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Building resilience through agrifood systems transformation

Executive Summary

Building resilience to climate change and multiple other shocks and stresses is the biggest challenge for countries in Asia and the Pacific. Across subregions, all Sustainable Development Goal (SDG) indicators related to disaster and climate resilience are regressing.

Agrifood systems are both highly vulnerable and contributing to increased risks through unsustainable practices and unhealthy diets. The transformation to resilient and sustainable agrifood systems is essential in tackling the national resilience challenge in the region.

The Asia and the Pacific Regional Conference (APRC) has acknowledged this challenge and has considered actions to promote resilient agrifood systems. There is increasing investment and progress of action; however, they are not compatible with the rate of growing risks and exacerbating vulnerabilities.

Members in Asia and the Pacific have prioritized resilience in their national pathways for agrifood systems transformation and related policies.

This paper highlights FAO actions to assist countries in accelerating resilient agrifood systems transformation. Examples of actions presented in the paper are guided by the FAO Strategic Framework 2022–31 and Regional Priorities and demonstrate FAO's adopted systems approach, such as integrating ecosystem restoration and biodiversity action to reduce disaster risks and build resilient communities. The actions also emphasize emerging issues, including accounting for loss and damage, and anticipatory action, while reinforcing the understanding of risks and measuring resilience for evidence-based action and innovative financing.

Suggested action by the Regional Conference

The Regional Conference is invited to:

a. take note of FAO initiatives to accelerate the transformation towards resilient and sustainable agrifood systems as key to building national resilience;

b. share national approaches and specific policies, programmes and experiences;

c. support the translation of commitments to transformational action such as:

   i. translate national pathways into costed action plans with implementation mechanisms;
   ii. develop regional and national capacity development roadmaps; and
   iii. formulate regional and national investment portfolios.

d. provide guidance on key institutional, technical and financial challenges for FAO and other partners to accelerate the technical support and investment needed to foster agrifood systems transformation in the region including through effective engagement with global, regional and national platforms.

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I. The resilience challenge in Asia and the Pacific

1. Building resilience is the greatest challenge in Asia and the Pacific. The high level of exposure to climatic and other hazards (i.e. geological, fire, pest and disease epidemic, market volatility and conflict), widespread vulnerabilities and limited capacities put more than half of the countries in the region at very high, high and medium risk.[1] Similarly, the region hosted six of the top ten countries most affected by climate change during 2000–2019.[2]

2. The region is home to 38 percent of the world's Small Island Developing States (SIDS), 11 out of 45 least developed countries (LDCs) and five landlocked developing countries (LLDCs), three of which are LDCs. These countries are among the most vulnerable countries due to the significant structural challenges such as remoteness and isolation from global markets in SIDS and LLDCs, and a lack of productive capacities in LDCs.[3] They are also at higher risk of conflicts which can be exacerbated by climate events; eight out of ten conflict incidents in the region occurred in drought-affected areas.[4]

3. Disaster risk is growing at a rate that outstrips our efforts to reduce it. The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) estimates that without disaster impacts, most of Southeast Asia countries should be able to eradicate extreme poverty by 2030 but the countries could only reduce extreme poverty by half if disaster risk is not mitigated.[5] Across subregions, SDG indicators related to climate and disaster resilience (i.e. SDGs 1.5, 9.a, 11.5 and 13.1) are regressing.[6]

4. Risks also increasingly interconnect and have compounding impacts, as seen in the last three years in the region with recurrent climate and natural hazards, COVID-19, the food, feed, fertilizer, fuel and finance (5F)[7] crisis and protracted conflicts driving millions of people to acute food insecurity and back to poverty. The Asian Development Bank (ADB) estimates that the COVID-19 pandemic has pushed about 78 million people in Asia back into extreme poverty and created approximately 162 million newly poor, particularly in South Asia. Inequality in income, wealth and opportunity has grown in most developing member countries.[8]

5. Understanding risks and measuring resilience is fundamental in addressing the resilience challenge, yet this is still largely missing. Multi-hazard risk mapping has become more available[9] but not specific for agrifood systems. While vulnerability and risk assessments (VRAs) in the agriculture sector are growing, these primarily focus on production and forego important elements of value chains, socioeconomic vulnerabilities or livelihoods. Without a nuanced understanding of risks and underlying vulnerabilities, effective targeting and investment are not possible.

