. **Integration through watershed development.** IOE reports raised a number of concerns about the relatively low integration and joint planning of NRM activities with irrigation development, in a watershed approach or integrated in other ways. The PPEs/CSPEs called for 'innovative integrated watershed approaches and sustainable natural resource management'.¹³³ For projects with irrigation in the ESR sample the reports called for much better integrated water management and water-shed approaches.¹³⁴

Box 27

¹²⁴ Some solar energy activities were on a pilot base only (e.g. #13, #33 and #37).

¹²⁵ Cameroon #(#4.), Mauritania #(#7 and #8.), Tunisia #(#10.), Malawi #(#11).

¹²⁶ Pakistan #(#16.), Nepal #(#6.), Brazil #(#12), China #(#26.), Rwanda #(#17).

¹²⁷ Mauritania #(#13.), Malawi #(#37.), Tunisia #(#33.), Madagascar #(#47).

¹²⁸ Occasionally high prices for other energy sources deterred beneficiaries, particularly the poor (Armenia #[#1.], Mauritania #[#12.]).

¹²⁹ Morocco #14, Pakistan #16 and #28, Rwanda #17, Burkina Faso #22, Sri Lanka #32, Tunisia #33 and #34, Gambia #46 and Burundi #42.

¹³⁰ Tunisia #33, Morocco #14, Burkina Faso #22.

¹³¹ e.g. in Burkina Faso #22, Morocco #14, Tunisia #33 and Pakistan #28.

¹³² Rwanda #17, Sri Lanka #32 and to a lesser extent in Burundi #42.

¹³³ Examples include Morocco #14, Pakistan #28 and 16 and Tunisia #33. In Tunisia, salty groundwater brought about soil degradation which was not adequately addressed in the project. For Pakistan the environmental and NRM issue was brought into stark relief by a major earthquake when landslides in mountainous areas increased due to low forest coverage.

¹³⁴ Such as in Georgia #7, Mauritania #12 and #13, Sudan #18, Cameroon #25, and Vietnam #35.

The need for an integrated approach to watersheds (Burkina Faso)

The Burkina Faso project (#22) is fully oriented towards NRM and successfully developed both degraded upland and lowland areas, mainly through relatively simple techniques, such as zai planting pits, demi-lune micro-catchments, stone barriers, dikes and some reforestation. Despite its strong NRM orientation climate change was not sufficiently considered with too little attention to micro-irrigation and certain water and soil conservation/soil protection and restoration (WSC/SPR). Lowlands should be more strongly considered as an entry point to NRM as they generally mobilize rural communities for working in the sub-watershed as a whole. Broader country experience (CSPE) suggests that there are unresolved problems with land tenure security that can affect development and sustainability in NRM and watershed activities, particularly for lowlands.

Source: ESR.

247. IOE reports recognize that integrated watershed development is very difficult, particularly in many of the low capacity and marginal areas where IFAD tends to work as it requires integrated planning and implementation, across communities, and reconciling many different interests. Stakeholder interest, know-how and capacities of country local implementation partners cannot be taken for granted, nor those of communities and farmers, as awareness is often low and interests diverge. Rwanda is a positive example for a country that introduced watershed approaches in most of its projects, including institutional structures for their implementation (#17 and to a lesser extent #29). Experiences from operations suggests to increasingly use GIS spatial and geographic data for watershed decision-making and monitoring and to support the necessary capacities in countries¹³⁵.

Box 28

E-survey feedback on ENRM and CCA

The importance of watershed and landscape approaches was also raised in open-ended responses to the ESR e-survey question on climate change and resilience. Several comments concerned particularly nature-based solutions and reconciliation of interests of upstream and down-stream users. Among specific suggestions made were to 'include climate and environment assessments upstream in strategy and project design to affect choice of irrigation projects, partners, and locations. Consider not only the hardware design but also the services offered by nature-based solutions to protect hardware - i.e. landscape restoration to reduce erosion and siltation of canals. Cross-disciplinary (i.e. NRM and engineering and gender) and inter-modal planning (i.e. land and water-based transport options).' Another respondent drew attention to multifunctional infrastructure for NRM/CCA goals: 'Looking not only at the protection of infrastructure against climate risks but make infrastructure multi-functional and pro-actively contribute to resilience - for instance in roads for water - whereby roads are used not only for transport but also to contribute to water harvesting and water management

Source: ESR e-survey.

248. **Water infrastructure for multiple purposes and water efficiency.** The sample of 35 projects included 21 projects that provided water infrastructure for different purposes. Water infrastructure straddles various categories, from 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 is no (evident) common framework of water resource planning and infrastructure provision and services for the different purposes. Usually they are separately executed and carried out.¹³⁶

¹³⁵ Based on Management comments on the draft final report.

¹³⁶ The reports identified separate and unrelated systems for water supply for irrigation, human consumption and livestock, such as in Laos #9 and #10 where completely separate systems exist for drinking water, through tanks and gravity, and lowland irrigation, or in Mauritania (#12) where irrigation is based on recess water of the Senegal river and village water supply through boreholes.

249. A thorough water availability assessment– and potentially competing interests - should be the start of a project, to address demand peaks for instance in an oasis (Mauritania #13) or for seasonal vegetable gardens (Pakistan #16, Burkina Faso #23). An integrated approach is also required around livestock water facilities that are also being used by people. In Sudan (#18), the construction of a new community water pipeline simultaneously was designed to provide water for 20,000 households and for animals. In a semi-arid ecosystem in Chad (#45) many different interests of pastoralists, settled communities, humans and livestock were taken into account in designing the system.
250. However integrated management of water and other resources could be complex, particularly for remote and fragile areas (Nepal #27).¹³⁷ Integration of different water supply systems and joint planning also often involves different agencies with specific mandates and jurisdiction which are not always easy to coordinate and involve.¹³⁸ Transfer of responsibilities for water to local government areas could facilitate integrated planning provided they have the capacities (Armenia #1).
251. **Towards multiple water use systems.** The ESR Water (2014) concluded that water should be addressed in a more systematic and strategic manner and that multi-sectoral infrastructure systems should be prioritized. An earlier IFAD (2006) report pointed to the benefits and costs of such multiple water-use systems, but also recognizes these systems tend to be more expensive than single-purpose water delivery systems (see Box 27 below).¹³⁹

Box 29

Multiple water use systems for sustainable and equitable water management

Water systems that provide services for multiple uses of water have been promoted as a potential approach for achieving the Millennium Development Goals. While a livelihood approach is central to developing multiple-use water systems, there are technical (water sources, quality) and cost issues that need to be addressed if this approach is to work in poor rural communities. In order to promote more sustainable and equitable water management practices, water systems designed for delivering services for multiple uses tend to be more expensive than single-purpose water delivery systems. However, multiple-use water systems also have a greater potential for more user commitments in operation and maintenance because they are able to provide a wide range of services to different users. The cost for designing, constructing, operating and maintaining such systems must be covered by water charges (which may be different depending on the use) and subsidies.

Source: IFAD. 2006. Gender and water Securing water for improved rural livelihoods: The multiple-uses system approach.

252. **In sum**, climate-smart infrastructure is more than climate-proofing and ensuring there is no harm for safeguards. Such infrastructure includes broader watershed and landscape planning, complementary climate-smart technologies and it works for positive NRM/CCA objectives and externalities for resource protection, environment and climate resilience.
253. Secondly, for IFAD climate-smart infrastructure is less about the 'what to do', but more about the how to do it (design and country capacity building), who to do it with (the right partners at corporate level and getting buy-in countries and project sites), how do deal with some of the more complex planning requirements (multi-sectoral and inter-community) and how to share incremental costs and benefits (ie. additional costs and costs for external benefits). And last, importantly, how IFAD's particular target groups are involved and can benefit.

¹³⁷ In Sudan #18 works related to building ponds for livestock were suspended due to lack of clarity regarding policy and responsibilities for operation and management of stock watering.

¹³⁸ In Mauritania (#13) and in Morocco (#14) IFAD did not have the right government partners involved.

¹³⁹ IFAD 2006. Securing water for improved rural livelihoods: The multiple-uses system approach. Gender and water.

254. If successful, IFAD can use climate resilience and green infrastructure as important forward-looking and innovative themes, to contribute to the 'next generation infrastructure' and related technologies, also in view of contributing to SDG9 which is about innovation and infrastructure.

C. Infrastructure in fragile states

255. The IFAD Strategy for Engagement in Countries with Fragile Situations¹⁴⁰ of 2016 has a clear definition of fragility and its main drivers: "Fragility is a condition of high vulnerability to natural and man-made shocks, often associated with an elevated risk of violence and conflict. Weak governance structures along with low-capacity institutions are a common driver and consequence of fragile situations." Countries with fragile situations are commonly characterized by weaker governance systems and institutions that lack the capacity and the ability to respond to shocks. The 2005 'Senior Level Forum on Development Effectiveness in Fragile States' highlighted in its definition that fragility is characterized by situations where "the state power is unable and/or unwilling to deliver core functions to the majority of its people: security, protection of property, basic public services and essential infrastructure."¹⁴¹
256. **Infrastructure choices.** Infrastructure in fragile and conflict-affected situations is important to alleviate low economies of scale, communities in isolation, high costs of accessing markets, and poor basic social services.¹⁴² Economic returns to infrastructure investments in post-conflict environments are likely to be very high. IFAD's projects in countries with fragile situations that were sampled in this ESR had a strong focus on the rehabilitation and development of productive infrastructure, particularly related to water and watershed management/NRM and that of social infrastructure. Transport also appeared in several cases.
257. **Water management and irrigation.** Large and small-scale irrigation infrastructure can contribute significantly to food security when well managed and coupled with market access. The greatest potential returns in countries with fragile situations are expected from the rehabilitation of existing but damaged irrigation infrastructure, and from stimulating community-led small-scale agricultural water management.¹⁴³ Case studies and sample projects with watershed management and rehabilitated irrigation include #42 Burundi, #44 Georgia, #46 Gambia, #48 Sri Lanka, #18 Sudan. Two other countries with fragile situations, covered by the CSPE sample, were Niger and Afghanistan¹⁴⁴ (the latter was only recently approved). They have significant irrigation schemes and are among the top 10 IFAD countries with infrastructure investments.
258. The review shows that irrigation and watershed projects in these countries reported problems with technologies¹⁴⁵ and the sustainable management of these schemes. In Sudan irrigation management was transferred to WUAs, but low profitability and lingering uncertainties about tenancy undercut these organizations and beneficiaries' interest. There were large efforts of institutional strengthening of government irrigation scheme managers (for river off-take and main canals), but governance of secondary and tertiary canals remained weak. In recent projects in Niger too few resources were invested in WUA and communal management for rehabilitating small-scale irrigation infrastructure and ensuring economies of scale

¹⁴⁰ IFAD. 2016. IFAD Strategy for Engagement in Countries with Fragile Situations.

¹⁴¹ CLE: IFAD's Engagement in Fragile and Conflict-affected States and Situations (2015)

¹⁴² Asian Development Bank. 2013. Asian Development Blog: *Infrastructure development in fragile states: Is it worth it?*

¹⁴³ Stephen Jones and Simon Howarth. UK AID. 2012. Supporting Infrastructure Development in Fragile and Conflict-Affected States: Learning from Experience.

¹⁴⁴ In Afghanistan, the Arghandab project (approved in late 2019) focuses on small-scale and well-targeted river valley irrigation schemes that are owned, operated, and maintained by village communities.

¹⁴⁵ Technologies were either too low-tech and short-lived (Burundi, Gambia [early schemes]) or ones that introduced relatively high-technology and high-cost systems that required too much technical maintenance support, operational management and expenses (Sudan, Georgia, Gambia [later schemes], Niger [earlier systems])

in these schemes. Many of these problems require capacities and support that are often in particular short supply in countries with fragile situations.

259. In countries with fragile situations IFAD invested relatively more (see portfolio analysis in Chapter II) into natural resource infrastructure for soil and water management, for example in Gambia, Burundi and Niger. These are often plot-specific activities to increase productivity, with small water retaining structures and erosion control (bunding, contours, terracing, tree planting etc.). But they also include the promotion of integrated watershed and landscape management solutions that include lowland irrigation schemes (Gambia, Burundi). Their advantage in fragile situations is that they are usually using mostly local materials and are labor intensive. They offer the opportunity of food- and cash-for work for farmers to replete their income sources and assets. At the same time farmers can learn about new NRM and climate sensitive soil and water management methods. These activities were usually well carried out and adopted (Niger, Burundi), although their lasting effects and adoption by farmers is occasionally questioned (Gambia). Some technologies were too costly and low-yielding for farmers to be adopted (terracing in Burundi). Capacities for watershed or landscape planning are often weak in countries with fragile situations.
260. **Social infrastructure** (schools and health facilities) is relatively easy to construct in fragile contexts, but the impact is highly dependent on adequate services provided in the new facility, for which institutional strengthening as well as access to the facilities are pre-requisites.¹⁴⁶ Social infrastructure is also in high demand in fragile situation. When well managed and delivered, social infrastructure can galvanize interest in a project and community participation at a point when productive infrastructure is just starting to deliver.
261. The review found that social infrastructure has clearly contributed to rural poverty impact and enhancement for women particularly in the form of education, health, and household water supply (DRC, Burundi, and Sudan). In Sudan, significant benefits came from the project's integrated water access for households, supported by a community development and empowerment component and enhanced livelihood options through access to finance, with focus on women. In Chad, social capital improvements were found through the mobile education and basic health infrastructure for pastoralist. But its ultimate impact was disappointing in terms of delivery and targeting although physical targets were mostly reached.
262. In principle, social infrastructure construction and rehabilitation is technically relatively simple, but its realization and impact were not always easily achieved. Social infrastructure was sometimes relegated in projects to cofinanciers that did not deliver well, on time or pulled out. These cofinanciers included OFID in Burundi which delivered very late due to outstanding government arrears; BFFS in DRC and Niger, where either quality or delivery of infrastructure was not satisfactory and led to discontinuation; and AFD and Swiss Development Assistance in Chad that were supposed to take on the social infrastructure component in the project, but then decided otherwise.
263. The physical quantities of delivered structures were not always high (DRC, Niger) and the quality of services and beneficiary participation was questioned, particularly when established in a rush or when plans were changed (Burundi, Chad). In Niger, the planning and functioning of social infrastructure was hampered by complex participatory planning and ultimate official ministry validation processes which led to its discontinuation.

¹⁴⁶ Stephen Jones and Simon Howarth. UK AID. 2012. Supporting Infrastructure Development in Fragile and Conflict-Affected States: Learning from Experience.

264. **Road and other market access infrastructure.** Road and other transport construction and maintenance can provide significant short-term employment opportunities as well as boosting economic opportunities, but sustainability requires institutional strengthening.¹⁴⁷ For the reviewed sample, Niger, Gambia and DRC included rural roads, with varying emphasis over time. In Niger (CSPE 2011 and 2020) roads were built in good quality, but at higher costs than expected and with questionable maintenance arrangements. Many roads were not built with the specific purpose of linking farm producers to their markets. But Niger is the only country in the sample that also invested in infrastructure to avoid produce losses through better storage and to achieve higher prices that worked relatively well. In DRC fewer roads were built than planned at design (only 30 per cent) and user groups and local governments are not well equipped for their maintenance.
265. **Institutional choices.** CDD as an effective modality in fragile and post-conflict situations. Community mobilization and participation for infrastructure design and operation from the start and beneficiaries' continued involvement in user groups is paramount for functioning and sustainable infrastructure. In many countries with fragile situations where central or local government structure do not work well the CDD approach worked better (ESR CDD).¹⁴⁸
266. For the sample cases reviewed in this ESR, several projects made very positive experiences with relying on community development as the post-conflict starting point of mobilization (Burundi), working with existing community organizations to generate and operate infrastructure (DRC, Gambia) and investing heavily into communities' and community organizations' capacities (Chad in particular). In Afghanistan, capacity building for community-based and beneficiary governed institutions is an explicit part of the country programme's Strategic Objective 3 (Country Note).
267. In Burundi community development has been noted as the essential pillar since the early 2000s and until today (Burundi COSOPs 2008 and 2016). In Gambia IFAD worked with traditional work groups ('kafos'), particularly of women, with positive results for the continuity of project activities and results. In Chad the PROHYPA pastoralist project generated a complex but workable system, with separate committees for the management of wells, the surveillance of ponds, and the long-term maintenance of hydro-infrastructure. The main tasks of these committees were to ensure access for all intended users and the proper use of the generated infrastructure, prevent and manage potential conflicts among different users, and ensure periodic maintenance. As in Gambia, community building efforts were not started from scratch but relied on past work by other projects with the same or similar communities.
268. **Capacity and governance constraints.** Four factors deserve particular attention for effective community mobilization and development based on observations in countries with fragile situations. First, capacity building in the form of training was often done as a one-time activity, but to be effective it usually requires continuous follow-up, booster training and engagement with groups (Gambia). Secondly, in reaching IFAD's main target groups some trade-offs had to be made. In DRC it was not possible to work in the more remote and poorer areas that IFAD usually targets, partly due to the security circumstances. The project primarily worked in areas closer to urban centers and major roads. In Gambia, the fact that IFAD was working with long established community groups limited access to project benefits

¹⁴⁷ Stephen Jones and Simon Howarth. UK AID. 2012. Supporting Infrastructure Development in Fragile and Conflict-Affected States: Learning from Experience.

¹⁴⁸ Provision of infrastructure through CDD as part of a post conflict/post emergency approach was effective in #16 Pakistan, #24 Cambodia and #27 Nepal. #27 Nepal was originally designed in 2001 within a fragile political situation (i.e. Maoist insurgency). In #16 Pakistan the massive earthquake in Kashmir in October 2005, with a death toll of about 75,000 people, made the priorities of the government and the population shifted to relief, reconstruction and rehabilitation. In #15 Nigeria the project effectively delivering infrastructure in a fragile situation in the country's terrorist threatened North.

by some poorer community members that were not part of these groups. Third, it was challenging to get different community groups and service providers to work together, across communities and activities, for better results, exchange experiences and address common inter-community objectives. This is often not sufficiently the case and encouraged by project management (Gambia, Chad). Last, a major constraint in effective institutional support for rural infrastructure, particularly infrastructure involving land and water and major improvements of these basic resources, are land tenure issues and water rights which grew often particularly sensitive in settings with fragile and post-conflict situations. Several projects reported that social and land tenure complexities have been considerably underestimated (Sudan, Burundi, Niger). This is particularly the case in Sudan where the intended land tenancy reform process remains incomplete and continues to affect project performance negatively.

269. **Working with government counterparts and other implementing organizations.** Building institutional capacity in state institutions requires a long-term strategic perspective and there may be difficult choices to be made about how far it is worth supporting short-term investments that are carried out in ways that do not build (and may weaken) capacity given the need for institutional capacity if sustainable impact is to be achieved.¹⁴⁹
270. The review shows that IFAD worked with several kinds of intermediaries, always including certain government agencies that were available in one way or the other in all countries, as well as with CSOs (particularly in Burundi and Chad), and some private and semi-private service providers (Chad, Afghanistan, DRC). In all sampled projects cases in fragile situations Government played a major role here. The involvement of line ministries that have a mandate for the specific activities that the project works in is absolutely critical to move ahead with infrastructure construction and operations without major delays and complications. For instance, aligning and having cooperation from different ministries is seen as key for project success in Afghanistan, concerning the Ministry of Agriculture, Irrigation and Livestock and the Ministry for Rural Rehabilitation (Country Note).
271. **Weak governance.** An extremely weak institutional environment in many countries with fragile situations creates difficulties for the management of procurement processes using the normal procedures of international development agencies and this has contributed to delays in implementation because of fiduciary risk aversion. By-passing normal procurement and management processes can fuel corruption which may itself have been a driver of conflict and undermined peace-building 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 the sustainability and future maintenance arrangements.¹⁵⁰
272. Poor government capacity led to very low disbursements and outputs in DRC: 56 per cent and only 36 per cent for infrastructure. Projects in Gambia and Chad faced heavy and prolonged procurement and delayed execution of works due to government capacities for planning, execution and supervision of sub-contracts. This was compounded by limited capacities of infrastructure construction companies and other service providers to provide proper bids and implement the work. There is scope for capacity building of such companies, which has not been widely applied so far. Not all strengthening of state planning and management capacities bears fruits though. In Sudan, large efforts were made to institutionally strengthen government irrigation scheme management (such as for river off-take and main canals), but other key institutions, complementary production and market activities remained weak and kept the irrigation schemes from performing

¹⁴⁹ Stephen Jones and Simon Howarth. UK AID. 2012. Supporting Infrastructure Development in Fragile and Conflict-Affected States: Learning from Experience.

