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PROGRAMME COMMITTEE

Hundred and Thirty-third Session

Rome, 16-20 May 2022

**Evaluation of FAO's contribution to Sustainable Development Goal 6:
Ensure availability and sustainable management of water and
sanitation for all**

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EXECUTIVE SUMMARY

- This report presents the key findings, conclusions and recommendations of the Evaluation of the Food and Agriculture Organization of the United Nations' (FAO) contribution to Sustainable Development Goal (SDG) 6: "Ensure availability and sustainable management of water and sanitation for all". The evaluation covers FAO's work between 2016 and 2021, with a methodology that included extensive stakeholder consultations, surveys, case studies and documentary analysis. The evaluation examined FAO's work at the country, regional and global levels, covering all FAO regions. In total, it reviewed 89 country, regional and global level projects and programmes in 37 countries, with a total project budget of over USD 420 million and a range of headquarters normative activities.
- The evaluation found that FAO's strategic approach to water-related activities is unclear. This is despite the high volume of work at all levels that are contributing to different SDG 6 targets. Water resources management and land-water interactions are fundamental to core areas of FAO's mandate: agricultural production, ecosystems management, livelihoods development and climate change adaptation.
- These fundamental relations are poorly reflected in a number of FAO strategic documents, including the Strategic Framework 2022-31 as well as the current FAO Strategy on Climate Change and Resilience Strategy. FAO lacks a coherent approach to water resources management and land-water interactions that integrates climate change; such an approach would be a foundation for the development of FAO's overall strategic direction.
- FAO has implemented its custodial role for SDG 6 indicators in a structured and coherent manner. FAO has a comparative advantage in relation to many of the SDG 6-related activities covered, combining strong technical expertise, extensive global experience, competent analytical capabilities, good relationships with all key stakeholders and a perception of political neutrality.
- The most persistent and entrenched area of concern is that the links between agriculture and water quality and pollution (SDG target 6.3) were not adequately addressed at any level, including both in the FAO Strategic Framework and, most critically, in project implementation. FAO guidelines on the issue from 1976 are only concerned with the impacts of water quality on agriculture (and not vice versa). Information from a number of normative activities is not reflected in either FAO strategies or project practice.
- Irrigation (under SDG target 6.4) is a dominant theme in FAO's field projects, notably the modernization, rehabilitation and climate-proofing of old irrigation schemes and systems, which is an area of high demand from Members. Many projects were found to be successfully addressing the needs and demands of Members, including improving management and infrastructure, introducing innovations, integrating water management and climate adaptation, and strengthening production and livelihoods, but many projects faced considerable challenges in scaling up successful pilots to other locations in the host countries.
- Groundwater irrigation, rainfed farming, livestock, aquaculture and livelihood activities dependent on natural resources management are areas where the existing work at the project-level is lower than could be expected. A range of knowledge products and normative initiatives on these issues, as well as on integrated approaches, provide a basis for strengthening these areas; but in this and other issues, there is a disconnect between headquarters initiatives and project and programme design and implementation.
- FAO has comprehensive policies and strategies on social inclusiveness, participation and gender but there are concerns over the extent to which this has translated into FAO's ability to meet differing needs of citizens at the project level. These issues are of fundamental importance to SDG 6, where social exclusion and gender differentiation of roles and priorities are major challenges in water resources management.

- Headquarters and regional programmes have raised awareness and improved understanding on issues related to integrated water resources management (SDG target 6.5) for agriculture, natural resources management and ecosystems conservation, and FAO is playing an important role as a knowledge source and convener at global and regional levels. However, FAO's contribution to SDG 6 through its potentially transformative work on water governance, including areas such as water tenure and groundwater governance, is limited by the lack of systematic integration of governance diagnosis in project design and implementation, and a lack of coherence in the overall approach to governance.
- Examples of full transformational changes where FAO has contributed towards an advancement of the SDG 6 targets by the work examined were not found, which is no surprise given this is a long-term process, but a number of activities have the potential, if supported, to contribute to transformational change in the future. This includes, amongst others, integrated approaches to water resources management as part of a wider natural resources management system that combines land and water and leaves no one behind as the core focus of FAO's work.
- Weak monitoring and evaluation and major gaps in systematic internal learning pervade much of FAO's work, so that positive experiences do not systematically inform future activities and problems are repeated.
- The evaluation concludes that there is a great deal of good work being done but also some significant gaps and a general sense of fragmentation and poor coherence, with this including potential negative impacts of agricultural activities on water quality and availability that were not adequately reflected in the scope of activities. Trends appear positive but there is a need to nurture and support activities that have the potential to contribute to transformative change. In many cases, this will entail the mobilization of additional resources and long-term commitment.
- FAO should build from existing strengths, whilst also recognize shortcomings to move towards a more coherent and strategic recognition of the central role of water resources management in FAO's mandate and activities. Water is fundamental to FAO's core mandate and FAO is in a strategic position to support Members achieve SDG 6 targets. But the visibility of FAO's actions is hampered by the poor integration of water and land resources into the Strategic Framework and other strategic-level documents, including not recognizing the synergies between SDG 6 and other SDGs that are a universal feature of projects and programmes. This is a major missed opportunity for FAO to contribute more effectively to SDG 6 and, at the same time, weakens its ability to fully achieve its mandate.
- Seven recommendations are issued for enhancing FAO's contribution to SDG 6. This will entail a long-term commitment to raising the centrality and visibility of water and land resources in the work of FAO, more purposeful resource mobilization and improved project design, all within a coherent framework that would give structure and direction to this body of work in FAO. This must recognize the impacts on water quality, quantity and pollution from agricultural activities as a serious concern, and address these issues as an integral part of FAO's actions in agriculture and food production.
- A one-page overview of the report's findings, conclusion and recommendations is presented in Appendix 1.

GUIDANCE SOUGHT FROM THE PROGRAMME COMMITTEE

- The Programme Committee is invited to review the content of the document and provide guidance as deemed appropriate.

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I. Introduction

1. This report presents the findings, conclusions and recommendations of the Evaluation of the Food and Agriculture Organization of the United Nations' (FAO) contribution to Sustainable Development Goal (SDG) 6: "Ensure availability and sustainable management of water and sanitation for all". The evaluation covers FAO's work between 2016 and 2021, the first period of the SDGs, meaning that the extent of concrete results on the ground is bound to be limited. The evaluation methodology included extensive stakeholder consultations, surveys, case studies and the documentary analysis.¹ The evaluation covered all FAO regions, global normative and thematic initiatives and activities of Members. These were analysed to determine the relevance and effectiveness of FAO's engagement with SDG 6-related activities and FAO's overall contributions to SDG 6. COVID-19 related restrictions limited the engagement, particularly with field-level and external stakeholders.
2. The evaluation focused on **four key evaluation questions** that have been at the core of the collection and analysis of evidence in the evaluation, which are:
 - 1) Has FAO positioned and organized itself to maximize its contribution to SDG 6?
 - 2) Have FAO's interventions related to SDG 6 addressed the needs and demands of its Members and their citizens?
 - 3) What have been the results achieved by or with the contribution of FAO in relation to SDG 6 at country, regional and global levels?
 - 4) Is FAO generating transformational and long-term changes in relation to SDG 6, promoting the principles of 'leave no one behind'?
3. This report, and particularly the wording of the recommendations, is influenced by best practices on and the global discourse about water resources management on the three following areas.
4. First, the evaluation reflects that, for FAO, water resources management is central to any consideration of agricultural production, ecosystems sustainability, rural livelihoods and climate change adaptation; issues that lie at the heart of FAO's mandate. In effect, water is at the core of the core, it is a **fundamental issue for realizing FAO's core mandate**.
5. Second, **water resources management needs to be dealt with from an integrated approach** that recognizes multiple resources and uses. Water resources management systems need to ensure that the actions of one set of users do not compromise the access of other users or the sustainability and quality of the resource, reflecting that agriculture is a major user and polluter of water worldwide. The State of the World's Land and Water Resources for Food and Agriculture (SOLAW, 2021)² recognizes the interactions between land and water, human welfare and climate change, and states that "taking production that is more environmentally responsible and climate smart to scale can reverse trends in the deterioration of land and water resources". SDG 6 is linked to other SDGs, including SDGs 1, 2 and 10, identified in the Strategic Framework 2022-31 as central to FAO actions.
6. Third, **climate change is now forcing humankind to rethink development**. Water availability and sustainability can no longer be taken for granted. It can also no longer only be seen as part of the problem. Instead, water is seen as fundamental to climate change adaptation, i.e., as part of the solution.
7. The report presents its findings in three sections below. First, a summary of FAO's work in relation to the eight SDG 6 targets is presented. This is followed by the evaluation findings,

¹ This includes, *inter alia*, desk reviews of FAO's strategies, policies, programme and project documentation, publications and past evaluations as well as related national policies and strategies and key international publications.