6. The various available resilience measurement tools, such as the FAO Resilience Index Measurement and Analysis (RIMA),[10] are usually applied only in development projects.

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[1] https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Risk

[2] Germanwatch. 2021. *Global Climate Risk Index 2021*. https://www.germanwatch.org/sites/default/files/Global%20Climate%20Risk%20Index%202021_2.pdf

[3] UNESCAP. 2018. *Asia-Pacific Countries with Special Needs Development Report 2018*. https://www.unescap.org/publications/asia-pacific-countries-special-needs-development-report-2018

[4] FAO. 2021. *FAO's Damage and Loss Assessment methodology to monitor the Sendai Framework's Indicator C2 and the Enhanced Transparency Framework (ETF)*. https://www.fao.org/documents/card/en?details=CB4265EN%2f

[5] UNESCAP. 2019. Asia Pacific Disaster Report. https://www.unescap.org/sites/default/d8files/Asia-Pacific%20Disaster%20Report%202019%20-%20Summary%20for%20Policymakers_0.pdf

[6] UNESCAP. 2023. *Asia and the Pacific SDG Progress Report 2022*. https://www.unescap.org/sites/default/d8files/knowledge-products/ESCAP-2022-FG_SDG-Progress-Report.pdf

[7] 5F refers to the increasing prices of food, feed, fertilizer, fuel and finance, in 2022/2023, associated with the onset of the war in Ukraine.

[8] https://www.adb.org/what-we-do/topics/social-development

[9] Such as through RISK INFORM https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Risk

[10] https://www.fao.org/agrifood-economics/areas-of-work/rima/en/; RIMA operated in the following countries in the Asia and the Pacific region: Afghanistan, Bangladesh, Cambodia, Lao People's Democratic Republic, Mongolia, Myanmar, Pakistan and Timor-Leste.

Understanding household capacities, their strategies to manage shocks and stresses and their access to support systems is key for designing appropriate policies and interventions.

II. Transforming agrifood systems to build national resilience

7. Resilient and sustainable agrifood systems are vital for achieving national resilience. Resilient agrifood systems ensure reliable food supply and economic stability, providing employment opportunities, supporting rural livelihoods, and contributing to the gross domestic product (GDP) of countries, which in turn strengthens the overall stability and resilience of nations. Agriculture accounts for under 5 percent of GDP in Asia and the Pacific, but employs 30 percent of the region's workforce; more than 36 percent of them are women who face significant gender inequalities.[11] Resilient agrifood systems enable farmers, especially smallholders, to apply sustainable and climate-smart practices and adapt to changing environmental conditions, thereby reducing risks and mitigating disaster impacts. A resilient agrifood system requires robust and adaptable supply chains to ensure that consumers have efficient access to food, even during crises and shocks.

8. A diverse and resilient agrifood system promotes nutritional diversity, contributing to a healthy population that is resilient to epidemic risks. Agrifood systems should contribute to sustainable rural development, help reduce inequalities and foster social and economic resilience. This is important for Asia and the Pacific as the region accounts for half of the world's severe food insecure population, and continues to have the highest level of stunting and wasting. Overweight prevalence among children under five years of age and anaemia among women of reproductive age are still well below the World Health Assembly global nutrition targets.[12] With rising average cost of a healthy diet, almost 2 billion people in the region cannot afford it.[13]

9. The transformation to resilient and sustainable agrifood systems in Asia and the Pacific is urgent. Agrifood systems are highly vulnerable to multiple shocks, bearing a large part of impacts. Over the last 30 years, an estimated USD 3.8 trillion worth of crops and livestock production has been lost due to disasters, or 5 percent of annual global agricultural GDP.[14] While Asia shows the largest share of the losses in absolute figures (45 percent of USD 3.8 trillion), the losses relative to agriculture GDP are the smallest (4 percent), compared to 8 percent in Africa and almost 7 percent in the SIDS.