¹⁵⁰ Stephen Jones and Simon Howarth. UK AID. 2012. Supporting Infrastructure Development in Fragile and Conflict-Affected States: Learning from Experience.

well. Projects in Gambia and DRC did not manage well to keep themselves insulated from political perturbations and fiduciary management interferences, including very frequent changes of senior government officials and managers, even arrests.

273. In the recently approved projects in Afghanistan, the risk mitigation measures taken for weak government capacities for project management and poor fiduciary management are intensified capacity building of government institutions and that of service providers on project management; the recruitment of 'reputable national and international service providers'; and a participatory community approach to enhance transparency at the field level.
274. **Sustainability.** Sustainability of all forms of infrastructure is clearly the weakest link in countries with fragile situations where institutional and technical support, beneficiary capacities and financial resources for keeping infrastructure operational are particularly in short supply. Without exception, all case studies see a very small likelihood of sustainability unless arrangements are made for post-project technical infrastructure support, institutional group support and continued contributions to operational and maintenance costs. Some countries and projects do not even have an exit strategy or weak ones (Chad). Difficulties of sustaining participation and management through grassroots organizations are widely acknowledged (Niger). At the same time, governments in these countries do not demonstrate the capacity or political will for contributing to long-term financial and technical capacity support and service provision (Gambia and Niger). After the project finishes, farmers can no longer rely on government maintenance or continued training and advisory services. While this issue was been prominently raised in Gambia when the latest COSOP was developed, IFAD could not convince the Government to adopt project generated irrigation and drainage infrastructure as a public good to ensure its sustainability.
275. In order to enhance the prospects for sustainability, IFAD adopted more programmatic and long-term approaches in countries with fragile situations, sometimes with emphasis on infrastructure (Burundi COSOP 2016) and through ensuring some overlaps across different projects to maintain support to beneficiaries over time and further develop and refine models to ensure long-term solutions and sustainability (Burundi, Gambia, Chad and Niger).
276. **The lessons** coming out of these countries with fragile situations are that (i) infrastructure solutions require long-term perspectives, working with target populations over time; testing and advancing institutional capacities and concepts; and building-up reliable partners; (ii) cofinanciers, development partners and advocacy for IFAD's populations and solutions are important elements as IFAD has too few resources to address many infrastructure issues on its own; (iii) political dialogue with the Government and others is critical on issues from enabling policies, such as on ownership and land security; legal status and responsibilities of groups; and institutionalizing government support services, markets; and (iv) sustainability of much of rural infrastructure can only be achieved through continued government contributions to sustainable solutions, including those by local governments.

Key points (Chapter VI)

- **Infrastructure for smallholder market access and value chains.** The most common and generally satisfactory market infrastructure was the construction of roads, bridges and other forms of transport to and from markets. The construction of enhanced marketplaces, stalls, warehouses and other storage facilities had varying success.
- Projects that supported livestock production, aggregation and processing, for dairy and meat, were able to raise household incomes through better market outlets and prices.
- Without adequate capacities, funds and authority the necessary market business plans were not developed and market operations and infrastructure not managed effectively. The constitutional and legal enabling framework were often insufficient, too.
- The ESR found only few cases in its portfolio sample and case studies where projects successfully managed to engage the private sector as a partner and cofinancier in market operations for smallholder market access.
- **Infrastructure for NRM and climate change adaptation.** Climate proofing of infrastructure against future climate risks is a centrepiece of smart climate action, based on SECAP assessments. The review sample included only one project, the CCRIP Bangladesh (#40) that explicitly aimed at climate-proofing infrastructure, specifically coastal roads and market infrastructure.
- The review sample included 11 projects that had some form of (mostly) renewable energy. Performance of renewable and other energy sources in these projects was variable. Those activities that were doing well usually were based on locally known technologies (hydel or biogas) that were scaled-up, occasionally with some technical and social improvements.
- NRM projects often showed some good results in increasing soil fertility, increasing upland water efficiency and in reclaiming and stabilizing lands and forests. Yet, objectives of linking NRM and irrigation management in a watershed approach worked only in some countries.
- 21 of the 35 sample projects include water infrastructure for different purposes. But there was common framework of water resource planning and infrastructure provision and services for the different purposes. Usually they were separately executed and carried out. Integration of different water supply systems and joint planning involves different agencies with specific mandates and jurisdiction which are not always easy to coordinate.
- **Infrastructure in fragile states.** Infrastructure in fragile and conflict-affected situations is important to alleviate low economies of scale, communities in isolation, high costs of accessing markets, and poor basic social services. Economic returns to infrastructure investments in post-conflict environments are likely to be very high. Large and small-scale irrigation infrastructure can contribute significantly to food security when well managed and coupled with market access.
- Projects made very positive experiences with relying on community development as the post-conflict starting point of mobilization, working with existing community organizations to generate and operate infrastructure and investing heavily into communities' and community organizations' capacities.
- Weak government capacities are among the biggest risks for implementation in countries with fragile situations. In Afghanistan IFAD intensified capacity building of government institutions and that of service providers on project management; the recruitment of 'reputable national and international service providers'; and a participatory community approach to enhance transparency at the field level.
- Sustainability of all forms of infrastructure is clearly the weakest link in countries with fragile situations where institutional and technical support, beneficiary capacities and financial resources for keeping infrastructure operational are particularly in short supply.

VII. Conclusions and recommendations

A. Conclusions

277. **IFAD infrastructure investments were relevant and overall effective in their contribution to poverty reduction.** Infrastructure sub-projects overall 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 scales, 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.
278. **Ownership and multi-stakeholder capacity building were important preconditions to ensure that infrastructure is well taken care of.** User participation has been critical for operations and sustainability but engagement of local administrations was important, too. There has not been enough dedicated technical know-how, and sometimes priority interest, among IFAD's traditional government partners to support the ongoing transition from government-owned (and maintained) infrastructure to more inclusive and stakeholder-owned models. User groups, as the trade-mark IFAD model, tended to be too weak to fulfill the expected functions, and private sector participation in operation and maintenance has been rare. Institutional governance and capacity building of user associations and farmer groups at community and local levels requires 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.
279. **Water-related infrastructure has been an area of focus for IFAD; it requires greater efforts to enhance efficiency and sustainability issues.** Drinking water has 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 into 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 natural resources 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.
280. **Innovative 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 SDG9 on innovation and infrastructure. There is an increasing demand for innovative, climate-smart infrastructure. These include 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, complementary climate-smart technologies and it works for positive NRM/CCA objectives and externalities for resource protection, environment and climate resilience. Renewable energy decentralized to communities or households, mainly executed as pilots, would deserve more

attention for the multiple social and economic benefits, particularly for women, and its importance for natural resource management and climate resilience.

281. **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 partners. In such places cofinanciers, identification of new development partners (particularly CSOs) and advocacy for IFAD's populations and solutions are even more important than elsewhere as IFAD has too few resources and traditional partners to address many infrastructure issues on its own. Political dialogue with the Government and others is often critical to facilitate enabling policies, such as on ownership and land security; legal status and responsibilities of groups; and institutionalizing government support services, markets. In the end, sustainability of much of rural infrastructure in fragile situations can only be achieved through increasing government contributions, including those by local governments.
282. **IFAD has a positive track record and added value but it needs to step up its internal technical capacities and guidance** for the provision of infrastructure. IFAD is relatively experienced, mainly through tacit staff knowledge, on water and irrigation, roads/transport, and social infrastructure. IFAD lacks sufficient support for and attention to infrastructure through specialized technical staff, safeguards and climate risk expertise and resources, and M&E capacities, in design, implementation assistance and supervision. Hence there is an urgency to reconcile IFAD's strategic infrastructure approach with its infrastructure support capacities.
283. **Demand for infrastructure investments in partner countries is expected to increase, particularly in MICs**, where the decreasing availability of concessional loans and grants for these countries 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 suggests some caution in scaling up these investments. It will also require careful assessments 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, they often increased the transaction costs for both IFAD and its government partners
284. **Above all, any IFAD niche in infrastructure and increased future borrowing for infrastructure needs to stay closely linked to IFAD's mandate** to facilitate better access and sustainability for IFAD's core target groups and help ensure that elite capture is minimized. This could include small-scale irrigation schemes; tapping into larger infrastructure investments and schemes through co-financing; enhanced access for the poor and for women; connecting into value chains; and keep linking and phasing hard and soft infrastructure well. IFAD's comparative advantage is clearly in the provision of small-scale, climate-smart and pro-poor infrastructure, in line with IFAD's mandate, but this needs to be articulated more clearly at strategic level. Addressing the demand of IFAD's core target group also requires balancing the provision of productive and market infrastructure with infrastructure catering for basic needs, such as drinking water.

B. Recommendations

285. **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 the rehabilitation of existing irrigation. The strategy would clarify options for resource acquisition and use, taking into consideration the time and transaction costs for partnership building at the level of operations. Finally, the strategy will need to define a better approach to tracking the performance and results of infrastructure investments at corporate level, including hard and soft infrastructure activities. The strategy will provide a common framework for IFAD; regional differentiations will be required to respond to the demand and capacities on the ground.

286. **Recommendation 2. Adopt a comprehensive approach to strengthening know-how and capacities 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 infrastructure investments. Technical expertise (and staff) needs to be maintained at HQ 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 relevant capacities. The growing demand for green infrastructure will require better alignment of corporate human and financial resources for CCA and SECAP.
287. **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 start. Community-based approaches and capacity building for user 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 QAG. The inclusiveness of the approach and the sustained benefits for poor men and women need to be monitored and reported through supervisions, as do SECAP requirements and management plans.

I. Evaluation Framework

	Questions	Corporate-level documents review	FGDs and interviews	Review of evaluation sample	Case study	evaluation criteria
Q1	Main question 1: How well is IFAD set up (strategically, institutionally and capacity-wise) to address the demand for infrastructure by providing (or leveraging) the financial and technical support required to properly plan, manage and supervise projects with significant infrastructure investments?					
Q1.1	questions on strategy					
	How is infrastructure expected to contribute to IFAD's strategic objectives (globally and at country level)?	√	√	√	√	Relevance
	Does IFAD have a generally agreed-on and well-understood definition for infrastructure? How are sub-categories -sectors with infrastructure investments defined?	√	√			Relevance
	How does IFAD track the current volume and performance of infrastructure investments at corporate level? To what extent are sub-categories of infrastructure monitored? How could data collection and analysis be improved?	√	√			Relevance
	What are the main factors driving infrastructure investments at IFAD? (e.g. Country demand, PBAS allocations, project cycle issues such as SECAP requirements, etc.). Why infrastructure remains a priority for Government?	√	√	√	√	Relevance
	What is the demand for infrastructure investments (and what type of infrastructure) in fragile and post-conflict environments?			√	√	Relevance
	What is IFAD's comparative advantage in the provision of (soft and hard) infrastructure?	√	√	√		Funding instruments, arrangements and partnerships
	What are the factors driving or limiting IFAD's investments into infrastructure?					Relevance
Q1.2	questions on co-finance					
	What are the (strategic or prevailing) co-financing partnerships for provision of infrastructure?	√	√	√	√	Funding instruments, arrangements and partnerships
	Are the institutional and financial arrangements for co-financing working in a complementary manner at operational levels?	√	√	√	√	Funding instruments, arrangements and partnerships

	Questions	Corporate-level documents review	FGDs and interviews	Review of evaluation sample	Case study	evaluation criteria
	How does IFAD ensure that its policies and requirements are taken forward in co-financed (infrastructure) operations?					Funding instruments, arrangements and partnerships
Q1.3	questions on risk management					
	How is IFAD managing the (environmental and social) risks in relation to infrastructure provision?	√	√			Performance and results
	To what extent are SECAP (and earlier versions of IFAD safeguards) and FPIC requirements applied? Does IFAD have the capacity to implement SECAP?		√	√		Performance and results
	How are safeguards applied in co-financed projects?		√	√		Performance and results
Q1.4	questions on IFAD capacities					
	To what extent does IFAD provide the required technical expertise (engineering, financial and social) to design, supervise and/or monitor (hard and soft) infrastructure components?		√	√		Performance and results
	To what extent is knowledge on (hard and soft) infrastructure documented and shared?	√	√	√		Scaling up
Q2	Main question 2: How does infrastructure, within project-level theories-of-change, contribute to higher-level outcomes and impacts, such as poverty reduction and inclusive development? How can impact be most effectively, efficiently and sustainably achieved through special attention to smallholder commercialisation, markets and value chains in infrastructure design and operations?					
Q2.1	Questions with regard to overall performance					
	How effective are IFAD's investments into infrastructure?			√	√	Performance and results
	How do infrastructure-heavy project perform (according to IOE criteria) compared to the rest of the portfolio?			√		Performance and results
	What are the results and impacts of IFAD infrastructure investments, particularly in the context of projects supporting smallholder value chains and market access?			√	√	Performance and results
	How do infrastructure projects perform along the specified performance indicators?			√	√	Performance and results
	How does (hard) infrastructure complement the non-infrastructure parts of the project and vice versa? To what extent does the phasing of activities enable complementarity?		√	√	√	Performance and results

	Questions	Corporate-level documents review	FGDs and interviews	Review of evaluation sample	Case study	evaluation criteria
	To what extent does IFAD supported infrastructure provide value for money? How does VfM compare between types of infrastructure?		√		√	Performance and results
Q2.2	questions on targeting					
	What are effective (governance) arrangements to ensure that IFAD's target groups benefit from infrastructure?			√	√	Pro-poor and gender responsive infrastructure
	Are there any good practices for pro-poor or gender responsive infrastructure provision?			√	√	Pro-poor and gender responsive infrastructure
	To what extent do IFAD's targets groups participate in the identification, planning and implementation of infrastructure sub-projects? How (and to what extent) are target groups (as users) involved in the operation and maintenance?		√	√	√	Pro-poor and gender responsive infrastructure
Q2.3	question on climate change					
	To what extent do IFAD infrastructure investments contribute to the ultimate climate resilience of IFAD beneficiaries?			√	√	Climate change resilience
Q3	Main question 3: What is required, in terms of funding, capacity building and institutional arrangements, to make IFAD-funded infrastructure effective and sustainable for rural poor people in the longer term?					
Q3.1	O&M					
	What are the prevailing institutional, implementation and O&M arrangements and how did these affect the performance of the projects?		√	√	√	Performance and results
	Are there sufficient investments into "soft" infrastructure (capacities, institutions) to ensure that the "hard" infrastructure is functional and sustainable?		√	√	√	Performance and results
	To what extent is the infrastructure provided part of broader governance structures (e.g. last mile) or fully decentralised (e.g. community led)?			√	√	Performance and results
	Are there any innovative arrangements in the provision and maintenance of infrastructure? In particular: What role can the private sector play in the provision and maintenance of infrastructure?		√	√	√	Innovation

	Questions	Corporate-level documents review	FGDs and interviews	Review of evaluation sample	Case study	evaluation criteria
	Does IFAD pay sufficient attention to the absorptive capacity for infrastructure investments at community level, particularly in view of their ongoing utilization and sustainability beyond project end? To what extent are IFAD target groups willing and able to pay for the use of infrastructure?			√	√	Sustainability
Q3.2	sustainability					
	How do IFAD projects plan and provide for the technical, economic, social and environmental sustainability of infrastructure investments?	√		√	√	Sustainability
	Are ownership arrangements and hand-over (responsibility for O&M) clearly defined in the institutional set up?			√	√	Sustainability
	Are costs adequately planned and estimated to ensure continued functioning of the infrastructure?			√	√	Sustainability
	What could IFAD do to enhance the sustainability of (hard and soft) infrastructure?				√	Sustainability
	What could IFAD do to enhance the sustainability of (hard and soft) infrastructure?					Sustainability

II. List of projects sampled for review

Table 1 – Sample selected for qualitative review of evaluation reports (38 projects)

ESR Ref. No.	Region Code	Country	Fragility Status*	Project Number (GRIPS ID)	Project Name	Evaluation type	Approval date	Closing date	Total Budget, in US\$ M	IS Investment Share (of budget), %
#1	NEN	Armenia	Not fragile	1100001307	Rural Areas Economic Development Programme (RAEDP)	PE/PPA/IE	02-Dec-04	31-Mar-10	20.8	45.1%
#2	NEN	Azerbaijan	Not fragile	1100001289	North East Rural Development Project (NDP)	PE/PPA/IE	09-Sep-04	31-Mar-12	12.6	43.0%
#3	APR	Bhutan	Not fragile	1100001296	Agriculture, Marketing and Enterprise Promotion Programme (AMEPP)	PE/PPA/IE	19-Apr-05	31-Dec-12	15.6	52.3%
#4	APR	Cambodia	Not fragile	1100001350	Rural Livelihoods Improvement Programme (RULIP)	PE/PPA/IE	18-Apr-07	31-Mar-15	13.2	51.0%
#5	WCA	Cote d'Ivoire	Fragile	1100001435	Agricultural Rehabilitation and Poverty Reduction Project (ARPRP)	PE/PPA/IE	17-Dec-09	30-Jun-15	22.7	55.9%
#6	WCA	DR Congo	Fragile	1100001311	Agricultural rehabilitation programme in orientale province (PRAPO)	PE/PPA/IE	11-Dec-05	30-Apr-14	17.7	60.5%
#7	NEN	Georgia	Not fragile	1100001507	Agricultural Support Project (ASP)	PE/PPA/IE	17-Dec-09	31-Mar-16	13.7	64.8%
#8	ESA	Kenya	Not fragile	1100001330	Smallholder Horticulture Marketing Programme (SHoMaP)	PE/PPA/IE	18-Apr-07	30-Jun-15	23.9	66.3%
#9	APR	Laos	Not fragile	1100001207	Oudomxai Community Initiatives Support Project (OCISP)	PE/PPA/IE	23-Apr-02	30-Sep-10	16.9	49.3%
#10	APR	Laos	Not fragile	1100001301	Rural Livelihoods Improvement Programme in Attapeu and Sayaboury (RLIP)	PE/PPA/IE	19-Apr-05	30-Sep-14	23.8	30.4%
#11	ESA	Madagascar	Not fragile	1100001318	Project to Support Development in the Menabe and Melaky Regions (AD2M) ¹	PE/PPA/IE	20-Apr-06	30-Jun-16	20.3	37.6%

ESR Ref. No.	Region Code	Country	Fragility Status*	Project Number (GRIPS ID)	Project Name	Evaluation type	Approval date	Closing date	Total Budget, in US\$ M	IS Investment Share (of budget), %
#12	WCA	Mauritania	Not fragile	1100001179	Poverty Reduction Project in Aftout South and Karakoro (PASK)	PE/PPA/IE	12-Sep-01	30-Jun-10	14.8	44.4%
#13	WCA	Mauritania	Not fragile	1100001255	Oasis Sustainable Development Programme (PDDO)	PE/PPA/IE	17-Dec-03	31-Oct-14	11.4	38.4%
#14	NEN	Morocco	Not fragile	1100001338	Rural Development Project in the Eastern Middle Atlas Mountains (PDRMO)	PE/PPA/IE	13-Dec-05	04-Oct-16	26.0	44.1%
#15	WCA	Nigeria	Not fragile	1100001196	Community-based Agricultural and Rural Development Programme (CBARDP)	PE/PPA/IE	12-Sep-01	30-Sep-13	42.9	51.1%
#16	APR	Pakistan	Not fragile	1100001245	Community Development Programme (CDP)	PE/PPA/IE	18-Dec-03	31-Mar-13	21.8	34.2%
#17	ESA	Rwanda	Not fragile	1100001431	Kirehe Community-based Watershed Management Project (KWAMP)	PE/PPA/IE	11-Sep-08	31-Dec-16	42.3	51.8%
#18	NEN	Sudan	Fragile	1100001263	Gash Sustainable Livelihoods Regeneration Project (GSLRP)	PE/PPA/IE	18-Dec-03	31-Mar-13	24.9	39.2%
#19	ESA	Tanzania	Not fragile	1100001166	Agricultural Marketing Systems Development Programme (AMSDP)	PE/PPA/IE	06-Dec-01	30-Jun-10	36.4	32.4%
#20	NEN	Turkey	Not fragile	1100001189	Sivas – Erzincan Development Project (SEDP)	PE/PPA/IE	11-Sep-03	30-Sep-13	23.0	64.8%
#21	APR	Bangladesh	Not fragile	1100001235	Microfinance and Technical Support Project (MFTSP)	CPE/CSP E	10-Apr-03	30-Jun-11	16.3	30.2%
#22	WCA	Burkina Faso	Not fragile	1100001247	Sustainable Rural Development Programme (PDRD)	CPE/CSP E	02-Dec-04	30-Jun-14	24.8	33.0%
#23	WCA	Burkina Faso	Not fragile	1100001368	Small-scale irrigation and water management project (PIGEPE)	CPE/CSP E	13-Dec-07	22-Feb-17	13.7	46.9%
#24	APR	Cambodia	Not fragile	1100001261	Rural Poverty Reduction Project (Prey Veng and Svay Rieng) (RPRP)	CPE/CSP E	18-Dec-03	17-Dec-12	17.9	36.5%