² FAO. 2021. The State of the World's Land and Water Resources for Food and Agriculture – Systems at breaking point. Synthesis report. FAO. Rome.

grouped under the four key evaluation questions. The last section presents the evaluation's conclusions and recommendations.

II. FAO's work related to SDG 6

8. This section highlights FAO's work in relation to the eight SDG 6 targets, based on the main patterns of evidence collected during the evaluation, which covered the period 2016–2021. A total of 89 country, regional and global level projects and programmes covering the total project budget of over USD 420 million were examined as case studies in 37 countries across the five regions,³ a range of headquarters normative activities and relevant support by the Investment Centre (CFI) in the project designs of international financial institutions (IFIs) were assessed, over 200 people within and outside FAO were interviewed, an online survey of FAO personnel (166 responses) and external partners (77 responses) was conducted, and extensive documentary reviews including past evaluation reports were undertaken. Five regional and ten thematic assessments conducted by the evaluation provide a full range of evidence.
- 2.1 **Target 6.1 and 6.2: Achieve universal and equitable access to safe and affordable drinking water and sanitation and hygiene for all**
9. SDG targets 6.1 and 6.2, related to drinking water, sanitation and hygiene (WASH), are not an area where a substantial effort by FAO could be expected and the evidence collected in the evaluation reflects this. A number of projects were found, for example, at the regional level in Latin America and the Caribbean (LAC), in Afghanistan, Cambodia, Egypt, Namibia, Panama and across the Sahel region, where a multiple-use water system (MUS) approach or rainwater harvesting responded to community requests, including the extension of irrigation schemes to provide water for livestock and domestic purposes. The wider adoption of a MUS approach, including gender as a core issue, has considerable potential and a recent FAO paper⁴ proposed integrating WASH into rural livelihoods development.
- 2.2 **Target 6.3: Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials**
10. With regard to FAO's activities related to water quality and pollution generated by agricultural practices, the evaluation found a number of normative activities on different aspects of water quality, including with external partners such as the World Health Organization (WHO)⁵ and International Water Management Institute (IWMI).⁶ This includes the long negotiation process with governments and the fertilizer industry which led to the adoption of the Code of Conduct on Sustainable Use and Management of Fertilizers.⁷ There were also regional initiatives in the Near East and North Africa (NENA) and in the Caribbean. In some cases, water quality was a sub-component of a wider programme. The quality of these normative activities is generally high, but their influence on FAO's strategic direction and operations is minimal at best. FAO has no overall policy or strategy on water quality and pollution, Existing guidelines (from 1976) are only concerned with the impacts of water quality on agriculture (and not vice versa) and this issue is all but absent from the current Strategic Framework and its programme priority areas (PPAs).
 11. There were very limited activities related to water quality and agrochemical pollution in the **case study projects**. One subregional project in the Caribbean focused on the disposal of obsolete

³ About 5 percent of the projects active during the evaluation period in the Field Programme Management Information System (FPMIS) were identified as relevant to SDG 6. Forty-three percent of these projects were selected as case studies. A full list of case studies examined by the evaluation can be found here: <https://www.fao.org/evaluation/evaluation-digest/ongoing-evaluations/sdg6/en/>

⁴ Salman, M., Pek, E. and Ahmad, W. 2020. Smart irrigation – Smart wash. Solutions in response to the pandemic crisis in Africa. FAO Land and Water No. 16. Rome, FAO

⁵ FAO & OIE & WHO. 2010. The FAO-OIE-WHO Collaboration. A Tripartite Concept Note. April 2010.

⁶ FAO & IWMI. 2017. Water pollution from agriculture: a global review. FAO. Rome.

⁷ FAO. 2019. The international Code of Conduct for the sustainable use and management of fertilizers. FAO. Rome.

pesticides. There are some references to integrated pest management and improved use of agrochemicals as part of projects related to good agricultural practices and the reuse of treated wastewater in a small number of projects, but even these activities did not include the analysis of pollution outputs or levels of agrochemical use and did not set pollution reduction targets. The reduction of pollution was not a main objective in any of these projects.

2.3 Target 6.4: Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

12. Activities related to target 6.4 in the agricultural sector were the main focus of much of FAO's portfolio that included water resources management. These activities include those related to FAO's custodial role in relation to SDG indicators 6.4.1 and 6.4.2 and activities concerned with the management of water in rural production, with this including irrigated agriculture, rainfed farming and other livelihood activities such as fishing and the use of all sorts of forest products.
13. **FAO's custodial role** for indicators 6.4.1 and 6.4.2 was examined in detail. It includes the collection and management of data from Members and is largely managed through FAO's Global Information System on Water and Agriculture (AQUASTAT), FAO's global online information system that has been operational since 1994. The activities undertaken include measures to improve the quality and timeliness of data from individual countries through the establishment of national 'correspondents' who act as a focal point for provision of data to AQUASTAT. FAO has implemented a substantial amount of capacity building and data management activities. The reporting rate for indicators has grown from almost nothing at the start of the SDG period to 84.7 percent for 6.4.1 and 89.8 percent for 6.4.2 by 2021,⁸ with improvements made to the range and quality of the data (though addressing challenges here will continue to be a focus of activities).
14. **Irrigated agriculture** is the focus of a large proportion of FAO's projects examined that include water resources management. This is natural, given FAO's purpose and mandate and the fact that agriculture is by far the largest user of water globally. The following pattern emerged that characterizes FAO's work in irrigated agriculture:
 - Apart from CFI involvement in the design of several projects for IFIs such as in Uganda, there are no examples of FAO being involved in the design or construction of new large-scale irrigation schemes during the evaluation's timeframe. Small-scale irrigation development is included in a number of projects, often as pilot schemes and as a part of a wider local-level agricultural improvement process.
 - FAO is focused on **improving existing irrigation systems**. This includes the design work of CFI, with several modernization projects, and the irrigation performance assessment work of the Land and Water (NSL) Division. A recent joint CFI/NSL publication⁹ recognizes that this is the main challenge facing global irrigation development: "*In order to reach the targeted irrigation area by 2050, substantial investment is needed to cover about 172 million hectares of irrigation-equipped area each year, of which 90 percent is for rehabilitation or substitution and the balance for net expansion.*"
 - FAO's work in this area can be characterized by four words: **modernization, rehabilitation, innovation and information**. The mix of these areas of activity varied greatly from project to project, but most contained some elements of each issue. In some cases, such as Afghanistan, Cameroon, Kenya and Pakistan, FAO supported irrigation sector reforms and planning.
 - **Modernization** of the irrigation management system was a component of almost all projects examined, with specific activities that reflected local circumstances, including the preparation of modernization plans, defining responsibilities and building capacities for the

⁸ FAO's Statistics Office, obtained on 31 January 2022.

⁹ FAO. 2018. **Guidelines on irrigation investment projects**. FAO. Rome.

management system, improving operation and maintenance, water allocation and pricing mechanisms, strengthening community involvement and other aspects of the governance structure of irrigation. Successful examples were found, amongst others, in Afghanistan, Jordan, Malawi, Pakistan and Zimbabwe.

- **Rehabilitation** of the physical infrastructure was central to many projects, including lining canals, replacing sluices and pumps and other activities. This rehabilitation reflects a widespread need as the irrigation systems of many countries are getting old and have been poorly maintained. There is also an emerging need to climate-proof schemes as hydrological regimes alter with climate change. Rehabilitation has been the main rationale of many requests for FAO's involvement in irrigation projects. Success stories on rehabilitation were found, amongst others, in Afghanistan, Egypt and Sierra Leone.
 - **Innovation** takes many forms but is something that has been actively propagated in a number of projects. This includes technical innovation such as solar pumping systems and drip irrigation. It also includes innovations in data collection and management, and in governance systems to foster higher levels of community control over irrigation systems, such as smartphone applications in projects in Lebanon and Uganda.
 - **Information** provision and management is a key feature of FAO's approach. Many projects, such as in Ethiopia, Pakistan, Somalia and Uganda, and regional programmes such as the one in NENA,¹⁰ include components to strengthen national capacities for water accounting and water governance, improve the availability and management of data on water flows, usage and other issues within the irrigation systems. In a few cases, such as Kenya, this included strengthening national systems as part of assistance to national irrigation planning capacities.
 - The 2018 Guidelines on irrigation investment projects are too recent to have had an impact on the case study projects reviewed by the evaluation, but these guidelines are comprehensive in scope and structured to give clear direction to all partners in the development of irrigation investment projects. They are an important development that can be built on in the design of future FAO activities in the irrigated agriculture sector.
15. **National demand** for the improvement of existing irrigation systems is high, with many governments regarding this as a priority. FAO's ability to provide assistance that combines technical and managerial competence, extensive experience, an understanding of wider patterns of agricultural development and good relations with government agencies and other stakeholders is valued and reflects FAO's **comparative advantage**.
16. **Groundwater irrigation** is an important form of water provision for agriculture in a number of regions¹¹ and often faces challenges in relation to unsustainable withdrawals, salinization and deteriorating water quality. Given this significance, the evaluation found only a small number of FAO projects on groundwater irrigation such as a transboundary aquifer project between Cambodia and Viet Nam, individual country projects in Bangladesh and Jordan, and a headquarters initiative on a groundwater governance global framework for action. The quality of the activities that does exist is comparable to that of surface irrigation projects, but groundwater irrigation is an area that has the potential for the expansion of FAO's activities.