10. Agrifood systems are also vulnerable to stresses such as animal diseases, changes in land use, dietary shifts, demographic change, regulatory alterations, biodiversity loss, among others. Shocks and stresses interact and influence or aggravate, reinforcing the need for systemic thinking in building resilience.

11. At the same time, agrifood systems increase risks and exacerbate vulnerabilities. Unsustainable practices such as deforestation, excessive use of agrochemicals, and soil degradation, together with urbanization, cause biodiversity loss, reduce ecosystem services and increase global warming. These in turn increase the risks of disasters such as landslides, forest fires, floods, and pests and diseases.

12. The transformation to resilient agrifood systems requires an integrated approach that addresses the interconnected and systemic risks and their drivers across production, processing, distribution, food consumption and disposal of food in order to (i) anticipate, (ii) prevent, (iii) absorb, (iv) adapt to evolving risks and (v) transform in cases where current food systems are no longer sustainable. It also

[11] International Labour Organization. 2022. *Asia–Pacific Sectoral Labour Market Profile: Agriculture* https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/briefingnote/wcms_863302.pdf
[12] FAO. 2023. *Asia and the Pacific - Regional Overview of Food Security and Nutrition 2023: Statistics and Trends*. Bangkok. https://doi.org/10.4060/cc8228en
[13] FAO. 2023. *Asia and the Pacific - Regional Overview of Food Security and Nutrition 2023: Statistics and Trends*. Bangkok. https://doi.org/10.4060/cc8228en
[14] FAO. 2023. *The Impacts of Disasters on Agriculture and Food Security 2023*. https://www.fao.org/documents/card/en?details=cc7900en

requires a clear understanding of specific agrifood system contexts to develop targeted solutions and concrete measures that can be effectively operationalized.[15]

13. The Asia and the Pacific Regional Conference (APRC) has regularly acknowledged the challenges and has considered actions to promote sustainable and resilient agrifood systems (Box 1)

Box 1. APRC, climate change, resilience and agrifood systems
Climate change and resilience have been regular topics of focus at the APRC, highlighting their importance and the proactive approach Members have adopted to address risks. At APRC 30 (2010), the implications of climate change for food security and sustainable development were highlighted along with potential key adaptation and mitigation strategies at national and local levels. APRC 31 (2012), 32 (2014) and 33 (2016) discussed climate change as a key challenge and the specific needs of Pacific countries as well as some options to address climate change, such as restoration of grasslands and forests. At APRC 34 (2018), Members highlighted the opportunities that climate elements of the 2030 Agenda such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Sendai Framework for Disaster Risk Reduction provided to mobilize resources and drive climate action in the agriculture sector. APRC 35 (2020) and 36 (2022) further emphasized the importance of climate resilience as a crucial element of sustainable agrifood systems and outlined strategies to transform towards resilient agrifood systems.

14. Members in Asia and the Pacific have prioritized resilience in their national pathways for food system transformation, in reaffirmed commitments at the UN Food Systems Summit +2 Stocktaking Moment t and related policies, including the Nationally Determined Contributions to the Paris Agreement. Building resilience is commonly emphasized by the SIDS, LDCs and LLDCs for their next decadal programmes of action to address the unique challenges they face.

