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COMMITTEE ON FISHERIES

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ADDRESSING CLIMATE CHANGE IN FISHERIES AND AQUACULTURE: REPORTING ON PROGRESS AND ACTION PLAN FOR THE IMPLEMENTATION OF THE FAO STRATEGY ON CLIMATE CHANGE 2022-2031

Executive summary

This document provides an overview of the intersessional work carried out by FAO on climate change in relation to fisheries and aquaculture. It reports on normative work in response to the Committee's recommendation to provide guidance on climate change, on direct support to countries through field projects, and on suggested steps forward. The document also refers to the Action Plan of the FAO Strategy on Climate Change 2022-2031.

The report is complemented by the following documents:

Information document COFI/2022/INF/11 (Update on the FAO strategy on climate change)

Suggested action by the Committee

The Committee is invited to:

- comment on the intersessional work undertaken on climate change and provide recommendations on future priorities to be addressed by FAO in order to enhance the support to Members in fostering responses to climate change impacts, including actions targeting fisheries and aquaculture-dependent communities;
- provide guidance based on the updated National Adaptation Plans and Nationally Determined Contributions to the implementation of the Paris Agreement and recommend actions to support their implementation;
- provide advice on current and additional thematic areas and activities, including regional collaboration, opportunities for partnerships, inter-agency cooperation in multi-stakeholder initiatives and consistency in international processes;
- provide guidance as deemed appropriate on the Action Plan for the implementation of the FAO Strategy on Climate Change 2022-2031

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I. INTRODUCTION

1. The Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR6) reaffirmed that climate change is widespread, rapid, intensifying, and causing disproportionate impacts on sectors and regions across the globe.¹ Aquatic food systems, as an integral part of agrifood systems are identified as particularly vulnerable to climate change and recognized as a fundamental priority in the Paris Agreement.² The vulnerability of aquatic food production is highlighted in the 2019 IPCC Special Report on the Ocean and Cryosphere (SROCC)³ and the FAO Technical Paper 627.⁴ There is also increasing recognition of the critical role of ocean and freshwater ecosystems in delivering benefits for climate change adaptation and mitigation. According to the latest FAO report on nationally determined contributions (NDCs) submitted by countries (between 1 January 2020 and 31 July 2021), 77 out of these 85 new or updated NDCs contained adaptation components, and 62 of these (81 percent) referred to adaptation in fisheries and aquaculture, including oceans and coastal zones management.⁵ There is thus a need for urgent actions to address the risks climate change poses to aquatic food systems and maximize their potential roles as an essential part of the climate solutions.

2. During the intersessional period, normative and field work initiated in previous years has been pursued to help countries and communities i) better understand, respond to and cope with climate change, ii) mobilize resources to support action to minimize risks and maximize opportunities associated with climate change, and iii) reduce the contribution of the aquatic food sector to climate change by improving fishing and farming practices. Activities were implemented within the overall framework of the Sustainable Development Goals (SDGs) 2, 13, 14 and 17, leveraging existing and new partnerships, with funds from the FAO Regular Programme and extra-budgetary funds from international and bilateral donors. The work carried out is in line with the 2017 corporate Strategy on Climate Change endorsed by the 156th Session of the FAO Council (April 2017). A new FAO strategy on Climate Change 2022-2031 (the Strategy) was developed to raise the level of ambition of FAO's climate action around three main pillars, addressing needs and priorities at global, regional, country and local levels and better aligned with the SDGs, as well as the FAO core functions and Programme Priority Areas (PPAs). The FAO Strategy on Climate Change 2022-2031 was endorsed by the FAO Council at its 170th Session. Outcomes and draft outputs for the future Action Plan for the implementation of the Strategy are presented in the Appendix of this document.

II. UNDERSTANDING AND COPING WITH CLIMATE CHANGE IMPACTS

3. Although there has been rapidly increasing awareness of the need to address climate change in aquatic food systems, climate data and information with a finer spatial or temporal resolution to support decision-making are still lacking in most developing countries. Climate considerations and measures also remain largely missing from existing fisheries and aquaculture management policies and approaches. To address these gaps, FAO invested efforts in improving the understanding of climate

¹ IPCC. 2021. Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for Policymakers. (also available at https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf) IPCC.

2022. Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for Policymakers. (also available at https://report.ipcc.ch/ar6wg2/pdf/IPCC_AR6_WGII_SummaryForPolicymakers.pdf)

² Paris Agreement, preamble.

³ IPCC. 2019. Special Report on the Ocean and Cryosphere in a Changing Climate. (also available at https://report.ipcc.ch/srocc/pdf/SROCC_FinalDraft_FullReport.pdf)

⁴ Barange, M., Bahri, T., Beveridge, M.C.M., Cochrane, K.L., Funge-Smith, S. & Poulain, F., eds. 2018. Impacts of climate change on fisheries and aquaculture. FAO Fisheries and Aquaculture Technical Paper 627. Rome, FAO. 628 pp. (also available at www.fao.org/3/i9705en/i9705en.pdf)

⁵ Crumpler, K., Abi Khalil, R., Tanganelli, E., Rai, N., Roffredi, L., Meybeck, A., Umulisa, V., Wolf, J. & Bernoux, M. 2021. 2021 (Interim) Global update report: Agriculture, Forestry and Fisheries in the Nationally Determined Contributions. Environment and Natural Resources Management Working Paper No. 91. Rome, FAO. (also available at <https://doi.org/10.4060/cb7442en>)

change impacts, risks and vulnerabilities as well as mitigation potentials, strengthening guidance on efficient climate adaptation and mitigation, and increasing its leadership in United Nations (UN) fora and global processes especially those addressing climate change and oceans. Based on the Committee on Fisheries (COFI)'s requests, FAO has implemented a range of activities to support its Members and partners to effectively mitigate and adapt to the impacts of climate change on fisheries, aquaculture and aquatic ecosystems, through knowledge development and exchange, guidance for policy development, practical demonstration, and capacity building.

