CGIAR

INITIATIVE ON
Asian Mega-Deltas

CGIAR Initiative on Asian Mega-Deltas

ANNUAL TECHNICAL REPORT 2022

CGIAR Technical Reporting 2022

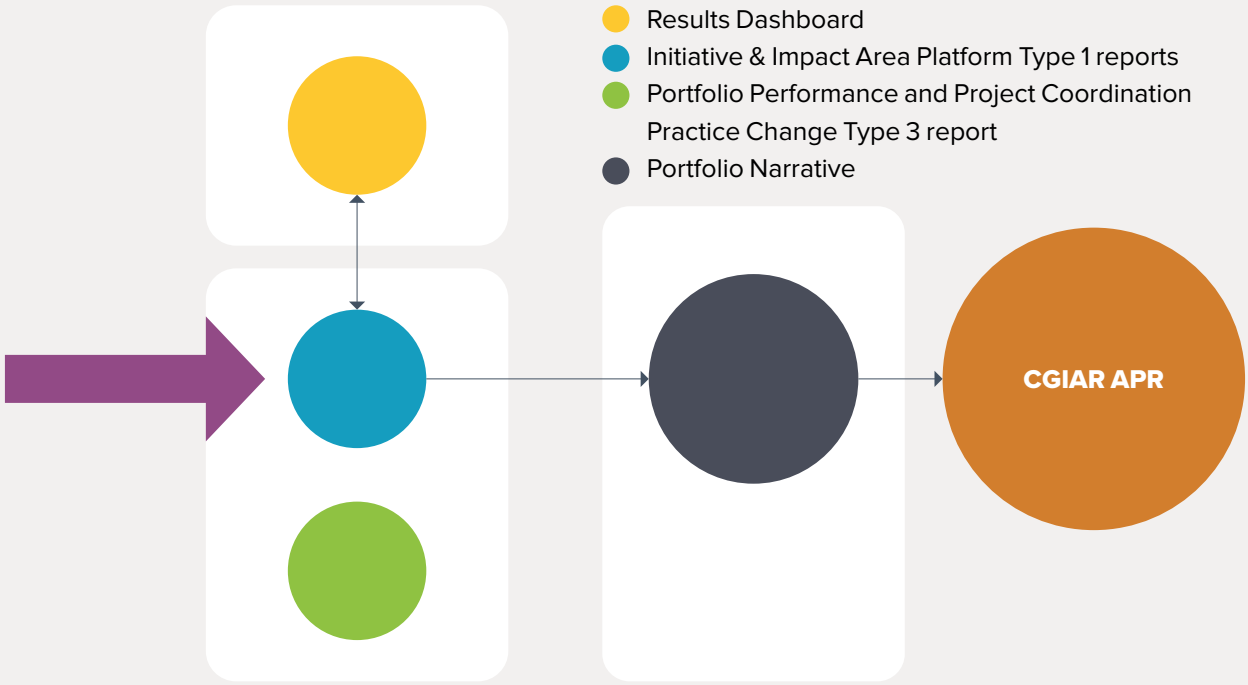
CGIAR Technical Reporting has been developed in alignment with the CGIAR Technical Reporting Arrangement.

This Initiative report is a Type 1 report and constitutes part of the broader CGIAR Technical Report. Each CGIAR Initiative submits an annual Type 1 report, which provides assurance on Initiative-level progress towards End of Initiative outcomes.

The CGIAR Technical Report comprises:

- Type 1 Initiative and Impact Area Platform reports, with quality assured results reported by Initiatives and Platforms available on the CGIAR Results Dashboard.
- The Type 3 Portfolio Performance and Project Coordination Practice Change report, which focuses on internal practice change.
- The Portfolio Narrative, which draws on the Type 1 and Type 3 reports, and the CGIAR Results Dashboard, to provide a broader view on portfolio coherence, including results, partnerships, country and regional engagement, and synergies among the portfolio's constituent parts.

The CGIAR Technical Report constitutes a key component of the CGIAR Annual Performance Report (APR).



US$	2022	2023	2024
Proposal Budget from initial submission	US$8,000,000	US$11,000,000	US$11,000,000
Approved 2022 Budget	US$3,988,250		

2022 Disbursement Target based on Approved FinPlan

Section 1 Fact sheet

Initiative name	Securing the Food Systems of Asian Mega-Deltas for Climate and Livelihood Resilience
Initiative short name	Asian Mega-Deltas (AMD)
Action Area	Resilient Agrifood Systems
Geographic scope	**Countries targeted in the proposal:** Bangladesh; Cambodia; India; Myanmar; Viet Nam **Countries with results reported in 2022:** Bangladesh; Cambodia; Egypt; India; Laos; Malaysia; Myanmar; Thailand; Viet Nam
Start date	Apr. 1, 2022
End date	Mar. 31, 2025
Initiative Lead	Bjoern Ole Sander – b.sander@irri.org
Initiative Deputy	Khondker Murshed-e-Jahan – K.Murshed-e-Jahan@cgiar.org
Measurable three-year End of Initiative outcomes (EOI-Os)	**EOI-O 1:** By 2025, a network of inclusive learning alliances comprised of at least 200 stakeholders and 30 organizations in each delta, and supported by at least three national/sub-national policies, actively scale up diversification of agrifood systems in deltas, to accelerate adaptation by 75,000 smallholders and improve management of 50,000 hectares of land.
	EOI-O 2: By 2025, national ministries and major NGOs in at least three countries use AMD co-produced knowledge and evidence to table at least three nutrition-sensitive interventions to reduce mortality, DALYs, and micronutrient deficiencies, for 10,000 producers (80% women) and 50,000 consumers.
	EOI-O 3: By 2025, DCAS+ provided by public and private sector partners are used by at least 300,000 smallholders (at least 29% of them women), with at least one financing partnership plan established to assure sustainability and further scaling.
	EOI-O 4: By 2025, at least three gender-equitable and socially inclusive natural-resources informed food systems governance policies or strategies have been co-designed in partnership with national and sub-national governments, international development partners, and grassroot actors.
	EOI-O 5: By 2025, high-level policy-makers and development partners in at least two deltas involved in knowledge integration networks make public statements on the importance of One CGIAR and AMD and engage with AMD to help design climate adaptation-oriented policies, projects and investment plans with a nominal value of at least US$900 million.

OECD DAC Climate marker adaptation score*	**Score 2:** Principal: The activity is principally about meeting any of the three CGIAR climate-related strategy objectives — namely, climate mitigation, climate adaptation, and climate policy, and would not have been undertaken without this objective.
OECD DAC Climate marker mitigation score*	**Score 1:** Significant: The activity contributes in a significant way to any of the three CGIAR climate-related strategy objectives — namely, climate mitigation, climate adaptation, and climate policy, even though it is not the principal focus of the activity.
OECD DAC Gender equity marker score*	**Score 1B:** Significant: The activity contributes in a significant way to any of the three CGIAR climate-related strategy objectives — namely, climate mitigation, climate adaptation, and climate policy, even though it is not the principal focus of the activity.
Website link	https://www.cgiar.org/initiative/asian-mega-deltas/

*The Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) markers refer to the OECD DAC Rio Markers for Climate and the gender equality policy marker. For climate adaptation and mitigation, scores are: 0 = Not targeted; 1 = Significant; and 2 = Principal.
The CGIAR GENDER Impact Platform has adapted the OECD gender marker, splitting the 1 score into 1A and 1B. For gender equality, scores are: 0 = Not targeted; 1A = Gender accommodative/aware; 1B = Gender responsive; and 2 = Principal.
These scores are derived from Initiative proposals, and refer to the score given to the Initiative overall based on their proposal.

Section 2 Initiative progress on science and towards End of Initiative outcomes

Machinery demonstrations and digital cultivation practices during the Agritechnica Asia Live in August 2022. Photo credit: DLG

Overall summary of progress against the theory of change

Launched in June 2022, the CGIAR Initiative on Asian Mega-Deltas (AMD) has started implementing its activities and forging partnerships in its priority countries of Bangladesh, Cambodia, and Viet Nam. Additionally, activities have been initiated in India and in Myanmar but remain limited due to political instability. With the goal of promoting resilient, inclusive, and productive deltas, AMD, in its first year, produced new knowledge products, organized learning and capacity development events, enhanced existing innovations, and achieved capacity, policy, and investment outcomes.

In 2022, AMD produced 84 new knowledge products, ranging from journal articles and research reports to policy briefs, multimedia materials, and training materials. The majority of these materials are open access and available online. AMD knowledge products focus on the Initiative's various research areas, such as building learning alliances on diversified production systems, promoting nutrition-sensitive interventions, developing digital climate advisory and bundled services (DCAS+), designing socially-inclusive policies, and supporting evidence-based delta development planning.

In the area of capacity sharing for development, AMD conducted 30 capacity-building activities and learning events, reaching nearly 7,000 people. In Bangladesh, activities include: training of farmers on modern high-yielding rice cultivation with improved water management in the coastal polder zones; capacity-building of postgraduate students on thesis research focusing on agrifood systems in the polder zone; nutritional awareness program for women; and the school fair concept on climate-resilient agriculture for the food and nutritional security of coastal communities. For stakeholders in Cambodia, AMD held training workshops on

climate-smart mapping and adaptation planning (CS-MAP), learning alliances to address climate change impacts, and shared lessons learned on agro-advisory, crop insurance, irrigation management, and crop modelling. In Viet Nam, learning events include experience sharing on climate services, establishing a province-level learning alliance network, and workshops with government stakeholders on sustainable and inclusive governance and on nutrition-sensitive agrifood systems. AMD also co-organized field demonstrations, an exhibition, and conference program during the Agritechnica Asia Live event in Viet Nam on 24–26 August 2022. This event was attended by approximately 4,000 farmers, traders, scientists, and government officials.