15. The national pathways highlight resilience to climate change and disasters as vital for food security and sustainable livelihoods. Recognizing risk drivers, Members commonly prioritize actions to shift to sustainable production, nature-positive innovations, agrobiodiversity approaches and reducing food loss and waste. A strong emphasis is also placed on food safety, healthy diets and sustainable consumption, to stimulate demand for sustainability and resilience. Focusing on vulnerable people, promoting the role of women, girls and youth in agrifood systems and drawing on indigenous knowledge and experiences are identified as some of the common drivers of change.

16. At the Asia–Pacific Symposium on Agrifood Systems Transformation held on 5-7 October 2022, Members and stakeholders highlighted the following actions to spark changes and accelerate transformation:

a. Implementing policies, making investments, and building institutions to strengthen trade linkages; incentivize sustainable investments and price those with negative outcomes (i.e. through carbon or unhealthy food taxes); repurpose public resources; and attract private sector investment through good governance and partnerships.
b. Harnessing science, innovation and digitalization as breakthroughs to support inclusiveness and resilience of agrifood systems.[16] This includes smart apps to support farmer-led diversification of farming systems, and innovations such as use of data through satellite and remote-sensing imagery and machine learning algorithms as well as big data.
c. Building multistakeholder partnerships to harmonize interests and arrive at common objectives and outcomes, develop concrete mechanisms to realize public–private–farmer partnerships and enhance engagement with regional organizations such as the Association of Southeast Asian Nations (ASEAN), the South Asian Association for Regional Cooperation (SAARC) and the South Pacific Community (SPC).

[15] UN Food Systems Summit. 2021. Action Track 5: Building Resilience to Vulnerabilities, Shocks and Stresses. https://sc-fss2021.org/materials/scientific-group-reports-and-briefs/
[16] Gálvez, E. 2022. *Scaling up inclusive innovation in agrifood chains in Asia and the Pacific*. Bangkok, FAO. https://doi.org/10.4060/cb8306en

d. Developing a regional platform for knowledge sharing and community building drawing on good examples such as the Special Agricultural Products platform[17] or adapting the UN Food Systems Summit Coordination Hub[18] model.

17. Following the Symposium, many countries in the region are being supported in detailing and fine tuning their national agrifood systems transformation pathways. Workshops have been organized for South and Southeast Asia countries to concretize actions, including their costing and identification of internal and external financial resources. FAO's flagship initiatives – Hand in Hand (HIH); 1,000 Digital Villages (DVI); and One Country One Priority Product (OCOP) – and key strategies – on climate change and on science and innovation – are being incorporated to synergize actions by all stakeholders and serve as platforms for knowledge sharing and exchange. Projects on implementing transformative approaches to food and agriculture have been operationalized. The Pacific Island countries will be similarly supported in 2024.

III. Innovative solutions for accelerating transformation towards more resilient agrifood systems

18. This section highlights actions that can support accelerated progress towards more resilient and sustainable agrifood systems, laying the foundation for broader system-wide transformation over time.

19. The selected actions demonstrate FAO's adopted systems approach to achieve multiple objectives such as integrating ecosystem restoration and biodiversity action to reduce disaster risks while tackling biodiversity loss and greenhouse gas (GHG) emissions. Such systems and integrated approaches are articulated in the FAO Strategic Framework 2022–31 and Regional Priorities[19] that facilitate FAO's support for Members to tailor solutions and scale up transformational actions across *better production*, *better nutrition*, a *better environment*, and a *better life*.

20. The selected actions are structured around the core elements of risk management as highlighted in the priorities for action of the *Sendai Framework for Disaster Risk Reduction 2015-2030*: understanding risks; strengthening disaster risk governance; investing in reducing disaster risk for resilience; and enhancing disaster preparedness for effective response and to "build back better" in recovery, rehabilitation and reconstruction.[20]

Strengthening vulnerability and risk assessment (VRA) and measuring resilience

21. FAO has developed a suite of tools for assessing climate and disaster risks such as the Climate Risk Toolbox (CRTB), Climate and Agriculture Risk Visualization and Assessment (CAVA) Platform, and Python-based Analysis of Agro-Ecological Zones (PyAEZ).[21] FAO RAP is working to adapt the risk-inform methodologies for VRA in agriculture subsectors, and to make socioeconomic information available in machine-learning algorithms and support governments to utilize available big data to analyse vulnerabilities and risks in agrifood systems.