A. Strengthening the knowledge base and guidance for policy development

4. During the intersessional period, FAO and its partners have been working to strengthen the knowledge base on climate change impacts, risks and vulnerability relating to aquatic food systems and provide guidance for mitigation and adaptation options, including disaster risk management at global, regional and national levels. Drawing on case studies across the globe, the FAO Technical Paper 667 compiled a set of good practices for climate-adaptive fisheries management that have proven their effectiveness and can be adapted to different contexts.⁶ Policy guidance is under development on how to mainstream climate change into the ecosystem approach to fisheries and aquaculture (EAF/EAA), focusing specifically on the development of climate smart management plans. These are informed by vulnerability assessments to better inform decision-making on adaptation including allocation of resources and prioritization of areas for action. A review of recent advances in climate vulnerability or risk assessments in the fisheries and aquaculture sector was hence carried to take stock of the most recent developments in the literature and in the field.⁷ When it comes to vulnerability, small scale producers are often at the forefront of climate change and disasters, as highlighted by Chapter 9 of the Voluntary Guidelines for Securing Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines). Guidance is now available on the integration of human rights standards and laws into disaster risk reduction and climate action in small-scale fisheries.⁸ Moreover, an e-learning course on fisheries and aquaculture response to emergencies (publicly available and free-of-charge) was developed to enhance the quality and accountability of preparedness and response to emergencies affecting fisheries and aquaculture.⁹ Research and data gathering is underway on various topics including non-native species, improvement of climate impact models and nature-based solutions.

5. Reviews and analyses with regional and national relevance were also carried out. In Central Asia and the Caucasus, FAO convened a workshop to take stock of climate change impacts on fisheries and aquaculture in these regions and discuss potential adaptation and mitigation activities.¹⁰ In Asia, FAO analyzed risks and vulnerability of sardine fisheries in the Philippines to climate and other non-climate stressors and identified suitable adaptation responses.¹¹

⁶ Bahri, T., Vasconcellos, M., Welch, D.J., Johnson, J., Perry, R.I., Ma, X. & Sharma, R., eds. 2021. Adaptive management of fisheries in response to climate change. FAO Fisheries and Aquaculture Technical Paper No. 667. Rome, FAO. (also available at <https://www.fao.org/3/cb3095en/cb3095en.pdf>)

⁷ Comte, A. 2021. Recent advances in climate change vulnerability/risk assessments in the fisheries and aquaculture sector. FAO Fisheries and Aquaculture Circular No. 1225. Rome. (also available at <https://www.fao.org/3/cb4585en/cb4585en.pdf>)

⁸ Cook, K., Rosenbaum, K. L. and Poulain, F. 2021. Building resilience to climate change and disaster risks for small-scale fisheries communities. A human-rights-based approach to the implementation of Chapter 9 of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication. Rome, FAO. (also available at <https://www.fao.org/3/cb7616en/cb7616en.pdf>)

⁹ <https://elearning.fao.org/course/view.php?id=789>

¹⁰ FAO. 2021. Virtual workshop report: Climate change adaptation in fisheries and aquaculture, 23–24 June 2020. Ankara. (also available at <http://www.fao.org/3/cb4175en/cb4175en.pdf>)

¹¹ Labaria, E.C., Fernandez de la Reguera, D., Poulain, F., Siar, S. and Vasconcellos, M. 2021. The risks and vulnerability of the sardine fisheries sector in the Republic of the Philippines to climate and other non-climate processes. Rome. (also available at <https://www.fao.org/3/cb7506en/cb7506en.pdf>)

6. In the Caribbean, to protect climate-sensitive fishery livelihoods, a guide of good practices for pelagic longline fishers was developed,¹² and in Saint Lucia, a baseline survey report on safety at sea is available,¹³ as well as guidance on promoting the climate resilience of Saint Lucia's pelagic fisheries and value chains through sustainable and efficient resource use.¹⁴ Under the Climate Change Adaptation of the Eastern Caribbean Fisheries Sector (CC4FISH) Project a set of guidance and briefs were produced for a wide range of stakeholders: capacity building material intended for fisheries officers¹⁵, methodological toolkit on Vulnerability and Capacity assessments for the fisheries sector¹⁶, policy briefs on climate change¹⁷, disaster risk management¹⁸, third-party liability insurance for fishing vessels¹⁹. Finally, a Protocol aiming at ensuring the development of the Caribbean fishery sector encompassing climate resilience and disaster management was published²⁰.

7. In Latin America, through a project in Chile funded by the Global Environment Facility (GEF), FAO developed capacity-building materials for public officials, national experts, regional and community decision-makers²¹ and also for fisheries and aquaculture communities,²² as well as a policy brief summarizing lessons learned and public policy recommendations on adaptation of Chile's artisanal fisheries and small-scale aquaculture to climate change.²³ Two seminars - one inter-institutional seminar²⁴ in March 2021 and one closing seminar²⁵ in June 2021 - were also organized as part of the GEF project.