AMD is building on the technological innovations developed and introduced by the previous CGIAR Research Programs and other bilateral projects. For example, CS-MAP, a participatory approach that integrates local knowledge and science-based research in developing climate-risk maps and adaptation plans for rice production in Viet Nam's Mekong Delta, was initiated under the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Within the AMD Initiative, this approach is being expanded to incorporate all crops and the methodology is being adapted and extended to Cambodia and Bangladesh through cross-country knowledge-sharing events. Under the Feed the Future Innovation Lab for Sustainable Intensification (SIIL) program in Bangladesh, AMD continues work on the improved community-led water governance approach and on diversified and intensified rice-based cropping systems. AMD has also invested in developing new innovations and business models on digital climate services and rice straw composting.

AMD has achieved significant progress towards achieving its End of Initiative (EOI) outcomes. In terms of innovation use, AMD collaborated with the DeRISK SE Asia project on applying seasonal climate forecasting and innovative insurance solutions to climate risk management in agriculture in Southeast Asia. Through this collaboration, farmers have improved access to climate advisories using agro-climatic bulletins (ACB). The ACBs were disseminated via multiple communication channels reaching an estimated 130,000 farmers in Viet Nam. AMD innovations, such as crop decision trees (CDTs) for climate risk management and voice messaging weather forecasts with recommendations to avoid rainfall-induced crop damage to mung bean, were adopted in Cambodia and Bangladesh.

In 2022, AMD has influenced policies at the local and national levels in Viet Nam and Bangladesh. In Viet Nam, AMD innovations were integrated in policies, such as the inclusion of CS-MAPs in the National Green Growth Strategy, ACBs in the regional directive letter of the Department of Crop Production (DCP) and in the provincial seasonal work plans, and alternate wetting drying (AWD) technology to mitigate greenhouse gas emissions in rice in the Nationally Determined Contributions (NDCs). In Bangladesh, AWD was also included as a key adaptation action in the National Adaptation Plan (NAP) 2023–2050.

AMD attracted investments on climate change adaptation and mitigation in the deltas. The Asian Development Bank (ADB) provided funding amounting to US$200,000 to AMD to conduct exploratory research on spatial analysis and cost-benefit assessments of climate change adaptation in rice-based agrifood systems of select Asian Mega-Deltas. The Australian Government Department of Foreign Affairs and Trade's (DFAT) Business Partnerships Platform (BPP) invested over 1 million AUD to incentivize low-emission rice production through training smallholder farmers; use remote sensing, artificial intelligence and other data assets to monitor management changes for use in reporting and verification; and scale carbon market access to smallholder rice producers.

Gender equality and social inclusion (GESI) is at the forefront of all activities under AMD. Specifically, AMD conducted GESI training for partners,

Work planning together with representatives from the government agencies of Vietnam and Cambodia and other relevant stakeholders during AMD inception workshop in June 2022. Photo credit: IRRI

developed gender-responsive sampling and research design in all Work Packages (WPs), and established a collaboration and co-funding from the CGIAR's GENDER Impact Platform for research on climate–gender–agriculture hotspots in Bangladesh.

To ensure sustainable and country-owned outcomes, AMD is working closely with National Agricultural Research and Extension Systems (NARES) in its priority countries. AMD activities have been carried out together with agricultural and related ministries and their attached agencies, such as the Ministry of Agriculture (MoA) – Bangladesh, Ministry of Agriculture, Forestry and Fisheries (MAFF) — Cambodia, Ministry of Agriculture and Rural Development (MARD) — Viet Nam, and the National Institute of Nutrition (NIN), Ministry of Health – Viet Nam. AMD has also collaborated with international organizations (e.g., International Institute of Rural Reconstruction, United States Agency for International Development) and academic institutions (e.g., Royal University of Phnom Penh, Can Tho University, University of Liberal Arts Bangladesh, Kansas State University) in various research and capacity-building activities.

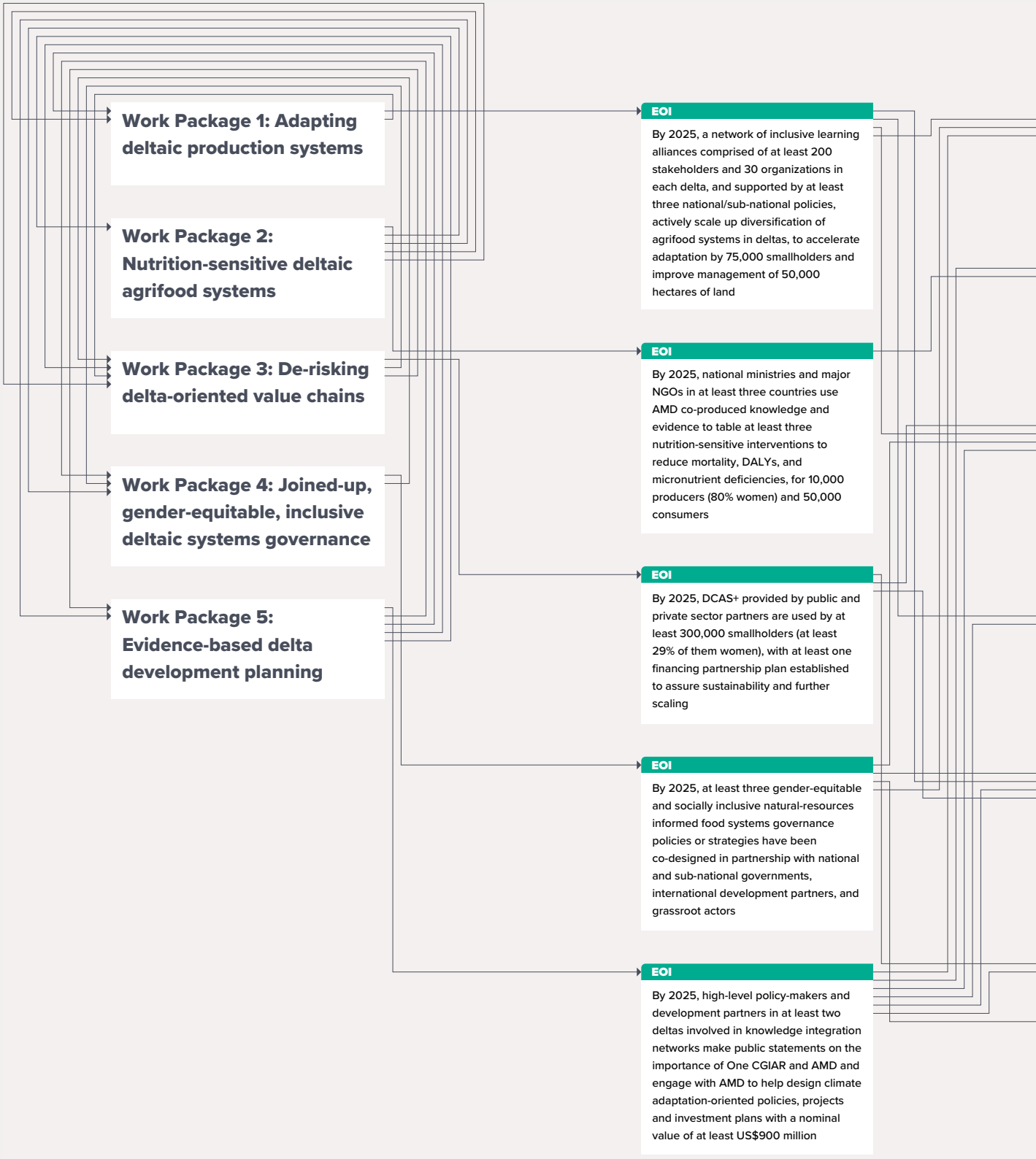
As a Regional Integrated Initiative, AMD serves as a platform for integrating the other CGIAR Initiatives and bilateral projects working in the region. In Viet Nam, for example, AMD is working with Excellence in Agronomy and Low-Emission Food Systems on a mechanized rice straw composting business model, building a learning alliance for living labs, hosting the Agritechnica Asia Live event, fostering synergies on understanding and improving nutrition-sensitive agrifood systems policy review with Sustainable Healthy Diets, and generating new knowledge on the climate security-mobility nexus and researching the implications of climate-related mobility for human security with Climate Resilience. Regarding the development of DCAS+, there has been an initial interaction with the climate service teams of Climate Resilience and Diversification in East and Southern Africa, to develop and share methodologies, tools, and lessons learned. To further integrate the work in South Asia, AMD is also working with Transforming Agrifood Systems in South Asia (TAFSSA) on weather forecasts for mung bean and on early warning systems for aquaculture in Bangladesh.

AMD also participated in several global and national policy engagement events in 2022. In UNFCCC COP27, AMD organized two side events: an interactive dialogue event on agricultural transformations in the Asian Mega-Deltas, together with Wageningen University & Research (WUR); and an event on accelerating digital climate services for resilient food systems in the Global South, co-organized with TAFSSA. AMD presented in a main event at COP27 titled "How to bridge the climate finance gap and support smallholders in food systems transformation". AMD also participated in the WUR-led Delta Knowledge Days in Bangladesh, which is a learning and sharing event on delta knowledge and research.

As of 2022, the AMD Initiative team is composed of approximately 85 staff from six CGIAR Centers, such as the Alliance of Bioversity International and CIAT, International Maize and Wheat Improvement Center, International Potato Center, International Rice Research Institute, International Water Management Institute, and WorldFish. Partner agreements had been signed with around 30 external research partners at international and national levels.

