# PATHWAYS TO GENDER EQUALITY AND EMPOWERMENT

## Sustainable Animal and Aquatic Foods: Setting the Science Agenda (2025-2030)

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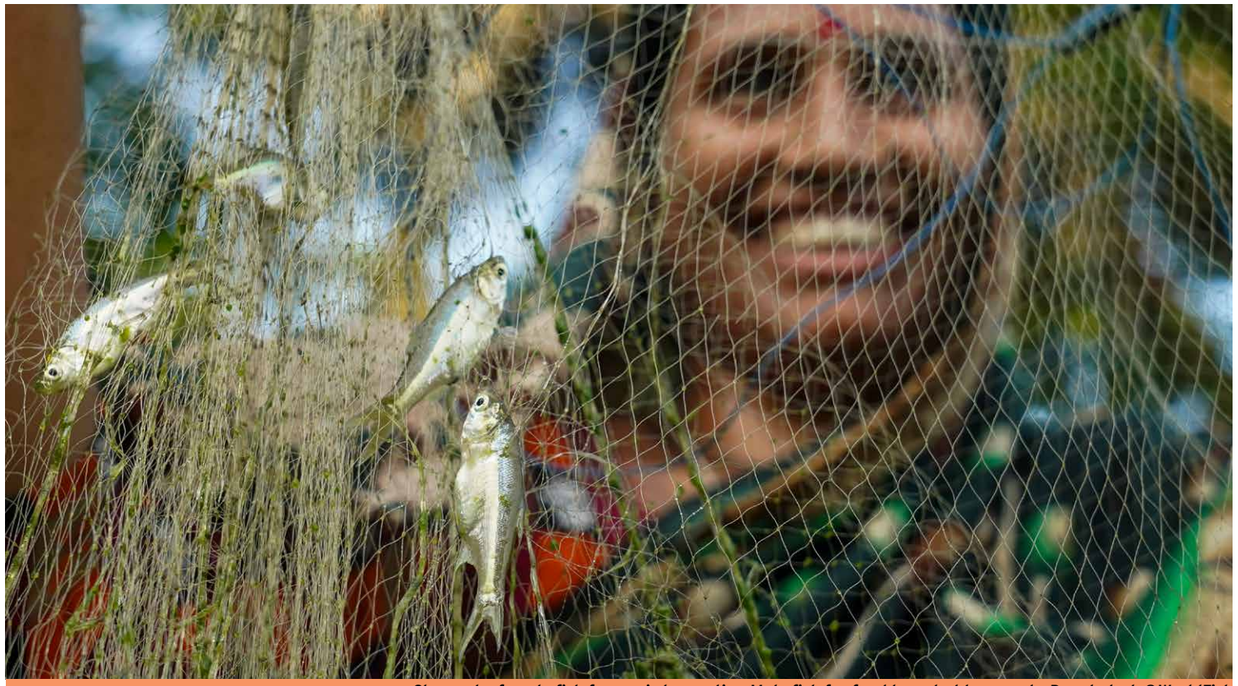

*Shyamol a female fish farmer is harvesting Mola fish for food by net at her pond - Bangladesh ©WorldFish*

# INTRODUCTION

This Sustainable Animal and Aquatic Foods (SAAF) brief maps out gender entry points for the new Science Program which will run from 2025 to 2030.

The brief provides six pathways to enhance gender equality and women's empowerment in CGIAR Sustainable Animal and Aquatic Foods (SAAF) Science Program. This brief offers Gender Equality and Social Inclusion (GESI) solutions which range from accommodative to transformative through norm changes. While accommodative gender solutions try to provide solutions within existing norms and cultures, in the long term, it is the transformative solutions which change societies for more equitable and inclusive gender outcomes. The brief goes beyond business as usual or gender mainstreaming approaches by setting an ambitious gender research agenda for the SAAF and related science programs.