¹² Bealey, R. 2021. Guide of good practices for Caribbean pelagic longline fishers: Promoting the sustainable and efficient use of pelagic resources to mitigate climate change impacts and secure future fishery livelihoods. Rome, FAO. (also available at <https://www.fao.org/3/cb4826en/cb4826en.pdf>)

¹³ Holliday, E. 2021. Safety at sea – Baseline survey report, Saint Lucia. Rome, FAO. (also available at <https://www.fao.org/3/cb4465en/cb4465en.pdf>)

¹⁴ Bealey, R. 2021. Opportunities to promote the climate change resilience of Saint Lucia's pelagic fisheries and value chains through sustainable and efficient resource use. FAO Fisheries and Aquaculture Circular No. 1228. Bridgetown, FAO. (also available at <https://www.fao.org/3/cb7149en/cb7149en.pdf>)

¹⁵ Powerpoint presentation on 'A Climate Change impacts on the Caribbean Fisheries Sector' <http://www.fao.org/3/cb4091en/cb4091en.pdf>

¹⁶ FAO and CANARI. 2022. Toolkit for vulnerability and capacity assessments in Caribbean coastal and fishing communities – Developed under the Climate Change Adaptation in the Eastern Caribbean Fisheries Sector Project (CC4FISH). Rome. <https://www.fao.org/3/cb6786en/cb6786en.pdf>

¹⁷ <https://www.fao.org/3/cb1471en/cb1471en.pdf>

¹⁸ <http://www.fao.org/3/cb2729en/cb2729en.pdf>

¹⁹ <https://www.fao.org/3/cb6963en/cb6963en.pdf>

²⁰ FAO and Caribbean Regional Fisheries Mechanism. 2021. Protocol on Climate Change Adaptation and Disaster Risk Management in Fisheries and Aquaculture in the Caribbean. Barbados, 18 April 2018. Rome, Belmopan. <https://doi.org/10.4060/cb4205en>

²¹ Cubillos Santander, L., Norambuena Cleveland, R., Soto Benavides, D., Jacques Coper, M., Simon Rodgers, J. y Carmona Montenegro, M.A. 2021. Manual de capacitación en adaptación al cambio climático en pesca y acuicultura en Chile. Santiago de Chile, FAO y Universidad de Concepción. (also available at <https://www.fao.org/3/cb5556es/cb5556es.pdf>)

²² FAO y CESSO. 2021. Cambio climático - Manual práctico para la pesca artesanal y la acuicultura a pequeña escala en Chile - Edición revisada. Santiago de Chile. (also available at

<https://www.fao.org/3/cb3566es/cb3566es.pdf>); FAO y CESSO. 2021. Cambio climático-Guía para el facilitador del aprendizaje-Edición revisada. Santiago de Chile. (also available at

<http://www.fao.org/3/cb3574es/cb3574es.pdf>)

²³ FAO, Ministry of the Environment, Undersecretariat of Fisheries and Aquaculture. 2021. Lessons learned and public policy recommendations on adaptation to climate change in artisanal fisheries and small-scale aquaculture in Chile. Policy brief. Santiago, FAO. (also available at <https://www.fao.org/3/cb6536en/cb6536en.pdf>)

²⁴ <https://www.fao.org/chile/noticias/detail-events/es/c/1390751/>

²⁵ <https://www.fao.org/americas/eventos/ver/en/c/1401195/>

B. Fostering adaptation and reducing vulnerability of fishing and fish farming communities to climate change and natural disasters

8. According to IPCC AR6, climate change will increasingly put pressure on food production from freshwater, coastal and open ocean marine ecosystems especially in vulnerable countries and islands.²⁶ Adaptation is happening on the ground, but progress is uneven and not fast enough.²⁷ Transformational adaptation of aquatic food production is thus needed, a message coming out of the FAO Fisheries Sustainability Symposium in 2019,²⁸ and subsequently reiterated at the UN Food Systems Summit in 2021.²⁹ For that, FAO has developed and is implementing a diversity of adaptation measures worldwide to reduce the vulnerability of fishing and fish farming communities to climate change and natural disasters, in line with the guidance of FAO Adaptation Toolbox which organizes action in three main areas: promoting institutional adaptations; providing adaptation options addressing livelihoods, such as livelihood diversification and alternatives to support vulnerable communities; and reducing and managing risks through climate information and early warning systems, capacity building activities, social protection or insurance access, for example.

9. Overall, FAO is currently implementing a field programme of adaptation projects for fisheries and aquaculture in more than 30 developing countries with the full involvement of governments and local communities. GEF-funded projects through the Special Climate Change Fund (SCCF) and/or the Least Developed Countries Fund (LDCF) are underway in Bangladesh, Benguela Current, Cambodia, Eastern Caribbean, Kiribati, Malawi, Myanmar and Timor-Leste. Work is also ongoing in projects implemented by FAO with bilateral funds from Belgium (Region of Flanders), Canada, European Union, Japan and Norway, supporting countries to build the resilience of aquatic food production to climate change and natural disasters so as to attain sustainability.

10. In the past biennium, six new climate change project proposals developed with the support of FAO have been approved. A global project with specific country-level activities (GCP /GLO/352/NOR) is in progress, with the aim of supporting the Philippines, South Africa and other selected countries to adapt to climate change effectively and secure sustainable socio-economic development. Through a project in the Pacific (GCP /SAP/003/CAN), FAO is working to improve the resilience of coastal communities in Fiji, the Solomon Islands and Vanuatu, by strengthening capacity to adapt the management of nearshore resources to climate change and reducing vulnerabilities including through a focus on gender equity. Another project is ongoing in Cambodia (GCP /CMB/037/LDF) to strengthen climate adaptation and resilience of coastal fisheries dependent communities. Moreover, FAO is implementing a project in Belize (GCP /BZE/002/GCR) to enhance adaptation planning and climate resilience in the coastal zone and fisheries sector, the results of which are to set the stage for upscaling adaptation action. Two projects (known as “IkanAdapt”, GCP /TIM/012/LDF & GCP /TIM/010/GFF) are also underway to support Timor-Leste in strengthening the adaptive capacity and resilience of fisheries and aquaculture-dependent livelihoods.