ESR Ref. No.	Region Code	Country	Fragility Status*	Project Number (GRIPS ID)	Project Name	Evaluation type	Approval date	Closing date	Total Budget, in US\$ M	IS Investment Share (of budget), %
#25	WCA	Cameroon	Not fragile	1100001136	Community Development Support Project (PADC)	CPE/CSP E	23-Apr-02	31-Dec-09	11.8	49.8%
#26	APR	China	Not fragile	1100001478	Sichuan Post-Earthquake Agriculture Rehabilitation Project (SPEARP)	CPE/CSP E	30-Apr-09	31-Mar-13	30.5	99.1%
#27	APR	Nepal	Not fragile	1100001119	Western Uplands Poverty Alleviation Project (WUPAP)	CPE/CSP E	06-Dec-01	31-Mar-17	24.3	45.2%
#28	APR	Pakistan	Not fragile	1100001182	North West Frontier Province Barani Area Development Project (NWFP BAPD)	CPE/CSP E	26-Apr-01	31-Dec-08	66.5	45.0%
#29	ESA	Rwanda	Not fragile	1100001222	Umutara Community Resource and Infrastructure Development Project (PDRCIU)	CPE/CSP E	06-Dec-01	30-Jun-08	20.5	53.5%
#30	APR	Sri Lanka	Not fragile	1100001254	Dry Zone Livelihood Support and Partnership Programme (DZ-LiSPP)	CPE/CSP E	09-Sep-04	30-Sep-13	27.0	40.0%
#31	APR	Sri Lanka	Not fragile	1100001351	Post-Tsunami Livelihoods Support and Partnership Programme (PT-LiSPP)	CPE/CSP E	19-Apr-05	30-Sep-10	4.7	100.0%
#32	APR	Sri Lanka	Not fragile	1100001600	Iranamadu Irrigation Development Project (IIDP) ²	CPE/CSP E	13-Dec-11	30-Sep-17	22.2	86.8%
#33	NEN	Tunisia	Not fragile	1100001213	Programme for Agro-pastoral Development and Promotion of Local Initiatives in the South-East (PRODESUD)	CPE/CSP E	05-Sep-02	31-Dec-15	30.2	60.0%
#34	NEN	Tunisia	Not fragile	1100001299	Integrated Agricultural Development Project in the Governorate of Siliana-Phase II (PDAI Siliana II)	CPE/CSP E	13-Dec-05	31-Mar-16	31.1	76.7%
#35	APR	Vietnam	Fragile	1100001202	Rural Income Diversification Project in Tuyen Quang Province (RIDP)	CPE/CSP E	06-Dec-01	31-Mar-10	25.9	39.3%
#36	ESA	Mozambique	Not fragile	1100001184	Sofala Bank Artisanal Fisheries Project (SBAFP)	PE/PPA/IE	12-Sep-01	30-Sep-11	29.6	21.1%

ESR Ref. No.	Region Code	Country	Fragility Status*	Project Number (GRIPS ID)	Project Name	Evaluation type	Approval date	Closing date	Total Budget, in US\$ M	IS Investment Share (of budget), %
#37	NEN	Turkey	Not fragile	1100001492	Ardahan-Kars-Artvin Development Project (AKADP)	PE/PPA/IE	17-Dec-09	31-Mar-18	26.4	51.5%
#38	ESA	Malawi	Not fragile	1100001365	Rural livelihoods economic enhancement programme (RLEEP)	PE/PPA/IE	13-Dec-07	30-Jun-18	29.2	41.1%

Source: ESR.

* Fragility status taken from the Special Programme for Countries with Fragile Situations: Operationalizing IFAD's Fragility Strategy (2019)

<https://webapps.ifad.org/members/wgtf/TFWG8/docs/TFWG-2019-8-W-P-3-Rev-1.pdf>.

¹ Also reviewed as a case study (#47 in Table "List of case studies")

² Also reviewed as a case study (#48 in Table "List of case studies")

Table 2 – List of 10 case studies

ESR Ref. No.	Region Code	Country	Fragility Status*	Project Number (GRIPS ID)	Project Name	Infrastructure Typology	Approval date	Closing date	Total Budget, in US\$M	IS Invest. Share (of budget), %
#40	APR	Bangladesh	Not fragile	1100001647	Coastal Climate Resilient Infrastructure Project (CCRIP)	Market places & value chains Road transport mobility	10-Apr-13	31-Mar-20	150.1	68.2%
#41	APR	China	Not fragile	1100001555	Guangxi Integrated Agricultural Development Project (GIADP)	Road transport mobility Productivity (irrigation/drainage, pastoral water IS) Basic needs (drinking water, schools, sanitation, energy)	13-Dec-11	30-Sep-17	96.9	30.1%
#42	ESA	Burundi	Fragile	1100001105	Rural Recovery and Development Programme (PRDMR)	Road transport mobility Productivity (irrigation/drainage, pastoral water IS) Basic needs (drinking water, schools, sanitation, energy)	28-Apr-99	31-Dec-10	34.2	44.2%
#43	LAC	Brazil	Not fragile	1100001335	Rural Communities Development Project in the Poorest Areas of the State of Bahia (Gente de Valor)	Productivity (irrigation/drainage, pastoral water IS) Basic needs (drinking water, schools, sanitation, energy)	20-Apr-06	30-Sep-13	60.5	0.0%
#44	NEN	Georgia	Not fragile	1100001760	Agriculture Modernization, Market Access and	Market places & value chains Productivity (irrigation/drainage, pastoral water IS)	01-Sep-14	31-Jul-21	35	2.9%

<i>ESR Ref. No.</i>	<i>Region Code</i>	<i>Country</i>	<i>Fragility Status*</i>	<i>Project Number (GRIPS ID)</i>	<i>Project Name</i>	<i>Infrastructure Typology</i>	<i>Approval date</i>	<i>Closing date</i>	<i>Total Budget, in US\$M</i>	<i>IS Invest. Share (of budget), %</i>
					Resilience Project (AMMAR)					
#45	WCA	Chad	Fragile	1100001446	PROHYPA	Productivity (irrigation/drainage, pastoral water IS)	15-Sep-09	30-Sep-15	22.6	0.0%
#46	WCA	Gambia	Fragile	1100001643	National Agricultural Land and Water Management Development Project (NEMA)	Road transport mobility Productivity (irrigation/drainage, pastoral water IS) ENRM (Sustainable management of water bodies)	10-Dec-12	30-Dec-20	76.6	77.5%
#47	APR	Madagascar	Not fragile	1100001318	Project to Support Development in the Menabe and Melaky Regions (AD2M)	Road transport mobility Water transport mobility Irrigation/drainage	20-Apr-06	30-Jun-16	23.5	32.3%
#48	APR	Sri Lanka	Not fragile	1100001600	Iranamadu Irrigation Rehabilitation Project (IIDP)	Productivity (irrigation/drainage, pastoral water IS)	13-Dec-11	30-Sep-17	29.3	65.9%
#49	APR	Philippines	Not fragile	1100001485	Irrigated Rice Production Enhancement Project of the Rapid Food Production Enhancement Programme (RaFPEP)	Irrigation/Drainage management Market Linkages Value addition (other) Irrigation/Drainage IS	17-Dec-08	30-Jun-17	17.6	8.5%

* Fragility status taken from the Special Programme for Countries with Fragile Situations: Operationalizing IFAD's Fragility Strategy (2019) <https://webapps.ifad.org/members/wgtf/TFWG8/docs/TFWG-2019-8-W-P-3-Rev-1.pdf>.

III. Key results of e-survey

Figure 1
Profile of respondents

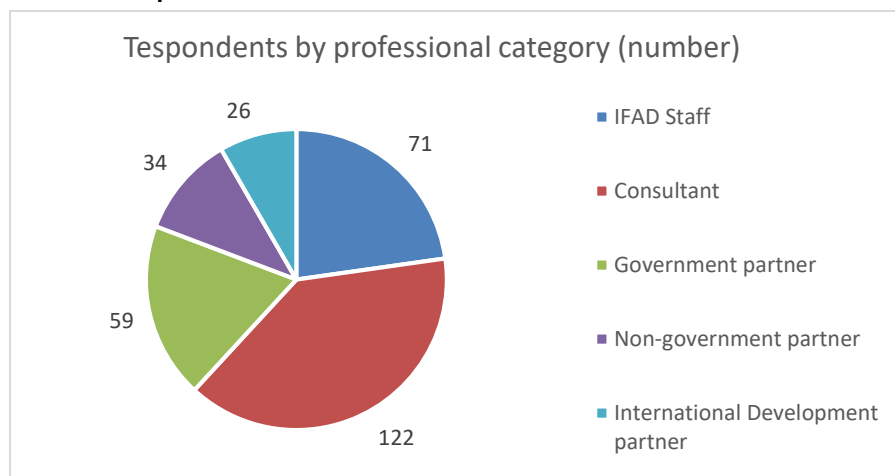
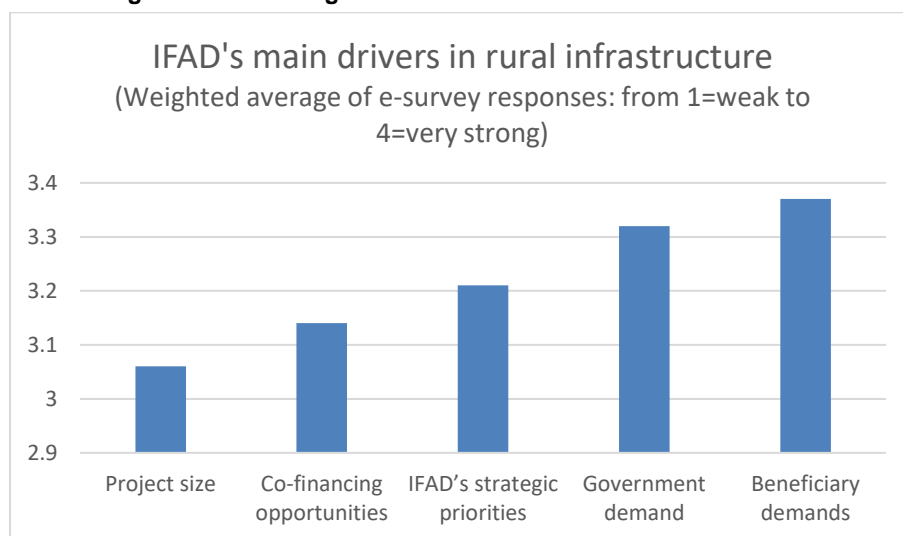
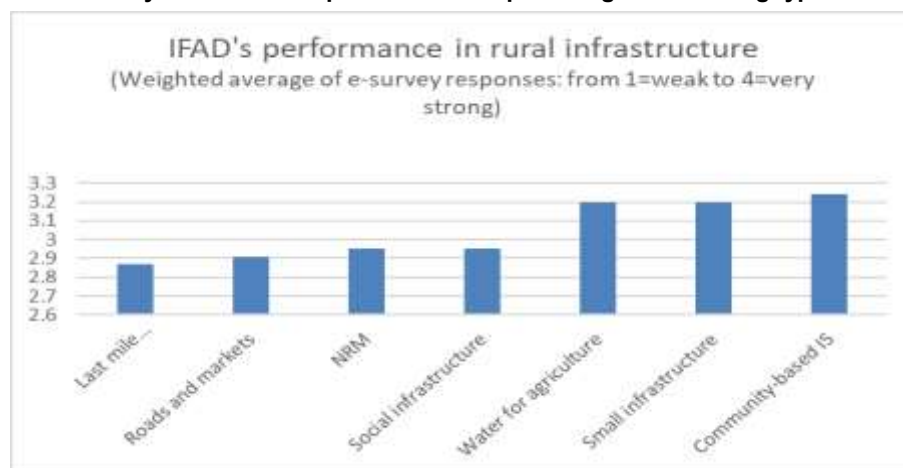


Figure 2
How strong are the following drivers for IFAD's investments in infrastructure?



Source: ESR e-survey (n=306 answers).

Figure 3
How would you rate IFAD's performance in providing the following types of infrastructure?



Source: ESR e-survey (n=277 answers).

Figure 4
How common are the following issues in IFAD supported projects?

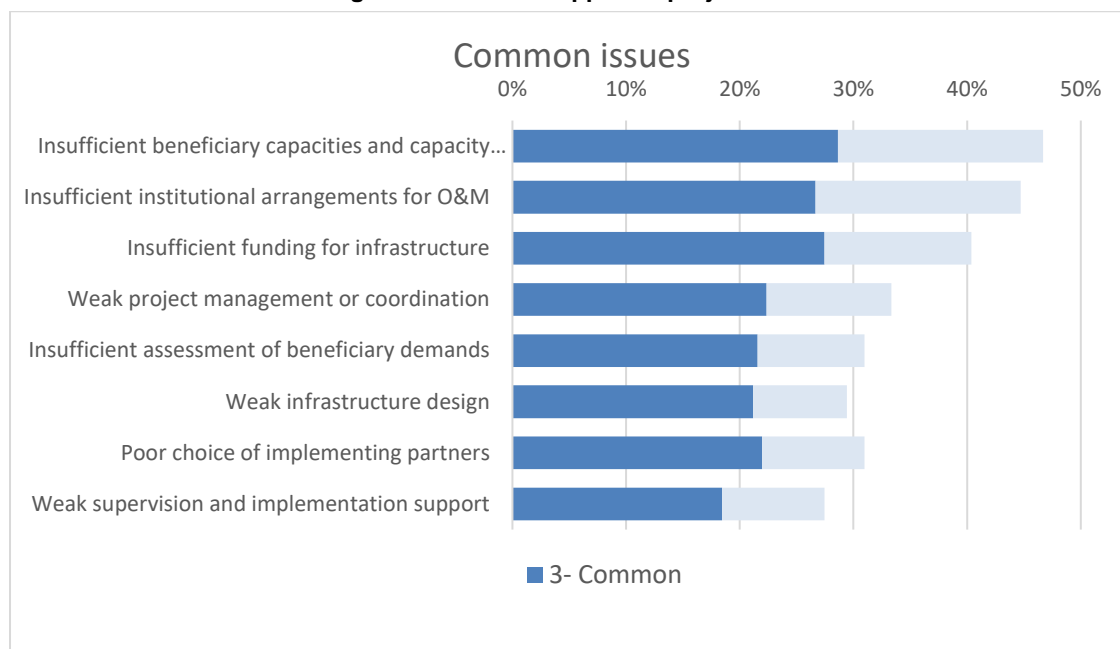


Figure 5
How would you rate IFAD’s performance in providing the following types of infrastructure? Differences in perceptions by respondent group

Figure 5.a

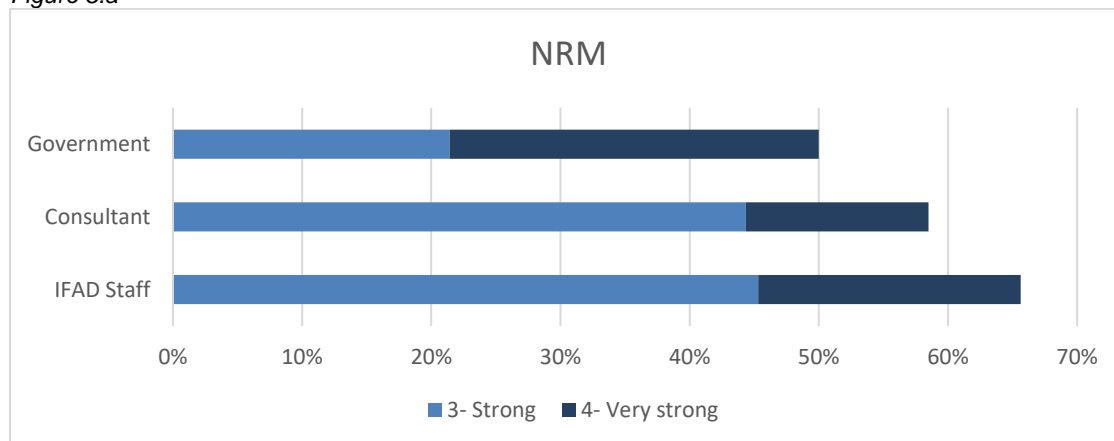
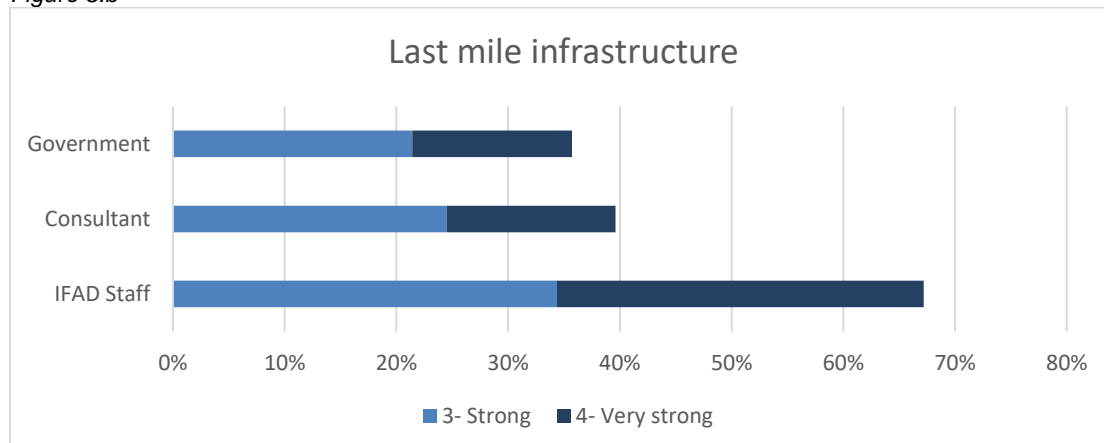
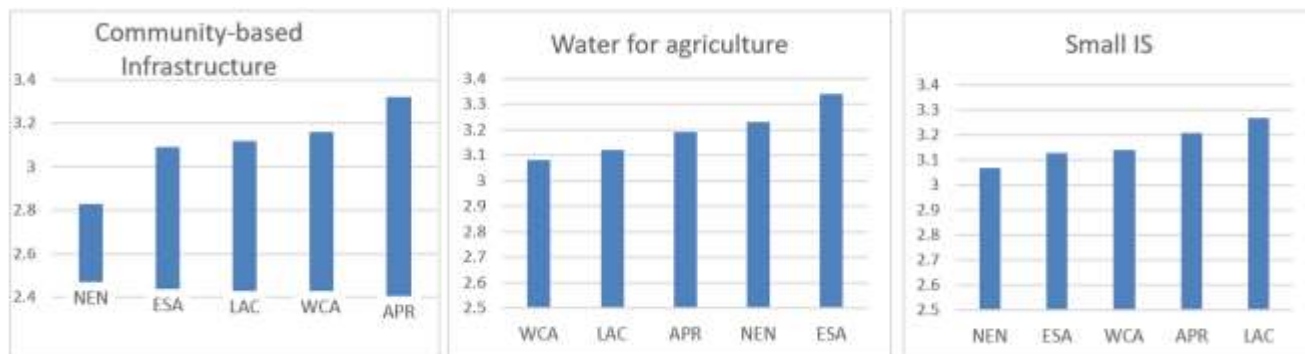


Figure 5.b



Note: Only strong and very strong responses are shown; all responses include 'don't know'. Responses are only shown for categories where differences were statistically significant [t-value >1.96; n= 300+]
 Source: ESR e-survey.

Figure 6
How would you rate IFAD’s performance in providing the following types of infrastructure? (weighted average by regional division)



Source: ESR e-survey.