Initiative-level theory of change diagram

This is a simple, linear, and static representation of a complex, non-linear, and dynamic reality. Feedback loops and connections between this Initiative and other Initiatives' theories of change are excluded for clarity.



EOI — End of Initiative outcome

AA — Action Area

IA — Impact Area

SDG — Sustainable Development Goal

- Nutrition, Health, and Food Security
- Poverty Reduction, Livelihoods, and Jobs
- Gender Equality, Youth, and Social Inclusion
- Climate Adaptation and Mitigation
- Environmental Health and Biodiversity

Teams from CGIAR's three Action Areas — System Transformation, Resilient Agrifood Systems and Genetic Innovation — worked to develop an improved set of Action Area outcomes in October 2022. Since this was near the end of the reporting cycle for 2022, it was decided not to update the theories of change based on these new Action Area outcomes.
The exception to this is Genetic Innovation — for this Action Area, as the new outcomes had already been widely discussed among the relevant Initiatives, and with its advisory group of funders and other stakeholders, the decision was made to update their outcomes in time for the 2022 reporting cycle.

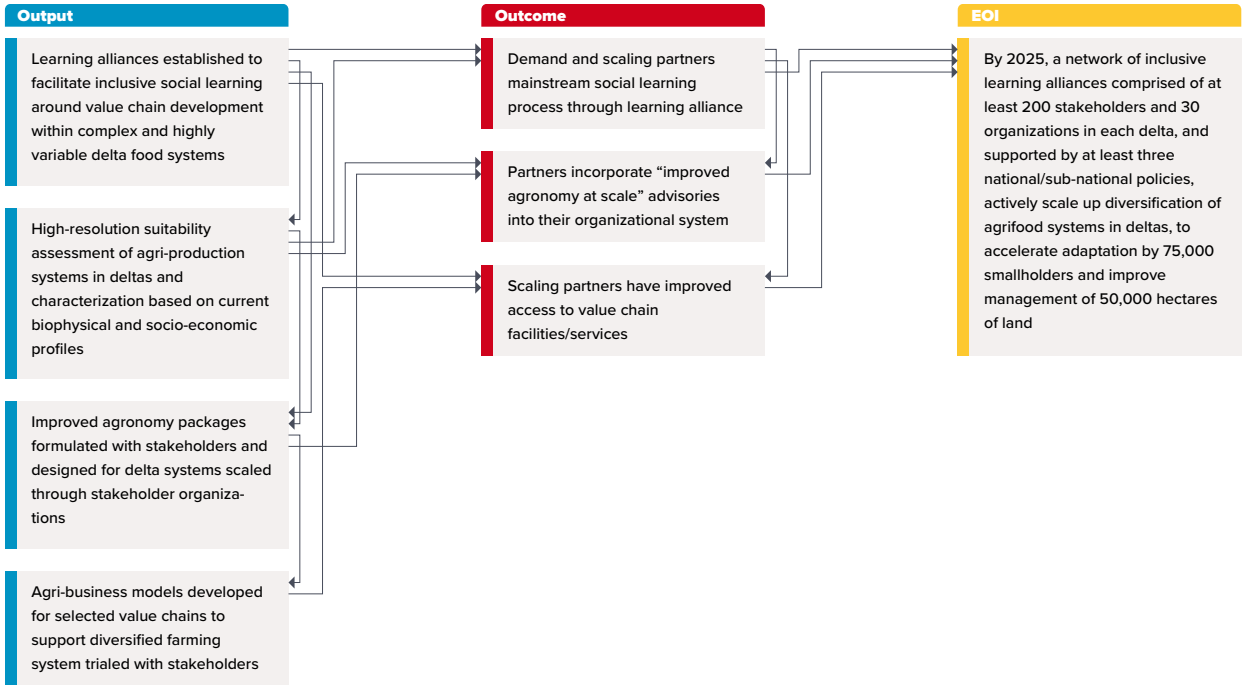
Progress by End of Initiative outcome

EOI-O 1 **By 2025, a network of inclusive learning alliances comprised of at least 200 stakeholders and 30 organizations in each delta, and supported by at least three national/sub-national policies, actively scale up diversification of agrifood systems in deltas, to accelerate adaptation by 75,000 smallholders and improve management of 50,000 hectares of land.**	2022 was focused on getting the on-the-ground activities started in each of the countries, therefore, most of the results are at output level. However, there are some early outcome-level results, including: the adoption of rice straw composting business models in Viet Nam; adoption of modern high-yielding rice cultivation with improved water management in the coastal polder zone of Bangladesh; and empowering farmers and officials of water management groups on cropping intensification with improved water management in Bangladesh. In 2022, AMD also established two province-level learning alliances in Cambodia (Takeo and Prey Veng) and one in Viet Nam (Can Tho). A Learning Alliance Toolkit for facilitators of multi-stakeholder networks was also published.
EOI-O 2 **By 2025, national ministries and major NGOs in at least three countries use AMD co-produced knowledge and evidence to table at least three nutrition-sensitive interventions to reduce mortality, DALYs, and micronutrient deficiencies, for 10,000 producers (80% women) and 50,000 consumers.**	AMD established partnerships through Memorandum of Understanding with various institutions in Bangladesh, Cambodia, and Viet Nam. In Viet Nam, a workshop was conducted on how to integrate AMD into the nutrition-sensitive agriculture models of Viet Nam under the Zero Hunger National Action Program.
EOI-O 3 **By 2025, DCAS+ provided by public and private sector partners are used by at least 300,000 smallholders (at least 29% of them women), with at least one financing partnership plan established to assure sustainability and further scaling.**	In Viet Nam, several government policies were issued to support the uptake of DCAS+ innovations with support of AMD such as: integration of ACBs through the regional directive letter of DCP/MARD and integration of ACBs into the provincial seasonal work plans of the Department of Agriculture and Rural Development. With the help of these policy frameworks, ACBs have reached 130,000 farmers in seven provinces in the Mekong Delta. To further enhance digital advisory, CDTs have been developed for Viet Nam and Cambodia, while in Bangladesh, a livestock component was added to Agvisely, a digital platform for climate advisory.

EOI-O 4 **By 2025, at least three gender-equitable and socially inclusive natural-resources informed food systems governance policies or strategies have been co-designed in partnership with national and sub-national governments, international development partners, and grassroot actors.**	Baseline policy and institutional review of GESI and inclusive governance in agriculture and climate-resilient food systems Initiatives was completed in Bangladesh, Cambodia, and Viet Nam. In Bangladesh, a policy brief was discussed with key national-level stakeholders and a financial commitment from CGIAR GENDER Impact Platform to develop a conceptual and methodological framework for field research was received. In Viet Nam, milestones included: gender analysis of Viet Nam's Mekong River Delta policy documents; a workshop on science connections for better governance and sustainable development; and a regional workshop on gender and agriculture in a changing climate in Southeast Asia.
EOI-O 5 **By 2025, high-level policy-makers and development partners in at least two deltas involved in knowledge integration networks make public statements on the importance of One CGIAR and AMD and engage with AMD to help design climate adaptation-oriented policies, projects and investment plans with a nominal value of at least US$900 million.**	AMD innovations were nationally scaled through their implementation in several government policies. These include the CS-MAP approach being expanded nationally in Viet Nam's Green Growth Strategy and AWD being recognized and included as a dual mitigation and adaptation activity in Viet Nam's updated NDC as well as in Bangladesh's NAP. Development partners funded new projects to maximize Climate Adaptation and Mitigation outcomes in delta development, specifically through increased climate finance investment in adaptation through an ADB bilateral-funded project on AMDs. The Australian Government's DFAT Business Partnerships Platform is funding two projects with CGIAR involvement to support private and public sector partners in scaling carbon market access for rice producers and enhancing transparency of emission reduction claims.

Section 3 Work Package-specific progress

Work Package 1:
Adapting deltaic production systems



Work Package 1 progress against the theory of change

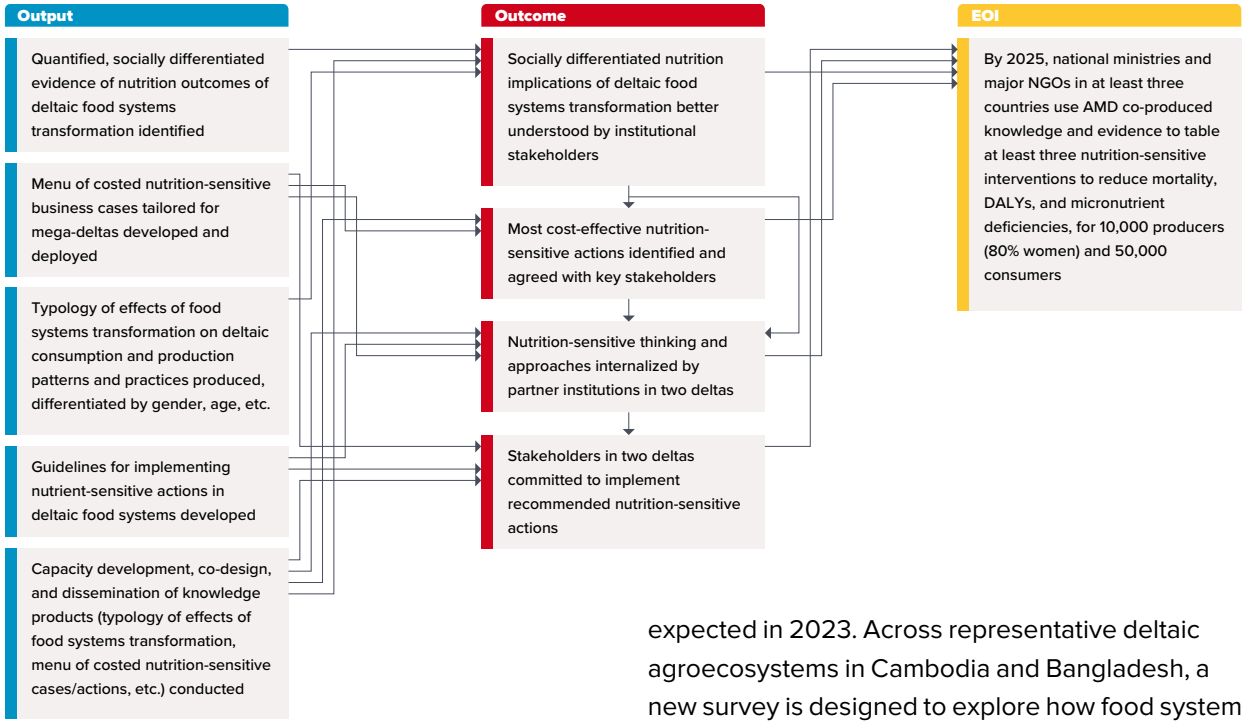
High resolution suitability assessments (Output 1.1) of agri-production systems using a ground-truthed suitability mapping approach are in various stages of completion for Viet Nam, Cambodia, and Bangladesh. These are being done jointly by AMDs experts in remote sensing and crop modelling and our partners in each country, in combination with the land use analysis and risk mapping component of Work Package 5.