11. FAO project TCP/BHA/3703 supported the Bahamas in 2021 with the preparation of an Investment Plan for the Development of Climate Resilient Fisheries Infrastructure in Grand Bahama Island³⁰. Follow-up assistance is being provided, in close collaboration with INFOPESCA, through the design of a climate proof fish and seafood buying station.

²⁶ IPCC. 2022. Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for Policymakers. (also available at https://report.ipcc.ch/ar6wg2/pdf/IPCC_AR6_WGII_SummaryForPolicymakers.pdf)

²⁷ Ibid.

²⁸ <https://www.fao.org/about/meetings/sustainable-fisheries-symposium/en/>

²⁹ https://www.nfoodpartnership.com/insights/Food_Systems_Summit_Outcomes/

³⁰ The investment plan can be found at: <https://www.fao.org/fishing-safety/news-events/events/detail/en/c/1457010/>

12. Drawing on current and past project experience, FAO has also developed guidance on the methodology of climate vulnerability and risk assessment³¹ as well as on identifying, sequencing and appraising adaptation options³² in the fisheries and aquaculture sector. FAO field projects have carried out vulnerability and risk assessments as well as adaptation planning activities in different locations across the globe including the Benguela Current (Angola, Namibia, and South Africa), the Caribbean, Chile, Malawi, the Mediterranean, Myanmar, and the Philippines. The high vulnerability of small-scale fisheries in the post COVID-19 era was also the topic of a virtual seminar organized by FAO in June 2021, highlighting the need for integration of climate change and disaster risks into fisheries management.³³

13. As an Accredited Entity to the Green Climate Fund (GCF), FAO supports member countries' efforts to access climate finance for transformational, country-driven projects addressing climate adaptation and/or mitigation.

14. An increasing number of FAO-led GCF projects are aiming at supporting the increased resilience of marine and coastal livelihoods and ecosystems, both through climate Readiness support (3 ongoing projects in Belize, Saint Lucia, and Cabo Verde) and larger support (projects in The Gambia, Saint Lucia, Honduras and Cabo Verde currently being designed). Such FAO-GCF projects are aligned with GCF Sectoral Guide on Ecosystems & Ecosystem Services, which includes priorities relating to fisheries, marine and coastal ecosystems, and Blue Economy, as well as with the GCF Sectoral Guide on Agriculture and Food Security which also includes priorities related to fisheries. Additionally, the GCF includes Small Islands Developing States in its priority targets, where fisheries and associated ecosystems are particularly vulnerable to the effects of climate change.

15. FAO has been specifically supporting climate adaptation in the Fisheries sector through GCF Readiness grants, enhancing the preparedness of countries to mobilize and implement climate funds, but also to develop their National Adaptation Plans (enabling countries to identify medium- and long-term adaptation needs, such as increasing the resilience of the fisheries sector, and to develop and implement strategies to address those needs). In addition to these Readiness grants, FAO is developing several projects at different stage of the design cycle, with a key focus on Fisheries and/or marine/coastal ecosystems adaptation to climate change, in The Gambia (Funding Proposal stage), Saint Lucia (Concept Note stage), Honduras (Concept Note stage), and Cabo Verde (project idea stage). Based on these experiences, FAO is also assessing the possibility of designing programmatic initiatives that could enhance the ability to develop comprehensive adaptation solutions by engaging neighboring countries to collaborate on these issues.

³¹ Comte, A. 2021. Recent advances in climate change vulnerability/risk assessments in the fisheries and aquaculture sector. FAO Fisheries and Aquaculture Circular No. 1225. Rome. (also available at <https://www.fao.org/3/cb4585en/cb4585en.pdf>); Brugère, C and De Young, C. 2015. Assessing climate change vulnerability in fisheries and aquaculture: Available methodologies and their relevance for the sector. FAO Fisheries and Aquaculture Technical Paper No. 597. Rome, Italy. 86 pp. (also available at <https://www.fao.org/3/i5109e/i5109e.pdf>)

³² Watkiss, P., Ventura, A., and Poulain, F. 2019. Decision-making and economics of adaptation to climate change in the fisheries and aquaculture sector. FAO Fisheries and Aquaculture Technical Paper No. 650. Rome, FAO. (also available at <https://www.fao.org/3/ca7229en/CA7229EN.pdf>)

³³ SSF Open House June 4 - Unpacking the SSF Guidelines: Building resilience for SSF post COVID-19. 04 June 2021. (also available at <https://youtu.be/d4wcrmRJ54U>)

C. Understanding the emissions and mitigation potentials from fisheries and aquaculture

16. Every increment of global warming will accelerate adverse climate change impacts and related losses and damages,³⁴ and rapid, deep and sustained reductions in global greenhouse gas (GHG) emissions are urgently needed.³⁵ Aquatic food has one of the lowest carbon footprints among all the animal-source food commodities and thus is a crucial carbon-efficient solution to meet the nutrition needs of a growing world population. However, fisheries and aquaculture are often peripheral in mitigation discussions. As a result, significant opportunities for decarbonization along the value chain remain untapped.

17. The main source of GHG in capture fisheries is the use of fossil fuel, although non-fuel use processes in fish production and associated activities such as the loss of refrigerants can also release GHG. Most of the GHG emissions from aquaculture are associated with feed production and on-farm electricity. Additionally, energy is consumed further down the aquatic food value chain; electricity, often produced from fossil fuel, is needed for processing, transportation, packaging, and marketing. Therefore, improved energy use efficiency and use of renewable energy constitute critical solutions to effective GHG reductions in the fisheries and aquaculture sector.

18. A study identified opportunities for renewable energy in the small-scale fisheries value chain, with the aim of exploring specific technologies that can improve the carbon efficiency of aquatic food production while improving incomes of small-scale fishers³⁶. More research efforts are in need for generating the most up-to-date data about GHG accounting in fisheries and aquaculture at the global level, developing disaggregated data of regional and national relevance, and undertaking subsector level analyses especially in relation to inland fisheries. A report on fuel use and GHG emissions³⁷ in industrial fisheries was part of the efforts to address this matter.