Figure 7
Responses on suggested needs for improving gender and pro-poor focus of infrastructure

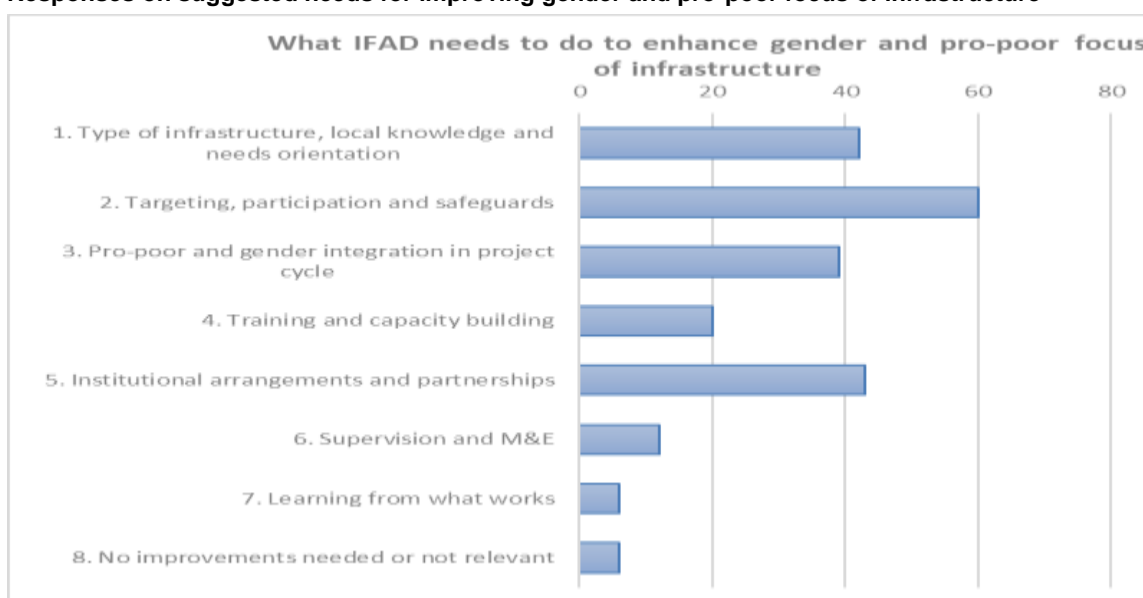
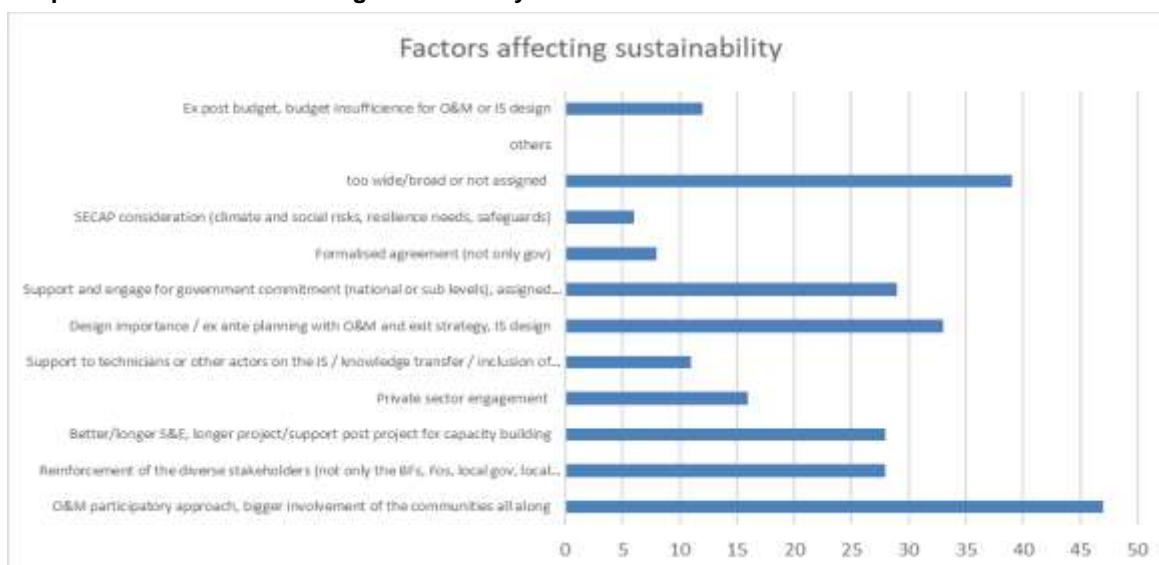


Figure 8
Responses for factors affecting sustainability



IV. Supporting tables for Chapters I, II, III, IV

Table 1

Project types (sample of 35 qualitatively-reviewed projects and 10 case studies [in italics])

Project type/ project size (total project amount)	CDD projects (with community CDF) (7 projects) <i>[1 case study]</i>	Community- based projects (CBD) (11 projects) <i>[3 case studies]</i>	Production and market oriented projects (12 projects)	Specialized infrastructure - super heavy infrastructure project (>70%) (5 projects) <i>[4 case studies]</i>
Small (<US\$20M)	#13 Mauritania	#23 Burkina Faso #25 Cameroon	#3 Bhutan #7 Georgia <i>#[49 Philippines]</i>	#31 Sri Lanka
Medium small (US\$20M-30M)	#24 Cambodia	#6 DRC #9 Laos #10 Laos #11 Madagascar #12 Mauritania <i>#[45 Chad]</i> <i>#[47 Madagascar]</i>	#1 Armenia #2 Azerbaijan #8 Kenya #29 Rwanda #38 Malawi	#32 Sri Lanka #37 Turkey <i>#[48 Sri Lanka]</i>
Medium large (30-US\$40M)	#35 Vietnam #16 Pakistan # 27Nepal	#14 Morocco #18 Sudan (drinking water) #22 Burkina Faso <i>#[42 Burundi]</i>	#20 Turkey #30 Sri Lanka #36 Mozambique <i>#[44 Georgia]</i>	
Large (40-US\$65M)	#17 Rwanda <i>#[43 Brazil]</i>		#19 Tanzania #33 Tunisia	#34 Tunisia
Very large > US\$65M(>98)	#15 Nigeria	#28 Pakistan		#26 China <i>#[40 Bangladesh]</i> <i>#[41 China]</i> <i>#[46 Gambia]</i>

Table 2

Presence of infrastructure activities in project types (average)

	CDD	CB	Prod & Market	IS-heavy
ASSET USERS GROUP DEVELOPMENT	0.1	0.1	0.2	0.0
COMMUNITY DEVELOPMENT	0.3	0.2	0.1	0.0
DRINKING WATER AND SANITATION	0.9	0.6	0.4	0.4
ENERGY	0.4	0.3	0.1	0.2
FINANCE	0.1	0.2	0.0	0.0
HEALTH	0.4	0.4	0.1	0.0
IRRIGATION INFRASTRUCTURES	1.0	0.8	0.7	0.6
IRRIGATION MANAGEMENT	0.1	0.0	0.1	0.0
LITERACY AND HOUSING	0.7	0.5	0.1	0.4
LIVESTOCK AND FISHERY	0.4	0.3	0.5	0.6
MARKET PLACES	0.1	0.3	0.6	0.2
POST-HARVEST	0.1	0.0	0.5	0.2
SUSTAINABLE LAND MANAGEMENT	0.6	0.3	0.2	0.4
TRANSPORT	0.9	0.7	0.9	0.8
VALUE ADDITION	0.4	0.2	0.2	0.2

Table 3
Infrastructure Investments by sub-component type (in %) from 2001 to present (IFAD 5-11) in millions US\$

<i>Sum of Investment</i>	<i>IFAD05</i>	<i>IFAD06</i>	<i>IFAD07</i>	<i>IFAD08</i>	<i>IFAD09</i>	<i>IFAD10</i> <i>IFAD11</i>	<i>IFAD05-11</i>	
Row Labels								
Access to Markets								
Market Linkages	1.5	2.1	4.1	4.2	4.7	4.1	6.4	4.4
Market places	1.2	1.5	12.8	12.0	8.5	13.1	20.1	11.5
Road transport mobility	21.3	35.1	35.3	25.4	15.1	16.9	11.8	20.7
Value addition (crops)	< 0.1	2.2	< 0.1	8.8	1.9	4.1	7.6	4.1
Value addition (dairy)					< 0.1			< 0.1
Value addition (other)	0.7		0.1	0.2	0.5	2.2	0.5	0.7
Water transport mobility				1.2				0.2
Environment, Natural Resources and Climate								
Climate change adaptation		0.1		1.2	7.7	13.3	12.4	6.5
Sustainable Land Management	3.5	6.8	3.6	2.3	1.1	6.7	4.0	3.5
Production Sectors								
Animal Husbandry	4.1	9.9	3.5	4.8	6.6	3.51		4.3
Aquaculture production				0.1	1.3	< 0.1	1.4	0.6
Aquaculture technology		< 0.1	2.4	0.2		2.9		0.9
Fisheries technology	0.1			0.8	1.9	0.7		0.8
Irrigation/Drainage Infrastructure	38.5	14.4	25.2	29.7	10.3	18.1	20.7	20.6
Irrigation/Drainage management	1.5	3.46	0.6	0.9	33.1	2.3	6.2	10.0
Livestock post harvest	0.4	< 0.1	0.7	2.7	2.8	5.2		2.2
Post harvest control/storage	1.2			2.0	0.5	3.1	1.5	1.3
Sustainable water management	0.6	1.4	1.0	0.1	0.4	0.5	4.9	1.2
Water harvesting/storage	0.6			0.5	0.1			0.1
Social Services								
Basic drinking water supply	8.3	4.7	2.4	1.37	1.5	2.6	0.1	2.1
Energy infrastructure	0.06		3.6	< 0.1	0.1		1.4	0.7
Housing	< 0.1	7.1						0.4
Literacy	8.4	3.4	0.9	1.0	0.3	0.2		1.1
Sanitation & waste management	1.2	4.6	0.5	0.4	0.7		0.2	0.7
Policy & Institutions								
Asset users group development	6.8	3.3	3.3	0.1	0.8	0.6	0.8	1.4
Grand Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: PMI database accessed April 2020.

Table 4
NRM/CCA relevant infrastructure based on typology from the IFAD infrastructure desk

Sub-category	Hard infrastructure
Sustainable land management	Activities at non-plot level, including protection, rehabilitation and conservation of land: terraces, bunds, land clearing etc. Activities that conserve rainfall or prevent erosion, desertification and land desertification
Sustainable water management	Protection, rehabilitation and conservation of water bodies, swamps, wetland etc. Watershed management, planning and development

Sub-category	Hard infrastructure
	Groundwater management, monitoring and recharge
Water harvesting and storage	Rainwater harvesting Construction of reservoirs, storage tanks, dams, ponds etc.
Drinking water supply	Rural water supply schemes using hand-pumps, catchments, gravity-fed systems, rainwater collection and fog harvesting Storage tanks and small distribution systems typically with shared connections/points of use
Energy (small-scale)	Supply to rural communities through hydro-electric, solar, wind, geothermal, biofuels and waste management (biogas etc.) Energy supply and use for households: energy-efficient cook stoves, biogas) <i>[Energy for production, such as pumping for irrigation, processing (rice parboiling plant), and storage (cold storage), falls under other categories]</i>

Source: Chitima, Mawira. Sharing knowledge on rural infrastructure and SECAP – ESA. PowerPoint presentation. IFAD Sustainable Production, Markets and Institutions (PMI) Division.

Table 5

Contributions by natural systems (forests, floodplains, and soils) to clean, reliable water supply, protection against floods and drought or provision of other ecological/ecosystem services

Combining “green infrastructure” with traditional “gray infrastructure,” such as dams, levees, reservoirs, treatment systems, and pipes, could provide next generation solutions for climate resilience.

Service	Gray infrastructure component	Green infrastructure components
Irrigation and drainage	Dams, reservoirs, aqueducts, pump stations, canals, bunds, drainage systems	Improve upstream soil and water management to avoid flooding, erosion and damage to downstream irrigation Increase soil water storage capacity to reduce irrigation requirements Store flood waters in river flood plains and thereby reduce embankment requirements
Hydropower	Reservoirs and power generation	Reduce sediment inflows from watersheds and extend life of reservoirs and power
Water supply and sanitation	Reservoirs, wells, pipe networks, treatment plants	Improve source water quality, enhance water safety and reduce treatment requirements
Coastal flood protection	Embankments, groynes, sluice gates	Decrease wave energy and storm surges through mangrove forests and thereby reduce embankment requirements

Source: ESR.

Table 6

PMI sub-categories included as infrastructure

Categorisation in IFAD dashboard	ESR categorisation
	Sustainable land management
	Climate change adaptation
	Post-harvest losses control/storage
	Aquaculture technology (ponds, post-harvest etc.)
	Fisheries technology
	Animal husbandry (housing, storage etc.)

Categorisation in IFAD dashboard	ESR categorisation
	Livestock post-harvest (handling and storage)
Irrigation and drainage infrastructure	Irrigation and drainage infrastructure
	Irrigation and Drainage management
	Sustainable water management
	Water harvesting/storage
Road transport mobility	Road transport mobility
Water transport mobility	Water transport mobility
Value addition (crops)	Value addition (crops)
Value addition (fish)	Value addition (fish)
	Value addition (meat)
Value addition (dairy)	Value addition (dairy)
Value addition (other)	Value addition (other)
Market places	Market places
	Market linkages
Asset users group development	Asset users group development
	Basic drinking water supply
	Literacy (incl. schools)
	Sanitation and waste management
Energy infrastructure	Energy infrastructure
Energy management	Energy management
Housing	Housing
	Community development

Note: Grey shaded fields refer to exclusively soft infrastructure investments

Table 7
Co-finance investments infrastructure categories by co-financiers

Organi zation	Roads	Market linkages/ value addition	Irrigatio n	Post-harve st	SLM	Live-stock	Drinking water & sanitation	Energy	Social (other or combined)	Total number of projects
OFID	Mauritania #12 Rwanda #29 Tunisia #33	Turkey #20 Malawi #38			Burkina Faso #22		Rwanda #29	Armenia #1	(Morocco #14, cancelled)	8 (+1 cancelled, Morocco)
WFP	Laos #10 Cambodia #24 Nepal #27	Laos #9 Sri Lanka #			Rwanda #17					6
GEF					Burkina Faso #22,					2

Organization	Roads	Market linkages/ value addition	Irrigation	Post-harvest	SLM	Live-stock	Drinking water & sanitation	Energy	Social (other or combined)	Total number of projects
					Tunisia #34					
ADB	Pakistan #16		Pakistan #16						Pakistan #16	1
AfDB	Tanzania #19	Tanzania #19		Tanzania #19						1
EU	Madagascar #11		Madagascar #11							1
Bilaterals	Sri Lanka #30 Tunisia #34 (AFD), Mozambique #36 (Norway)		Bhutan #3 (SNV), Vietnam #35 (Sweden)			Tunisia #34 (AFD)			DRC #6(DSF), Laos #10 (GIZ)	8
Domestic cofinance (by activity, >15%); no. of PF sample projects	9		7		2	2	1	1	3	18
Project #s with significant domestic cofinance	#3, 6, 10, 11, 17, 19, 27, 28, 33		#2, 12, 13, 18, 23, 33, 34		#28, 34	#18, 20	#27	#26	#6, 10, 15	

Source: ESR portfolio sample.

Table 8

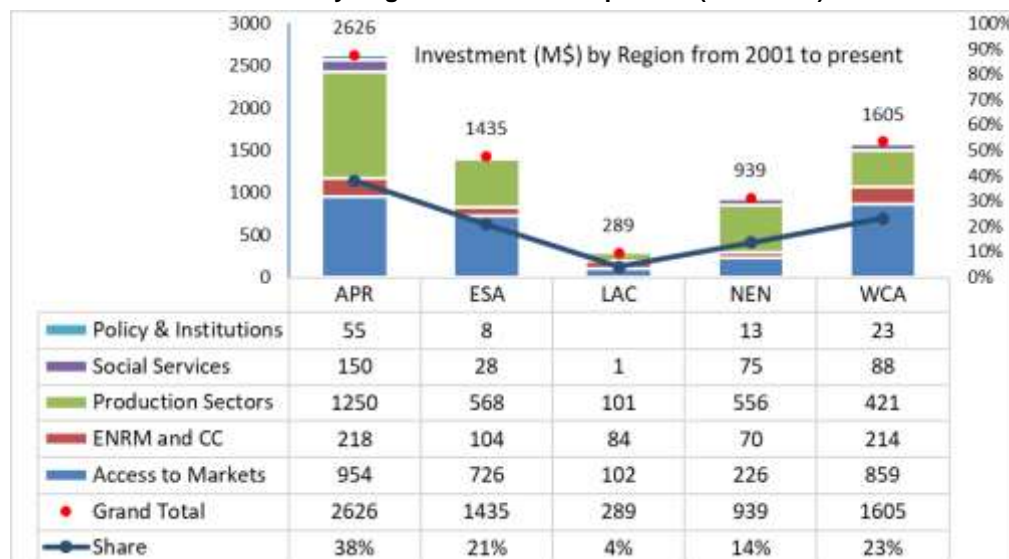
Performance of co-financed vs. non-co-financed infrastructure activities

Performance indicators	Internationally co-financed project activities	Domestically co-financed project activities (>15 per cent co-finance)
Infrastructure outputs	When project activities are internationally co-financed there are fewer of them that significantly underachieve and fewer that overachieve, there is more concentration in the middle ground	When domestically co-financed there are more infrastructure activities with weaker achievement of outputs
Infrastructure technical quality	No differences	[too few observations]
O&M	Slightly more co-financed infrastructure activities with the highest O&M performance (4), but also slightly more projects that are scored 2	Slightly more co-financed infrastructure activities with the highest O&M performance (4)
Exit and sustainability	Somewhat better with international co-finance (the scores of 3 and 4 add up to 58 per cent compared with 45 per cent for non-co-financed)	Somewhat higher sustainability with domestic co-finance (the scores of 3 and 4 add up to 55 per cent compared with 45 per cent for non-co-financed)
Reaching the very poor	Co-financed infrastructure activities are less likely to reach the poor (but based on relatively few cases with observations)	[too few observations]
Engaging and reaching women	'IFAD only' projects are not better than co-financed ones	Infrastructure activities that include domestic co-finance report slightly higher engagement of women than those without (scores of 3 and 4 add up to 77 per cent compared with 65 per cent for non-co-financed)

Source: ESR.

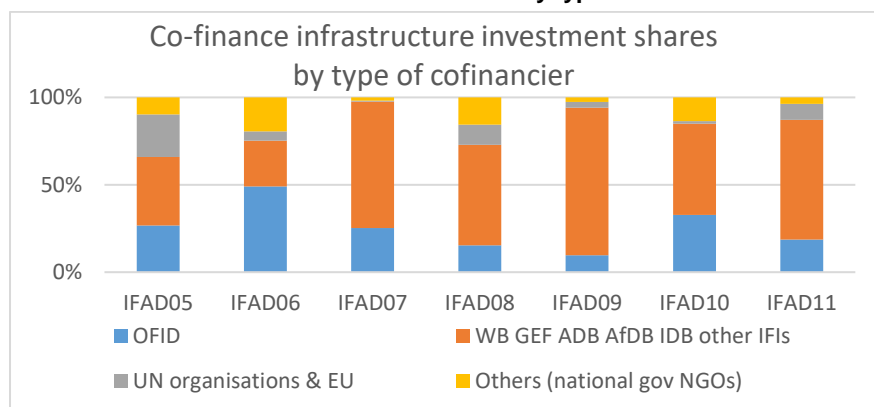
V. Supporting charts and figures for Chapters II, III, IV

Figure 1
Infrastructure Investments by Regions from 2001 to present (IFAD 5-11)



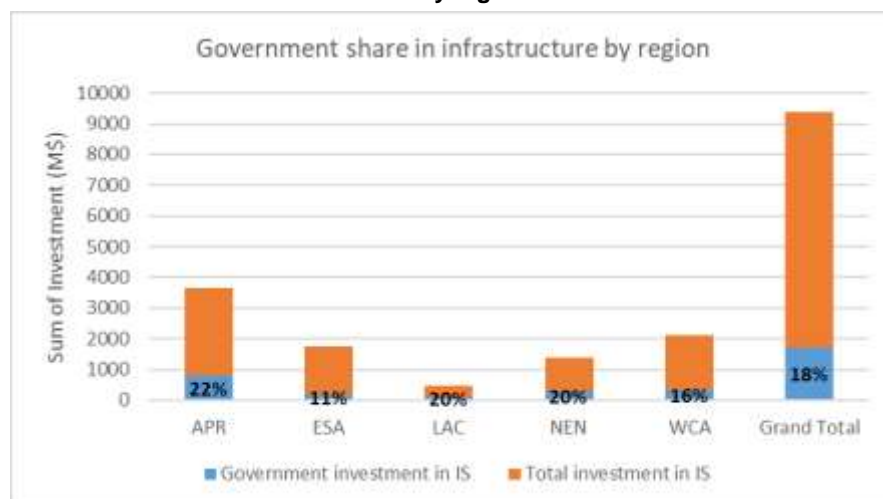
Source: PMI database accessed April 2020.