The SAAF science program provides opportunities for women and youth from low-and-middle-income countries (LMICs) to participate, engage and benefit from animal and aquatic food systems (AAFS). Gender and restrictive social norms in AAFS can lead to inequalities. This limits the potential of AAFS to provide avenues for women's economic and social empowerment and equitable job creation. Addressing barriers towards gender inequality, and youth and women's empowerment through gender transformative approaches is vital if AAFS are to contribute effectively to improving food security, nutrition and livelihoods, while reducing poverty.

Empowering women and youths is vital for developing AAFS; they make up half of the actors in aquatic food systems and two-thirds of those in the livestock system. The SAAF science program will investigate frameworks, methods and interventions to support women's and youths' economic and social empowerment, to leverage opportunities for self-determination and identify entry points that need attention to enhance empowerment. It is vital for SAAF to uncover business models that engage women and youth in value chains and nodes that are conventionally dominated by men, and to connect small-scale producers and other value chain actors to markets that are beyond their communities. This will increase women's meaningful involvement in value chains (e.g., efficient production, value addition, food safety, and waste management), to increase women's incomes and transform their lives.

Animal and aquatic foods (AAF) are nutrient-dense and provide essential bio-available nutrients that are critical during the early stages of child development, contributing to better diets and improved nutrition (Grace et al. 2018; Headey et al. 2018; Hicks et al. 2019). Fish and other aquatic foods are affordable, but also critical for brain development during the first 1000 days, due to their omega-3 fatty acid content. Aquatic foods are a key part of sustainable diets (Thilsted et al. 2016; Golden et al. 2021; Byrd et al. 2022; Robinson et al. 2022).

In LMICs, young people make up much of the population—called the "youth bulge" (IFAD 2019; Sommers et al. 2011). The SAAF offers opportunities to embrace the youth bulge as a "population dividend" (the large population of working-age people). The population share of young people in LMICs is expected to continue to grow by 7%, to reach about 1.3 billion by 2050, intensifying the need for job creation, education, and social services. The population in LMICs that are affected by conflict, fragility and climate shocks are on the rise. By 2030, close to 60% of the extremely poor will live in fragile and conflict-affected situations (World Bank Group 2024). Poverty, fragility and conflict are also linked to trends such as persistent gender inequalities (IMF 2022; Malapit and Brown 2023). There is no empirical evidence on the impact of livestock or aquatic foods-based livelihoods programs on gender equality and women's empowerment in conflict-affected contexts, SAAF will provide models of how livestock and aquatic resources can provide pathways leading to gendered empowerment in these settings. Such pathways will explore innovations in SAAF, business models, and approaches that empower women.

Appropriate tools are essential for incorporating gender within SAAF. Since 2012, the CGIAR has developed a novel and evolving suite of quantitative and qualitative tools that measure the empowerment of women in agriculture (Alkire et al. 2013), in livestock (Galiè et al. 2019) and in fisheries and aquaculture (Adam et al. 2025). These tools can be complemented with other modules, such as on market inclusion or nutrition, or climate change and resilience. There are multiple versions of the tools (abbreviated and project level)[1]. For over a decade, these tools have been implemented in at least 58 countries,[2] generating a large body of work describing how men and women make decisions about the production, sale, and use of agricultural, livestock, and fisheries products, and the inclusion and agency of women in these food systems.

**The SAAF science program will examine gender, and youth inequities through the following pathways:**

1. Gender transformative approaches (GTA) to address discriminating norms and create a conducive social environment for gender equality.
2. Inclusive governance and policy as the foundation of equitable and resilient animal and aquatic food system management.
3. Women and youth's empowerment in animal and aquatic food systems, through inclusive and sustainable livelihoods.
4. Resilience of animal and aquatic food systems, which relies on gender-inclusive and gender-responsive bundled strategies.
5. Enabling youth to thrive in animal and fish-agrifood systems through job creation and meaningful engagement within value chains.
6. Inclusive consumption of nutritious and safe animal and aquatic foods to support healthy diets for all.