19. To support Countries and stakeholders in the assessment and tracking of their environmental commitments such as GHG emissions reductions, FAO has developed three tools related to the Rio conventions objectives: the Nationally Determined Contribution Tool (NEXT³⁸), the Adaptation, Biodiversity and Carbon Mapping Tool (ABC-Map³⁹), and the Nationally Determined Contribution (NDC) Tracking Tool⁴⁰. NEXT addresses commitments to reducing GHG emissions within the Nationally Determined Contributions (NDCs) and any climate actions over a 30 years' time series, the ABC-Map holistically assesses the environmental impact of national policies and plans, while the NDC Tracking Tool tracks progress made by countries in implementing and achieving their NDCs in all IPCC sectors. Wherever relevant, aquatic food systems are included in these tools and instruments; however, there is room for further inclusion and this area of work will be explored and developed in the near future.

³⁴ IPCC. 2022. Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for Policymakers. (also available at https://report.ipcc.ch/ar6wg2/pdf/IPCC_AR6_WGII_SummaryForPolicymakers.pdf)

³⁵ UNFCCC, 2021. Glasgow Climate Pact. 13 November 2021. Decision -/CP.26. para. 17 (also available at https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf)

³⁶ Manas, P., Kojakovic, A., Rincon, L., Vaskalis, I., Gallego, J., Maltsoğlu, I. The small-scale fisheries and energy nexus: opportunities for renewable energy interventions. FAO Fisheries and Aquaculture Technical Paper (in press)

³⁷ Sala, A. Fuel use and greenhouse gas (GHG) emissions in fisheries - Contribution of marine capture fisheries to global fuel use and GHG emissions. FAO fisheries circular (under finalization)

³⁸ NEXT tool - <https://www.fao.org/climate-change/our-work/what-we-do/ndcs/research-tools/next>

³⁹ <https://abc-map.org/>

⁴⁰ In press

D. Securing the space for resilient fisheries and aquaculture in cross-sectoral and global climate change discussions and policy

20. At the 26th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP26), the ocean gained substantial prominence in the conference outcomes as recorded in the Glasgow Climate Pact.⁴¹ Countries explicitly recognized the need for a crosscutting integration of the ocean into the work of all relevant UNFCCC work programmes and constituted bodies, as well as an annual ocean dialogue. The Glasgow Climate Pact also placed unprecedented emphasis on adaptation and urged developed countries to significantly increase their collective provision of adaptation finance to developing countries.⁴² This is critical noting the adaptation finance gap has been worsened by the increased indebtedness of developing countries because of the COVID-19 pandemic.

21. As for previous years, FAO was engaged in multiple events related to COP26, ensuring fisheries and aquaculture were addressed under the UNFCCC. FAO organized two pre-COP events on private sector engagement⁴³ and nature-based solutions⁴⁴ in aquatic food systems and participated in the Ocean Action Day, as well as a number of other events during COP26. FAO used the opportunity to reinforce its commitment to continue supporting countries to achieve sustainability and climate resilience collectively for fisheries and aquaculture, in collaboration with partners from the UN system, ocean community and private sector. Contribution was made to the Ocean Climate Action Pathway⁴⁵ and Ocean for Climate Declaration⁴⁶ under the framework of the UNFCCC Marrakech Partnership as well as to publications of the UN Global Compact including the Blueprint for a Climate-Smart Ocean to Meet 1.5°C⁴⁷ and the Seafood and Science-based Targets Guide.⁴⁸ FAO also participated in the first-ever Middle East and North Africa Regional Climate Week held in March 2022.

22. In the lead up to and at COP27, FAO will continue to work closely with the ocean community to contribute to the ocean dialogues under UNFCCC and ensure discussions on the ocean and aquatic food systems are progressing within UNFCCC and other relevant international fora such as the UN Ocean Conference. FAO also seeks to leverage the progress made on the ocean and expand the scope of discussions to include freshwater systems that currently do not fit anywhere under UNFCCC. Aquaculture could, for example, provide a relevant entry point, building on the work of the COFI Sub-Committee on Aquaculture to increase resilience of aquaculture to ensure food security, nutrition and livelihoods.⁴⁹

⁴¹ UNFCCC, 2021. Glasgow Climate Pact. 13 November 2021. Decision -/CP.26. Preamble & paras. 58, 60, 61 (also available at https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf)

⁴² Ibid, paras. 11, 13, 22, 26, 27

⁴³ UNFCCC pre-COP event on “Engaging the private sector in climate proofing aquatic food systems” (virtual, 29 September 2021) (also available at https://fao.zoom.us/rec/share/FrBGkH133MR30QnIsku_d5gwR6oi2elCAuJeMcnqXy_4jr9_DfeC9O0SJrw9Ygs.cO5v2iICDqJMpbDu)

⁴⁴ UNFCCC pre-COP event on “Nature-based Solutions in aquatic food systems: pathways to climate resilience” (virtual, 30 September 2021) (also available at https://fao.zoom.us/rec/share/dgGIhrDnnQILmfIqrwFFuf0f29mKgr9jCIXkC9BO8ZGdS2eZKtTXclNQC3nJ1b7G.48O11_hNG9Q2i5c1)

⁴⁵ <https://unfccc.int/climate-action/marrakech-partnership/reporting-tracking/pathways/oceans-and-coastal-zones-climate-action-pathway>

⁴⁶ <https://racetozero.unfccc.int/wp-content/uploads/2021/10/The-Ocean-for-Climate-Declaration.pdf>

⁴⁷ <https://unglobalcompact.org/take-action/ocean/communication/blueprint-endorsements>

⁴⁸ <https://unglobalcompact.org/library/6050>

⁴⁹ <https://www.fao.org/3/cb9465en/cb9465en.pdf>

E. Future priorities to be addressed

23. Climate change is a top-line corporate priority of FAO. To improve its contribution to SDG 13, FAO developed a new Strategy on Climate Change 2022-2031, according to the FAO Members' request at the 166th Session of the FAO Council and the support expressed by FAO Members at the 168th Session of the Council to the outline and roadmap of the Strategy. The new Strategy builds on the former FAO Climate Change Strategy (2017) and is aligned with and contributes to the implementation of the FAO Strategic Framework 2022-2031. The development of the Strategy followed an inclusive and consultative process and was recommended by the 133rd Session of the Programme Committee and endorsed by the 170th Session of the Council.