Learning alliances (Output 1.2) were established in Cambodia and Viet Nam to facilitate inclusive social learning around value chain development within complex and highly variable delta food systems, focusing on climate change adaptation and mitigation. In Viet Nam, the learning alliance has been established in partnership with the Living Labs for People (LL4P) approach of the CGIAR Initiative on Low-Emission Food Systems.

Improved agronomy packages (Output 1.3) are being formulated with stakeholders, designed for delta systems, and to be scaled through stakeholder organizations. These activities have been mainly focused in Bangladesh and India, with the groundwork set for expansion in Cambodia and Viet Nam in 2023. These activities are linked with the SIIL project in Bangladesh, which AMD will build on more strongly in 2023 and beyond. Work Package 1 is also collaborating with the other CGIAR Initiatives (i.e., Excellence in Agronomy and Seed Equal) on this work.

Agribusiness models (Output 1.4) are being tested and developed for selected value chains to support diversified farming systems in delta regions. Examples are: maize, sunflower, and okra in Bangladesh; sweetpotato, mung bean, and rice fish in Cambodia; and sweetpotato and rice-shrimp in Viet Nam.

Work Package 2:
Nutrition-sensitive deltaic agrifood systems



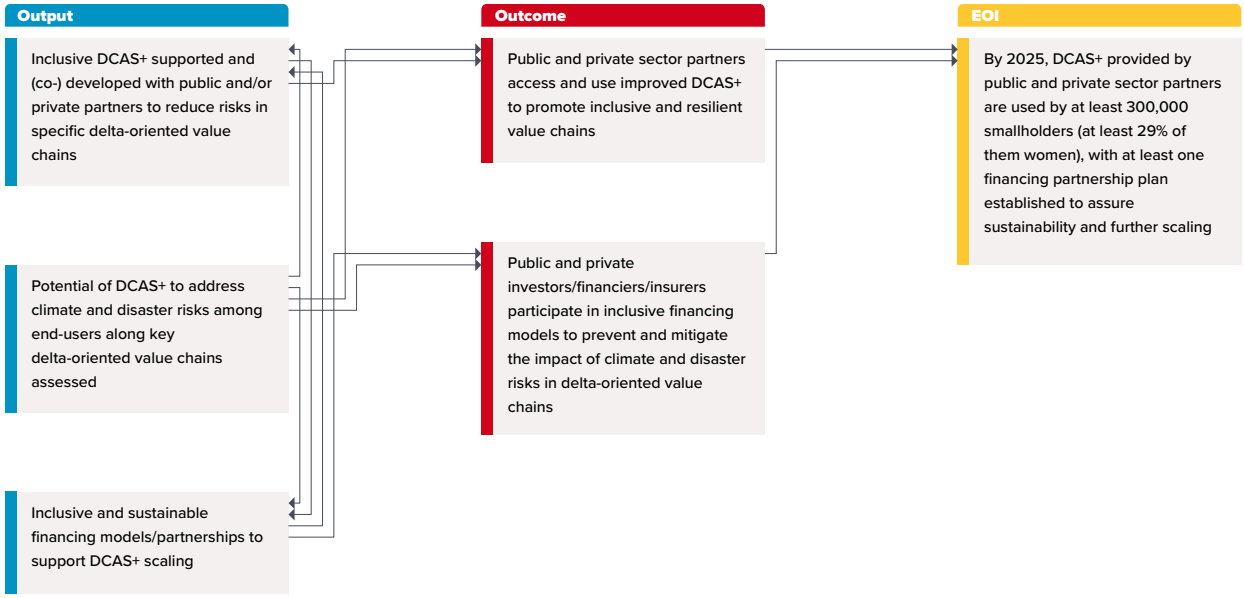
Work Package 2 progress against the theory of change

The focus of Work Package 2 is to identify deltaic food system transitions and their drivers on both the demand and supply sides to design nutrition-sensitive interventions. Work Package 2 reviewed and started analyzing existing datasets from governments and CGIAR organizations in AMD-focused countries in 2022 to determine how changes in production practices and consumption patterns may influence micronutrient intakes (Outputs 2.1 and 2.2), differentiating by gender, age, and socioeconomic status. Two articles from the existing datasets are submitted to journals for publication. Review methods for nutrition-sensitive agrifood systems policies, literature, and data sources are also developed and applied for reviewing in Viet Nam, Cambodia, and Myanmar. Comparisons across AMD-focused countries on nutrition-sensitive policies and interventions are expected in 2023. Across representative deltaic agroecosystems in Cambodia and Bangladesh, a new survey is designed to explore how food system transformation impacts nutrition security.

Work Package 2 collaborated with the Global Health Department at the University of Washington to evaluate an aquaculture project in Bangladesh. The study aimed to define the most appropriate, standardized methods for measuring the cost and cost-effectiveness of integrated multi-sectoral nutrition strategies and interventions (Output 2.3). In 2023, the evaluation results will be published and Work Package 2 intends to develop guidelines and manuals for replicating the approaches in other AMD-focused countries (Output 2.4).

In collaboration with MARD's Zero Hunger National Action Program in Viet Nam, Work Package 2 explored and identified opportunities for integrating Work Package 2 research into nutrition-sensitive agriculture models. After a successful national stakeholder consultation workshop organized in Cambodia in 2022, Work Package 2 plans to facilitate several consultation workshops in other AMD focus countries in 2023 to validate nutrition-sensitive policies and interventions identified during the policy and literature reviews.

Work Package 3:
De-risking delta-oriented value chains



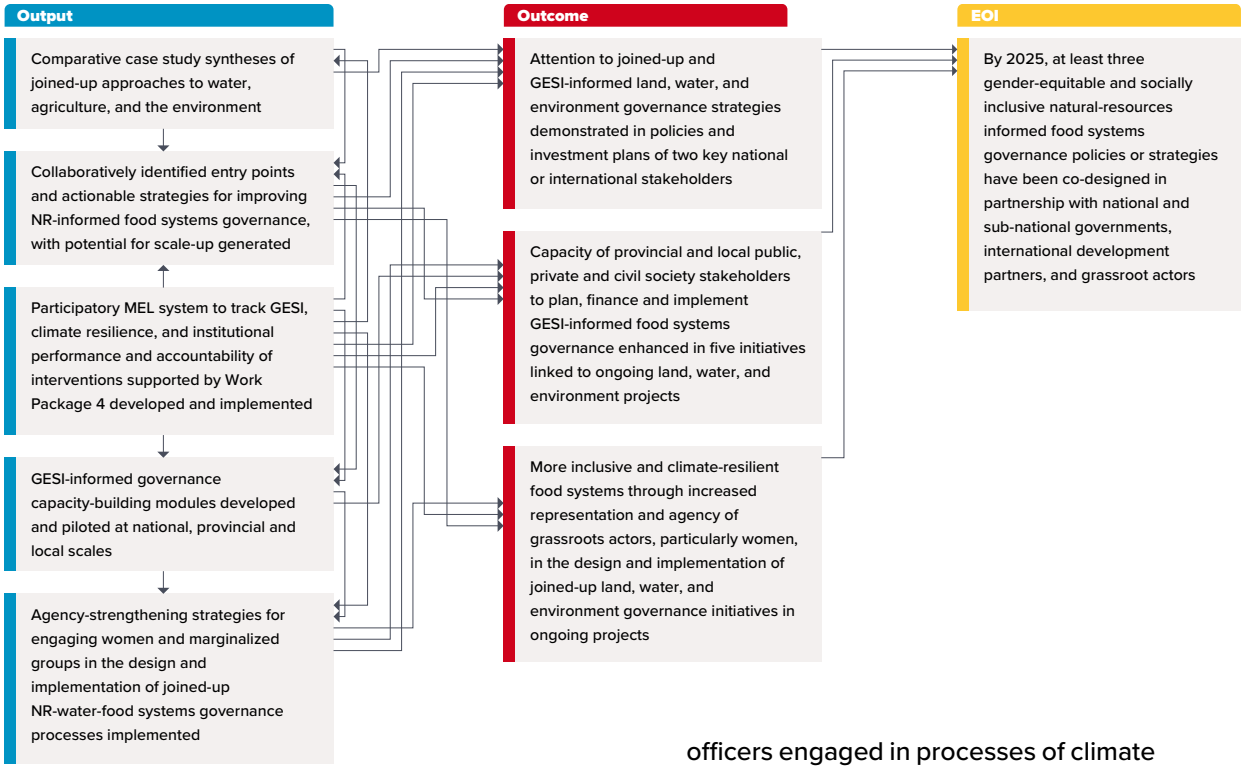
Work Package 3 progress against the theory of change

As part of an assessment of DCAS+ to address climate and disaster risks (Output 3.1), a scoping study for Viet Nam, Cambodia, and Myanmar and a scoping and value chain study for Bangladesh were conducted to prioritize delta-oriented value chains in each country based on economic, social, and environmental criteria. Data on climate and agricultural information sources and (digital) climate advisory tools/services were also collected in preparation for an online survey among providers in 2023 to explore type of service, target users, information sources, dissemination, and business model, among others (see initial results for Viet Nam). Parallel to this, a user needs assessment was initiated among farmers and cooperatives to better understand farming systems, climate risks/impacts, key farming decisions, existing and desired use of services, and digital readiness (see initial results for farmer user needs assessment in Viet Nam).