1) https://weai.ifpri.info/about-weai/
2) https://www.ifpri.org/event/decade-womens-empowerment-agriculture-index-weai-lessons-using-empowerment-metrics/

## 1. GENDER TRANSFORMATIVE APPROACHES TO ADDRESS DISCRIMINATING NORMS AND CREATE A CONDUCIVE SOCIAL ENVIRONMENT FOR GENDER EQUALITY

This pathway aims to address the long-term, systemic barriers which hinder women and youths from improving food security, nutrition, income and livelihoods, while reducing poverty through the AAFS.

Inequitable and discriminating gender norms are the root cause of gender-based disadvantage in AAFS (and elsewhere). GTAs intentionally addresses inequitable norms, unlike the more common gender accommodative approaches (GAAs) that find solutions to gender-based discrimination by working around the norms (Cislaghi and Heise 2020). Accommodative approaches focus on reaching women, improving their capacities, access to assets, and enabling benefits. These approaches recognize that barriers exist but try to work around them.

While some studies show the effectiveness of GTAs in creating an enabling environment for gender equality, more needs to be done

*Livestock provides for family needs - Tunisia*
*© CGIAR Research Program on Dryland Systems*

to better understand how to systematically implement interventions for gender-equitable norms and outcomes in SAAFs. A study in Zambia compared an accommodative and a transformative approach to address gender constraints within a post-harvest fish loss reduction intervention. The transformative approach led to greater changes in gender equality attitudes[3] and women's empowerment outcomes[4] than the accommodative approach (Cole et al. 2020). A study of the livestock sector in northern Ghana found that GTAs more effectively address norms restricting women's empowerment, and their access to animal vaccines. Complementing GTAs with GAAs proved to be a more effective strategy for easing restrictive norms (Njiru et al. 2024).

New tools to describe and quantify norms and their change need to be standardized, validated, and streamlined for animal and aquatic food systems. SAAF will explore which tools have universal application and which ones need to be adapted for context. The tools will need to capture norms in the key areas of SAAF, such as policy, climate change, nutrition and markets.

### A future AR4D agenda

SAAF will conduct frontier research on how GTA and GAAs (or a combination of both), affect progress towards gender equality and women's empowerment. The research will articulate which GTAs are effective, why and under what conditions. This will identify the best GTAs and GAAs for equity and empowerment. SAAF will identify entry points for transformative change by understanding how to address inequitable norms and leverage conducive norms. SAAF will examine how norms are created, kept in place or changed. This will include studying how gender norms interact with norms for other social identities (e.g., age, ethnicity, class, caste, religion, among others). The research will shed light on how behavior change scales within social systems. We are going to understand pathways for inclusive gender transformation.

**The broader research questions are:**

- **How are gender norms created, maintained, or modified in combination with norms for other social identities?**
- **What are the best combinations of GAAs and GTAs in conjunction with social-technical innovation bundling (combining technical solutions and the social and gender aspects) for equality and empowerment?**
- **How do changes in individual behavior translate into norm changes and into policy change?**

3) Women were more involved in fishing, processing and trading of fish.
4) Levels of involvement in making "large inputs" into household decisions about the income generated from catching, processing and trading fish.

## 2. INCLUSIVE POLICY AND GOVERNANCE AS THE FOUNDATION OF EQUITABLE AND RESILIENT ANIMAL AND AQUATIC FOOD SYSTEMS

This pathway aims to: first, improve the availability of data that is disaggregated by sex and other social identities, for policy making in AAFS. Second, understand effective governance models for AAFS that enhance the benefits for women and youth inclusion (e.g. co-management, multi-stakeholder platforms, citizen science and exploring artificial intelligence [AI] opportunities).