¹⁰ FAO. 2022. Water efficiency, productivity and sustainability in the NENA regions (WEPS-NENA). In: *Food and Agriculture Organization of the United Nations*. <https://www.fao.org/in-action/water-efficiency-nena/en/>

¹¹ FAO. 2020. The State of Food and Agriculture 2020. Overcoming water challenges in agriculture. FAO. Rome.

17. **Non-irrigated agriculture, livestock, aquaculture¹² and natural resources management** such as fishing and forest and wetland management are an important aspect of FAO's work in relation to SDG 6. The issue includes production from home gardens, livestock, agroforestry and silviculture, aquaculture, harvesting of plants and animals from forests, wetlands, rangelands and other areas and forms of production that are important elements of the livelihoods of rural people everywhere.
18. Several headquarters and regional initiatives on issues such as home gardens,¹³ livestock^{14,15} and agroforestry¹⁶ emphasize the significance of these forms of production in livelihoods and integrated landscape management. A number of projects, for example in Cambodia, Ecuador and East Africa, were found where these forms of production were dominant in the livelihoods of local communities.

2.4 Target 6.5: Implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

19. Water governance is key in a number of headquarters initiatives, including on water tenure, groundwater governance¹⁷ and within the framework of the water-energy-food nexus.¹⁸ It also features in regional programmes in NENA and Asia and the Pacific. Water governance is a prominent issue in the 2021 SOLAW report, including as one of four priority action areas. Work on the legal aspects of water is undertaken by the FAO Legal Office's Development Law Service, which is about to launch AQUALEX, a legislative and policy database that will inform assistance to FAO Members on the review and development of legal frameworks for sustainable water management and use.
20. Components on integrated water resources management and water governance were found in the majority of projects examined. The scope of this work varied between projects but included components on the preparation of new policies, the development of mechanisms to implement existing policies, capacity and institutional development in different tiers of the administrative system, and a variety of approaches to the development of community-level water governance systems.

2.5 Target 6.6: Protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

21. The protection and restoration of ecosystems was an issue addressed in almost all projects, but usually not as their core purpose. The recent State of the World's Biodiversity for Food and Agriculture 2019 report¹⁹ identifies biodiversity and ecosystems conservation as key considerations for food and agricultural production. This is reflected in headquarters initiatives on nature-based solutions, integrated landscape management and forest-water resources management, among others. Ecosystem conservation is a core issue embedded throughout the Strategic Framework and in a number of its PPAs.
22. A number of projects focused on water as a key component of ecosystems conservation, including forest management in China, coastal ecosystems in Cambodia, livestock impacts in Sudan, restoration in Ecuador, management in Turkey, restoring Lake Urmia's ecosystem in the Islamic Republic of Iran, coastal aquifers in NENA, and ecosystem services in Ghana.

¹² FAO. 2020. The State of World Fisheries and Aquaculture 2020: Sustainability in Action. FAO. Rome.

¹³ Family Farming Knowledge Platform. <https://www.fao.org/family-farming/detail/en/c/1129558/>

¹⁴ Livestock Environmental Assessment and Performance Partnership (LEAP) <https://www.fao.org/partnerships/leap/en/>

¹⁵ The Global Livestock Environment Assessment Model

¹⁶ Mitchell, R., Hanstad, R. 2004. Small Homegarden Plots and Sustainable Livelihoods for the Poor 2004.

¹⁷ FAO. 2015. Shared global vision for groundwater governance 2030 and a call for action. FAO. Rome.

¹⁸ FAO. 2014. The water-energy-food nexus: a new approach in support of food security and sustainable agriculture. FAO. Rome.

¹⁹ FAO. 2019. The State of the World's Biodiversity for Food and Agriculture. FAO. Rome.

23. Measures to reduce ecosystems impacts were included in many agriculturally-focused projects, often centred on ensuring that water abstraction was kept within sustainable limits. Activities such as capacity development and awareness raising for government officials and local communities were also included in a number of cases.

2.6 Target 6.a: Expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes

24. FAO is an active partner in several international activities related to water resources management, including UN-Water on FAO's custodial role of SDG 6.4.1 and 6.4.2 indicators. The Global Framework on Water Scarcity in Agriculture (WASAG), launched in 2017 and hosted by FAO, is a major international partnership structure with over 80 partners. Knowing Water Better (KnoWat) is a recent initiative aiming to strengthen water governance and management. AQUASTAT has prepared transboundary basin overviews that provide important knowledge products and has developed gender-sensitive indicators in four countries, the Africa Sustainable Livestock 2050 project aims to build capacities for sustainable livestock management, whilst FAO has collaborated with the United Nations Economic Commission for Europe (UNECE) on basin assessments in Europe and Central Asia. FAO is active in other partnerships such as World Agricultural Watch and the Partnership for Agricultural Water in Africa.
25. **Regional-level activities** include the Transboundary Agro-ecosystem Management Project for the Kagera River Basin, the Enhanced Cross-boundary Water Resource Management in the Senegal River Basin, the Water efficiency, productivity and sustainability in the NENA regions (WEPS-NENA),²⁰ an initiative on water governance in six Latin American and Caribbean countries, and the Model Law on Community Water and Sanitation for 33 Latin American and Caribbean countries. The only specific activity found on transboundary waters is the Asia Transboundary Water Programme that contains five projects funded by the Global Environment Facility (GEF).²¹ The Programme is aimed at developing transboundary management of rivers and aquifers in ten countries and includes systematic stakeholder engagement at local, national and international levels.

2.7 Targets 6.b: Support and strengthen the participation of local communities in improving water and sanitation management

26. Issues of **community participation and empowerment**, including those related to equity, gender and leave no one behind, are central to FAO's Strategic Framework and numerous other documents. The FAO Policy on Gender Equality²² states that gender equality is central to FAO's mandate, whilst the 2015 Environmental and social management guidelines²³ state that "FAO is committed to ensuring meaningful, effective and informed participation of stakeholders", a position mirrored in the draft new guidelines.²⁴ In these and other documents, participation, equity and gender are expected to be fully integrated into all FAO work at headquarters, regional and project levels.

²⁰ FAO. 2020. Support to the Regional Collaboration Platform of the Water Scarcity Initiative to increase water productivity. TCP/RAB/3602.

²¹ FAO & GEF. 2021. Fostering Water and Environmental Security in the Ma and Neun/Ca Transboundary River Basin and Related Coastal Areas (PPG). GCP/RAS/380/GFF.

FAO & GEF. 2021. Enhancing sustainability of the Transboundary Cambodia - Mekong River Delta Aquifer. GCP/RAS/390/GFF.

FAO & GEF. 2020. Institutionalising transboundary water management for the Panj River Sub Basin (PPG). GCP/INT/1002/GFF.

FAO & GEF. 2021. Enhancing water-food security and climate resilience in volcanic island countries of the Pacific (PPG). GCP/SAP/003/GFF.

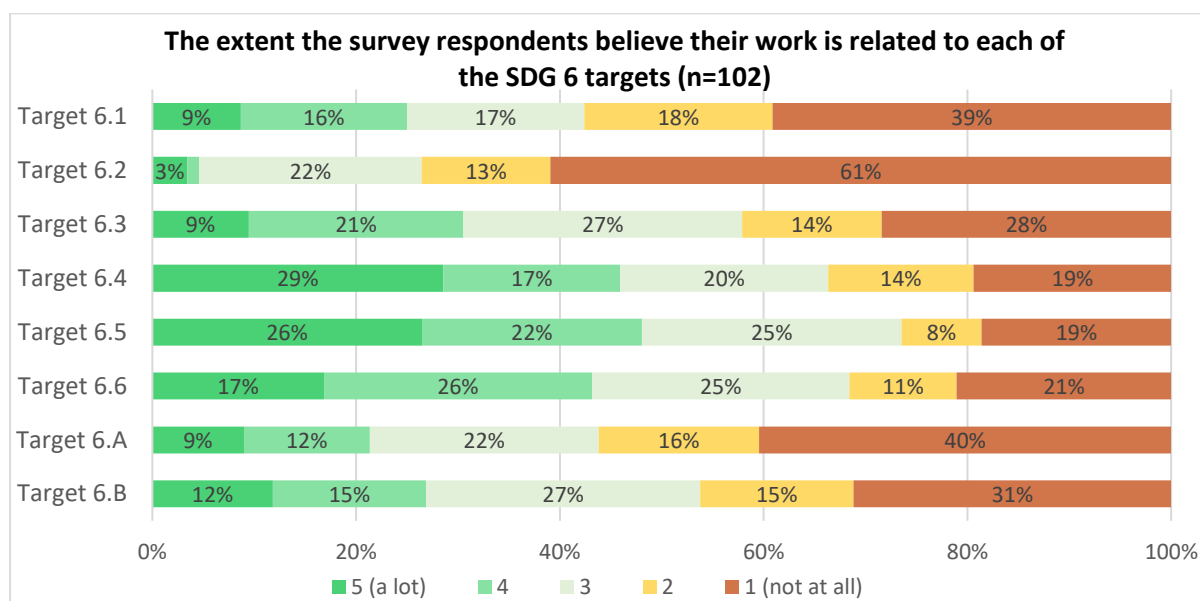
FAO. n.d. Strengthening Field Capacities for ASF Detection and Emergency Response. GCP/RAS/903P/GFF.