24. In line with the FAO Strategy on Climate Change 2022-2031, FAO will design a set of priority actions on climate resilient fisheries and aquaculture for 2022-2030 that capture priorities at global, regional, country, and local levels, with measurable outcomes, outputs and activities focusing on: i) increasing evidence and knowledge base, ii) strengthening climate policy and governance, and iii) scaling up adaptation and mitigation actions. The design of these actions will draw on the former Strategy for Fisheries, Aquaculture and Climate Change 2011-2016⁵⁰ and are expected to be aligned with the Blue Transformation roadmap 2022-2030.

⁵⁰ <https://www.fao.org/3/am434e/am434e.pdf>

Appendix – Action Plan for the implementation of the FAO Strategy on Climate Change 2022-2031.

I. OUTCOMES AND DRAFT OUTPUTS OF THE FAO STRATEGY ON CLIMATE CHANGE 2022-2031

1. The Action Plan will guide the implementation of the FAO Strategy on Climate Change 2022-2031 (the Strategy).^{51,52} To enable monitoring and reporting on the progress and impact of the Strategy implementation, the Action Plan will comprise outcomes, outputs, indicators, targets, timelines and responsibilities. Monitoring and reporting require also setting specific indicators and targets for FAO's climate action that are adequately disaggregated to capture the effects and impacts of interventions on different population segments, including on men, women, youth, Indigenous Peoples and marginalized groups.

2. As a first step towards the further development of the Action Plan, this document presents the outcomes as described in the Strategy and puts forward draft outputs based on the areas of action defined in the draft Strategy's section IV "Three pillars for enhanced action". The proposed logic and structure of FAO's climate action across global, regional, national, and local level are illustrated in table 1. In this table, the clustered outputs shown under the outcomes constitute the core areas of FAO's climate activities. These outputs are achieved through activities at all intervention levels – global, regional, national and local. Indicators of progress will be aligned to the approach to monitoring and reporting of the FAO Strategic Framework 2022-31. The last columns of the proposed Action Plan illustrate the SDGs targets, Programme Priority Areas (PPAs) and FAO Core Functions (CF) supported by the outputs. The overview of these is provided in the Annex. The proposed duration of the Action Plan is four years (2022-2025).

⁵¹ See also COFI/2022/INF/11.

⁵² <https://www.fao.org/3/nj485en/nj485en.pdf>

Table 1: Outcomes and draft outputs of the Action Plan for the implementation of the FAO Strategy on Climate Change 2022-2031.

I Pillar Global and Regional levels. Strengthened Global and Regional Climate Policy and Governance				
Outcome 1.1 <i>Considerations of food security, nutrition, agrifood systems, natural resources and livelihoods are fully addressed in the international climate, environment, disaster risk, humanitarian and development agendas as part of the solution to the climate change, and climate finance for agrifood systems is supportive.</i>				
	Outputs	SDG targets	PPA	CF
Support the integration of agrifood systems in climate action	1.1.1 Efficient, inclusive, resilient, low-emission and sustainable agrifood systems are recognized as part of the solution to climate change, biodiversity loss and ecosystem degradation and part of a broader sustainability agenda	2.4	BE1; BP1; BP4	2, 3
	1.1.2a Relevant initiatives and pledges are formulated, implemented and monitored, including those launched at UNFCCC COP 26 and future UNFCCC COPs	13.1, 13.a	BE1; BL6	2, 3, 5
	1.1.2b FAO Members and partners are supported in their preparations for the forthcoming sessions of the UNFCCC COPs	13.3, 13.b	BE1	2, 3, 5
	1.1.3 Agrifood systems considerations, including crops, livestock, forestry, fisheries and aquaculture, and related value chains, ecosystems and livelihoods are integrated in the key workstreams under UNFCCC	15.1, 15.2, 15.3, 15.4, 15.5	BE1; BE3; BP1	2, 3
	1.1.4 The energy-food-water-forest nexus is regionally and globally recognized as an approach for improving access to sustainable energy and energy efficiency and enhancing sustainable water management systems across all agrifood systems	6.4, 6.5, 6.6, 7.3	BP1	2, 3
	1.1.5 The sustainable use of marine living resources is better integrated with other uses of the oceans	14.2	BP2	3
	1.1.6 The climate and environment financing agendas recognize and support sustainable agrifood systems' contribution to climate action	13.a	BL6	3, 4
Promote innovation and collaboration	1.1.7 The role of agrifood systems innovations as a solution to climate change is recognized and expanded at global and regional levels	12.a	BE2	2, 3
	1.1.8 Stakeholders in agrifood systems and other sectors affected by climate change interact and exchange lessons learned, and climate, biodiversity, environment and humanitarian development agendas act reciprocally.	12.2, 12.4, 12.5	BE1; BE2	2