22. In recent years, the use of RIMA in Asia and the Pacific, not only in emergency operations but also in measuring outcomes and impacts of development projects, has led to valuable insights that inform policies and action, significantly enhancing government and partners' confidence in the FAO's evidence-based interventions (see Box 2).

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[17] https://www.fao.org/one-country-one-priority-product/about/special-agricultural-products-(saps)/en

[18] www.unfoodsystemshub.org/en

[19] The Regional Priorities (RP) are: RP 1 - Transforming agrifood systems for sustainable production and healthy diets; RP 2 - Accelerating sustainable natural resources management for biodiversity conservation and climate action; RP3 - Supporting inclusive rural transformation for sustainable agrifood systems and equitable rural societies; and RP4 – Building sustainable and resilient agrifood systems in the Pacific Small Island Developing States (SIDS).

[20] https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf?_gl=1*1bu6gjp*_ga*MTU3NTI0MzQzOS4xNzA0NTgzODQy*_ga_D8G5WXP6YM*MTcwNDU4Mzg3My4xLjAuMTcwNDU4Mzg3My4wLjAuMA

[21] https://gaez.fao.org/pages/pyaez

Box 2. FAO's Resilience Index Measurement and Analysis (RIMA)
RIMA estimates household resilience to food insecurity with a quantitative approach to establish a cause-effect relationship between resilience and its critical determinants. RIMA is context- and shock-specific and can be used for resilience assessment, project monitoring and impact evaluation to improve programme design and to inform policy decisions. The RIMA analysis uses household-level data with a questionnaire to collect the minimum information needed for estimating household resilience capacity through short interviews on: Access to Basic Services (ABS); Social Safety Nets (SSN); Food security; Assets (AST); Adaptive Capacity (AC); and Shocks.[22]
RIMA can be complemented with additional project/context-relevant subjects, e.g. conflict, specific farming systems, or people's knowledge of their own resilience and factors contributing to it.

Accounting for loss and damage to anticipate and prevent future losses

23. Assessing past impacts is essential in projecting future losses. However, data on agrifood systems is partial and inconsistent, especially in the fisheries and aquaculture and forestry subsectors.[23] A recent FAO review of agriculture disaster information systems in Asia and the Pacific region showed several critical issues, such as lack of regular data collection and reporting, narrow focus on a few natural hazards or agriculture subsectors, and neglect of economic losses in the overall calculations that have led to a significant under-accounting of disaster losses in the agriculture sector (see Box 3).

Box 3. Unaccounted loss and damage in the agriculture sector
Between 2010 and 2020, Lao People's Democratic Republic underreported losses and damages due to floods of up to USD 680 million in the crop sector alone. Similarly, estimations suggest that Cambodia potentially underreported up to USD 346 million in damage and loss due to African swine fever between 2018 and 2019, and additionally, it might have underreported up to USD 67 million for each year for cassava mosaic disease impact. The focus on damages only, rather than damages and economic losses, would have led to an underreporting of USD 9.2 billion in economic losses in Pakistan floods in 2022, about 70 percent of this in the agricultural sector. Similarly, not including losses following the Hunga Tonga-Hunga Ha'apai Volcano eruption in Tonga would have underreported nearly 40 percent of the overall damage and loss in the fisheries sector.

24. There is increasing recognition of the need to understand fully the loss and damage caused by climate change and disasters, especially with the recent decision to establish a new Loss and Damage Fund by the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties. To support Members to fully account for agriculture losses, FAO has developed a methodology for evaluating disaster losses in the agriculture sector – FAO's Damage and Loss Assessment Methodology.[24] This methodology can be applied in different country and regional contexts, for a broad range of disasters considering all agricultural subsectors and their specificities. The methodology includes an online platform and interface for time-efficient damage and loss data collection, verification and processing. It constitutes a strategic tool for assembling and interpreting new or existing information to inform policy and planning.