²² FAO. 2020. FAO Policy on Gender Equality 2020–2030. Rome. <https://www.fao.org/3/cb1583en/cb1583en.pdf>

²³ FAO. 2015. Environmental and social management guidelines. <https://www.fao.org/3/i4413e/i4413e.pdf>

²⁴ FAO. 2021. Draft Framework for Environmental and Social Management. FAO. Rome.

27. Gender, equity and participation of local communities were cross-cutting themes in the projects and programmes examined, with a range of approaches to strengthen the involvement of local communities in the planning and implementation of project activities. Some projects were limited to community-level consultations, some had components aimed at the structural empowerment of local communities, and many projects aimed at levels of participation somewhere between these two.
28. Overall, the online survey with FAO's personnel aligns with the evidence collected above. SDG targets 6.5, 6.4 and 6.6, respectively, were the top three SDG 6 targets that the respondents believed their work were most relevant to.



III. Key findings

3.1 Has FAO positioned and organized itself to maximize its contribution to SDG 6?

Finding 1. FAO's strategic approach to water-related activities is unclear. This is despite the significant volume of work at all levels that are contributing to different SDG 6 targets. There are almost no references to water resources in the priority areas of FAO Strategic Framework 2022-31 and only limited references in the existing versions of the 20 accompanying PPAs. Projects addressing the relationship between climate, resilience and water are increasingly common and can be extremely effective, but these projects are happening in isolation, with no conceptual or methodological framework to guide and inform them.

29. The assessment of FAO's performance in relation to SDG 6 can only be understood in relation to FAO Strategic Framework and operational structure. The picture that emerged shows a lack of clarity. In some documents, water is seen as an integral part of FAO's mandate and mission. The 2020 State of Food and Agriculture (SOFA) report²⁵ places sustainable water resources management as central to the future of agriculture and sustainable development and notes that "rising competition for water and the effects of climate change are leading to tensions and conflicts among stakeholders, thereby exacerbating inequalities in access to water". The 2021 SOLAW report has a similar message on the centrality of an integrated approach to land and

²⁵ FAO. 2020. The State of Food and Agriculture 2020. Overcoming water challenges in agriculture. FAO. Rome.

water resources management for FAO and identifies the first of four key action areas for the future to be “adopting inclusive land and water governance”. Similar perspectives on water in FAO are found in a 2015 White Paper,²⁶ the water-energy-food nexus²⁷ and a range of cross-cutting thematic areas of FAO’s activity, including nature-based solutions,²⁸ the Environmental and Social Management Framework,²⁹ integrated landscape management,³⁰ sustainable forestry,³¹ watershed management³² and others.

30. In contrast, there are almost no references to water as a key strategic outcome in FAO Strategic Framework 2022-31.³³ Where water is mentioned, it is mostly as part of wider resource degradation processes. There are also only limited references to water as key thematic components in the 20 accompanying PPAs. The PPA *better production* 1 on innovation for sustainable agricultural production, a *better environment* 3 on biodiversity and ecosystem services, and a *better life* 2 on inclusive rural transformation refer to a number of SDG 6 targets whilst two others refer to one target. A *Better environment* 2 on bioeconomy for sustainable food and agriculture does not identify SDG 6 targets but does discuss the need to improve water quality and wastewater reuse. Again, apart from very limited references as part of wider resource degradation processes, water is not mentioned in the PPAs on climate change, resilience, small-scale producers, nutrition, gender and scaling up investments where water is seen internationally as a core issue. The Medium-Term Plan 2022-25 refers to water primarily as a problem. Overall, the extremely limited recognition in FAO’s main strategic documents of the fundamental role water resources (and land-water interactions) play in FAO’s core mandate areas of sustainable agriculture, ecosystems management, rural livelihoods and climate change responses is a matter of serious concern and can be expected to constrain the scope and effectiveness of all activities in these areas. Actions to address this issue should be regarded as an urgent priority.
31. The Strategic Framework 2010-19 covered the first part of the evaluation period, but was prepared prior to the SDG period and consequently does not refer to SDG 6 explicitly. It contained three global goals, the third of which was the “sustainable management and utilization of natural resources, including land, water, air, climate and genetic resources, for the benefit of present and future generations”. Water was addressed as one of the full range of natural resources in the goal and was also referred to within the context of several of the 11 Strategic Objectives, including in terms of specific water resources management options.
32. The FAO Strategy on Climate Change (2017)³⁴ contains limited references to water on the need to adjust to water scarcity. It does not recognize water resources management as the basis for adaptation actions. The new draft FAO Strategy on Climate Change 2022-2031 shows a more balanced perspective, in particular with reference to integrated land and water management approaches. The next step, preparation of an Action Plan for the Strategy, will be crucial in ensuring that water is fully integrated into FAO’s approach to addressing the climate crisis.

²⁶ **FAO & World Water Council.** 2015. Towards a water and food secure future. FAO. Rome.

²⁷ **FAO.** 2014. The water-energy-food nexus: a new approach in support of food security and sustainable agriculture. FAO. Rome.

²⁸ **Miralles-Wilhelm, F.** 2021. Nature-based solutions in agriculture – Sustainable management and conservation of land, water, and biodiversity

Virginia, and Sonneveld, B. et al. 2018. Nature-based solutions for agricultural water resources management and food security. FAO. Rome.

²⁹ **FAO.** 2021. Framework for Environmental and Social Management. FAO. Rome.

³⁰ **FAO.** 2017. Landscapes for life: approaches to landscape management for sustainable food and agriculture. FAO. Rome.

³¹ **Eberhardt, U. et al.** 2019. Advancing the forest and water nexus. FAO. Rome.

³² **FAO.** 2017. Watershed management in action: lessons from FAO field projects. FAO. Rome.

³³ **FAO.** 2021. Strategic Framework 2022-31. FAO. Rome.

³⁴ **FAO.** 2017. FAO Strategy on Climate Change .FAO. Rome.

33. In contrast to the position at the strategic level, at the **project level**, the inclusion of components on the relationship between climate, resilience and water is so common that it can be regarded as normal practice. The assessment of a number of case studies, such as in Cambodia, El Salvador, Fiji and Malawi shows that the work on the ground can be extremely effective and appreciated. However, these projects are happening in isolation, with no conceptual or methodological framework that can guide and inform them. Overall, the position on the internal and external coherence in this field is a matter of concern.
34. The FAO Resilience Strategy³⁵ states that “the resilience work of FAO is context-specific, anchored in the local livelihoods system”, but the role water resources management plays in rural livelihoods and in responding to stress and enhancing resilience is not recognized. Again, this is out of step with mainstream international approaches to these issues.
35. FAO has an extensive network of partnerships related to water at international, regional and national levels, including ones such as WASAG and the International Network of Service Providers for Irrigation Excellence (INSPIRE) that relate to FAO’s core mission and with the World Water Council, International Commission on Irrigation and Drainage and UN-Water. Several are referred to in relation to thematic issues related to the SDG 6 target above, but it is important to note partnerships as an important *modus operandi* for FAO through which the influence and effectiveness of its activities are greatly enhanced.

Finding 2. FAO has positioned and organized itself in relation to FAO’s custodial role for SDG 6 indicators in a structured and coherent manner, allowing itself to fulfil its custodial obligations. The reporting rate for indicators 6.4.1 and 6.4.2 has improved markedly.