Persistent gender and social exclusion in the AAF sector has structural roots in policy, governance and in the lack of data disaggregated by sex, age, ethnicity, social class, and other intersecting identities. Despite the recognition of gender in global policy guidance for the animal and aquatic food sectors (Basurto et al. 2023), exclusions in governance for women, youth, and the marginalized persist at all scales. While policies might be in place for AAFs, the main challenge will be their lack of coherence, poor implementation and because they are not gender and youth-inclusive.

AAFS have failed to reduce poverty, not for lack of technical solutions, but due to the misaligned policy objectives and the lack of accountable governance mechanisms. Most policies are gender-blind, so they fail to address, or they even worsen gender inequality (Ribot and Peluso 2003). Promising methods to understand such challenges include systematic policy reviews, and collective action research studies focusing on the Ostrom Institutional design principles (Ostrom, 1998). The design principles may be modified to include gender equality and social inclusion. See also the Critical Institutional Analysis and Development Framework (Whaley 2018).

*Fish sold at a roadside stall in Dili - Timor-Leste*
*© Holly Holmes, WorldFish*

Co-management and community-based natural resource management (CBNRM) are promising governance models for inclusiveness. The co-management of fisheries and of community-based natural resources have sought to set up institutions for communities living near wildlife areas, to ensure that they also derive benefits from the animal and forestry resources. CBNRM has increased sustainable wildlife management, as communities also derive material benefits (Murphree 1990; Mapedza and Mandondo 2002). Other methods include a framework to assess inclusion in community-based resource management (Johnson et al. 2021); Gender-inclusive facilitation for community-based marine resource management (Kleiber et al. 2019). Rights, equity and justice is a diagnostic for social meta-norm diffusion in environmental governance (Lawless et al. 2020). In Kenya and Ethiopia, collective management in pastoral areas has proven to be a conflict reduction mechanism (Robinson et al. 2022).

Policy makers and researchers commonly highlight the "gender data gap." This lack of gender-disaggregated data leads to a knowledge gap that obstructs the understanding of how interventions can lead to different impacts on men and on women. Some of the methods that can remedy gender data gaps include Women's Empowerment in Fisheries and Aquaculture Index (WEFI–Adam et al. 2025), Women's Empowerment in Livestock Index (WELI–Galiè et al. 2019), Women's Empowerment in Livestock and Business Index (WELBI), the Reach-Benefit-Empower-Transform (RBET) framework, gendered aquaculture value chain framework, and a selection of participatory approaches. These methods can help to enhance the availability of sex-disaggregated data in AAFS and its adoption by researchers and policy makers.

### A future AR4D agenda

Work with national and local governments to ensure that AAF policies and governance mechanisms are coherent, inclusive and implemented. The livestock master plan (LMP) and aquaculture master plan (AMP) of countries enable governments to make informed decisions and prioritize investments in the right value chains. However, gender integration in LMP and AMP needs to be pushed forward for women's empowerment. Integrating gender considerations in LMP and AMP could be a key research area in the SAAF science program in coming years. The methods and frameworks of LMP and AMP must be refined to integrate gender.

Citizen science and inclusive Multi-Stakeholder Platforms can be some of the instruments for addressing the gender data gap by: (i) Providing the women and men from animal and aquatic foods sectors the chance to be their own advocates. For instance, gendered data can be gathered from women who sell fish or livestock products, by giving the women weighing scales, and a phone to take photos and record the catch of the day and to send notes on the species of fish caught, quantity, volume sold or eaten by the households; and (ii) Measure and record the care work done by women in these value chains.

Equitable Governance and policy should be built on the principles of: devolution, representation, participation and inclusive monitoring.

Other frontier area includes the use of Inclusive Multi-Stakeholder Platforms as a mechanism for ensuring that women, youths, and the marginalized are included in decision making (Ratner et al. 2019; Larson and Barletti, 2020). Documentation helps to map out the power dynamics within the multi-stakeholder platforms and how gender is negotiated, re-configured and how norms change.