Boosting ecosystem restoration and biodiversity action – a win-win solution

[22] FAO.2020. Resilience index measurement and analysis: Short questionnaire. https://www.fao.org/3/cb2348en/cb2348en.pdf
[23] FAO. 2023. *The Impact of Disasters on Agriculture and Food Security 2023 – Avoiding and reducing losses through investment in resilience*. Rome. https://doi.org/10.4060/cc7900en
[24] FAO. 2021. *FAO's Damage and Loss Assessment methodology to monitor the Sendai Framework's Indicator C2 and the Enhanced Transparency Framework (ETF)* https://www.fao.org/documents/card/fr/c/CB4265EN/

25. Recognizing the critical importance of ecosystem restoration and biodiversity conservation, efforts are underway in Asia and the Pacific region to bolster these actions, offering a promising win-win solution for both ecological integrity and resilient communities.

26. Restoration initiatives have focused on diverse agroecosystems, with interventions ranging from natural regeneration and agroforestry, to reforestation, habitat rehabilitation and invasive species management that offer enhanced provisioning services, such as timber, fish, and medicinal plants, contributing to local livelihoods and economic growth. Restored ecosystems can recover their functionality, enhance habitat availability, and provide crucial ecosystem services such as water purification, carbon sequestration, and soil fertility.

27. For win-win solutions, it is essential that biodiversity considerations are cost-effectively incorporated into the design and implementation of restoration efforts and tailored to the needs and priorities of the local communities. Promising examples of biodiversity-positive restoration efforts include:

a. the Bukidnon Integrated Network of Home Industries (BINHI)'s project in the Philippines, which restored a range of biodiverse habitats that are home to dozens of threatened species of flora and fauna, and rescued, secured, and mainstreamed the 96 most threatened Philippine native tree species;
b. Harapan Rainforest in Indonesia, where 98 555 hectares of degraded biodiversity-rich rain forests were brought under long-term restoration with support from non-governmental organizations (NGOs) and the private sector;
c. Khata Corridor Terai Arc Landscape Program, Nepal, which created a functional wildlife corridor in 20 years.

28. In the Pacific, responding to the APRC 36 request,[25] FAO is supporting Members to develop a regional plan to promote cohesive action on mainstreaming biodiversity across agricultural sectors. This plan was prepared in consultation with Members in 2023. It contains key areas and actions to meet regional and national goals, in line with the FAO Strategic Framework 2022–31 and the FAO Strategy on Mainstreaming Biodiversity while supporting Members to implement the Kunming-Montreal Global Biodiversity Framework.

29. The *Regional Strategy and Action Plan for Forest and Landscape Restoration in Asia-Pacific*[26] outlines priorities to upscale ecosystems restoration. As part of the United Nations Decade on Ecosystem Restoration 2021–2030, practical standards and tools were developed to harness climate and biodiversity co-benefits in ecosystem restoration efforts. The upcoming updates of the national biodiversity strategies and action plans offer an opportunity to harness the role of restoration for biodiversity benefits.

Climate-resilient water resources management to address water scarcity and drought risk

30. Water scarcity is driven by population growth and associated economic growth. Climate change acts as a multiplier of water scarcity, evidenced by the rising frequency and severity of droughts, in addition to increasing incidences of dry spells in the wet season and shifting of the seasons. Agriculture drives water scarcity as evapotranspiration from irrigated agricultural land is by far the largest consumptive use of water withdrawn. Farmers in Asia and the Pacific face an increasingly uncertain future as competition for water intensifies and governments are forced to re-allocate water away from agriculture and towards higher priority uses such as cities, towns, energy and industry.