36. FAO has custodial responsibility for the monitoring of SDG indicators 6.4.1 (change in water-use efficiency over time) and 6.4.2 (level of water stress: freshwater withdrawal as a proportion of available freshwater resources). This includes supporting countries to collect and provide data and ensuring an efficient system for providing data to the overall SDG monitoring system. The custodial role also includes identifying and implementing actions to address challenges associated with the collection and management of data, such as national capacities and the quality of data. The AQUASTAT system is found to be an effective system for the operationalization of FAO’s custodial responsibilities. The reporting rate for the indicators has improved markedly, from almost nothing at the start of the SDG period to 84.7 percent for 6.4.1 and 89.8 percent for 6.4.2 by 2021,³⁶ with improvements made to the range and quality of the data. Evidence available suggests that FAO is able to fulfil its custodial obligations on the SDG 6 indicators and these obligations have been met throughout the SDG period.

Finding 3. FAO has a comparative advantage in relation to many of the activities covered, combining strong technical expertise, extensive global experience, competent analytical capabilities, good relationships with all key stakeholders and a perception of political neutrality.

37. A combination of strong technical competence, extensive experience, good management and analytical capabilities, good relationships with Member governments and other stakeholders, and a perception of no political agenda meant that FAO was regarded as a partner of choice. FAO’s long history of work in emergency situations means there is an understanding that water resources management can contribute to peace and security and find practical solutions in situations of extreme stress. FAO’s credibility and strong relations with governments mean that it is able to address reform and governance issues that are potentially controversial. FAO is uniquely placed to be the lead agency in agricultural initiatives that include water resources management as part of innovative, integrated approaches. The issue of comparative advantage was cited by governments and other partners as an important factor in FAO’s engagement on challenging issues in countries such as Egypt, Ecuador, Pakistan and Somalia. Such engagement also requires skills and sensitivity to understand the history, culture, institutions and political dynamics at work

³⁵ FAO. 2017. Strategic work of FAO to increase the resilience of livelihoods. FAO. Rome.

³⁶ FAO’s Statistics Division, obtained on 31 January 2022.

in countries, at both national and local levels. FAO has also leveraged its technical expertise, through CFI, in promoting and scaling up investments in irrigation and water investment through its support in project designs and implementation to IFIs.

Finding 4. The links between agriculture and water quality and pollution were not adequately addressed at any level of FAO. FAO Guidelines on Water Quality for Agriculture³⁷ from 1976, with a 1985 update, focus on the impacts of water quality on agriculture, not the impacts of agriculture on water quality. This was found to be the most persistent and entrenched area of concern across FAO in relation to its contribution to SDG 6.

38. The impacts of agriculture on water quality and pollution are a global concern, as recognized in the 2021 SOLAW report: “Water pollution is a rising global crisis that directly affects health, economic development and food security [...] agriculture has become the dominant source of pollution in many countries”. Similarly, the 2020 SOFA report recognizes this as a major challenge for sustainability and resilience in agricultural systems and identifies the need to address this issue beyond the farm level. The reduction of pollution is also integrated into recent work on nature-based solutions.³⁸ A joint paper³⁹ recognized the scale of this issue and the existential threat it poses to agricultural production and ecosystems health worldwide. Some work on wastewater reuse is found in the NENA region in particular, but the scope and impact of this is limited to individual activities.
39. The fact that FAO’s guidelines on this issue are decades old, despite changes in agricultural use of chemicals, is in itself a reflection of the neglect of this issue. More importantly, the Guidelines on Water Quality for Agriculture focus on the impacts of water quality on agriculture, not the impacts of agriculture on water quality.
40. Despite the recognition in some knowledge products of the issue of water quality and pollution generated by agriculture and a limited set of project-level activities, the evaluation found this to be an area of consistent underperformance across FAO. The Strategic Framework and PPAs make little or no reference to this issue and few projects address this issue. This is the most persistent and entrenched area of concern across FAO in relation to its contribution to SDG 6. That the world’s leading agricultural agency does not have a strategic perspective or effective actions on agriculture’s impact on water quality and pollution as a central part of its agenda means that FAO’s contribution to the realization of SDG 6 target 6.3 is likely to be far less than would be expected.

3.2 To what extent have FAO’s interventions related to SDG 6 addressed the needs and demands of its Members and their citizens?

Finding 5. Many projects are successfully addressing the needs and demands of Members and their citizens. This includes clear achievements in improving management and infrastructure, introducing innovations and strengthening production and livelihoods. Irrigation is a dominant theme in field projects, notably the modernization, rehabilitation and climate-proofing of old irrigation schemes and systems, which is an area of high demand from Members. Less activities were found in groundwater irrigation, rainfed farming, livestock and other aspects of natural resource-based rural livelihood activities.

41. Taken together, FAO’s project-level work in relation to SDG 6 is making substantial impacts in a number of areas where water resources management is a key issue:
 - **Irrigated agriculture** is one of the main areas of FAO’s involvement in relation to SDG 6 and FAO has the capability to address this challenge that few other organizations possess.

³⁷ FAO. 1985. Water Quality for Agriculture. FAO. Rome.

³⁸ Miralles-Wilhelm, E. 2021. Nature-based solutions in agriculture: sustainable management and conservation of land, water and biodiversity. FAO and TNC, Virginia USA.

³⁹ FAO & IWMI. 2017. Water Pollution from agriculture: A global review. FAO. Rome.

The results of the activities assessed in this area were mixed but in general positive. No project was an unequivocal success but most had clear achievements in improving management and infrastructure, introducing innovations and strengthening production and livelihoods. This area of work is a positive contribution to SDG 6 and the development of agriculture in a substantial number of countries. One aspect of this work is that each region has a distinctive approach to this issue that reflects the characteristics and challenges of that region; a trend that has increased with the decentralization process within FAO. Until recently, there was a lack of headquarters guidance in relation to the modernization and rehabilitation of irrigation systems but the 2018 guidelines could provide a basis for the development of activities in this sector in the future.

- **Information management and capacity building** has brought clear benefits to Members. This includes the collection and management of data for SDG 6 indicators 6.4.1 and 6.4.2, as well as projects with components on drought forecasting and modelling, disaster prediction and preparedness, agricultural water needs and efficiency, water flows for the maintenance of ecosystems integrity and other issues. These activities are often not high-profile or exciting but they are meeting a fundamental need of many governments. The development of indicators disaggregated by gender, age, socioeconomic status and other factor would enhance the relevance and effectiveness of these activities.
- Agricultural water resources management for **climate change adaptation and resilience** is the focus of large numbers of Members' projects, despite the lack of recognition of this issue at the headquarters strategic level. Results vary but many projects are providing real insights into how agriculture needs to adapt and how production can be more resilient.
- A substantial number of projects had **ecosystems management and conservation** as either their main rationale or as a part of a wider project. Results were mixed but in a substantial number of cases the projects were instrumental in ensuring the conservation and improvement of the ecosystems in which they were working.
- Five areas where the levels of activity were less than could be anticipated were **groundwater irrigation, rainfed farming, livestock, aquaculture** and other aspects of **natural resource-based rural livelihood activities**, including home gardens, harvesting of plants and animals from forests, rangelands and water bodies. There is no overall strategy on these forms of production in FAO and it could be argued that, given their importance to rural livelihoods, more should be done. There is scope for increasing the scales of activities within Members supported by FAO.

Finding 6. Many projects in the areas identified in Finding 5 faced considerable challenges in scaling up successful pilots in other locations in the host countries. These challenges were in many cases a consequence of poor project design.

42. The limited scaling up of successful pilots was found in many of the projects examined. Too often, there was a naïve assumption that successful pilot innovations will be automatically replicated. This does not recognize the need to have specific strategies for scaling up and replication: an area where FAO's impact on Members would be considerably greater if such strategies were integral to project design. The short-term nature of many projects, lack of resources to follow-up even where the need is identified and the disconnect between different tiers within FAO are structural factors that limit the scope of work to support scaling up processes.
43. The evaluation found that, where projects face challenges in achieving their objectives, this frequently reflected problems at the design stage. The understanding and integration into design of patterns of resource use and potentials, existing governance and institutional structures, policy formation and implementation processes, the needs and priorities of local communities and other issues were often poorly understood and integrated into project design. There were, in many projects, overambitious aspirations on changes that could be achieved at both community and government levels within the boundaries of a limited time project and unrealistic time frames for the actions that were included in design. In a number of cases, these design problems in one

component (for example, policy reform) affected the credibility of the whole project and limited the appreciation of other successful components such as improvements to resource management at the community level.

Finding 7. FAO has comprehensive policies and strategies on social inclusiveness, participation and gender but there are concerns over the extent to which this has translated into FAO's ability to meet differing needs of citizens at the project level where a limited and inconsistent approach to inclusiveness, participation and gender was often found.