Meanwhile, further progress has been made in improving and scaling climate services based on previous projects and programs (Outcome 3.1). In Viet Nam, participatory development of ACBs scaled with government partners have reached 130,000 farmers in seven provinces in the Mekong Delta. CDTs have been developed for both Viet Nam and Cambodia as a step towards digital advisory and/or platforms. Similar developments took place in Bangladesh with expanding decision trees to livestock as part of Agvisely, an existing platform that AMD will expand. Also, several knowledge products, like manuals and tools, were developed to support implementation, capacity-building, and scaling.

Based on the work, opportunities, and pathways for the further development, improvement, and promotion of DCAS+ business models (Output 3.2) will be discussed with public and private sector partners by April/May 2023. This will include an initial assessment of sustaining financing mechanisms and partnerships (Output 3.3).

Work Package 4:
Joined-up, gender-equitable, inclusive deltaic systems governance



Work Package 4 progress against the theory of change

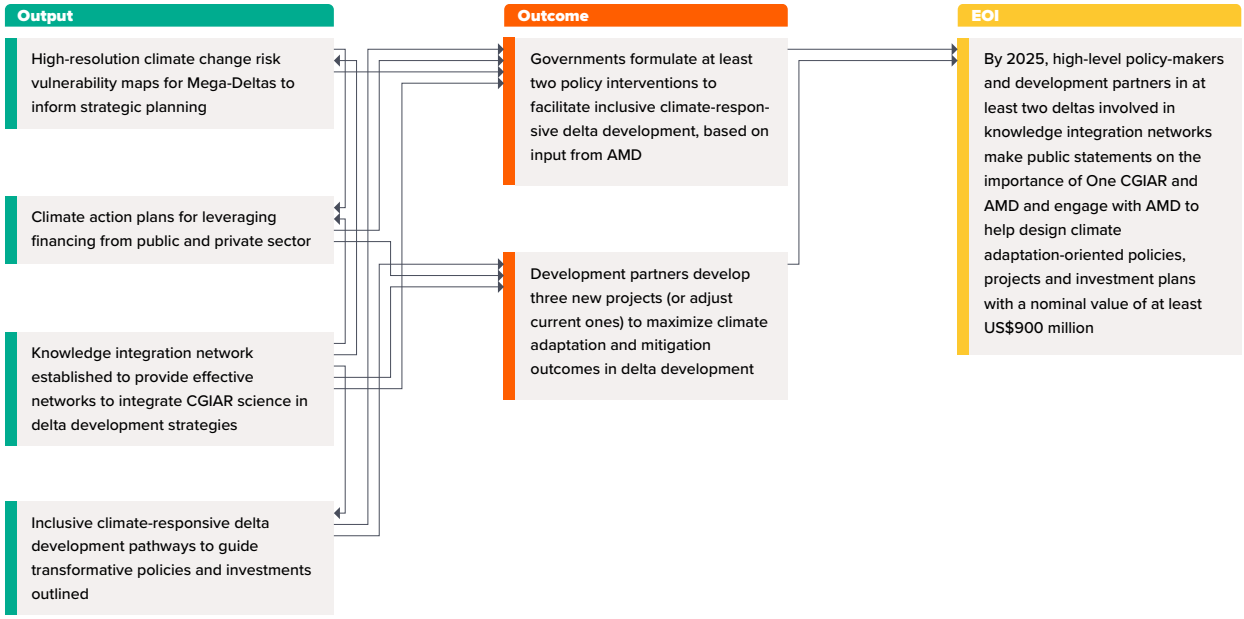
Work Package 4 focuses on gender equality and social inclusion (GESI) governance in the shift to more climate-resilient food systems in the Asia Mega-Deltas. In 2022, five CGIAR Centers and multiple local partner organizations achieved three outputs:

(i) Policy analyses in Viet Nam, Cambodia and Bangladesh. These insights help identify key gaps, opportunities, and entry points towards facilitating more equitable and inclusive food systems governance processes and implementation (Output 4.1).

(ii) Identify key challenges and opportunities for capacity-building of sub-national implementation actors. In Viet Nam, capacity-building in GESI was initiated with government officers engaged in processes of climate adaptation interventions. In addition, a gender and agriculture regional capacity-development workshop was carried out with partners from eight countries in Southeast Asia in collaboration with the Plant Health Initiative (Outputs 4.2 and 4.3). AMD joined gender sessions in COP27 with the CGIAR GENDER Impact Platform to discuss engaging women and the marginalized in climate change adaptation policies and practices (Output 4.4). Work Package 4 also supports gender integration in other Work Packages to ensure that AMD innovations achieve greater impacts on gender equality in deltaic food systems and climate adaptation.

(iii) Identification of key partners in Bangladesh and India with a mandate to support and build agency of grassroots actors in demanding improved accountability to inclusive and GESI-informed food systems governance in specific research locations.

Work Package 5:
Evidence-based delta development planning



Work Package 5 progress against the theory of change

Under Output 5.1, a key outcome was the integration of the CS-MAP methodology into Viet Nam's Green Growth Strategy. This approach has also been shared across the AMD countries through the development of a guide and materials package. An individual-level human security index was developed and research on climate-induced mobility as an adaptation strategy has commenced. Climate-risk data was systematized for mapping climate hazards in delta areas.

Output 5.2 focused on assessing: (i) suitability for AWD; and (ii) sustainable straw management adoption capacity, analyzing policy and modelling investment costs for comparing different adaptation scenarios, and publishing a framework for monitoring, reporting, and verification following the Paris Agreement.

Key outputs delivered under Output 5.3 focused on climate-responsive delta development pathways to guide transformative policies and investments. These include publishing papers and articles providing guidance and support for the implementation of national climate strategies and private–public partnerships for climate finance.

Under Output 5.4, the cooperation with the Food Security and Valuing Water Programme of WUR created key outputs. These include a joint COP27 event on agricultural transformations in the Asian Mega-Deltas and co-organization of the Delta Knowledge Days to share insights from research on adaptation planning and investment in the Ganges Delta. Additional outputs include co-organization of the COP27 event on the climate finance gap and reaching smallholder farmers, knowledge sharing during Mekong Delta Working Group meetings, and World Bank/MARD consultation meetings on the new "1 million hectares" program in Viet Nam aimed at producing high-quality low-carbon rice.

Work Package progress rating

WORK PACKAGE	TRAFFIC LIGHT / RATIONALE
1	 Given the progress relative to the theory of change at output level, with some early examples of outcomes, such as the statement of policy support and endorsement of "mechanized rice straw composting business model" in Can Tho, Viet Nam.
2	 Activities took longer than anticipated to initiate due to delays in staffing the Initiative caused by CGIAR People and Culture regulations as well as internal staffing issues (e.g., staff recruited to AMD with time fully committed to ongoing projects). However, Work Package 2 has been able to assemble an excellent and highly committed team that has made excellent progress in making up for lost time and anticipates "hitting the ground running" in 2023, after what was in effect a nine-month inception phase from March 2022 onward.
3	 Most activities are largely on track although minor delay (4–6 weeks) has occurred, especially in Viet Nam, Cambodia, and Myanmar due to overlap with the closing of DE-RISK SE Asia, a regional program with similar content, team, and partners. The delay is not expected to have a major impact on the success of Work Package 3. On the contrary, since DE-RISK SE Asia strongly overlaps with AMD, the outputs and resulting partnerships are expected to have a positive impact on the ability to reach outputs and outcomes with public and private sector partners.
4	 Work Package 4 has initiated work on the following planned activities: 1.1.1/2.1.1: case study and policy analysis of food systems governance with respect to climate resilience and GESI; formal and customary governance in local contexts; identification of most promising entry points for facilitating climate-resilient outcomes; comparative analysis across countries; and synthesis needs to be done in 2023. 1.1.2: key stakeholders identified and dialogues initiated at national and local levels. The reasons for the delay are technical: a late start, vetting of partners and consultants, and in-house administrative delays, as well as challenges in coordination and allocation of work across Centers.

WORK PACKAGE	TRAFFIC LIGHT / RATIONALE
5	 Work Package 5 has signed Letters of Authorization with partners in all countries and we have already begun the mapping and vulnerability assessment studies. Work Package 5 has commenced training on CS-MAPs in Cambodia and will begin training in Bangladesh in the first quarter of 2023. Work Package 5 has met some outcomes already in terms of increasing investments in climate change in Asian Mega-Deltas and influencing policy, as evidenced by adopting the CS-MAP approach nationally as part of the Green Growth Strategy in Viet Nam and including the AMD innovation of AWD in Viet Nam's updated NDC and in Bangladesh's NAP.