Figure 2
Co-finance infrastructure investment shares by type of cofinancier



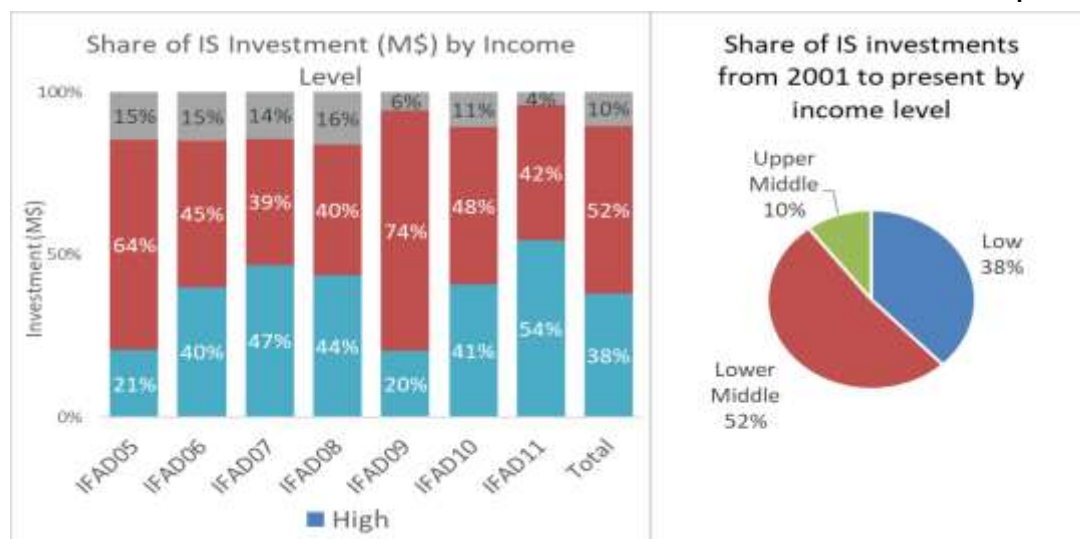
Source: PMI database accessed April 2020.

Figure 3
Government share in infrastructure by region



Source: PMI database accessed April 2020.

Figure 4
MICs and LICs: Trend of infrastructure investments shares over time. Total shares 2001-present



Source: PMI database accessed April 2020.

Figure 5
IS macro-categories by country type (LIC, lower MIC, upper MIC) (2001-present)

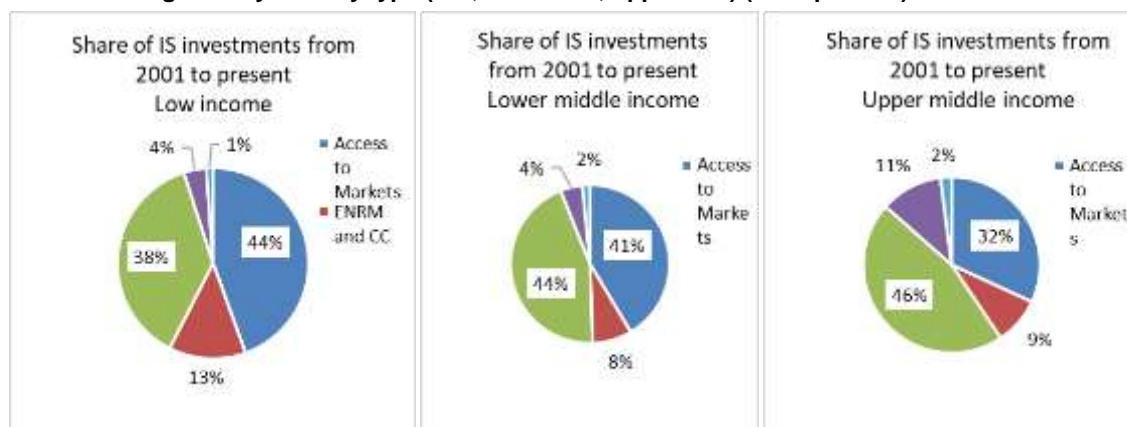
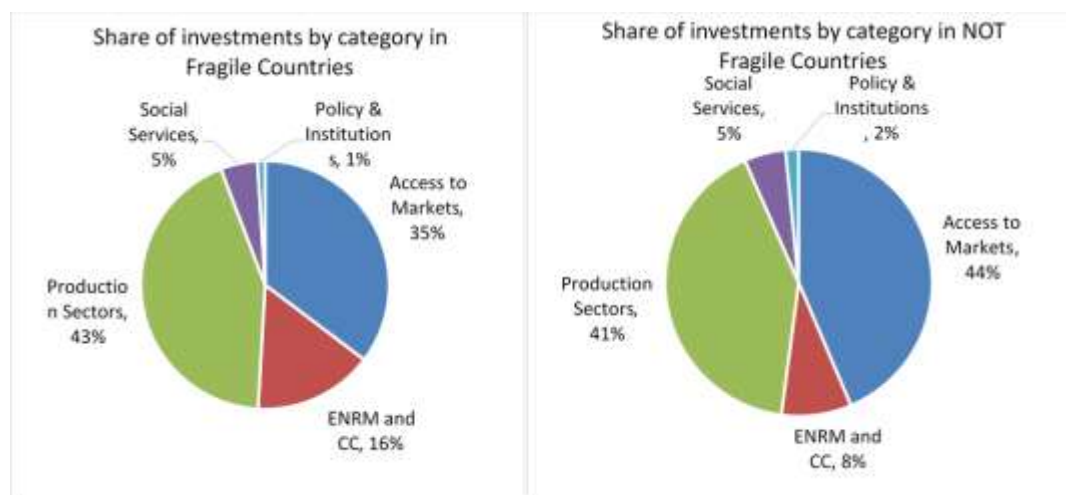


Figure 6
Fragility: Shares of infrastructure investment categories for fragile and non-fragile countries (2001-present)

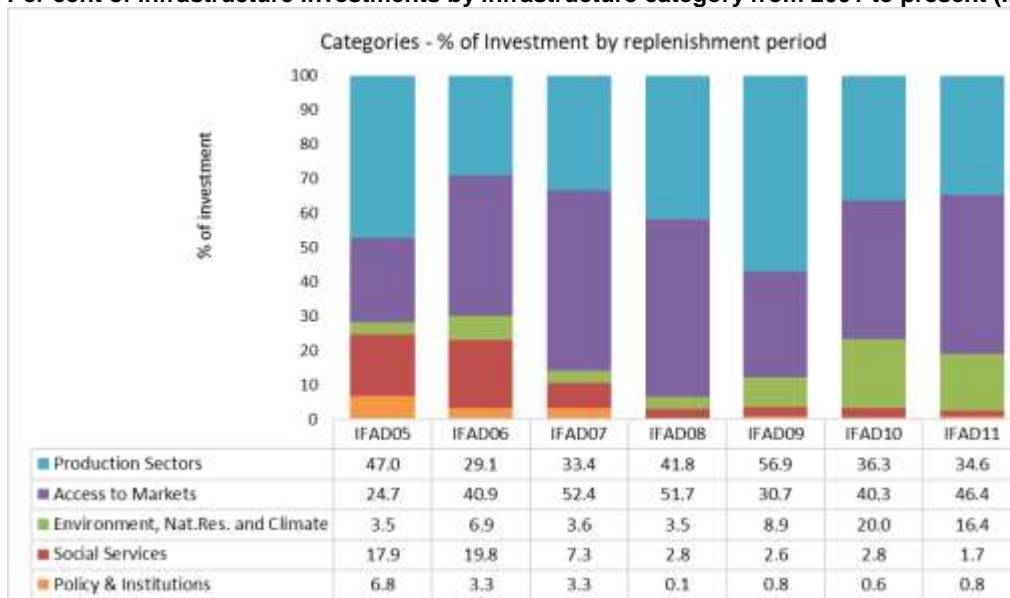
FRAGILE NON-FRAGILE



Source: PMI database accessed April 2020.

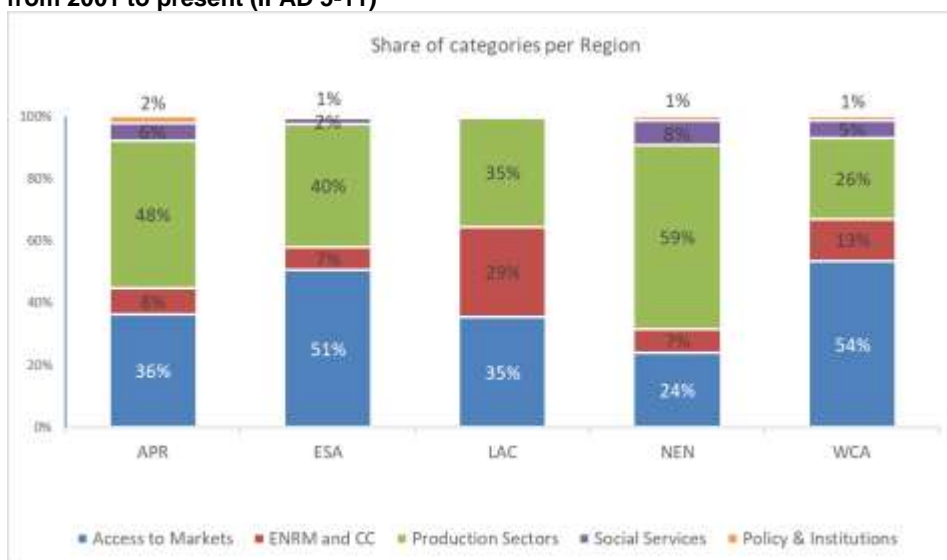
Figure 7

Per cent of infrastructure investments by infrastructure category from 2001 to present (IFAD 5-11)



Source: PMI database accessed April 2020.

Figure 8
Infrastructure mix by region: Per cent of infrastructure investments by infrastructure category and region from 2001 to present (IFAD 5-11)



Source: PMI database accessed April 2020.

Figure 9
Infrastructure phases in the project cycle



Source: ESR.

VI. ESR scoring definitions

Criteria for scoring infrastructure portfolio review indicators

Infrastructure outputs – quantitative achievements vs. targets

This indicator is the percentage of what was achieved vs. what was planned. It should be reviewed by infrastructure category and activity. If targets were changed during MTR or any other time of implementation percentages of revised targets achieved should be presented but this may depend on the circumstances (PPE). Changes in targets during implementation should be noted in the justification.

Technical quality of infrastructure

Scale 1 – 4, from low to high; Or: nothing mentioned/insufficient information; n/a

This includes references to the quality of the constructed or rehabilitated infrastructure, in terms of technical standards and quality of the works. Qualitative criteria could include: work being well or not so well executed, in view of common and comparable standards; attention to quality of technical design/feasibility studies; well-established, standard infrastructure design was used; innovative design; infrastructure was adapted or not adapted to beneficiaries' demand and capacities. Please note that technical quality may be a function of infrastructure budgets and unit costs and should be assessed accordingly.

O&M arrangements

Scale 1 – 4, from low to high; Or: nothing mentioned/insufficient information; n/a

1 = There are no workable O&M arrangements and major problems exist for IS O&M; 2 = Some O&M arrangements have been established relatively well but with major problems in carrying out O&M responsibilities; 3 = O&M arrangements have been well established, with some day-to-day problems occurring that do not endanger basic O&M; 4 = O&M arrangements have been well established, with demonstrated capacity and willingness to operate and maintain infrastructure.

Prompts: Functional technical and institutional capacities have been built. Clear ownership arrangements are in place. IS user associations, producer associations/coops, individuals, and local administrators have been established and trained. Private sector is involved.

Note: Ratings for O&M in this column can include beneficiaries' financial contributions to O&M or lack thereof.

Exit strategy and sustainability

Scale 1 – 4, from low to high; Or: nothing mentioned/insufficient information; n/a

1 = the project had no functional exit and sustainability strategy and/or sustainability was very poor; 2 = the project had an exit and sustainability strategy, but it is likely not to be working (or questionable) and/or sustainability was weak; 3 = the project had an exit and sustainability strategy for continued infrastructure operations, but there are some questions whether it would be working and/or sustainability was marginally satisfactory; 4 = the project had a strong and workable exit and sustainability strategy for continued IS operations and/or sustainability was good.

Prompts: Sustainability refers mainly to functionality and institutional questions of O&M beyond project closure, but also should address technical sustainability, financial/economic sustainability and continuity of operations.

Benefits for IFAD target groups

Very poor households: To what extent are very poor households beneficiaries – ie. those below poverty level, with very small or no land holdings etc. - reached by the project?

Scale 1 – 4 from low to high; Or: nothing mentioned/insufficient information; n/a

Women: To what extent are women beneficiaries – including women-owned households – engaged and reached by the project?

Scale 1 – 4 from low to high; Or: nothing mentioned, not clear, n/a

Infrastructure link with other project activities (relevance)

How well is infrastructure linked with other project activities and components?

Scale 1 – 4 from low to high; Or: nothing mentioned/insufficient information; n/a

Some prompting questions could be: How well is infrastructure embedded in overall project objectives? How closely is infrastructure related to community development? Is infrastructure seen from a value chain/market lens perspective: are complementary activities such as market and finance services ensured, either through the project itself or outside the project? In general, what are the synergies? Is the infrastructure rationale clearly defined?

Note: This question does not refer to complementarities of hard and soft infrastructure. Soft infrastructure and capacity building would be covered under other indicators, particularly infrastructure O&M and sustainability.

VII. Performance according to activity, project type and institutional models

Performance according to activity

Figure 1

Average outputs achieved (as percentage against targets) by ESR category

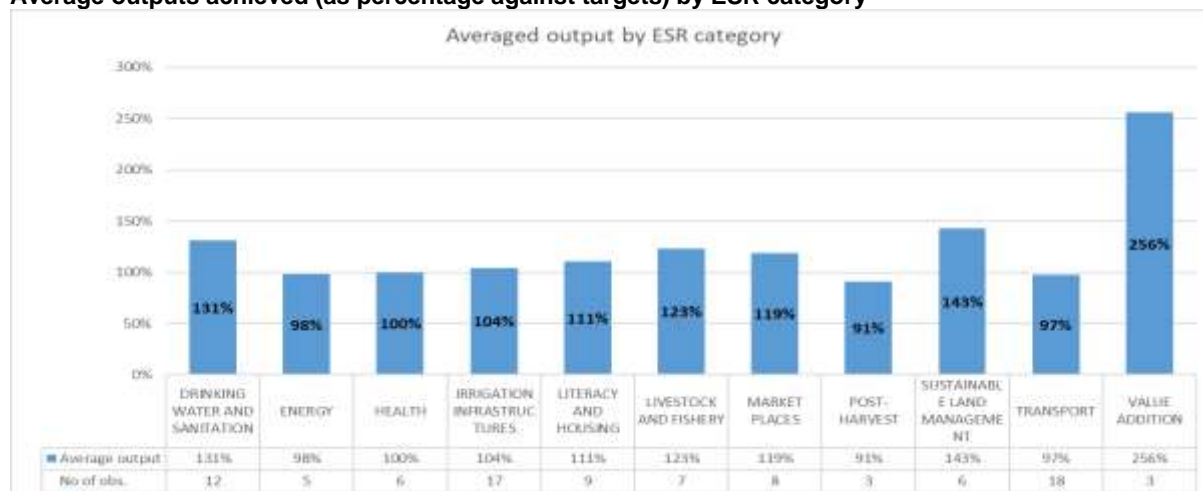


Figure 2

IS technical quality (by activity)



Figure 3

IS utilization (by activity)

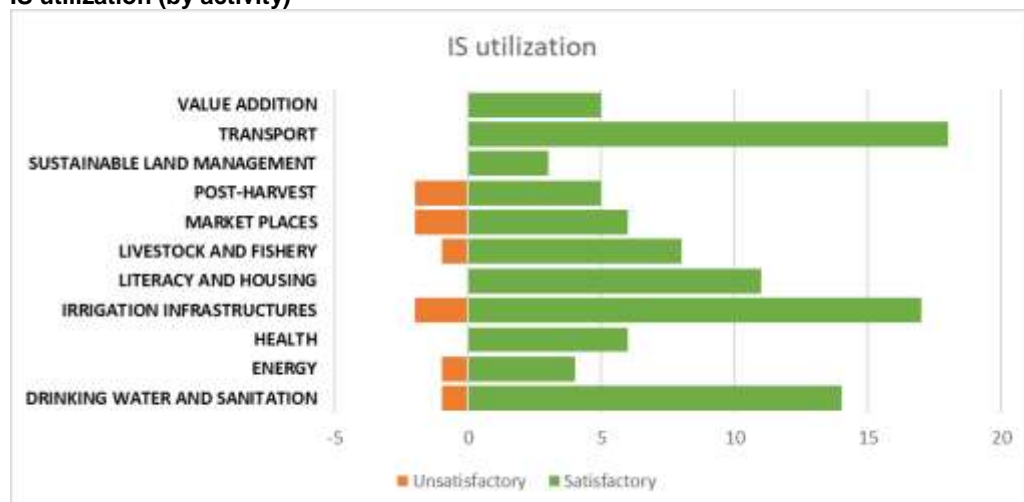


Figure 4
O&M arrangements (by activity)

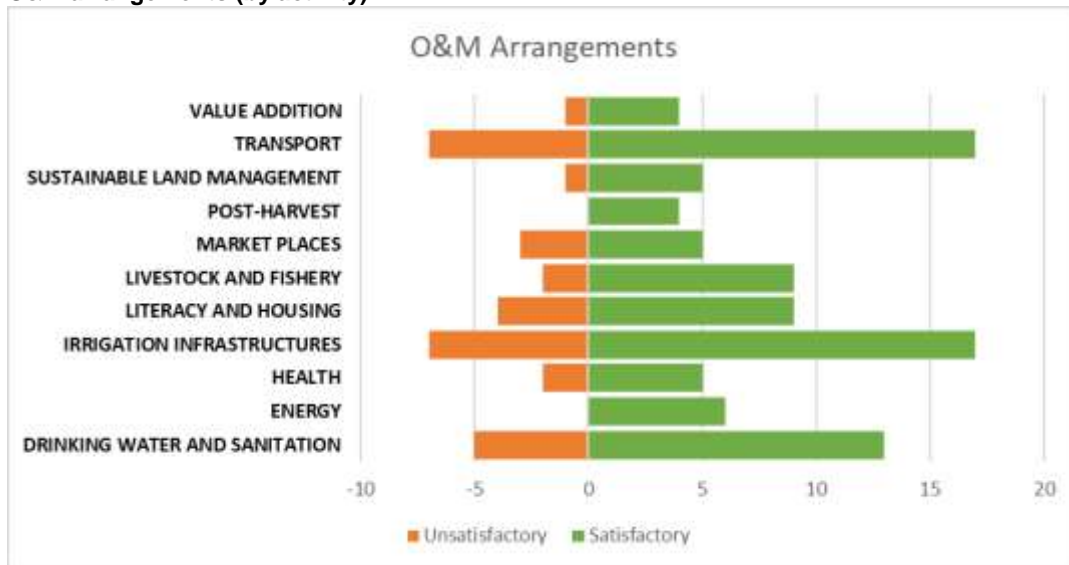


Figure 5
Exit and sustainability (by activity)

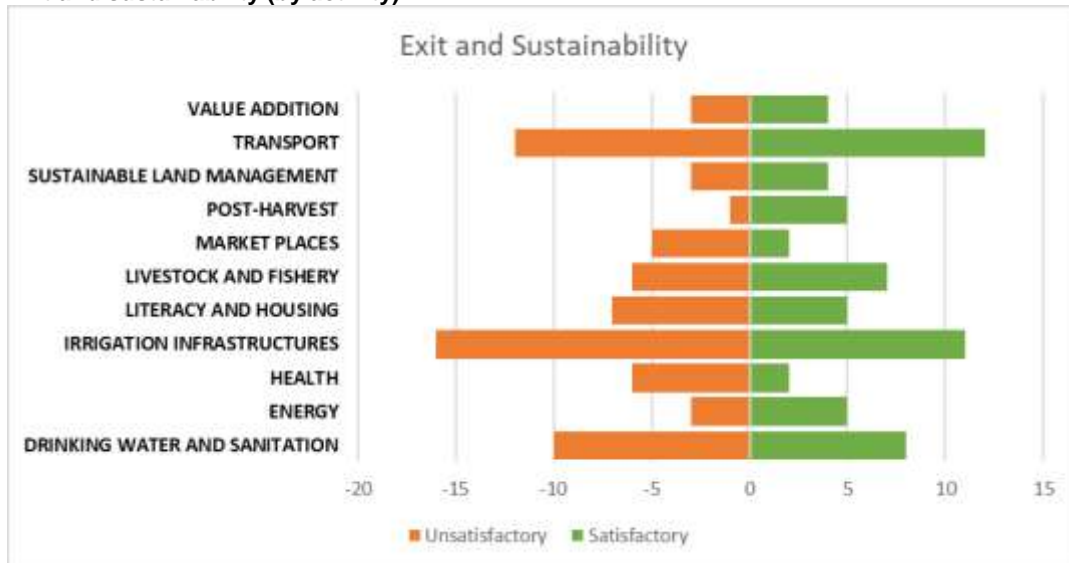


Figure 6
Benefits for very poor households (by activity)