**Research questions are:**

- **Which specific policy leverage points increase the benefits accruing to women, youths and the marginalized within AAFS?**
- **What governance models promote inclusive management and sustainably increase benefits from animal and aquatic food systems?**
- **How could the availability and quality of data, disaggregated by sex (and other identities) in AAFS be enhanced for evidence-based policymaking towards gender equality and women's empowerment?**
- **What is the role of modern technical, methodological innovations such as AI in promoting inclusive animal and aquatic food systems?**

*Changing diets in Kapuas Hulu © Icaro Cooke Vieira/CIFOR*

## 3. INCLUSIVE AAFS LIVELIHOOD INTERVENTIONS TO ENHANCE WOMEN AND YOUTH EMPOWERMENT

### Several innovations from CGIAR have narrowed gender inequalities and improved scalability in AAFS.

Empowering smallholder farmers, especially women, through access to resources and market opportunities is crucial for improving food security and enhancing household nutrition (FAO 2019). Inequalities can be addressed by introducing interventions for the empowerment of women and youth that consider various social identifies and the contexts where people operate. Introducing innovations such as value-addition and improved access to markets via "from farm to fork"[5] skills training, while promoting access to credit, should improve the household nutrition and the economic viability of AAF value chains.

There are good arguments for supporting smallholders and other value chain actors to obtain more benefits. In Asia, 80% of farmers are small-scale (Basurto et al. 2023) and in Egypt, 90% of the tilapia supply is produced by small-and medium-sized enterprises (Macfadyen 2011). WorldFish has used a gender-transformative-entrepreneurship approach that has empowered women fish retailers in Egypt to create formal enterprises that process and retail farmed fish, adding value that resulted in a 27% increase in household profitability. The main breeding goal was to have a faster-growing and more feed-efficient Nile tilapia strain. Abbassa strain G9 shows promising results with a 28% growth rate (Bedir et al. 2025) with opportunities for scaling value-added fish products. Entrepreneurs underwent technical, vocational and education training (TVET) and established women business centers, which offered knowledge and support to women fish producers.

The International Livestock Research Institute (ILRI) supported young women veterinary school graduates in Tanzania to lead a private chicken business which included delivery of improved chickens, animal inputs, advice and good markets to rural women. The approach supported the empowerment of women agri-preneurs and farmers. In Ghana, ILRI enabled women farmers to access animal vaccines for their chickens and goats through women veterinary extension staff. Piloting and scaling similar innovative strategies can help to create other sustainable and equitable practices that benefit local communities while enhancing food security and improving livelihoods across diverse contexts.

### A future AR4D agenda

Frontier research must be prioritized to explore viable entrepreneurship strategies and business models for women and youth in SAAF. This research should enhance collaborative interventions by supporting a bottom-up approach of business or entrepreneurship, empowering marginalized communities within the AAFS value chains. Such an approach will reshape the male-dominated narratives surrounding access to resources, but also lead to more equitable outcomes, including increased economic participation, improved livelihoods, and greater gender equality in resource allocation and decision-making. Innovative research methods, including participatory action research and mixed methods approaches, can capture the perspectives and experiences of women and youth stakeholders who are engaged in these businesses.

The aim here is to make interventions more gender-responsive, gender-transformative, equitable and empowering and to conduct research on how to do this. To foster inclusive livelihoods and wealth generation for women, it is crucial to forge supportive familial relationships, and social protection strategies to mitigate asset loss. This effort also requires investments in social networks through self-help groups, associations or cooperatives, along with equitable engagement in decision-making at all levels. It is also necessary to engage women and men to address structural barriers, including restrictive gender norms.

Gender equity considerations must be woven into every stage of innovation and dissemination, shifting from male-focused processes to inclusive frameworks that assess needs of women and youth, and harness their potential as innovators. SAAF will continue to improve the tools, reviewing their performance across various livestock and aquatic systems. Such improvements include a better integration of the qualitative and quantitative components, and approaches to better capture the relational aspects of empowerment. Promoting user-responsive innovation ensures that stakeholder needs are effectively integrated into the interventions.