KEY		
On track		• Annual progress largely aligns with Plan of Results and Budget and Work Package theory of change • Can include small deviations/issues/ delays/risks that do not jeopardise success of Work Package
Delayed		• Annual progress slightly falls behind Plan of Results and Budget and Work Package theory of change in key areas • Deviations/issues/delays/risks could jeopardise success of Work Package if not managed appropriately
Off track		• Annual progress clearly falls behind Plan of Results and Budget and Work Package theory of change in most/all areas • Deviations/issues/delays/risks do jeopardise success of Work Package

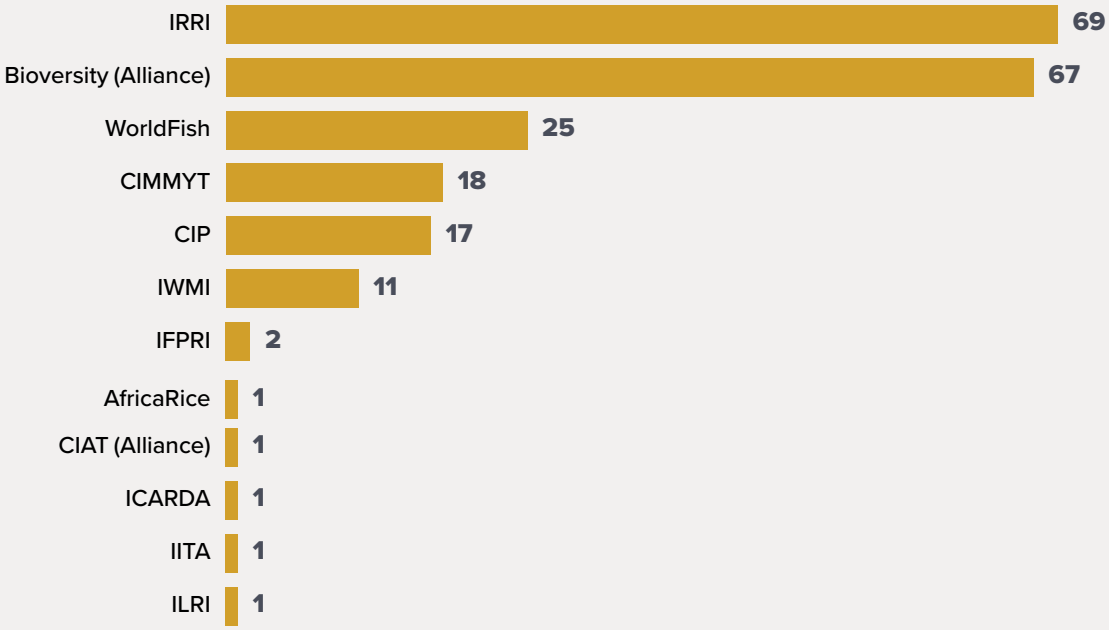
Section 4 Initiative key results

This section provides an overview of 2022 results reported by Asian Mega-Deltas. These results align with the CGIAR Results Framework and Asian Mega-Deltas' theory of change. Further information on these results is available through the CGIAR Results Dashboard.

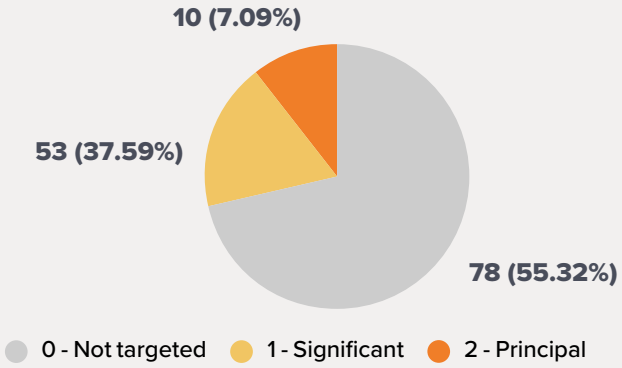
Overview

Results	Outputs				Outcomes		
141	30 Capacity sharing for development	8 Innovation development	84 Knowledge products	3 Other outputs	4 Innovation use	9 Policy change	3 Capacity change

Contributing CGIAR Centers



Results by gender tag

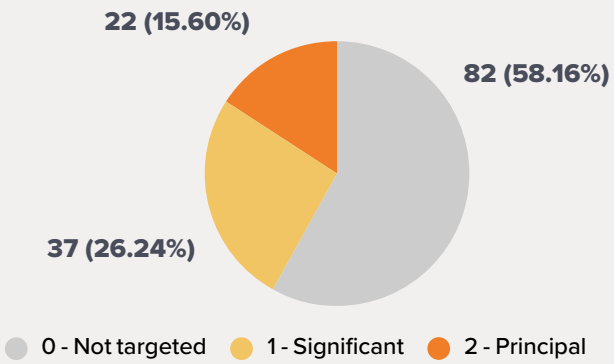


0 = Not targeted: The activity/result does not target gender equality.

1 = Significant: The activity/result contributes in significant ways to gender equality, even though it is not the principal focus of the activity.

2 = Principal: Gender equality is the main objective of the activity/result and is fundamental in its design and expected results.

Results by climate change tag



0 = Not targeted: The activity does not target climate mitigation, adaptation, and climate policy goals of the CGIAR as put forward in its strategy.

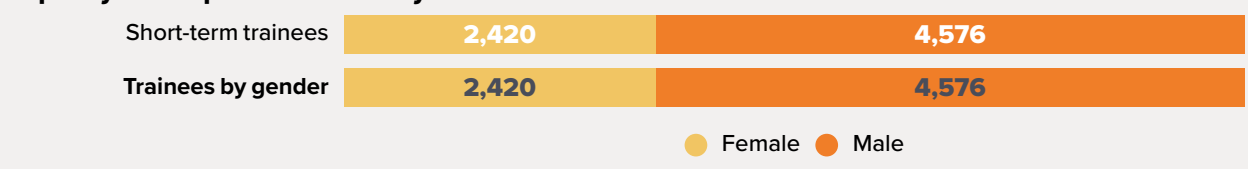
1 = Significant: The activity contributes in significant ways to either one of the three CGIAR climate-related strategy objectives — namely, climate mitigation, climate adaptation, and climate policy, even though it is not the principal focus of the activity.

2 = Principal: The activity is principally about meeting either one of the three CGIAR climate-related strategy objectives — namely, climate mitigation, climate adaptation, and climate policy, and would not have been undertaken without these objectives.