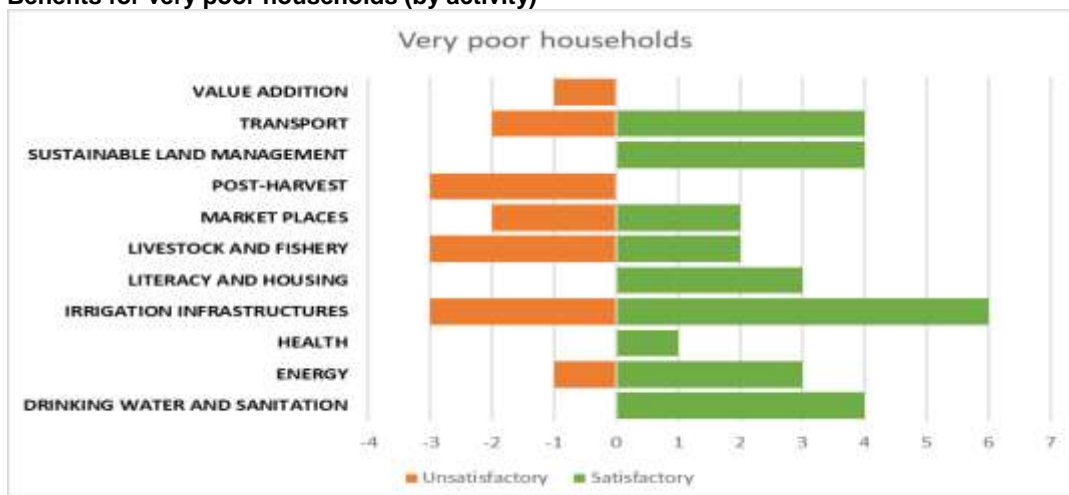
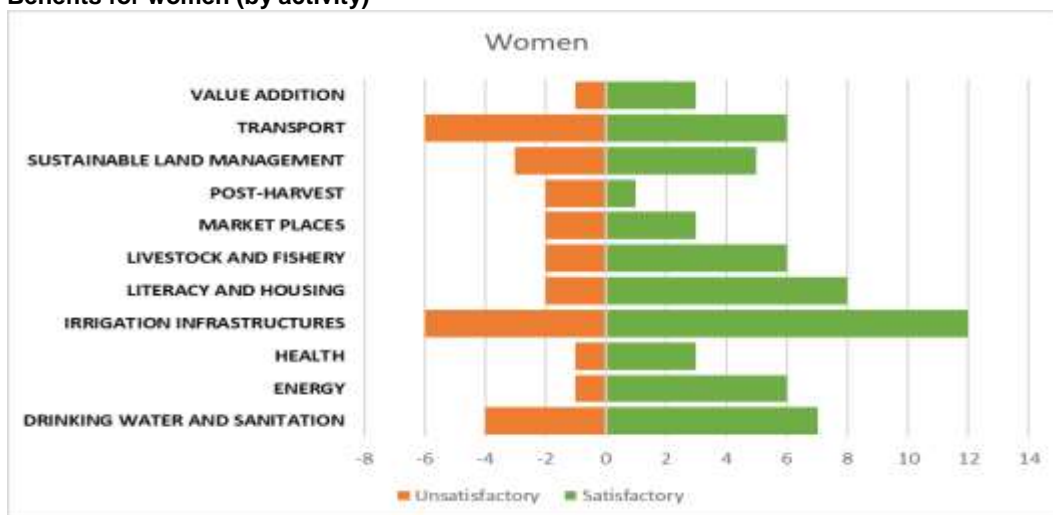


Figure 7
Benefits for women (by activity)



Performance according to project type

Figure 8
IS outputs – ratings by project type

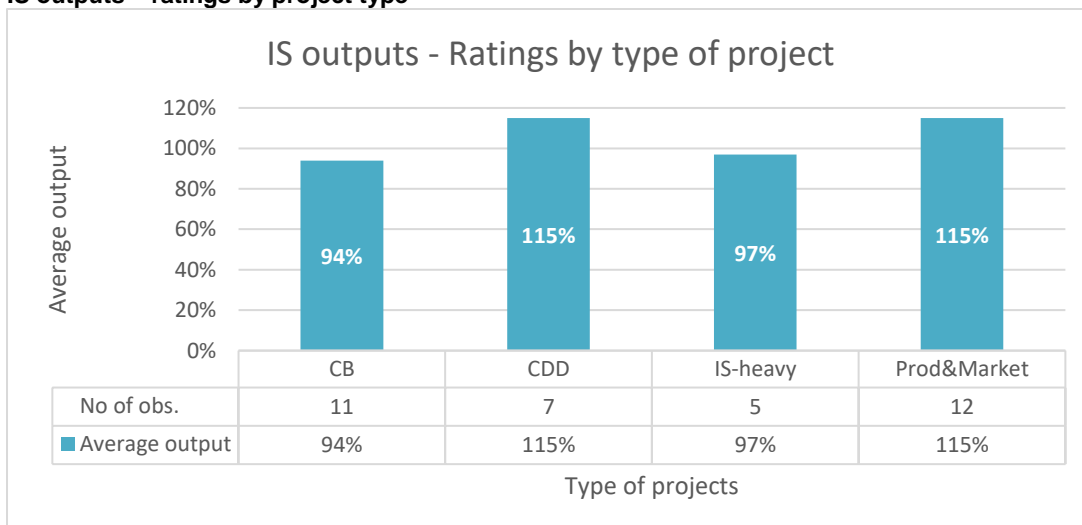


Figure 9
IS technical quality (by project type)

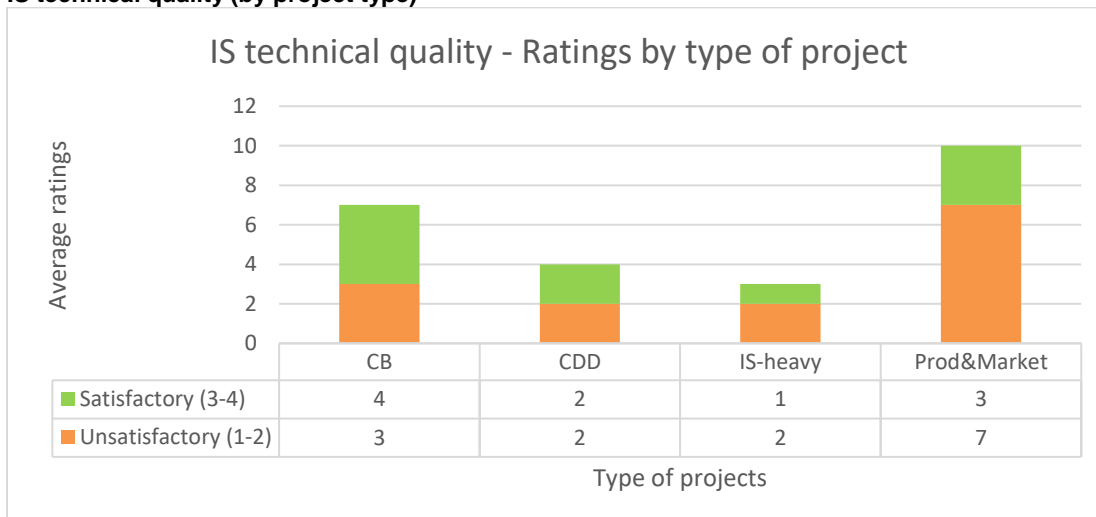


Figure 10
Benefits for very poor households (by project type)

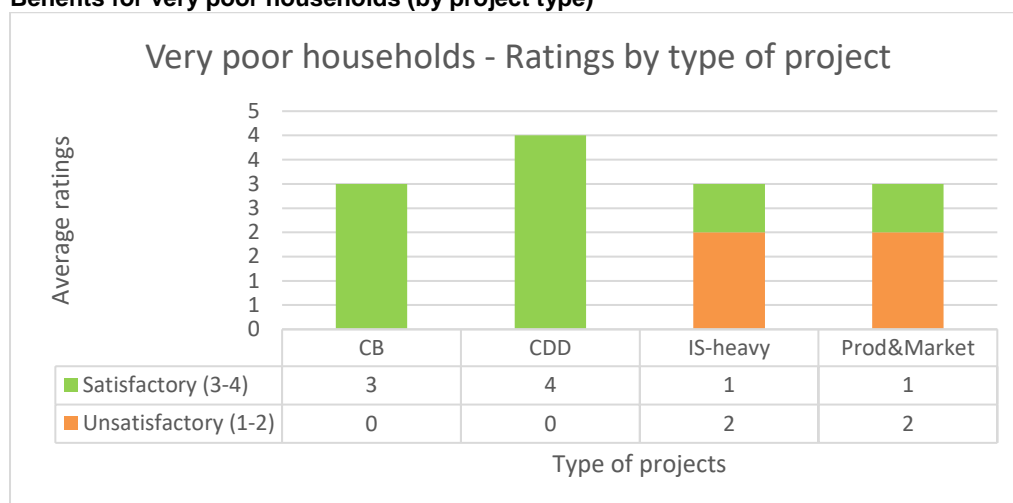


Figure 11
Benefits for women (by project type)

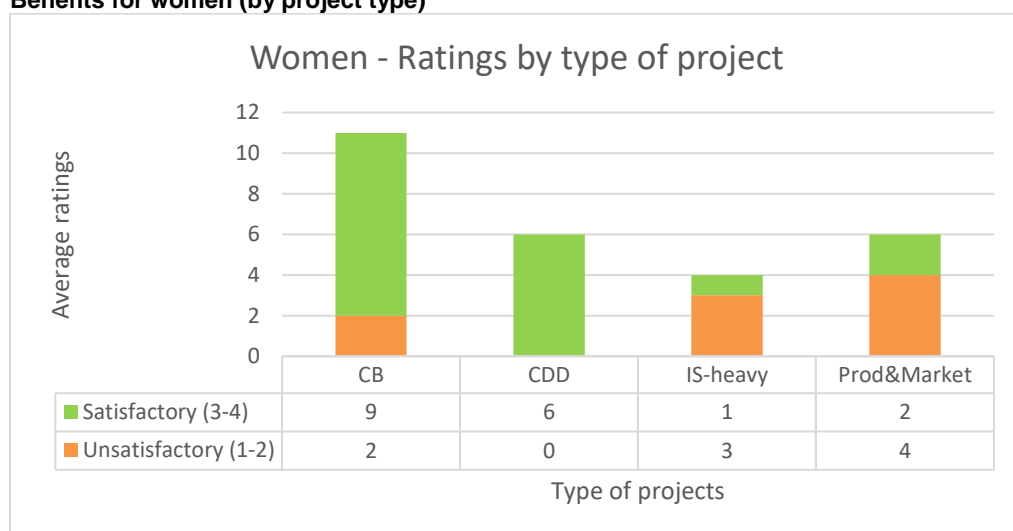


Figure 12
O&M arrangements (by project type)

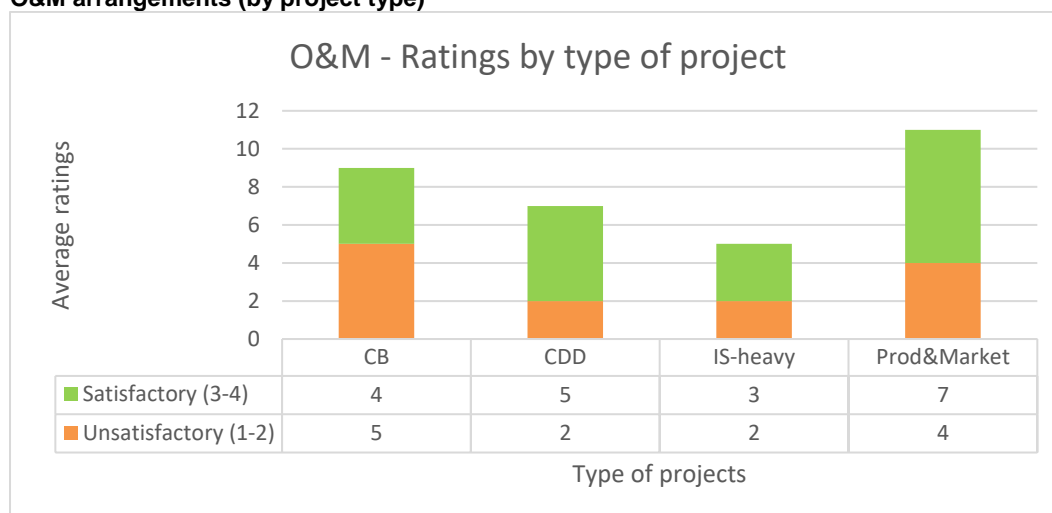
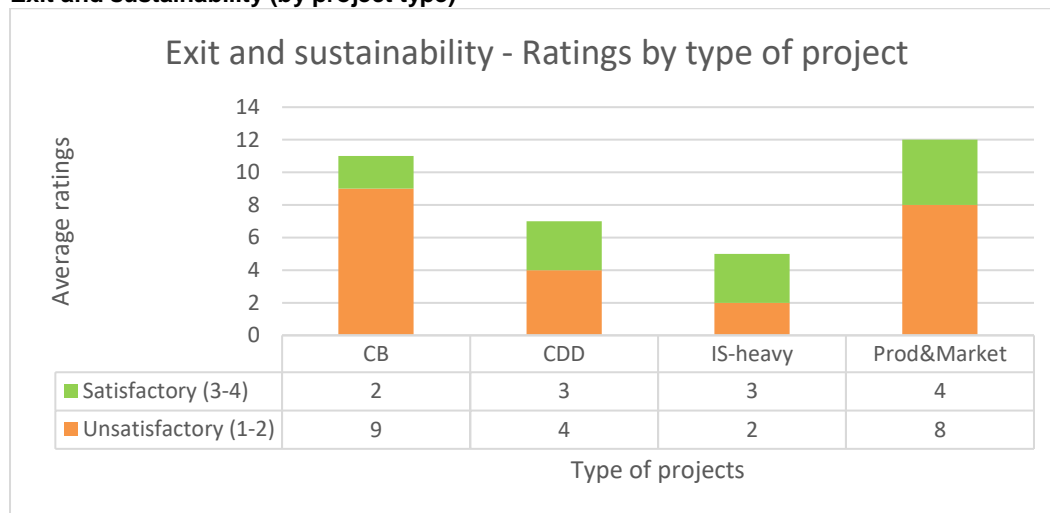


Figure 13
Exit and sustainability (by project type)



Performance according to institutional models

Figure 14
Ownership models and technical quality (by institutional model)

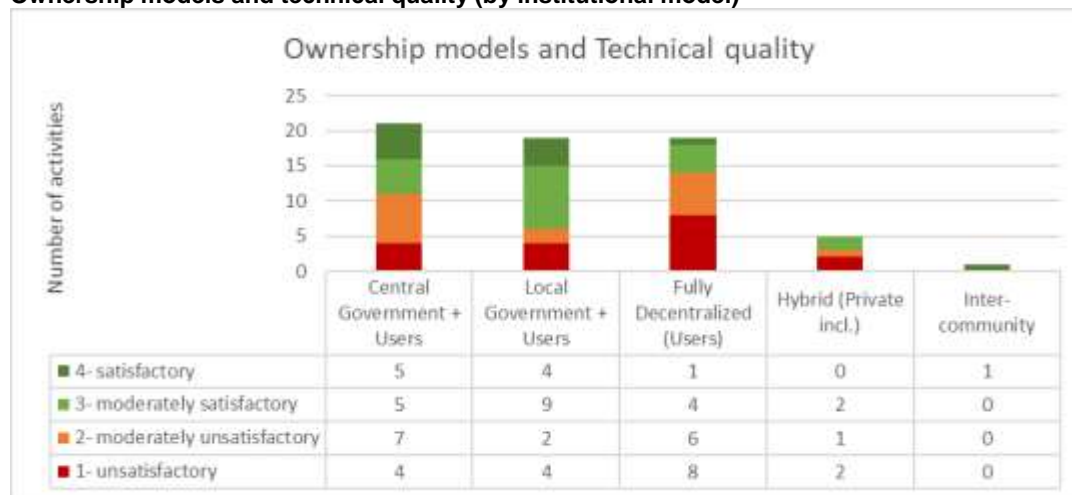


Figure 15
Ownership models and IS utilization (by institutional model)

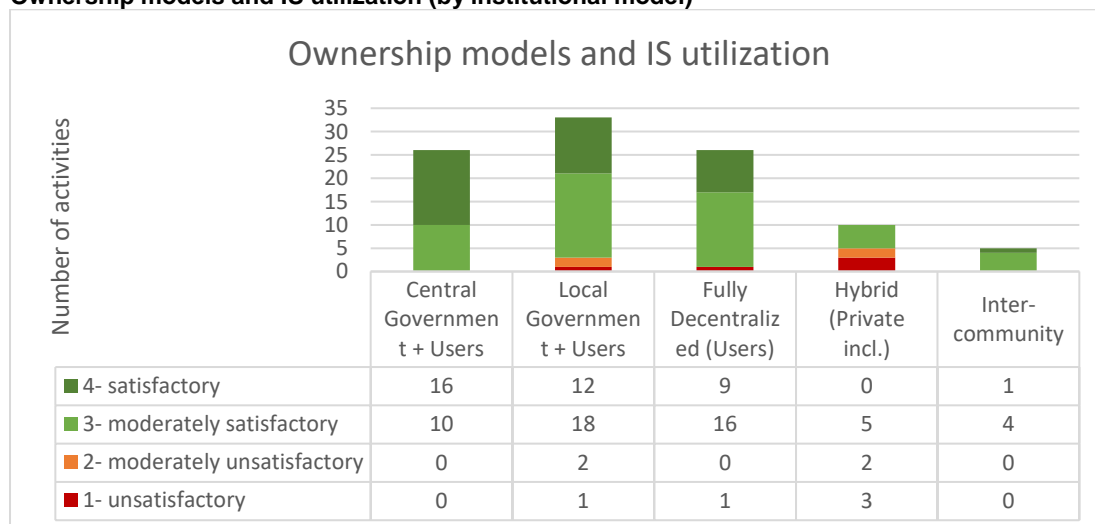


Figure 16
Ownership models and women (by institutional model)

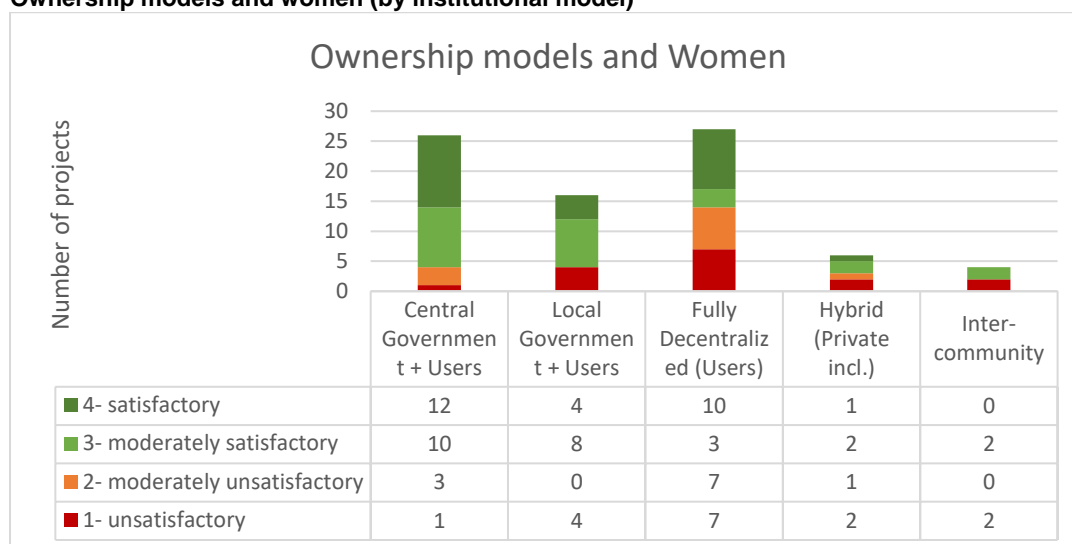


Figure 17
Ownership models and pro-poor targeting (by institutional model)