	Outcome 1.2 <i>The global community, countries and partners have access to and utilize data, science, evidence, tools, protocols, guidelines and standards related to climate change and agrifood systems that are collected and developed by FAO and partners, including for monitoring and reporting, climate vulnerability and risk analyses, assessment models and good practices and policies on climate resilience, adaptation and mitigation.</i>			
	Outputs	SDG targets	PPA	CF
Enable and enhance the use of data, information, digitalization and science	1.2.1 Data, science, information, knowledge, good practices, innovations, tools and technologies for climate action across agrifood systems are made available.	12.8, 13.1	BP1; BE1; BE3; BE4; BN1; BL4	1, 7
	1.2.2 The knowledge base on the impacts of climate change on agrifood systems is constantly updated and potential trade-offs between climate and other sustainable development goals and means for their balancing are identified	13.1	BE1; BE3; BE4; BL4	1, 6
	1.2.3.a Information, science and evidence are available on carbon sequestration in agricultural and forest lands, vegetation, pastures, rangelands, peatlands and wetlands, seascapes, ocean and other aquatic environments	14.3, 15.2, 15.3	BP1; BE1; BE3	1, 2, 7
	1.2.3.b Progress in designing inclusive and accessible carbon market mechanisms for agrifood systems	13.1	BE1	1, 2, 7
	1.2.4 Consideration of climate risks is mainstreamed into FAO corporate systems and programming through the identification of climate risks as a separate standard in FAO's upgraded environmental and social safeguards system and their integration into FAO's project cycle	13.1	BE1	7
II Pillar Country-level. Developing countries' capacities for climate action				
	Outcome 2.1 <i>FAO Members implement, monitor and report their climate commitments as outlined in their agrifood system strategies and/or climate change strategies, link them with the other commitments and tracking for sustainable development, including through their regular reporting to UNFCCC under the enhanced transparency framework and other international reporting frameworks.</i>			
	Outputs	SDG targets	PPA	CF
Enhance its assistance	2.1.1 Countries have improved capacities in climate change negotiations under the UNFCCC umbrella, including for designing, implementing and updating national commitments related to transforming agrifood systems and reversing biodiversity loss, including in NDCs, NAPs, REDD+ strategies and long-term low greenhouse gas emission development strategies	12.2, 13.1, 13.3, 15.5	BE1; BE2; BP1	2, 3
	2.1.2 Countries' research, extension, training institutions and innovation systems are strengthened to better respond to climate change challenges, including identifying, developing and disseminating country-specific and locally adapted solutions as well as preparedness to handle and recover from climate disasters	12.a, 13.1, 13.3	BP1; BE1; BE2; BE4	4

	2.1.3 Countries have scaled up anticipatory action, early warning systems, analysis and planning that contribute to building resilience	13.1, 13.3	BE1; BE3; BE4	4
	2.1.4 Countries generate, collect, monitor, analyse and utilize data and information and advance digitalization needed for climate action	13.1, 13.3	BE1	1, 4
	2.1.5 Countries can set baselines, monitor and report on progress in their climate commitments, including through monitoring and evaluation and measurement, reporting and verification (MRV) systems and CO ₂ and other GHG metrics under the enhanced transparency framework and other international reporting frameworks.	13.1, 13.3	BE1	1, 4
Enhance partnerships and access to climate financing	2.1.6 Countries access financial resources to carry out adaptation and mitigation measures at scale through domestic and international investment and financing from private, public and emerging sources	13.a	BL6	4, 5
	2.1.7 Countries prioritize and allocate domestic finance to climate action	13.a	BL6	4
	2.1.8 Countries identify and establish strategic public and private partnerships with global, regional, national and local organizations, for accelerating climate action	17.17	BE1	5
Promote adoption of good practices and innovative solutions	2.1.9 Countries identify and scale up existing good practices and innovative solutions in support of climate resilience, adaptation and mitigation	2.4, 12.8, 13.1	BP1; BP4; BE1; BN1; BN4	4, 6
	2.1.10 Countries build synergies and address trade-offs between short- and longer-term climate resilience, adaptation and mitigation measures and outcomes, as well as climate action and other SDGs	2.4, 13.1	BP1; BP4; BE1; BE3; BE4; BN4	4, 6
Mainstream equality and inclusiveness for ensuring that no-one is left behind	2.1.11.a Country-level climate decision-making and action integrate livelihood opportunities, inclusiveness, effective integration and participation of women, youth and legitimate tenure rights holders, including Indigenous Peoples, persons with disabilities and marginalized and minority groups	16.7	BL2; BL4	5
	2.1.11.b Countries adopt inclusive and gender-transformative climate policies, legislation and action	5.c	BL1	5
	2.1.12 SIDS, the Least Developed Countries (LDC) and Landlocked Developing Countries (LLDC) and others particularly at risk develop and adopt specific resilience and adaptation actions.	13.b, 14.7	BP2; BE1	6
Outcome 2.2 <i>FAO Members mainstream climate resilience, adaptation and mitigation in their policies and legislation, plans, programmes, practices and domestic and international investments across agrifood systems, including through FAO country programming frameworks and the United Nations Sustainable Development Cooperation Framework.</i>				
	Outputs	SDG targets	PPA	CF
Provide policy and legal support	2.2.1 Countries mainstream climate change considerations into national and subnational policies, legal and institutional frameworks, strategies and development and financing plans and budgeting across agrifood systems, national social protection systems and other key sectors	13.2	BE1	3, 4
	2.2.2 Countries incorporate agrifood systems considerations into their national climate strategies and plans, including NAPs, NDCs, long-term low greenhouse gas emission development strategies, disaster risk reduction plans and humanitarian response plans	13.2	BE1; BL4	3, 4