31. The *FAO Water Scarcity Programme (WSP) for Asia-Pacific* seeks to fill data and policy gaps for regular monitoring of water resources through water accounting to ensure that the inevitable reallocation of water in the future is informed, planned and inclusive so that both food security and the region's vulnerable rural communities do not bear the brunt of worsening water scarcity. The WSP,

[25] APRC/22/REP, paragraph 30. https://www.fao.org/3/ni607en/ni607en.pdf
[26] FAO and APFNet. 2018. *Regional Strategy and Action Plan for Forest and Landscape Restoration in Asia-Pacific*. https://www.fao.org/3/i8382en/I8382EN.pdf

through a regional cooperative platform dedicated to improving policy and governance in water, agriculture and environment across the region, encourages South-South and Triangular Cooperation and creates a space where countries can share experiences and stimulate policy innovation and new actions to support policy and practice for water scarcity management.

Land tenure security, especially for Indigenous Peoples, to address drivers of vulnerability and leave no one behind

32. In Asia and the Pacific, more than 50 percent of the population is rural, and has often, for generations, accessed land through customary tenure systems without formalized rights. This prevents them from having access to opportunities such as rural extension and credit. Land held by vulnerable rural communities, especially Indigenous Peoples is often allocated to private investors, development projects or designated protected areas. Land loss can be a root cause of conflict, poverty, hunger and inequality, which can be aggravated by the growing land degradation that undermines farmers' ability to produce food and affects the lives of more than 3.2 billion people in the world.

33. FAO is supporting Members to explore alternatives to address this challenge. In Indonesia, FAO supports the Government to develop policy instruments to enhance tenure security among rural populations with customary tenure systems. In Pakistan, FAO has assisted the Government to strengthen tenure security among tenant farmers, resulting in significant socioeconomic improvements.

Agro-climate services and early warning to support coherent disaster risk management and climate change adaptation

34. Agro- climate services, based on climate change simulations, ground observations, remotely sensed information, and agronomic data, help identify areas with higher climate risks and adaptation options, and produce information to support planning and investments.

35. An example of how agro-meteorological services strengthen resilience of farmers is the Lao People's Democratic Republic's Climate Services for Agriculture,[27] which consolidates available data from all weather stations as well as agriculture data into a central database at the Department of Meteorology and Hydrology; the service also develops agromet advisory bulletins comprising forecasts and farming management recommendations and early warnings in both English and Lao languages. The services are available for decision making at all levels through various channels, including social media, and help farmers to better manage weather-related risks and make informed decisions related to crop selection, irrigation, fertilization, and pest and disease control.

36. Drawing on the success in the country, FAO is extending the support to other Asian countries and is working with partners (such as the World Meteorological Organization) to facilitate the development of a regional investment roadmap for agriculture climate services to stimulate further investments.

Anticipatory action to harness innovations to protect agricultural livelihoods

37. The region has witnessed a remarkable surge in the adoption of the anticipatory action approach, which establishes a systematic connection between early warnings and preventive action, with predetermined delivery mechanisms and financial arrangements, all aimed at safeguarding families and their assets before a disaster strikes.

38. In Viet Nam, cash and waterproof drums were provided within less than 72 hours based on improved early warning information in preparation for Typhoon Noru in November 2022. Early action successfully safeguarded critical assets and ensured the food security of farmers.

39. In Mongolia, based on early warning of Dzud in early 2023, the Government provided a 50 percent discount on hay and fodder to support vulnerable herder households. FAO' complementary cash transfers to the most vulnerable herders enabled them to acquire the necessary fodder at reduced government rates. With every USD 1 invested, the model yields a return of up to USD 7 in prevented

[27] www.lacsa.net

losses and added benefits. It also makes Mongolia a compelling example of government leadership in scaling up anticipatory action.