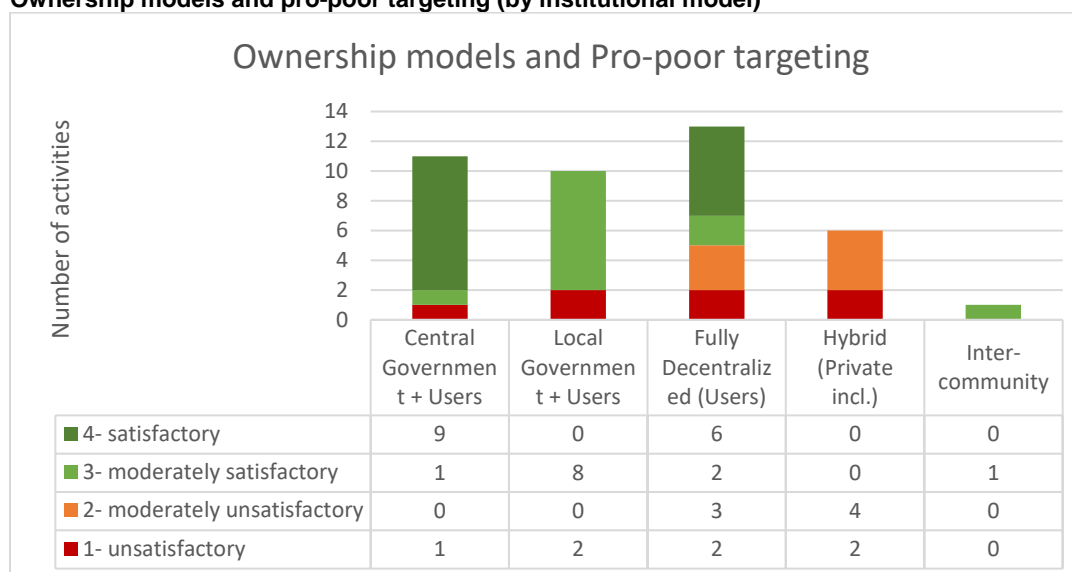


Figure 18
Ownership models and O&M (by institutional model)

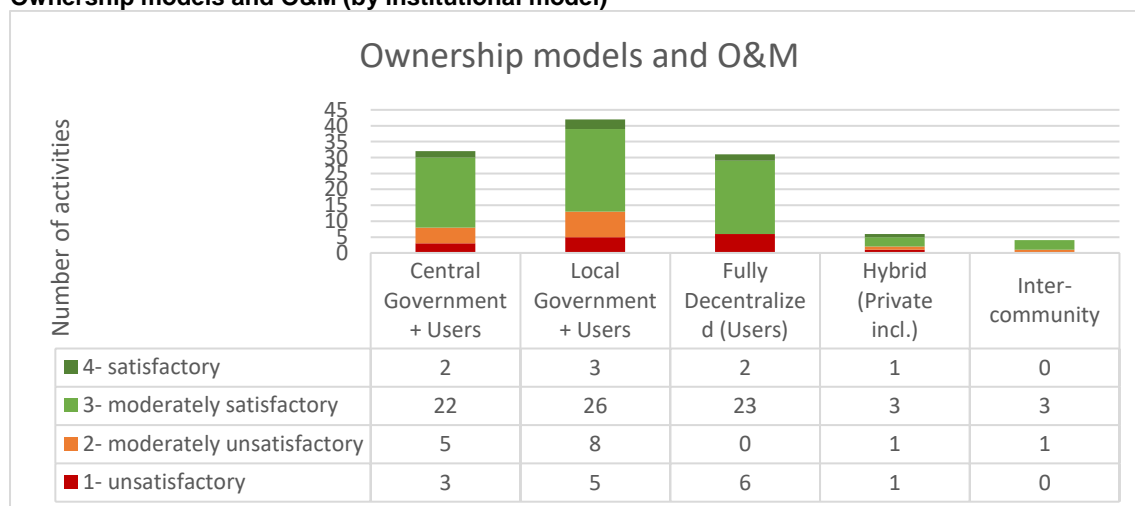
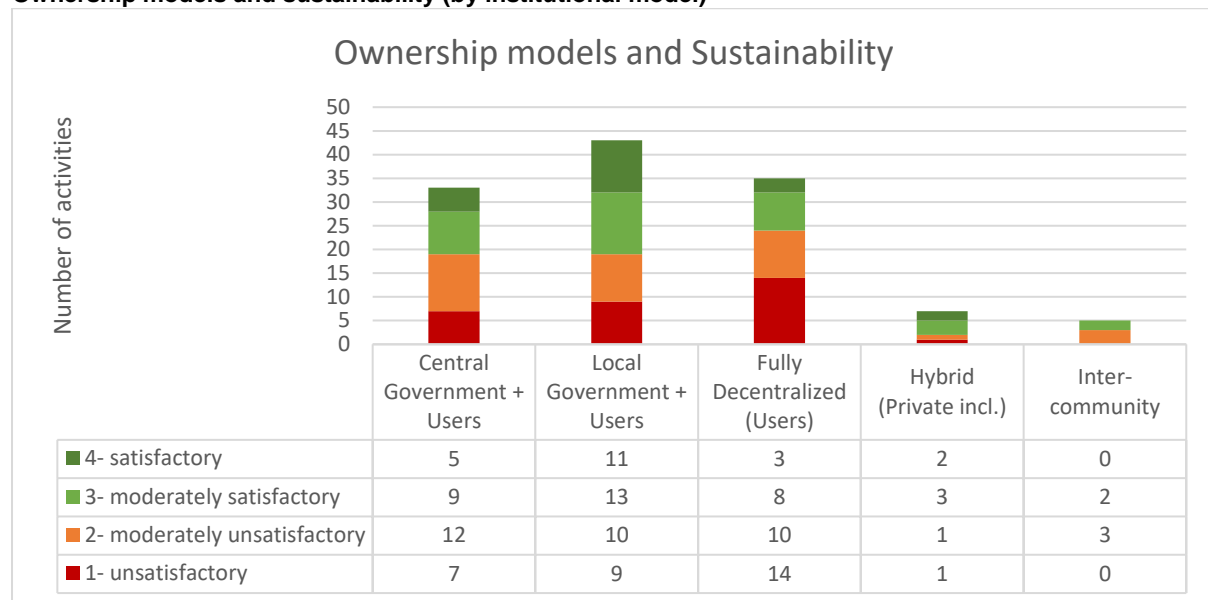


Figure 19
Ownership models and sustainability (by institutional model)



VIII. ESR projects with (renewable) energy activities¹

#	Country and project	Energy type	Performance (outputs, operational observations, outcomes)
1	Pakistan CDP (#16)	Micro-hydro power unit (CDD)	31 schemes, 2% of all CDF schemes, 4% of costs; maintenance committees collect fees
2	Pakistan NWFP BADP (#28)	Micro-hydro power unit	Almost no info available
3	Rwanda KWAMP (#17)	Biogas (CDD)	Innovative, using 'flexi' instead of concrete domes; 451 systems, for cooking and lighting; being upscaled
4	Cameroon PADC (#25)	Solar (community-based project)	4 out of 75 planned installed; poor performance overall
5	China SPEARP (#26)	Biogas	Privately owned; 99% of project budget for reconstruction of HH biogas systems after 2008 Sichuan earthquake;
6	Nepal WUPAP (#27)	Micro hydel (CDD)	96 micro-hydels installed, 7% of all CDF schemes; 20,000 beneficiaries; IRR 73%; reduced kerosene use; longer business hours and study time for children
7	Mauritania (#12)	Bottled gas (community-based project)	Included sales points (depots de gaz); problems with high price and availability of bottles
8	Armenia (#1)	Gas network	Piped gas supplies worked but did not reach the poor due to high prices
9	Mauritania PDDO (#13)	Solar panels for pumps (CDD)	For demonstration in oases. Concerns were expressed in PPE about need for better social, environmental and economic assessments
10	Tunisia PRODESUD (#33)	Solar panels for pumps	22 were installed for livestock wells; but not much demand and scaling-up outside of project; only 25 per cent of planned pumps realized in project phase II
11	Malawi RLEEP (#37)	Solar panels for pumps	20 solar panels installed in milk bulking centers that did not work well themselves. Electrical accidents destroyed all batteries in one center.
12	Brazil RCDP ² (#43)	Eco-efficient stoves, bio-digesters	Installation of 727 eco-efficient stoves and 31 bio-digesters (based on animal manure, cassava transformation); reduced drudgery for women
13	Madagascar AD2M (#47)	Solar panels and generators	Marginal role; results not clear

¹ The box on Women and energy in Ch. 3 of this ESR refers to the following four projects with positive effects of renewable energy activities on women in Rwanda #17, China #26, Nepal #27 and Mauritania #12.

² Rural Communities Development Project in the Poorest Areas of the State of Bahia.

IX. List of key persons met

Government

Republic of Indonesia

Ministry of Agriculture

Mr Laode Bakti, Ministry Officer
 Mr Muktiono Muktiono, M&E consultant
 Mr Ifan Saifannur, consultant

Ministry of Development and Planning

Juari Sutrisno, Deputy, Directorate water irrigation
 Mr Abdul Malik Sadat Idris, Directorate water irrigation
 Republic of Nigeria

Project PMU

Mr Sani Garbasbala, National Project Coordinator
 Mr Ben Odoemena, Project staff
 Mr Usman Mohammed Damatar, Project staff
 Mr Muhammad Lawal Idah, Project staff
 Mr Felix Obiokpa, Project staff

International and donor institutions

Asian Development Bank

Mr Eric Quincieu, Senior Water Resources Specialist, Environment, Natural Resources and Agriculture Division (SEER)
 Joanne Asquith, Principal Evaluation Specialist, Independent Evaluation Department, ADB
 Alvin Morales, Senior Evaluation Officer, Independent Evaluation Department, ADB

International Fund for Agricultural Development (IFAD)

Programme Management Department (PMD)

Mr Donal Brown, Associate Vice-President

Operational Policy and Results Division (OPR)

Mr Thomas Eriksson, Director
 Ms Raniya Sayed Khan, Policy and Results Specialist
 Ms Sheila Mwanundu, Lead Technical Specialist, SECAP compliance
 Mr Lapo Sermonti, Consultant – SECAP compliance, OPR (Compliance and Risk)
 Ms Audrey Hobbelen, Junior Progressional Officer, Compliance and Risk
 Ms Priscilla Torres, Lead Procurement Advisor, Compliance and Risk

Asia and the Pacific Division

Mr Nigel Brett, Director
 Mr Fabrizio Bresciani, Regional Economist
 Tarek Kotb, Country Director, Nepal and Sri Lanka
 Frew Behabtu, Country Programme Officer, India
 Meng Sakphouseth, Country Programme Officer, Cambodia
 Ms Marina Izzo, Logframe Analyst consultant
 Mr Shankar Achuthan Kutty, Procurement Specialist
 Mr Alessandro Marini, Country Director, Myanmar and Philippines

East and Southern Africa Division

Mr Moses Abukari, EU funded Regional Programme Manager
 Ms Lakshmi Moola, Country Director, Uganda
 Mr Demirag Han Ulac, Hub Director, Ethiopia
 Mr Ibrahim Bamba, Country Director, Comoros, Madagascar, Mauritius and Seychelles
 Ms Elena Pietschmann, Programme Officer

Latin America and the Caribbean Division (LAC)

Mr Paolo Silveri, Regional Economist
 Mr Jose Caceres Martinez, Country Technical Analyst, Perú
 Carlos Manuel Icaza Lara, Programme Analyst

Near east, north Africa and Europe Division (NEN)

Mr Naoufel Telahigue, Hub Director, Armenia Morocco
 Mr Chakib Nemmaoui, Country Programme Officer, Morocco
 Ms Isabelle Stordeur, Regional Analyst

West and Central Africa Division (WCA)

Mr John Hurley, Lead Regional Economist
 Ms Emime Ndiokubwayo, Country Director Central African Republic, Equatorial Guinea, Gabon, Sao Tome and Principe
 Mr Salem Hani Abdelkader Elsadani, Country Director Ghana
 Mr Takuro Harada, Junior Professional Officer, Mauritania and Senegal
 Ms Nadine, Gbossa, Head of Hub, Country Director Nigeria
 Ms Mariatu Kamara, Country Programme Officer, Nigeria
 Strategy and Knowledge Department (SKD)
 Mr Paul Winters, Associate Vice-President

Environment, Climate, Gender and Social Inclusion Division (ECG)

Ms Liza Leclerc, Lead Technical Specialist
 Mr Yawo Jonky Tenou, outposted IAP153 Task Manager, ECG
 Ms Ndaya Beltchika, Lead Technical Specialist Gender
 Ms Paxina Chileshe, Regional Climate and Environment Specialist
 Ms Kisa Mfalila, Regional Climate and Environment Specialist
 Mr Tom Mwangi Anyonge, Lead Technical Specialist, Youth, Rural Development & Institutions

Sustainable Production, Markets and Institutions Division (PMI)

Ms Thouraya Triki, Director
 Ms Rikke Olivera, Senior Global Technical Specialist, Natural Resources Management
 Ms Audrey Nepveu, Global Technical specialist – Water & Rural Infrastructure
 Mr Mawhira Chitima, Lead Global Technical Specialist - Water and Rural Infrastructure
 Ms Zainab Semgalawe, outposted Lead Regional Technical Specialist, Institutions
 Cécile Kouakou, outposted Country Technical Analyst

Research and Impact Assessment Division Aslihan Arslan (RIA)

Romina Cavatassi, Lead Economist
 Aslihan Arslan, Senior Economist
 Alessandra Gabero, Senior Econometrician
 Tisorn Songsermsawas, Technical Specialist Economist, RIA

Former IFAD staff

Rudolph Cleveringa, Senior Technical Adviser Former PTA

¹⁵³ Integrated Approach Programme (IAP)

X. Lessons

Ch. II A Comparative advantage and priorities of other IFIs and development partners

With the increasing importance of other sectors over time, agriculture has fallen a bit by the wayside in other IFIs even though several re-engaged in the sector after the food price crisis of 2007/08, re-emphasized priorities and developed new agriculture and food security operational plans with emphasis on low- and lower-middle income countries (as in the ADB154). But staffing, skills and resources were hardly sufficient (ADB 2018 and IDB 2015) and resulted in relatively low, scattered and often non-satisfactory agriculture infrastructure investments.

For ADB the poor performance of its large irrigation subsector with a 47% successful rate is a concern (ADB 2018). IDB limited its agriculture infrastructure to some public and private sector support for warehouses and processing plants and to irrigation in poorer countries, such as Haiti (IDB 2015). And the AfDB saw its largest decline of investments in agriculture (AfDB 2016 CEDR), with most infrastructure now going to transport, energy and water and sanitation. At the same time a recent independent evaluation by the World Bank (World Bank 2019) on service delivery in the irrigation sector showed weak results as investments continued to focus too much on hard infrastructure and problems continued with sustainability despite years of efforts to transfer management responsibility from public to private organizations (such as WUAs).

The Regional Development Banks clearly remained focussed on infrastructure, with the World Bank having a much more mixed portfolio. For the Regional Banks much of their support for agriculture and rural areas is seen as being provided indirectly, through their main complementary infrastructure sectors of transport, power, telecommunications and water and sanitation (e.g. IDB 2015). In IDB, 61 per cent of such support was coming through rural roads.

Multi-sector and -partner investments. All agencies concluded that there is urgent need to link single sector or sub-sector focused infrastructure investments with broader development activities, in agriculture and other infrastructure sectors. They offered some concrete ways forward.

A recent report on Future of Food at the World Bank (World Bank 2018) emphasized complementary investments into people, institutions and research, including engagement across multiple ministries and agencies, covering water, energy and other infrastructure sectors. The Bank's proclivity to repeat projects with continued single focus in infrastructure hardware rehabilitation should make place to projects that more strongly include climate change, water resource management, agricultural marketing and livelihood projects (World Bank /IEG 2019 Irrigation Ev.). There is scope for improving the sequencing and complementarity of projects, potentially with those of other lenders and donors, to address full theories of change in a country context.

For ADB (2018) irrigation infrastructure that was linked well with multiple agricultural and technical advisory support had greater impact, but it could take time for results to come to fruition. For farmers in Bangladesh, in two projects co-financed with IFAD between 2000 - 2017, connectivity to markets, fields, on farm grain storage and mechanization were more important than further investments in water resources. This example supported the case for improving results by combining water delivery infrastructure with extension services and through effective partnerships. For ADB a sector as complex as agriculture, rural development and natural resources warranted a more holistic approach, supported by greater resources and staff skills that can contribute more fully to the complete agriculture value chain. This also meant expanded collaboration and partnerships with recognized centers of excellence to complement current staff resources and supplement skills shortages, and with organizations as IFAD and FAO. For AfDB agricultural water management designs based on an integrated framework that considers trade and market development changes and contexts mattered most for the achievement of desired development results. And while gender mainstreaming was found to be satisfactory and outcomes usually included women they did not always reach them sufficiently, for instance, as projects did not include learning centers for women (Mali case study, AfDB 2020 Water management cluster evaluation).

¹⁵⁴ The ADB developed operational plans for Agriculture, Rural Development and Natural Resources in 2009 and 2015. ADB's Strategy 2030 has Rural Development and Food Security as a priority area.

Similar to IDB, lessons learnt from EBRD’s Agribusiness Strategy 2010 pointed to the need for better intra-agency organizational processes to coordinate and collaborate among the various infrastructure sector teams to ensure complementarities for rural areas (EBRD 2019-2023 Strategy] and to work more effectively and selectively towards food security results. EBRD lessons also pointed to food security requiring a better definition and theory of change beyond agriculture and for the context of EBRD and its mission. For IDB (2015) agriculture is only one of several ways to achieve food security, most of which suffers from access to food, not availability. IDB should formulate a comprehensive and multi-sector approach to support food security.

Climate resilient infrastructure is a UNDP signature programme¹⁵⁵. Based on their long-term experience with small-scale, community-based infrastructure, some UN-Agencies, such as UNDP (see also UNDP 2005 evaluation) and UNEP increasingly, and strongly, build in resilience and other SDGs into design and implementation of rural infrastructure programmes, be it roads, draining, irrigation electricity or water conduits using various climate finance programmes as a vehicle. UNDP also makes a point to help countries adopt policies and implement country-owned programmes to build more resilient infrastructure. In 2018 the UN Environment Programme (UNEP) launched a **platform to promote and support integrated approaches to sustainable infrastructure planning and development, financed by GEF. A stocktaking paper emphasized the centrality of infrastructure to the 2030 Agenda for Sustainable Development**, on the importance of systems-based integrated approaches to consider the complex interlinkages between different infrastructure systems, sectors, phases and governance structures, and the broadening of analytical tools routinely used for infrastructure assessments into a tool-box (UNEP 2019).

Monitoring and Evaluation. The importance of quality and functional monitoring and evaluation systems to support project development effectiveness and capture lessons for replication and scaling-up of innovative solutions was mentioned as one of five key lessons in the AfDB cluster evaluation of water management. [AfDB 2020 Cluster Evaluation]. The World Bank 2019 Irrigation service delivery evaluation found insufficient attention to tracking irrigation infrastructure and supportive services throughout the project cycle. Pertinent questions and data issues are whether the improved availability of irrigation water reaches the intended beneficiaries in an adequate, reliable, and flexible manner; and whether the supplied water is used efficiently for its intended purpose. Secondly, the evaluation found the use of innovative M&E technologies lacking from sensors and water flow measurement devices, satellite data and drones linked to cell phones and the internet of things.

Ch. II C – Safeguards

Several IFIs have been grappling with similar safeguards issues as discussed for IFAD in Chapter II. Safeguards have recently been evaluated for ADB (2020), AfDB (2019) and IDB (2018). The World Bank incorporated its long experiences in a new set of policies and guidelines for sustainable development in 2017 which covers safeguards.

ADB, AfDB and IDB all reported problems for safeguards at design and during implementation, with environmental and social risk and impact assessments (ESIA) and ESIA management not being well integrated into overall design and project management, incomplete assessments, and failure to consult with affected communities. At the IDB, a study found that four decades of conflicts related to infrastructure projects were primarily driven by the lack of adequate up-front planning and consultation with potentially affected communities.¹⁵⁶

In ADB the share of category A projects in the portfolio has dropped, partially due to leaving out infrastructure and other components with higher risks streamlined business processes for design left too little time to undertake the necessary assessments. At ADB, safeguards were also not well customized for non-sovereign private sector financing.