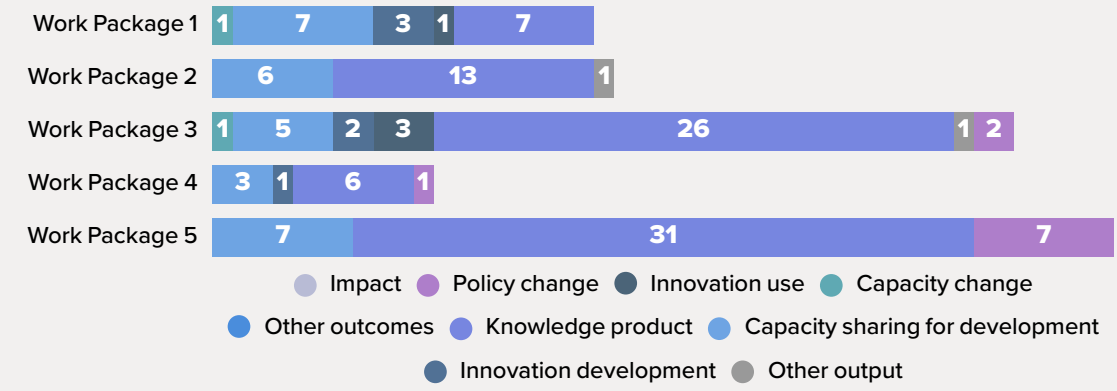
Results by country

Results by region

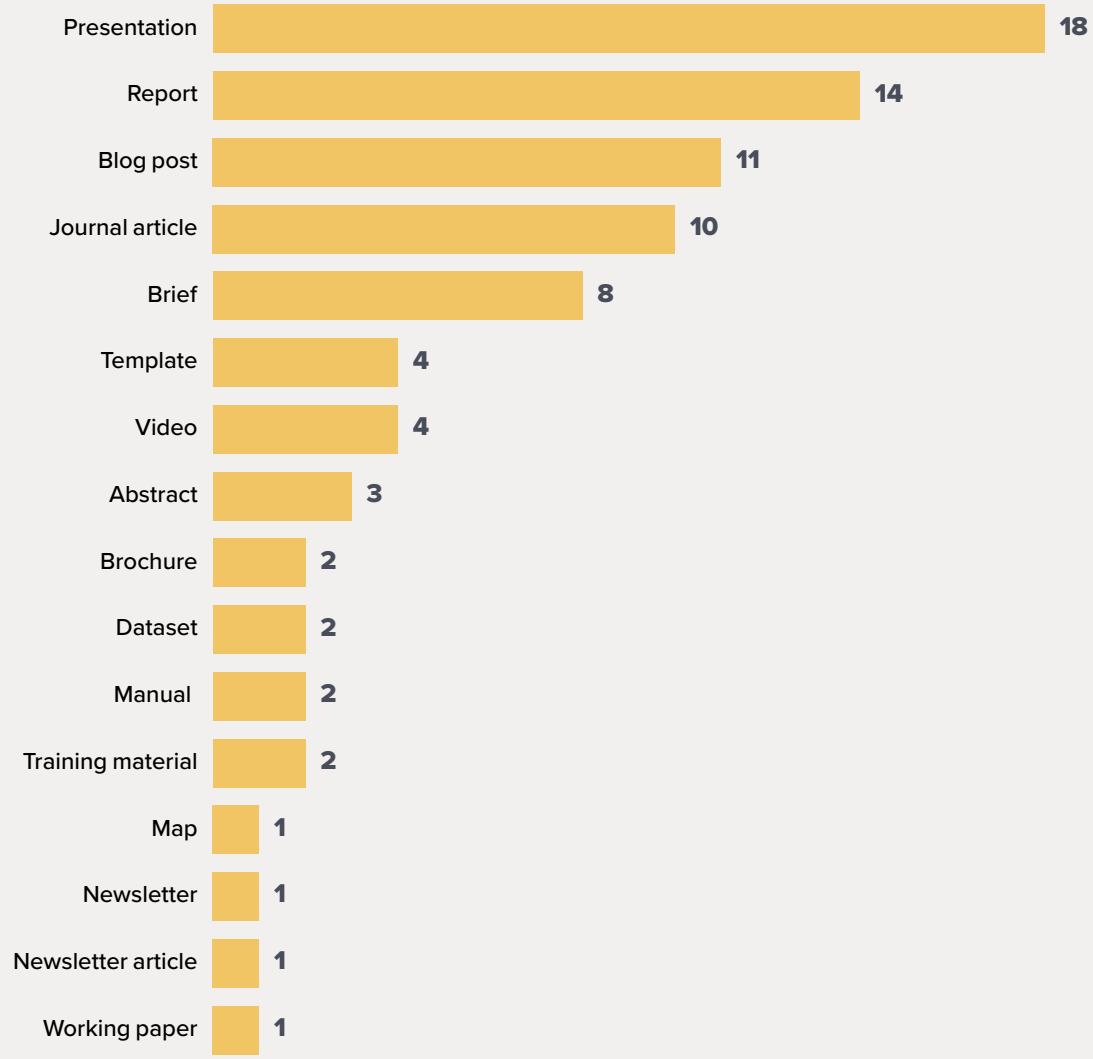
Capacity development trainees by term



Results by Work Package

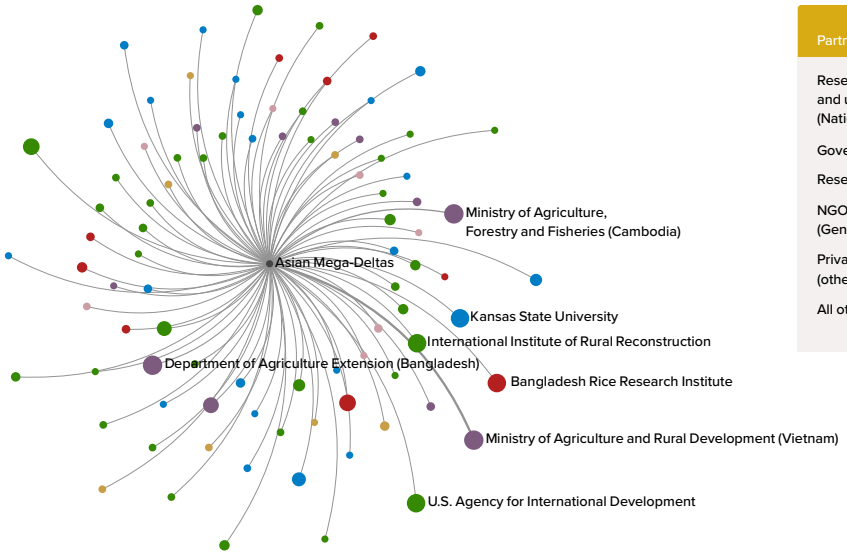


Knowledge products by category



Innovations by readiness level

Section 5 Impact pathway integration – External partners



Partners typology	# of partners	% of partners
Research organizations and universities (National) (Universities)	22	22.0%
Government (National)	11	11.0%
Research O&U (NARS)	9	9.0%
NGO International (General)	7	7.0%
Private company (other than financial)	7	7.0%
All other categories	35	35.0%

Top five institution types

All other categories · Government (National) · NGO International (General) · Not applicable · Private company (other than financial) · Research O&U (National) (NARS) · Research O&U (National) (Universities)

Note: CGIAR Centres are excluded from the analysis. Partners and edges are sized by the number of results. Labels are shown for the partners involved in the most results.

Partnerships and Asian Mega-Deltas' impact pathways

To create policy outcomes, AMD is working closely with National Agricultural Research and Extension Systems (NARES) in its three priority countries of Bangladesh, Cambodia, and Viet Nam. For instance, in Viet Nam, AMD's collaboration with MARD and its attached agencies resulted in a series of outcomes, such as: adoption of CS-MAP in the National Green Growth Strategy; integration of ACBs in the regional directive letter of the Department of Crop Production and in the provincial seasonal work plans; inclusion of AWD technology to mitigate greenhouse gas emissions in rice in the NDCs; and engagement with international private and public sector partners in scaling carbon market access and incentivizing low-emission rice production.

AMD is harnessing the multi-stakeholder collaboration in the priority countries in order to achieve outcomes. In Bangladesh, the partnership with government agencies (i.e., Bangladesh Rice Research Institute and the Department of Agriculture Extension), international organizations (United States Agency for International Development), and academic institutions (Kansas State University) led to capacity change among various stakeholders, particularly women and youth, on climate-resilient crop and water management practices and on food and nutritional security. For Cambodia, AMD is coordinating with the Ministry of Agriculture, Forestry and Fisheries on its work on implementing CS-MAP, building learning alliances, and developing digital climate advisory and bundled services. The International Institute of Rural Reconstruction is also providing support to AMD in the implementation of its work in Cambodia on nutrition-sensitive agrifood systems and climate risk management.

Section 6 Adaptive management

AMD is continuously working to improve its strategy, cooperation, and results management. Using CGIAR mechanisms and participatory approaches, AMD was able to identify areas for improvement in order to ensure sustainable and country-aligned outcomes. AMD officially formed a Steering Committee, which is composed of government leaders and experts representing the priority countries, to provide technical advice and guidance on the implementation of the Initiative. In addition, a Pause, Reflect, and Plan (P&R) workshop in Phnom Penh, Cambodia, from March 14 to 17, 2023, was conducted by the AMD team, together with the partners, to jointly refine the impact pathway, analyze gaps, and plan the actions and activities for the following implementation years of the AMD. During the workshop, a "Start, Stop, Continue" exercise was done with the participants to reflect on what the things are that AMD should start, stop, and continue doing.

Based on these activities, here are some of the adaptive management strategies that AMD identified and planned to implement:

RECOMMENDATION	SUPPORTING RATIONALE
Adjustments in the Initiative's theory of change to better align with the country governments' adaptation and mitigation priorities and incorporate learnings, challenges, and opportunities from Year 1 implementation. 1. AMD Work Packages decided to incorporate additional policy and engagement activities and outputs in order to better contribute to national/regional/delta priorities by delivering key research and policy evidence to inform climate resilience, low-carbon, and sustainable development responses, for example: - Work Packages 1 and 5: additional activities and policy engagements to contribute to the low-carbon rice roadmap and 1 Million Hectares Quality and Low-Emission Rice in Viet Nam and to the Bangladesh Delta Plan, which lead to achieving policy outcomes. - Work Package 2: integrate the research evidence to Zero Hunger National Action Plan of Viet Nam. - Work Package 3: additional policy advocacy and engagement activities to further intensify expansion on partnerships for creating sustainable financing models for DCAS+ scaling. - Work Package 4 amendment of EOI outcomes at P&R workshop in Cambodia. Acknowledgement that outcomes will need to reflect on the political/governance context of the deltaic countries. 2. Based on the current political climate in Myanmar, AMD decided to stop all activities with national government partners in the country from 2022 onwards.	The AMD P&R workshop provided an opportunity to reflect on Year 1 experience and revisit and align better AMD's innovation and research to the priorities of national partners in adaptation and mitigation in the deltas.

RECOMMENDATION	SUPPORTING RATIONALE
3. Adjust outcome targets and phasing of implementation and refine formulation of output and outcome statements to reflect on Year 1 implementation and to better understand the feasibility of achieving outputs and outcomes, for example: - Work Package 1: outcome target on area under improved management and number of farmers adopting diversified systems now have validated targets per country. The reflection led to the decision to reduce targets to 10,000 farmer adoptions across four countries (3,000 in Viet Nam, 3,000 in Cambodia, 3,000 in Bangladesh, and 1,000 in India) and 31,000 ha under improved management (8,000 in Viet Nam, 5,000 in Cambodia, 15,000 in Bangladesh, and 3,000 in India). Implementation in India will only start in 2023, which was delayed due to staff turnover. - Work Package 2: outcome target reduced to two countries and two nutrition-sensitive interventions. - Work Package 5: target on nominal value of informed investments on climate considered to be reduced due to global economic climate. 4. Strengthening cross-cutting gender activities to intentionally target gender across Work Packages, for example: - Work Package 1: targeting outputs and outcomes on women-led learning alliances and women-led business models. - Work Package 2: integrating gender research questions in the generation of socially-differentiated evidence of nutrition outcomes of deltaic food systems transformation. - Work Package 3: integrating GESI lens in evaluating and promoting DCAS+ advisory delivery and financing models. - Work Package 5: inclusion of gender indicators in analysis of vulnerability and adaptive capacity.	The AMD P&R workshop provided an opportunity to reflect on Year 1 experience and revisit and align better AMD's innovation and research to the priorities of national partners in adaptation and mitigation in the deltas.
Work Package 4 identified the need to adjust its theory of change/results framework. AMD is coordinating with the CGIAR Performance and Results Management team and Tonja Schutz to update the Work Package 4 theory of change/results framework to arrive at feasible and measurable outcomes and outputs. The changes in the theory of change are expected to be applied in April 2023.	During the AMD P&R workshop, all Work Packages were able to undergo a review and apply smaller adjustments to their theories of change. Work Package 4, however, needs more time for discussion and guidance on reflecting on their Year 1 experience and identified challenges.