44. Issues of social and economic inclusiveness, participation and gender are fully integrated into the Strategic Framework and other core strategies, providing a foundation for the integration of a 'leave no one behind' approach across all FAO operations. These issues are of fundamental importance to SDG 6, where social and economic exclusion and inequalities in access and where gender differentiation of roles and priorities are major challenges in water resources management. The inclusion of participation components in most projects also shows that FAO is aware of the importance of involving local communities. The intentions are clear but the outcomes were mixed, with the participatory components of many projects showing only limited empowerment of local communities. The challenges in implementation reflected poor diagnosis, top-down approaches and limited recognition of existing social and governance structures. There were examples of projects that included effective actions on inclusion and participation in all regions, including in countries as diverse as Afghanistan, Cambodia, Ecuador, Egypt, Ghana, Islamic Republic of Iran, Malawi, Namibia, Panama, and Yemen. This included approaches that focused on the specific needs and interests of women, landless, indigenous groups and other disadvantaged groups who can face challenges gaining equitable access to water and land resources and the governance structures associated with them.

3.3 What have been the results achieved by or with the contribution of FAO in relation to SDG 6 at country, regional and global levels?

The points raised under Finding 5 are also relevant for this question and these project-level outcomes (or potential outcomes) are the most tangible manifestation of contributions at the country level.

Finding 8. The headquarters and regional programmes have raised awareness and improved understanding on issues related to water resources management for agriculture, natural resources management and ecosystems conservation. This includes issues such as water tenure, groundwater governance and water accounting, where FAO is playing an important role as a knowledge source and convenor at the global and regional levels.

45. The regional programmes in NENA and Asia and the Pacific are already making a substantial impact in building capacities and bringing people together. FAO's Water Scarcity Initiative in NENA includes a Regional Collaborative Platform that enhances information and experience exchanges among Members on water efficiency, productivity and groundwater governance. In this region, FAO also has regional-level programmes on WEPS-NENA, good agricultural practices, wastewater reuse and other issues. The three regional programmes in Asia and the Pacific, the Water Scarcity Programme, the NextGen Programme, and the Transboundary Water Programme are bringing innovative ideas and structured processes of stakeholder engagement to the region. The Eco-Friendly Water Programme being developed in the Regional Office for Asia and the Pacific (RAP) has similar potential. The Latin American and the Caribbean region has an initiative on water governance in six countries.

Finding 9. FAO's contribution to SDG 6 through its potentially transformative work on water governance is limited. Whilst there are interesting global initiatives, they have yet to impact on the design and implementation of projects on the ground.

46. A range of headquarters initiatives on different aspects of water governance have been implemented, but these do not add up to a complete approach and links between them are not apparent. **Headquarters initiatives** include one on water tenure, where FAO is building a global partnership framework on this issue, and on groundwater governance that produced high quality knowledge products and stakeholder engagement. Governance issues are addressed as part of a range of other headquarters initiatives as well as regional initiatives, for example in Latin America and the Caribbean, NENA and Asia and the Pacific. Crucially, the projects examined suggest that these headquarters initiatives have not influenced the design and implementation of projects. There is an international consensus, well reflected in the recent SOLAW report, that enhancing governance systems is essential for both the long-term sustainability of water resources management and management systems that are more equitable and leave no one behind. Whilst FAO has produced some exemplary work in this field, it is partial in scope and is not having an influence on project-level activities.
47. At the **project-level**, results on activities related to governance were mixed. Projects that included the formulation of new legislation and policies were particularly problematic in almost all cases. In contrast, projects that developed implementation mechanisms for existing policies were often successful. At the **local-level**, examples of effective support to governance were found (for example, in Afghanistan, Cambodia, the Dominican Republic and Yemen), with ones that built on traditional systems in particular successful, but many projects had problems with local level governance. The successful examples provide a basis to build on, but the present mixed picture will continue unless there is a concerted effort, led from the top, to develop a coherent approach to water governance that links the global, regional and country levels and FAO areas of expertise. This should lead to a comprehensive and integrated approach to water governance which examines policy and legal options and a positive impact on the design and implementation of water projects.

3.4 Is FAO generating transformational and long-term changes in relation to SDG 6, promoting the principles of ‘leave no one behind’?

Finding 10. Examples of full transformational changes where FAO has contributed towards an advancement of the SDG 6 targets were not found, which is not surprising given this is a long-term process. However, there was evidence of activities and approaches that, if nurtured, could be the basis for transformational change in the future.

48. Programmes that cluster activities and long-term national-level engagement are more likely to engender transformational changes and a more comprehensive adoption of a programmatic approach across FAO would likely have significant benefits in catalysing transformative change that leaves no one behind. The lack of effective monitoring and of internal learning mechanisms are also factors that need to be addressed if transformative change is to be enhanced. Some examples of the activities with potential for transformational change are:
- **Long-term engagement in countries** such as Afghanistan, Pakistan and Somalia where, despite challenging political, environmental and economic circumstances, showed a progressive development of approaches in individual projects that was complemented by strong relationships with governments and support to policy reform processes.
 - **Regional programmes** in NENA and Asia and the Pacific that combine integrated approaches to water resources management, effective stakeholder engagement, and policy analysis and structured capacity building measures.
 - Support to national information **collection and management** systems, including capacity building activities that provide Members with the evidence to understand the challenges they face and the options to address these challenges available to them.
 - **Integrated approaches** to water resources management as part of a wider natural resources management system, including headquarters normative activities on issues such as multiple use systems, forest-water interactions, integrated landscape management and nature-based

solutions. There are also regional initiatives, for example in Latin America and the Caribbean, which can be built on. Effective examples of such approaches were also found in individual projects on issues such as watershed management, ecosystems management and rural livelihoods improvement.

- **Headquarters initiatives** such as that on **water tenure** that provides innovative thinking on governance, the **KnoWat** programme that links water and food security, the **AQUALEX** initiative that will be a repository of knowledge and provide a systematic base for understanding the legal issues and regulatory systems of individual countries and shared water basins, and how they are addressing challenges in the present system and have the potential to be important contributions to the overall approach to water resources management in FAO's work.

IV. Conclusions and recommendations

49. The **overall conclusion** of the evaluation is that, with regard to SDG 6-related activities, there is a great deal of good work being done but also some significant gaps and a general sense of fragmentation, poor coherence and insufficient visibility. The trends appear positive but the future trajectory of water in FAO is far from certain. In many cases, realizing the potential of transformative activities will entail the mobilization of additional resources (both funding and people) and long-term commitment. The individual conclusions below reflect this overall picture and the recommendations are intended to contribute to the incremental and cumulative resolution of the challenges identified by the evaluation.
50. There was an **evaluation of water in the FAO** completed in 2010⁴⁰ that recognized the scope and relevance of FAO's work in relation to water but also noted the need for more coherence and coordination across the Organization. It recommended the formation of an FAO Water Platform to act as a central coordination mechanism for all work that involved water resources. A number of position papers on an overall FAO approach to water were prepared covering issues such as climate change and water and poverty reduction,⁴¹ and some resources were allocated to launch the Water Platform. The process never gained traction, however, and it ceased to exist.
51. The diagnosis of the challenges from 2010 has parallels to the situation found in the present evaluation. The proposed solution in 2010 was one bold structural change to the way FAO worked without the resources and high-level support to sustain the effort. The lessons from 2010 are not lost to the present evaluation. The conclusions and recommendations below reflect the scope and complexity of the issues, with implications for many aspects of FAO's work. It is not realistic to assume these complexities can all be addressed at one go or in the short-term. The conclusions have a dual character: they are of immediate relevance and provide practical actions that are achievable, whilst at the same time they will build towards addressing structural issues that need to be resolved.

Conclusion 1. SDG 6 is at the core of FAO's mandate. Integrating water resources management into activities concerned with agricultural development, ecosystems management, rural livelihoods and climate change is fundamental to their success and to FAO achieving its aspirations. FAO is in a position to support Members achieve their SDG 6 targets and, more importantly, advance agrifood systems.

52. Water (and land) is fundamental to FAO's mandate. There are a range of areas where FAO demonstrates real strengths that are contributing towards SDG 6. These strengths are found at all levels and in relation to various aspects of SDG 6. They provide a base that can be sustained and enhanced in the remaining SDG period. The key areas of strength are:
- There are a wide range of **outputs from projects** that are producing real benefits to communities and countries in irrigated agriculture, rainfed farming and livelihood activities, ecosystems management and conservation, and other areas. Many had room for improvement and the scale of work for some was less than could have been anticipated but, despite these caveats, FAO is making an impact where it really matters, in the **lives and livelihoods of rural people** around the world. A more consistent recognition of issues associated with social impacts and potential conflicts between competing interests would enhance the analytical depth of this work.
 - FAO has a **comparative advantage** in many areas of work, in particular at Members' national and field levels. FAO is seen as a trusted partner that combines technical

⁴⁰ FAO. 2010. Evaluation of FAO's role and work related to water. FAO. Rome.

⁴¹ Turrel, H. & Faures, J-M. 2011. Climate change, water and food security. FAO, Rome.

Santini, G., *et al.* 2012. Assessing the potential for poverty reduction through investments in agricultural water resources management. FAO. Rome.