Half of the projects in IDB, and many in the other IFIs, used a framework approach which allows to do parts of ESIA during design, without going back to the board, for emerging sub-projects that were not fully identified before project approval. For IDB, such frameworks were often too generic to properly guide the selection of sub-projects and preparation of theirESIAs and management plans, and they would have required consistent follow-up during implementation which was often lacking. For this reason, the World Bank 2017 safeguards

¹⁵⁵ <https://www.adaptation-undp.org/small-rural-infrastructure>

¹⁵⁶ Watkins, G., Sven Uve Mueller, et al., 2017. Lessons from four Decades of Infrastructure. Project-Related Conflicts. Washington, DC: Inter-American Development Bank.

design paid attention to very clear guidance on the timing, follow-up and design of such ESIA for sub-projects.

At IDB follow-up and supervision of safeguards were not regular nor are they consistently monitored and reported. Safeguards results were mixed. Safeguards issues were left unattended during implementation because of resource constraints, the concentration of specialized safeguards staff at IDB headquarters, and team leaders limited familiarity with safeguards issues. The IDB evaluation recommended to (i) more consistently identify projects that use a framework approach to safeguards and enforce the multiple works safeguards preparation requirements; (ii) undertake more regular follow-up and field visits of all high and medium E&S impact operations, with particular emphasis on projects for which detailed designs emerge only during implementation; (iii) explore new supervision approaches, including more use of third-party supervision funded with project funds; and (iv) regular safeguards performance and results to become part of the Project Monitoring Report system, updated at least annually.

The AfDB safeguards evaluation concluded that the Bank was generally compliant with its disclosure requirements before Board approval but there were limitations in the use of E&S documents by stakeholders and deficiencies in their archiving. Reporting on E&S covenants and mitigation measures was poor and inconsistent.

The evaluation prioritized in its recommendations the need to mitigate shortcomings in effective implementation of the AfDB's safeguards systems across the project cycle, among others through (i) providing more safeguards resources to manage E&S across the project cycle; (ii) establishing systematic cross-support linkages between the teams dealing with E&S safeguards, climate change, and gender; (iii) developing an integrated and automated management information system across the project cycle and resume safeguards compliance reviews and audits; (iv) strengthening safeguards reporting to sharpen the focus on delivery and results; and (v) reinforcing the knowledge and awareness of internal and external stakeholders on the safeguards requirements and launching initiatives with other development partners to jointly organize capacity building in safeguards performance.

ADB has a large body of safeguards experts, with 124 [!] safeguards staff positions in 2018¹⁵⁷. But safeguards reporting requirements, degrees of autonomy and oversight are decentralized to various ADB departments. The ADB safeguards evaluation found a lack of safeguards oversight and consistent application across ADB and recommended to up-date the oversight structure and reporting lines to have more consistent safeguards application across ADB.

The analysis at ADB, IDB and World Bank saw an urgent requirement to work more with borrowers to strengthen country ESIA capacities and systems which was challenged by scarce resources in the past. For ADB and IDB, the roles of the Bank and its clients in ESIA have become blurred, particularly in implementation, and IDB recommended to differentiate more clearly between Bank and borrower responsibilities. Importantly, this includes proper arrangements and clarity of liability by governments and funding agencies. IDB also identified frequent capacity constraints and lack of knowledge on the borrowers' side about how E&S issues were managed and applicable IDB safeguards and recommended targeted capacity building and an incremental approach of using borrower's management systems of environmental and social issues. On the other hand, the AfDB found rather limited results and opportunities in its project operations to support broader E&S safeguards country capacities and suggested to focus on project specific interventions.

The World Bank saw a critical role for early engagement with government and full government ownership. It used its convening ability, financial instruments and intellectual resources to ensure that environmental and social considerations are reflected not only in projects but also in sector strategies, operational policies and country dialogues. The ADB safeguards evaluation recommended to assess necessary staffing to deliver the safeguards implementation framework, strengthen their skills and empower them, also in view of working more strategically and pragmatically with borrowers. A similar recommendation was made by the IDB.

Field case studies from the IDB evaluation showed that safeguards issues can be adequately addressed during project implementation, even if not all the E&S analyses and related consultations were completed to required standards before loan approval— if a clear framework and timetable are established to guide remaining work, sufficient project funds

¹⁵⁷ Up from 65 in 2009 matching increases.

are set aside to handle safeguards issues and there is close follow-up by the Bank during implementation. In sum, the report recommended that IDB should rebalance its focus on up-front procedural requirements with effective implementation for results and associated budgets.

Ch. III / IV – Performance and major performance factors/ sustainability

The recent AfDB cluster evaluation of water management in 9 projects (AfDB 2020) found that the Bank's interventions, mostly in irrigation, were relevant and achieved positive results, but had a number of design weaknesses which led to outputs and outcomes being considerably lower than expected.

On the institutional side, limited outcomes reflected primarily the inadequate capacity of water user associations to manage water resources adequately and claim ownership, due to low financial base, poor organization and management including of service charges and revolving loans, and take-over by individuals or groups of individuals of critical water supply and subsequent destabilization of systems. The evaluation found little evidence of adequate facilitating and engaging in partnerships with beneficiaries or private sector.

To mitigate these gaps the evaluation called for an enhanced formal framework to identify key stakeholders and their roles and responsibilities. Such a framework needs to pay attention to three challenges. First, water groups, cooperatives and associations that played a key intermediary role for efficient infrastructure functioning depended in their capacity on the nature of their partnerships with ministries and local governments. Adequate support needs to be ensured. Secondly, a careful selection of private entities and service providers was necessary to better work with farmers. Investments in building their capacity and adapting procurement procedures considerably helped to succeed with private sector and PPP contributions. And third, the evaluation found only very limited and insufficient partnerships and involvement of NGOs and CSOs in water management, clearly a missed opportunity.

On the technical side the evaluation found that limited outcomes were mainly caused by insufficient development of tertiary canals, incomplete land development for irrigation and quality of preparatory studies and design, and lack of complementary production inputs. Altogether, the time and efforts required for the planned scale of activities in these agricultural water management projects was often poorly estimated. Moreover, as summarized by the AfDB comprehensive evaluation for infrastructure in general (AfDB 2016 CEDR), infrastructure projects tended to benefit more from expert input, for instance into procurement plans by involving consultants and design engineers. But the Bank often focused on transactional compliance with ineffective or variable use of procurement resources. Country supervisions often had shortcomings in team composition to mobilize the necessary expertise to fix the issues, especially in infrastructure.

Sustainability. Financial and economic viability was the main factor limiting infrastructure sustainability at the AfDB [AfDB 2016 CEDR]. Smaller projects in states with fragile situations in agriculture, social, and water and sanitation were the worst performers. Examples of good practice existed across sectors with projects setting in place conditions such as fees for using the infrastructure built, and national authorities taking ownership and responsibility including budgets for maintenance. A credible cost-recovery strategy and sound governance improvements are key for ensuring accountability for efficient service delivery by the service providers [AfDB 2020 Cluster - key lesson]. Among others, fair representation of water users, use of local services and decentralization of authority at the local level would be necessary. Broad political, institutional and regulatory frameworks are required for support of water user groups.

Sustainability was also the lowest rated criterion of agriculture projects in the Asian Development Bank [ADB 2018 Agriculture Ev.]. Referring a bit more to environmental sustainability, ADB did not well take into account the medium- to long-term availability and reliability of the water resource, nor were wider basin-water availability upstream and downstream well considered.

The World Bank irrigation service delivery evaluation (2019) was very critical of the adequacy of policy reforms in many countries to promote financial sustainability of irrigation schemes and to ensure adequate operations and maintenance (O&M) and a service delivery perspective. Past World Bank assessments highlighted the urgency of policy reforms to promote financial sustainability, 'but to no avail'. Neglect of system O&M for public irrigation schemes has led to what is appropriately described by the practice as "design, neglect, and rebuild".

Some international development agencies introduced more or less detailed concepts and check-lists for better sustainability of infrastructure, such as IDB [IDB 2018 Guide to sustainable infrastructure]. For instance, the IDB framework and guidance for infrastructure sustainability identified 66 criteria that should be addressed during project preparation and design to ensure that economic and financial, environmental, social and institutional sustainability are achieved over the entire life cycle of an infrastructure investment, including private sector engagement and attention to climate resilience.¹⁵⁸ This IDB effort is too new to yield any results yet. But the effort itself draws attention to the absolute necessity to consider sustainability at project design, to avoid above trap of 'design, neglect and rebuild'.

Ch.IV A – institutional and policy issues

Decentralisation of transport. The IFAD RTT study (2008)¹⁵⁹ commented on the significant shortage of planning and implementation capacities for RTT, particularly in local governments. The decentralised bodies were often plagued by the lack of technical capacities and funding. Only in rare cases, if at all, had decentralisation been accompanied by a major capacity building programme and the allocation of sufficient funds for road improvement and maintenance. Where the decentralisation process was well advanced, staff had greater awareness of the pivotal role of RTT in local development. Still, local governments often remained too much focused on the roads themselves, while the issues of transport means and services were either overlooked or ignored.

The study also observed that the Ministry of Agriculture as IFAD's main partner is normally not directly responsible for RTT and neither is it competent to handle RTT programmes and issues. This is an important reason why a majority of rural roads is either not included in the Government's regular maintenance programmes, or is given a low priority in the partner country investment plans. Initiatives are required to achieve greater cooperation and knowledge exchange between the transport and agricultural sectors.

Decentralisation of irrigation management. FAO conducted a systematic review of decentralisation of irrigation management (2007).¹⁶⁰ Over many years Governments across the world embarked on a process of irrigation reform meant to tackle the increasing demands on irrigated agriculture and to enhance its performance while coping with both liberalization and participatory strategies. Among reforms in irrigated agriculture, irrigation management transfer (IMT) has appeared as the most important and far-reaching reform thus far. The concept of IMT normally refers to the process that seeks the relocation of responsibility and authority from the controlling government agencies managing irrigation systems (under the public sector) into the hands of non-governmental organizations (NGOs), such as WUAs, or other private-sector entities.

According to this study irrigation management transfer has partially achieved this objective of reducing government costs. However, government disengagement from financing irrigated agriculture has been hampering the provision of some basic support services in the agriculture sector. It underestimated the need by WUAs and irrigation agencies for substantial and prolonged capacity development. Many irrigation agencies simply lacked knowledge and experience in assisting WUAs to organize and manage their new responsibilities and support their capacities related to technical or organizational aspects. Furthermore, the institutional frameworks for WUAs are often only partial at the time of policy adoption and need to be elaborated further over time.

Ch. V – Rural poverty impact of roads

Many studies have pointed to a positive impact of rural roads and transport on poverty reduction. All evidence from a 2016 DFID systematic review¹⁶¹ showed a strong direct relationship between rural transport infrastructure, reduced transport costs and increased traffic volumes. Over time this led to higher employment, income and consumption, and an expansion of the agricultural sector. The strongest impacts were experienced in countries and regions with low road densities. Some studies indicated that feeder roads (basic access roads) provided greater social welfare gains than higher standard gravel or paved roads.

¹⁵⁸ Please refer to Tables 1–4 in the report that present sustainability criteria across the four principles at the project preparation and design phase.

¹⁵⁹ IFAD. 2008. Comprehensive Review of IFAD Rural Roads, Travel and Transport (RTT) Experiences, 1994-2007.

¹⁶⁰ Food and Agriculture Organization. 2007. Irrigation management transfer. Worldwide efforts and results. FAO Water Reports 32. Rome, Italy.

¹⁶¹ DFID. 2016. Does the extension of the rural road network have a positive impact on poverty reduction and resilience for the rural areas served? if so how, and if not, why not? A systematic review. July 2016

Health impacts were generally positive, but increased connectivity also led to an increase in communicable diseases that should be mitigated. With respect to marketing, communities closer to improved transport benefited much more than those in distant areas.

Another synthesis study by Raither et al. (ADB 2019)¹⁶² pointed to the wide range of outcomes and impact and the context specificity of the effects of various roads. Much of the evidence pertained to rural roads. This study also emphasized the impacts of roads on reduced gender disparities, higher land prices, farm productivity, migration, and much more.

An earlier case study-based review by ADB (2002)¹⁶³ had found that the poor and very poor benefited substantially from social impacts of rural roads, mainly through access to health, education and miscellaneous economic support services. But socio-economic benefits achieved were clearly different for different socioeconomic groups and the degree of integration of investments in roads with other activities. Where roads were simply parts of larger sector programs they were often benefiting largely better-off farmer groups. The poor required genuinely integrated support programs right through the cycles of production, transportation, and sale; and with transport services linked to improved livelihood and income diversification activities.

Most of the journeys made by the rural poor were for subsistence tasks. The poor relied also on the primary network of paths, tracks, culverts, and basic access routes in the immediate village vicinity and within the villages. Improving such transport was as important to the poor as providing access to markets outside the village.

Ch. VI – Infrastructure and crosscutting issues

Value chains for agricultural development. Two evaluation by AfDB (2019) and ADB (2013) paid close attention to value chains for agricultural development. For AfDB, the availability of appropriate infrastructure and technology was the first of five enabling, context-specific factors to ensure the success of agricultural value chains. Earlier lessons had led the AfDB to substitute wide-ranging agricultural support through more selective and concentrated efforts to leverage the Bank's comparative advantage (AfDB Medium-Term Strategy 2008-2013). Consequently, up to 80 per cent of projects approved had a strong agricultural infrastructure component, including for natural resource management and governance.

The AfDB evaluation found a number of positive practices and results in incorporating infrastructure management in irrigation structure to enhance infrastructure performance, as in Mozambique, Morocco and Kenya. For market infrastructure, insufficient ownership, poor planning and limited functionality often led to low support by local producers and private sector actors. Facilities ended up being underutilized with no clear sustainability mechanism in place, for instance in the case of meat producing facilities in DRC and some milk collection centers in Rwanda (AfDB 2019).

The earlier ADB evaluation had found that supportive market infrastructure such as storage facilities and transport logistics could increase farmers' selling options but that infrastructure would have to be very specific to the value chain needs and that the placement of markets and storage facilities is critical for value chain development. Rural roads could be helpful for competitive value chains if attention is paid to linking high-value crop production areas to strategic commercial markets (of both outputs and inputs). An enabling environment is seen as very important for value chain expansion, particularly for crowding in private sector through a leveled and incentivized playing field. Another ADB report [ADB 2017 infrastructure special report] points to the priority for regulatory and institutional reforms to make infrastructure more attractive to private investors and generate a pipeline of bankable projects for PPPs.

Crowding in private sector and blended public-private sector solutions also play a major role for the World Bank to optimize the use of scarce public resources [World Bank 2018 Future of Food]. Blended finance solutions could also help reduce transaction costs and risks and promote responsible and target group-oriented investments. Ideally, private investments would be broadly sourced and include enterprises at different levels. Increasing private sector investment will require identifying and understanding market failures currently leading to sub-optimal private provision of goods. This concerns particularly the policy and regulatory environment, and also financial services.

¹⁶² David A. Raither, Nina Bloendal, and Jasmin Sibal. 2019. Impact Evaluation of Transport Interventions. A review of the evidence. ADB.

¹⁶³ ADB. 2002. Impact of rural roads on poverty reduction: a case study-based analysis.

At the same time, the IDB 2015 evaluation stressed in its findings and through a key recommendation the necessity to better justify and delineate clear criteria for the financing of private sector or mixed investments as well as subsidies for agriculture. This should be done through either demonstrating that a good or service would be supplied at a socially suboptimal level if left to the market or that it would help to achieve socially desired objectives that would otherwise not be achieved. Whenever feasible, private goods and services should be provided to beneficiaries in return for a fee.

Climate resilience and multiple water-user models. In terms of increasing attention to climate resilience and incorporating broader natural resources concerns in infrastructure a seminal World Bank report (World Bank 2019, Hallegatte et al.) arrives at three main messages based on a wide range of case studies, global empirical analyses, and modeling exercises. First, the lack of resilient infrastructure is indeed harming people and firms. Non-sustainable infrastructure disruptions due to natural hazards are costly, worldwide upwards from \$391 billion annually, with Africa and South Asia bearing the highest losses from unreliable infrastructures. Secondly, investing in more resilient infrastructure is robust, profitable and urgent. Such investments clearly make users better able to manage disruptions. More resilient infrastructure assets pay for themselves and help users and beneficiaries to become more resilient. And third, good infrastructure management is the necessary basis for resilient infrastructure. There is no single intervention to make infrastructure systems resilient. Instead, a range of coordinated actions would be required.

For the authors of the report making infrastructure more resilient requires a consistent strategy and coordinated actions that include (i) getting the basics right such as proper planning, operation and maintenance of assets; (ii) building institutions for resilience through defining institutional mandates and strategies for infrastructure resilience; (iii) creating regulations and incentives by including resilience in regulations and incentive systems of infrastructure sectors; (iv) improving decision making through better data, tools and skills; and (v) providing appropriate financing, especially for risk-informed master plans, asset design, and preparedness.¹⁶⁴ Actions on these issues can be highly cost-effective and transformational, but they can nevertheless be challenging to fund in many poor countries, making them priorities for support from the international community.

The International Water Management Institute IWMI (CG system) offers much support for a stronger integrated focus on water. IWMI's strategy – based on its lessons learnt – prioritizes managing water scarcity, water use efficiency and productivity, integrated water resources management, protection of groundwater and ecosystems, as well as joint, participatory and inclusive planning and research, across national boundaries.¹⁶⁵ For IWMI, water management, engineering and economics need to be advanced and well integrated, with expanded partnership models and global dialogue.

Conventionally, water services in developing countries are planned with single objectives in mind: water for crop irrigation, water for livestock, water for domestic use and so on. Larger infrastructure projects, such as major dams, have almost always encompassed a multiple-user model as being essential to their cost-effectiveness. At the local level, however, this approach has been neglected. If water providers invest in local infrastructure which generates more uses and livelihood benefits, then the cost-effectiveness of these investments will also be enhanced.

Different entry points have emerged for multi-user water systems over the past decade. In a 'domestic plus' approach, the priority is for domestic water uses near to or at homesteads. Increasing the service levels allows households to use water for livestock, horticulture or small-scale enterprises. The income generated enhances the ability to pay and scheme sustainability. In a 'productive plus' approach, irrigation or livestock watering is the starting point, but other facilities are added. These could be special outlets or canals, troughs, washing places or bridges which improve the access to water for livestock, domestic needs and small-scale manufacturing.

Fragile Situations. A 2013 UNDP report on community infrastructure rehabilitation summarizes the agency's learning on institutional and technical aspects of working in fragile situations well. It highlights the contributions of infrastructure to the social contract through reconstructing damaged community assets through inclusive participation. But any

¹⁶⁴ For more details see page 15ff of the report

¹⁶⁵ International Water Management Institute (IWMI). IWMI Strategy 2019-23. Innovative water solutions for sustainable development. IWMI Multiple use water services: IWMI portal.

investments in social transformation also should be well beware of need for time and appropriate technical expertise of facilitators and local engineers. Projects need to be inclusive in identifying community infrastructure, including disadvantaged groups and women, and that opportunities and benefits should be equitably distributed.

Furthermore, projects should distinguish between the concrete management of a community infrastructure scheme to ensure quality and efficiency (for instance through specialized user associations) and the more general ownership of the initiative by the community to ensure sustainability. Sustainability requires commitment from the community before repairs commence. In the rush of rehabilitation, quality can be too easily sacrificed. Close and regular monitoring of rehabilitation, a skilled engineer and local community representatives must form part of a robust quality control mechanism.

In all of this it often helps to pre-position NGO and CBO partners in higher risk countries and develop longer-term work relationships to improve start-up time during emergency and increase country ownership; and to continuously build capacity alongside contingency arrangements. All of this requires taking a long-term perspective and using operations in a humanitarian environment to develop locally-driven and inclusive partnerships and institutions with longer-term, in-built resilience.

Long-standing partnerships during difficult periods were also seen by the AfDB's comprehensive institutional evaluation as a cornerstone for the Bank's overall effectiveness particularly in states with fragile situations¹⁶⁶. The Bank would combine a focus on hard infrastructure with increasing initiatives in fiscal administration, economic and sector analysis, policy dialogue and capacity development. [AfDB 2016 CEDR]

¹⁶⁶ Transition States in AfDB parlance.

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