40. In 2022, ASEAN Member States unanimously endorsed the ASEAN Framework on Anticipatory Action in Disaster Management, the first global framework of its kind. This framework provides a clear definition and vision for anticipatory action, serving as a pivotal blueprint for governments and partners to advance this approach in the larger Asia and the Pacific region.

41. Innovative solutions are being explored to address other challenges, including the definition of triggers and the precision of early warnings, to ensure timely actions, as well as blockchain technology to improve cash delivery.

Leveraging blended finance to boost action and access to technology

42. The above examples of actions point to a common urgent need – mobilizing finance and investment to support accelerated and sustained action. Up to USD 350 billion per year will be needed to meet global climate-related goals in food systems,[28] and while new sources of funding are supporting climate action, only 7 percent of total climate finance is being directed to adaptation in agriculture and land-use sectors.[29]

43. Repurposing current support to agricultural producers is an essential component in mobilizing the investment needed. The majority of government support to agricultural producers – approximately 87 percent or USD 540 billion per year globally, which could reach USD 1.8 trillion by 2030 – is either price-distorting or harmful to the environment and people's health. Action is needed at country, regional and global levels to redirect available support towards investments in climate-resilient agrifood systems, research and development, and infrastructure for greater resilience.[30]

44. Blended finance, combining public and private capital, can de-risk investments and provide long-term finance for small-scale farmers and businesses to adopt resilient practices. It can also build coordination, attract new investors, and strengthen the capacity of local financial institutions to support agrifood systems transformation. Challenges to be overcome include the lack of government capital, institutional and capacity gaps, high risk and low return of investment, and imperfect information.

45. It is particularly difficult to channel most of climate finance to smallholders, given their poor access to financial institutions and heavy reliance on informal providers and value chain actors that are unlikely to attract climate finance.

46. FAO is supporting Members in promoting blended finance and leveraging public finance (such as the Global Environment Facility [GEF] and the Green Climate Fund [GCF]) to repurpose government support to agriculture producers towards climate resilience and low emissions.

47. With support from the Sustainable Rice Landscapes Initiative and GEF, a blended finance facility is being designed to catalyse public and private funds for climate-resilient rice farms, value chains and livelihoods. The initiative will be piloted in Bangladesh, Cambodia and Viet Nam, supporting a sector-wide transition to sustainable rice landscapes and focusing on the funding needs of farmers, businesses and governments.[31]

48. In the new GCF project "Adapting Philippine Agriculture to Climate Change", a USD 26 million GCF grant will help re-orient an equal amount of Government agriculture subsidies to

[28] International Food Policy Research Institute. 2022. *2022 Global food policy report: Climate change and food systems*. https://ebrary.ifpri.org/digital/collection/p15738coll2/id/135889
[29] Climate Policy Initiative. 2022. *Global Landscape of Climate Finance: A Decade of Data*. https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-a-decade-of-data/
[30] FAO, UNDP and UNEP. 2021. *A Multi-Billion-Dollar Opportunity: Repurposing agricultural support to transform food systems*. https://www.fao.org/3/cb6562en/cb6562en.pdf
[31] FAO. 2023. Public-Private Blended Finance Facility for Climate-Resilient Rice Landscapes. https://www.thegef.org/projects-operations/projects/10929

support climate-resilient agriculture (CRA). The project also expects to leverage a large amount of private sector lending for smallholder farmers.[32]

49. In conclusion, Asia and the Pacific region is not on the right trajectory toward resilience. Risks are growing and overlapping quickly, causing compounded impacts and jeopardizing efforts to eradicate hunger and poverty. Unsustainable agrifood systems are highly vulnerable while contributing to increased risks and exacerbated vulnerabilities. The transformation to resilient and sustainable agrifood systems is fundamental to tackle the resilience challenge in the region. FAO has developed innovative solutions that can be deployed at scale to support Members to accelerate transformational actions.

[32] Green Climate Fund. 2023. Adapting Philippine Agriculture to Climate Change (APA). https://www.greenclimate.fund/project/fp201