FAO. 2011. The state of the world's land and water resources for food and agriculture. FAO. Rome.

competence, extensive experience, managerial capabilities, strong information management and credibility with a wide range of stakeholders. This is an important asset to be built upon.

- **Knowledge management**, including the custodial role for SDG 6 indicators but also many other areas of work is a strength that underlies many FAO activities. It means FAO has the authority that goes with access to a strong evidence base and extensive data. It is also a key dimension of the conceptual and operational innovations that characterize a number of FAO's areas of work.
 - A number of emerging **regional programmes** are providing insights into key challenges, strengthening partnerships and knowledge sharing between countries and other stakeholders, acting as a basis for innovation and providing a link between headquarters, regional and country offices. These regional programmes are small in number and are relatively new, but their potential needs to be supported and adequately resourced.
 - Innovative, high quality **normative work** that relates to either issues, such as water tenure, where new thinking is needed or to different aspects of integrated approaches to land and water resources management, such as integrated landscape management. Two concerns were identified about this work: it is often oriented to an external audience and not connected to FAO projects and programmes, and the different initiatives are not linked together.
53. A **challenge** across all of these areas of strength is that there is often a lack of coherence and poor coordination between them. Good work is being done, but impacts would be greater if a more structured approach on key issues were in place. Some of this lack of coherence reflects that there is no overall approach to **integrated land and water resources management** in FAO, something that is clearly needed. The land and water combination is important: the present evaluation is focused on SDG 6 and hence water, but in FAO, water must not be separated from land. Together, they are the foundation on which FAO's mandate on agriculture and food is based.
54. The poor integration of water into **core strategic documents**, especially the Strategic Framework and the accompanying PPAs, but also in the current FAO Strategy on Climate Change, the Resilience Strategy, the Environmental and social guidelines and others. **This is a major missed opportunity for FAO to enhance its contribution to SDG 6, strengthen its ability to achieve its core mandate and advance its contribution to sustainable agrifood systems globally.** Internationally, water is seen as fundamental to agricultural production, ecosystems management, rural livelihoods, climate adaptation and resilience, and it is not clear why FAO is at odds with this international consensus.
55. Often, weaknesses in the coherence and integration of different activities related to water reflect that work is taking place in different departments or in regional offices, but this is no excuse for poor coordination and does not reflect the centrality of water and land resources to the mandate and purpose of FAO.
56. One aspect of the poor integration of SDG 6 at the strategic level is that **links and synergies between SDG 6 and other SDGs** are poorly understood and articulated in the Strategic Framework and other key strategic documents. In contrast, in terms of the activities undertaken, such synergies are a universal feature of projects and programmes at the operational level. All projects and programmes examined involved links between water resources management (SDG 6) and activities such as food security (SDG 2), ecosystems maintenance (SDG 15), climate action (SDG 13) and many other SDGs, but in most cases such links were not expressed in SDG terms.

Recommendation 1. Build from existing strengths to move towards a coherent and strategic recognition of the central role of water resources management in FAO, including significantly strengthening the recognition of water resources management in the Strategic Framework and

PPAs. This is recognized as an incremental process that cannot be achieved in the short-term or by one set of actions. The following actions are recommended as key steps to catalyse this process:

57. Consult with Members on options for recognizing the strategic significance of water, including the possibility of establishing a **subcommittee on water for agriculture and ecosystems maintenance**, either under the Committee on Agriculture or the Committee on World Food Security. The subcommittee would serve as a forum for high-level consultation and discussion on matters related to water resources management for agricultural use and the management of ecosystems. It could also advise the respective Committee on technical and policy matters and on the work to be performed by FAO in this area. The subcommittee's engagement with international stakeholders related to water resources management is essential.
 - **Stocktake areas of strength** and identify the actions needed to make sure they endure and grow. In some cases, such as non-irrigated production or groundwater irrigation, there is substantial potential to expand activities and strategies on how to do this, including how to generate the resources to do it which should be prepared.
 - Conceptualize what an **integrated approach to land and water resources management** entails and how it links to the different dimensions of FAO's work. The evaluation has not determined whether this understanding should take the form of a vision, a strategy, operational guidelines, a policy statement or all of the above: the form this takes should not be dictated from outside but rather should be determined by the stakeholders within FAO who are best placed to decide this.
 - Establish **links and dialogues** between areas of activity that obviously relate to each other, with the PPAs a possible medium through which this can happen. Mutual understanding is needed and, in many cases, should be the basis for moving towards shared concepts and terminology.

Conclusion 2. The modernization and rehabilitation of irrigated agriculture, where demands from Members are high and FAO is in a strategic position to support, is the main focus of much of FAO's work in relation to SDG 6. However, the visibility of this work appears limited.

58. Inefficient, badly maintained and deteriorating irrigation systems are one of the most important challenges many countries face in maintaining and improving agricultural production. The state of irrigation systems can also have severe environmental impacts, and the change and uncertainties resulting from the climate crisis will only make these challenges more severe. The range and diversity of current FAO projects on this issue reflects the extent of need and demand for support from Members on improving existing irrigation systems. The current projects also reflect FAO's capabilities in this important area.
59. The 2018 guidelines⁴² produced jointly by CFI and NSL have recently provided a basis for understanding the scope of work and different approaches to the design of investments in the key elements of, and synergies between, modernization, rehabilitation, innovation and information management. This was lacking in the past, including in the development of the case study projects examined by this evaluation. The focus of the guidelines is on the design of new investment projects. This needs to be complemented by further guidance on the continued operation and functioning of the irrigated agriculture sector.
60. Although FAO's work on modernization, rehabilitation, innovation and information constitutes a substantial proportion of their work in water resources management, the **visibility** of this work is not high. FAO has a clear comparative advantage in this area that is of vital importance to many countries and should make clear statements that its focus is on improving existing irrigation capacities. This is not done; there are no guidelines or policy statements on this issue. It is something that needs to be addressed. FAO is a leader here, and it should make a clear statement

⁴² FAO. 2018. Guidelines on irrigation investment projects. FAO. Rome.

that “**this is who we are, this is what we do**” and provide governments and others with structured guidance on how to address the challenges they face in the improvement of existing irrigation systems.

Recommendation 2. FAO should consolidate and further develop work in the key area of irrigated agriculture. The following steps are examples of how this could be done:

- **Assess** the full scope and character of work on irrigated agriculture, at all levels and especially in projects. The analysis of what works where should be a key part of this assessment. It should include an assessment of needs at the national level and reflect differences between different countries and regions.
- Based on this, and using partnerships and extensive stakeholder engagement, prepare an overall **strategy**, a **manual of standards** (that includes an inventory of different forms of intervention options) and **operational guidelines** for the design and implementation of FAO projects in this key area. These standards and guidelines should specifically integrate multiple use systems approaches and innovations such as solar pumping (acknowledging the positive and negative sides of these innovations), and pay due attention to gender equality, social and economic equality, access to and management of natural resources and governance issues. Consideration should be given to making these operational guidelines mandatory rather than optional in the design and implementation of FAO projects.
- Implement an **information and communications** programme for governments, technical specialists, irrigation managers and others that provides information and offers technical support on how to maintain and improve irrigation systems. Such information and communications could also relate to the multidimensional nature of water, water tenure, and impacts of agriculture on water use and quality.

Conclusion 3. FAO has a diverse range of opportunities to contribute to achieving SDG 6, but many of these have not been realized to anything close to their potential. In many cases, this reflects a structural weakness in the understanding of and commitment to address issues that are fundamental to water resources management as part of sustainable agricultural development.

61. There are a number of missed opportunities and systematic weaknesses in relation to FAO’s contribution to SDG 6, areas where it could be expected that FAO could and should do more. These weaknesses potentially impact upon the integrity of many FAO activities in relation to sustainable agriculture. The main areas of weakness are:

- The limited amount of work on **water quality and pollution**, given that agriculture is one of the main sources of deteriorating water quality worldwide. A number of initiatives on this issue are recognized, but any learning from these initiatives is not reflected in either FAO’s policies and strategies or in project practice. This is a very challenging issue and there are some specific headquarters initiatives on some aspects of the challenge, but very few agricultural projects acknowledge or take actions to address this issue. Globally, people and governments appear to be looking the other way when confronted with the impact of agriculture on water quality and pollution. It could be expected that FAO, as the world’s premiere agricultural knowledge and support agency, would be proactive in finding solutions to the challenges the world faces on this issue. This is an organization-wide challenge, not one for one division or a handful of experts. Senior Management should demand that this issue is addressed as an urgent priority.
- **Water governance** is another challenging area. The evaluation identified some innovative and potentially important work on this at all levels: headquarters normative initiatives, regional programmes and in projects. This is all particularly fragmented, however, and there is no overall analysis of or approach to water governance as a whole. Many projects faced particular challenges on water governance and would have greatly benefited from systematic integration of governance diagnosis and organizational guidance and support on

what to do and how to do it. This is particularly important for the design of projects but is also an issue for the implementation of projects where the components on governance needed support.