RECOMMENDATION	SUPPORTING RATIONALE
Stronger connection with other Initiatives. AMD will organize a knowledge integration event around the second or third quarter of 2023 to share results from Year 1 and 2 of the different Initiatives working in the region. A joint workshop between CGIAR Initiatives on Excellence in Agronomy and AMD on climate-resilient agriculture for Asian deltas will be organized in Viet Nam in the first quarter of 2023. More joint activities with TAFSSA and Climate Resilience in Work Package 3 will be initiated. Through Work Package 1, AMD aims to integrate and contribute more to the Genetic Innovations action area	As a Regional Integrated Initiative, AMD will take the lead role in providing the platform for knowledge sharing among the Initiatives.
Better coordination and knowledge integration across Work Packages, Initiatives, and scaling partners. AMD is planning to hire a knowledge integration coordinator, who will work on both technical and administrative management and on coordination among AMD knowledge networks. This staff member will also serve as coordinator for Viet Nam.	In the first year of implementation, the team realized the need for a specific person focusing on better integration of AMD with scaling partner networks and other Initiatives.
Improving AMD Initiative baseline to: 1. Clarify contribution of AMD within relevant outcome trajectories of CGIAR Initiatives 2. Inform pacing of delivery of interventions; and 3. Enhance achievability of outcomes.	As an effort to improve the evaluability of AMD towards EOI outcomes, selected baseline studies have been identified to make sure outcome and impact evaluations can be rigorously done.

Section 7 Key result story

A workshop on Climate-Smart Mapping and Adaptation Planning (CS-MAP) to adjust the cropping pattern and the planting schedule of rice production in the Mekong Delta in Vietnam. Photo credit: IRRI

Viet Nam government is scaling AMD innovations to support Mekong River Delta (MRD) development

With the recent updating of Viet Nam's Nationally Determined Contributions (NDC), the Ministry of Agriculture and Rural Development (MARD) has to strengthen its policies and programs to achieve the mitigation targets in the agriculture sector. To support MARD's adaptation and mitigation efforts, several innovations (i.e., AWD, CS-MAP, ACB, rice straw-based green circular economy model) under the CGIAR Initiative on Asian Mega-Deltas (AMD) are being mainstreamed in Viet Nam's national policies (NDC, National Strategy on Green Growth) and local programs, particularly in the Mekong Delta.

Recently, Viet Nam updated its Nationally Determined Contributions (NDC) in the agriculture sector to develop and implement stronger greenhouse gas (GHG) emission reduction measures with its own resources, along with the cooperation and support of the international community. In the new NDC, the agriculture mitigation targets are almost doubled, specifically an 82% and 97% increase for unconditional and conditional contributions, respectively. New policies and master plans related to agriculture adaptation and mitigation are added in the NDC, such as the National Climate Change Strategy to 2050 with net zero target, National Strategy on Green Growth 2021–2030, and Master Plan for the Mekong Delta in the period of 2021–2030, vision to 2050.

To contribute to achieving the country's Climate Adaptation and Mitigation goals in agriculture, several innovations under the CGIAR Initiative on Asian Mega-Deltas (AMD) are being mainstreamed in Viet Nam's Ministry of Agriculture and Rural Development (MARD) national policies and local programs.

In the updated NDC, alternate wetting and drying (AWD), developed by the International Rice Research Institute (IRRI) and one of the innovation packages under AMD, is listed, for the first time, as a measure for methane reduction in agriculture in Viet Nam's NDC[1]. AWD and other measures in rice farming and management of agricultural by-products are projected to achieve the 30% reduction in methane emission from 2020 levels by 2033.

The Climate-Smart Mapping and Adaptation Planning (CS-MAP), developed by IRRI and Viet Nam's Department of Crop Production (DCP) to promote evidence-based delta development planning under AMD, has been integrated to MARD Decision No. 3444 on the Action Plan to implement the National Strategy on Green Growth 2021–2030[2]. Effectively implemented in five agroecological regions of Viet Nam, including the Mekong River Delta (MRD) region, CS-MAP is a participatory approach that integrates local knowledge and science-based research in developing maps of climate-related risks and adaptation plans for crop production, suitable to location-specific conditions. As the action point on "Developing a climate change adaptation map (CS-MAP) system for all localities", CS-MAP is selected as one of the strategies under the category of environmental protection to develop green infrastructure that adapts to climate change and reduces GHG emissions.

1 Viet Nam NDC 2022.
2 MARD Decision 3444 — Action Plan — National Strategy on Green Growth 2021–2030.

> **“AMD provides a platform for integration of CGIAR innovations in Viet Nam. For example, CS-MAP and ACB are linked to provide effective risk management from the provincial to commune levels. These interventions, including the rice straw composting, are contributing to the achievement of our goals in the Mekong Delta Plan 2030.”**
>
> **Mr Le Thanh Tung, Deputy Director, Department of Crop Production**

At the local levels, regional and provincial offices under MARD are scaling the Agro-Climatic Bulletin (ACB) and rice straw composting business model. Developed by the Alliance of Bioversity International and CIAT and DCP, ACBs are agricultural advisories based on climate and weather forecasts, which are co-developed with actors along the climate service value chain and disseminated through locally relevant and appropriate communication channels. ACB has been scaled to 342 communes in seven provinces (130,000 farmers) in the MRD, making use of seasonal and monthly/10-day agro-climatic advisories through Zalo groups and other communication channels (posters, loudspeakers, YouTube, meetings)[3]. Part of AMD's effort of de-risking delta-oriented value chains in MRD, ACB is integrated into provincial and regional plans, specifically, the seven provinces in the region have issued seasonal work plans to implement ACBs in Summer–Autumn 2022 and Winter–Spring 2022–2023, and DCP Southern office has issued official letters directing the implementation of ACBs in the whole of MRD[4].

Implemented by IRRI and the Sub-Department of Crop Production and Plant Protection of Can Tho City, the mechanized rice straw composting was pilot-tested by the New Green Farm Cooperative in 2022. To improve deltaic production systems in MRD under AMD, this rice straw-based green circular economy model includes composting and mushroom farming using rice straw aimed at supporting low-emission and organic rice farming. With remarkable results, including increased income among farmers, the Sub-Department of Crop Production and Plant Protection of Can Tho City issued a memorandum endorsing the replication of the model across the different districts in Can Tho.[5]

3 De-RISK SEA (2018–2022): Key results and outcomes.
4 Integration of Agro-climatic Bulletins (ACBs) into regional directive letter of Department of Crop Production (DCP)/Ministry of Agriculture and Rural Development and Integration of Agro-climatic Bulletins (ACBs) into provincial seasonal work plans of Department of Agriculture and Rural Development.
5 Letter issued by Sub-Department of Crop Production and Plant Protection of Can Tho City on the Replication of IRRI's "Mechanized rice straw composting" model dated Jan. 2, 2023.

References

1. *Ministry of Agriculture and Rural Development. 2021. MARD Decision 3444-Action Plan-National Strategy on Green Growth 2021-2030. Hanoi, Viet Nam: Office of the Prime Minister. Available online at* https://en.baochinhphu.vn/national-green-growth-strategy-for-2021-2030-vision-towards-2050-11142515.htm
2. *Socialist Republic of Viet Nam. 2022. Nationally Determined Contribution (NDC) Updated in 2022. Hanoi, Viet Nam: Ministry of Natural Resources and Environment. Available online at* https://unfccc.int/sites/default/files/NDC/2022-11/Viet%20Nam_NDC_2022_Eng.pdf
3. *Applying seasonal climate forecasting and innovative insurance solutions to climate risk management in the agriculture sector in in Southeast Asia (DeRISK SE Asia). 2022. DeRISK SEA (2018-2022): Key results and outcomes. M&E Brief. Hanoi, Viet Nam: Alliance of Bioversity and CIAT.*
4. *Department of Crop Production (DCP). 2022. Regional directive letter on the integration of Agro-climatic Bulletins (ACBs). Hanoi, Viet Nam: DCP-Ministry of Agriculture and Rural Development.*
5. *Department of Agriculture and Rural Development (DARD) - An Giang Province. 2022. Integration of Agro-climatic Bulletins (ACBs) into provincial seasonal work plans of the Department of Agriculture and Rural Development. An Giang, Viet Nam: DARD.*
6. *DARD-Can Tho City. 2022. Integration of Agro-climatic Bulletins (ACBs) into provincial seasonal work plans of the Department of Agriculture and Rural Development. Can Tho, Viet Nam: DARD.*
7. *Sub-Department of Crop Production and Plant Protection - Can Tho City. 2022. Letter promoting the replication of IRRI's "Mechanised rice straw composting" model. Can Tho, Viet Nam: DARD.*

LINKS TO IMPACT AREAS

Primary Impact Areas: Nutrition, Health and Food Security; Poverty Reduction, Livelihoods and Jobs; Gender Equality, Youth and Social Inclusion; Climate Adaptation; Mitigation and Environmental Health and Biodiversity

GEOGRAPHIC SCOPE

Region(s): Southeast Asia
Country/ies: Viet Nam

KEY CONTRIBUTORS

- IRRI
- Alliance of Bioversity International and CIAT
- Ministry of Agriculture and Rural Development
- Can Tho University
- German Society for International Cooperation
- Tien Giang University
- Nong Lam University

LINK TO CGIAR RESEARCH PROGRAMS

CGIAR Research Program on Climant Change, Agriculture and Food Security

COVER PHOTO: Training workshop to introduce Climate-Smart Mapping and Adaptation Planning (CS-MAP) in Cambodia.
Photo credit: IRRI

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