	2.2.3 Countries integrate overlapping climate and biodiversity considerations into relevant national plans, including NDCs, NAPS, National Biodiversity Strategies and Action Plans	15.5	BP1	3,4
	2.2.4 Countries conduct policy and legal reforms that support and enable climate resilience, adaptation and mitigation.	13.2	BE1; BL4	3, 4
III Pillar Local level. Scaling up climate action on the ground				
Outcome 3.1 <i>Actors strengthen resilience and adaptive capacity through climate risk management and adaptation, especially in areas most vulnerable to climate change, reducing risks and enhancing sustainability of agrifood systems, ecosystems and related livelihoods.</i>				
	Outputs	SDG targets	PPA	CF
Support local actors	3.1.1 Local actors, including farmers, fishers and aquaculturists, forest managers, forest-dependent people, land managers, local groups and communities and other local actors have access to knowledge and innovative solutions and take climate actions in their agrifood systems	2.4, 13.3, 14.2, 15.2, 15.3	BP1; BP2; BE1; BE3	6
	3.1.2 Farmers and local actors identify and engage with relevant partners including through South-South and Triangular Cooperation and organize themselves in groups, associations and cooperatives to be better positioned to take climate action	13.1, 17.6	BP1; BE1	5
	3.1.3 Insurance and social protection systems for local actors are promoted to strengthen the resilience of vulnerable smallholders in the face of climate risks	1.3, 13.1	BN1; BN2; BE1	4
Promote good practices and innovations (for climate-resilient development)	3.1.4 Local actors utilize more accurate information on anticipated climate impacts and adopt low-cost, inclusive and easily accessible climate risk management measures	2.4, 13.3	BP1; BP4; BE1	6
	3.1.5 Local actors adopt good adaptation practices, innovation, approaches with related co-benefits tailored to local conditions, landscapes, seascapes and needs of different groups, including women, men and youth	2.4, 13.3	BP1; BP4; BE1 BL4	6
Outcome 3.2 <i>Actors contribute to low-emission development pathways through more resilient and adapted agrifood systems with mitigation co-benefits</i>				
	Outputs	SDG targets	PPA	CF
Promote good practices and innovations (for low-emission development)	3.2.1 Feasible low-emission solutions for agrifood systems are available and adopted by local actors	2.4	BP1; BP4; BE1	6
	3.2.2 Local actors have access to knowledge on good practices for sustainable and inclusive business models	2.4	BP1; BP4; BE1	6
	3.2.3 Farmers, fishers and aquaculturists, forest managers and forest-dependent people, land managers, local groups and communities including those of Indigenous Peoples benefit from climate financing and other schemes for payment for environmental services.	2.a, 13.a	BE1; BL5; BL6	6

**Listing of the SDGs, PPAs and FAO Core Functions included in the table 1:
Sustainable Development Goals targets with direct links with proposed outputs**

- **2.4** By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality
- **2.a** Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries
- **5.c** Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.
- **6.4** By 2030, 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.
- **6.5** By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.
- **6.6** By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
- **7.3** By 2030, double the global rate of improvement in energy efficiency.
- **12.2** By 2030, achieve the sustainable management and efficient use of natural resources
- **12.4** By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment
- **12.5** By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse
- **12.8** By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature
- **12.a** Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production
- **13.1** Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries
- **13.2** Integrate climate change measures into national policies, strategies and planning
- **13.3** Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
- **13.a** Implement the commitment undertaken by developed country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible
- **13.b** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities
- **14.2** By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans

- **14.3** Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels
- **14.7** By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism
- **15.1** By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
- **15.2** By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.
 - **15.3** By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation neutral world
- **15.4** By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.
- **15.5** Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

- **16.7** Ensure responsive, inclusive, participatory and representative decision-making at all levels.
- **17.6** Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.
 - **17.17** Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resources strategies of partnerships.

FAO Programme Priority Areas with direct links to climate change

- BP1: Innovation for sustainable agriculture production;
- BP2: Blue Transformation;
- BP4: Small-scale producers' equitable access to resources;
- BN1: Healthy diets for all
 - BN2: Nutrition for the most vulnerable;
 - BN4: Reducing food loss and waste
- BE1: Climate change mitigating and adapted agrifood systems (linking to all outputs)
- BE2: Bioeconomy for sustainable food and agriculture;
- BE3: Biodiversity and ecosystem services for food and agriculture
- BE4: Achieving sustainable urban food systems
 - BL1: Gender equality and rural women's empowerment;
 - BL2: Inclusive rural transformation;
 - BL4: Resilient agrifood systems;
 - BL5: Hand-in-Hand –initiative
- BL6: Scaling up investment

FAO Core Functions

1. *Assemble, analyse, monitor and improve access to data and information*, in areas related to FAO's mandate, working in concert with countries and other development partners to identify consumer drivers, policy and investment gaps, promote common platforms and use emerging technological tools.
2. *Facilitate and support countries and other partners in the development and implementation of normative and standard setting instruments* for more efficient, inclusive, resilient and

sustainable agrifood systems, such as international agreements, codes of conduct, technical standards and related technologies, digital tools, good practices and others.

3. *Facilitate, promote and support agrifood systems policy dialogue at global, regional and country levels, including explicit recognition and consideration of trade-offs.*
4. *Support institutions at all levels, including through capacity development, to prepare, implement, monitor and evaluate evidence-based policies and programmes, and leverage investments.*
5. *Facilitate partnerships and coalitions for more efficient, inclusive, resilient and sustainable agrifood systems that address inequalities and leave no one behind, including with governments, development partners, civil society organizations and the private sector.*
6. *Advise and support activities that assemble, disseminate and improve the uptake of knowledge, technologies and good practices in the areas of FAO's mandate.*
7. *Advocate and communicate at national, regional and global levels, including to consumers, leveraging the Organization's knowledge, data, position as UN specialized agency, and trusted role as neutral broker.*