- **Weak monitoring and internal learning** are implicit in a number of the findings presented above and pervade many aspects of FAO's work, including many projects. This includes insufficient attention to indicators disaggregated by gender, age, socioeconomic status and other factors. The consequences of this are that where problems occur, they go unrecognized beyond the individual project so the same problems get repeated and, in addition, where things work, the success is not analysed or used to inform and guide future activities in the same field. FAO is a knowledge-based Organization. Internal learning should be in its DNA but that is clearly not the case.

62. The actions set out in Recommendation 1 will contribute to addressing these areas of weakness and, in addition, the evaluation recommends the following:

Recommendation 3. FAO should act to address defined weaknesses in the approach to water resources management through the following actions:

- Further consultations, including where appropriate with external experts, on the further **integration of water** in the **PPAs**, especially those related to climate change (*a better environment* 1), resilience of agrifood systems (*a better life* 4), Gender equality and women's empowerment (*a better life* 1) and ecosystems management (*a better environment* 3), and into the current processes of revising and operationalize the upcoming FAO Strategy on Climate Change and the Framework for Environmental and Social Management (discussed further below). These revisions should reflect water resources management as a key part of the solutions to these areas of work.
- Develop an overall approach to **water governance** that integrates the existing, often high quality, work on different aspects of the issue and that gives clear guidance and support on how to address water governance issues in operational activities at national and community levels. The scope for working on this issue with partner organizations with an interest in it should be considered. The strategy should build on the existing FAO-relevant approach to governance⁴³ and the forthcoming Framework Paper on *Focus on governance for more effective policy and technical support*.
- Review and prepare **internal learning materials** on examples of good practice and of failure found in projects related to different aspects of water resources management. These should document what worked and what didn't and give clear guidance on what to do and what to avoid in the design and implementation of projects containing water resources management components. This process could stimulate a wider internal learning process across FAO.

Recommendation 4: FAO should prepare and implement a comprehensive new organizational policy, strategy and guidelines on water quality and pollution that recognizes the seriousness of this problem and sees it as an integral part of FAO's actions in agriculture and food production. This should include a review of existing policies and practices on water quality and pollution, and the preparation of clear and specific measures to ensure that this issue is integrated into all aspects of FAO's work on agriculture and natural resource management.

Conclusion 4. Whilst there are numerous positive elements that are making a contribution to achieving SDG 6, there is no formal process to bring together ideas, lessons and good practices between headquarters units, regional and country offices within the context of a coherent strategy on water resources management.

63. Water is central to so much of what FAO does and a range of initiatives are based on different aspects of an integrated approach, but these initiatives are largely self-contained and often

⁴³ See FAO Governance webpage: <https://www.fao.org/policy-support/governance/en/>

externally-oriented, with no analysis of the links between them or how each of them fits within an overall integrated water and natural resources management approach.

64. A particular issue is that there is no formal process for the ideas and approaches from headquarters normative activities to inform project design and implementation at the field level. The opposite is also true: with a few exceptions, there is limited evidence that positive experiences or lessons learned from the implementation of projects are informing headquarters approaches even where they are of direct relevance. Many activities would be more effective and consistent in their impacts if they took place within the context of an organization-wide understanding of the nature of water resources and their uses in relation to agricultural production and ecosystems management. This is not the case at the moment: as things stand, **the whole is decidedly less than the sum of the parts.**

Recommendation 5: Establish online communities of practice to facilitate dialogues and agree on procedures between personnel working on similar themes, including within and between centres, offices and divisions with the aim of establishing common analytical frames and terminologies. In relation to the present evaluation, the following topics are proposed for such dialogues: water governance (including legal and policy frameworks as well as community-level governance), water, resilience and climate change, standards and good practices on **water quality, ecosystems protection and land and water interactions.** Other topics could be identified but these will provide a starting point for the process.

Conclusion 5: Poor project design emerges as a systematic issue impacting their effectiveness and constraining the adoption of innovative approaches to water resources management in agricultural production and ecosystems management at country level.

65. Many of the projects examined had problems that reflected poor project design, a systematic issue that needs to be addressed if, in particular, better coordinated and more innovative approaches to water resources management in agricultural production and ecosystems management are to be developed. These issues have existed for a long time but may have been exacerbated by the process of decentralization. The following points elaborate this challenge further:
- There was a general failure to **link headquarters initiatives** to the design process including in relation to projects that included issues such as multiple use systems, watershed management, groundwater governance and others where there were relevant headquarters programmes and knowledge products.
 - Successful pilot-level activities were found in many projects, but only a few were successfully **scaled up** to be replicated beyond the pilot sites. This partly reflects poor design and the short duration of projects, including the failure to have specific strategies for and resource mobilization to facilitate the scaling up successful pilots.
 - **Policy development** was an issue where there were particular problems in project design, with little or no policy diagnosis and unrealistic assumptions on the ability of limited term projects to catalyse policy change.
 - The existing 2015 **Environmental and social guidelines** on water are not fit for purpose. Water is considered only in relation to risks associated with the engineering aspects of new irrigation schemes and dams. No assessment of the wide range of other water-related risks or of non-irrigated agriculture development were considered. It is recognized that a new Framework for Environmental and Social Management has been prepared that includes a more effective approach to water, but these are not yet operational and there is room for improvement to their approach (for example, governance issues are not covered in any depth).

Recommendation 6: FAO should develop and implement the tools and procedures for a more coherent and effective project design process for water-related activities, with this including the following actions:

- Ensure that the knowledge and capabilities, including in guidelines and other knowledge products, in the headquarters level in FAO are available to and reflected in the project design process.
- Develop a standard **procedure for policy diagnosis**, based on existing headquarters initiatives and products.⁴⁴ The materials for this diagnostic tool already exist, they need to be put together and included as a standard requirement in project design.
- The project design process should take into account the impact on gender equality, lives and livelihoods, assess issues of exclusion of specific segments of the population and the risk of exacerbating inequalities, and consider issues of voice, participation and access to and management of natural resources.
- The scope and purpose of the **Framework for Environmental and Social Management** should be extended through the elaboration of the details in the Guidance Notes that support the Framework. At present, they exist to assess risks and remedial actions only if a “risk” is identified, which depends on who is making the assessment. A more positive, development-oriented approach should be added to the Framework that sets required **minimum standards** in relation to water resources use and management, with these minimum standards becoming a design requirement regardless of the level of risk assessment.
- The **learning materials** on the documentation of good practices and areas of failure proposed in Recommendation 3 should be set out in manuals that are required reference materials for the early stages of project conceptualization and design, to ensure lessons from the past are not forgotten and inform actions in the future.
- For larger projects in particular, the design process should ensure a multidisciplinary review to ensure proper judgements on risks, impacts and mitigation measures are put in place.

Conclusion 6. A range of positive experiences and initiatives exist that provide further means to resolve the identified challenges.

66. Existing positive experiences are the seeds from which change can spring, with in many cases these seeds needing nurturing to ensure that they reach their potential. This is the path forward, building on what already exists rather than requiring wholesale restructuring and change.

Recommendation 7. Actions should be taken to build on and extend the support to positive experiences that will contribute to the transformation of FAO’s approach to the realization of SDG 6 and the approach to sustainable water resources management. Examples of the seeds that can be built on are:

- Existing **normative work** in areas such as legal and policy assessment, governance topics, integrated approaches to forestry, watersheds, the land-water-energy nexus, gender equality and others are all of a high international standard, but there is a need for a strategy to take the lessons from these normative activities to operational design and implementation.
- **Regional offices and programmes** can be the missing link to establish more effective links between headquarters approaches and operational activities. The newly-emerging **regional programmes** show particular potential but will require sustained and expanded support if this potential is to be realized. Actions to ensure that there are adequate **human resources** at regional and, where appropriate, country levels should be taken to confirm that the intention for strengthening the role of the Decentralized Offices becomes a reality.
- **Partnerships** can play an important role in generating new approaches and catalysing change and FAO needs to build on existing networks of partnerships to better reflect FAO’s capabilities and

⁴⁴ Including the 2017 **Policy Guidance Series**, the **AQUALEX** system that will be launched in spring 2022, outputs from normative initiatives on **groundwater governance** and **water tenure**, existing guidance on **gender, participation** and **social inclusiveness** and other materials.

leading role on water in agriculture and ecosystems management, including extending systematic learning and cooperation between Members.

- **Long-term funding** for partnerships, programmes and innovative normative work is needed if their potential is to be realized and a coherent and sustained approach to resources management in FAO is to be developed.

Appendix 1. Matrix of findings, conclusions and recommendations