**Research questions are:**

- **How do gender dynamics and social relations influence access to resources and market opportunities for women and youth in smallholder AAFs?**
- **What are the best business and entrepreneurship strategies to increase revenues, expand the customer base, and improve participation in male-dominated AAFS value chains and nodes?**

5) From 'farm-to-fork' skills training equips individuals with knowledge and skills for all value chain stages, emphasizing sustainability, food safety, and value addition (FAO 2017; WorldFish 2020), while addressing gender disparities by empowering women through technical training, entrepreneurship, and leadership opportunities (Njiru et al. 2018; HLPE 2014).

*Planting mangroves - Timor-Leste © Yuichi Ishida/UNDP*



## 4. BUILD RESILIENCE OF WOMEN AND YOUTH IN FRAGILE SAAF

### The AAFs have an important role in LMICs, which are increasingly faced with conflict, fragility and climate shocks (World Bank Group 2024).

Gender inequality is exacerbated by fragility and conflict (IMF 2022; Malapit and Brown 2023). Strengthening the roles of women and youth in food systems enhances resilience and adaptability to challenges such as climate change and pandemics (FAO 2020). Livestock could be a household enterprise that addresses women's challenges during and after conflicts. Livestock-based interventions lead to more income for poor households, allowing them to spend more money on their families, build assets and savings (Banerjee et al. 2015; Collishaw et al. 2023).

It is important to explicitly target gender and track progress, and to fund programs that promote gender equality and women's empowerment in fragile and conflict-affected settings (Lwamba et al. 2022; Malapit and Brown 2023). The CGIAR innovations in SAAF and business models could be leveraged to build resilience of communities affected by conflict, drought and other shocks. These include innovations in adaptive genetic resources that are suitable to tropical production systems. Innovations from the Tropical Poultry Genetic Gains (TPGS) and the Africa and Asia Dairy Genetic Gains (AADGG) could be leveraged to empower women and youths in conflict and post-conflict settings.

In conflict settings, gender-based violence (GBV) is common (Schindler et al. 2024), with devastating impacts on women. Interventions that support GBV survivors' livelihoods and mental health are critical to help them to rebuild their lives and empower themselves (Tewabe et al. 2024). Research to test and evaluate CGIAR innovations, including contextualized business models, to empower GBV survivors in conflict settings will be a critical area of frontier research. Gender-based violence is pervasive within the agrifood systems (Forsythe 2023).

Inclusive climate-smart technologies promote sustainable practices and empower marginalized groups by offering new job opportunities. In Egypt, for example, WorldFish is pioneering the establishment of climate-smart production systems in the Nile Delta, such as in-pond raceway systems (IPRS) (Nasr-Allah et al. 2019) . These systems reduce greenhouse gas (GHG) emissions while maintaining high productivity, which is crucial to address the dual challenges of food security and climate change.

Another promising approach is integrated agriculture-aquaculture (IAA). IAA systems create a synergistic interconnectedness among land, animal, fish, and water resources, optimizing the use of inputs and enhancing productivity. By integrating various agri-aqua-land practices, IAA systems can improve resource efficiency and resilience to climate variability, thereby supporting sustainable livelihoods for women and youth in these sectors. The adoption of these innovative technologies contributes to environmental sustainability while fostering economic empowerment and social inclusion.

Some women are playing a promising role, including women in the fish-rice based farming systems in Bangladesh, Cambodia and Laos

*Dried fish at the weekly market of Yanonge - DRC © Axel Fassio/CIFOR*

(Kruijssen et al. 2016; Freed et al. 2021). The rice-fish systems provide multiple sources of income for women and their spouses. The sale of fish and rice offers vital diversification to improve households' financial security. Women are key players: managing and stocking the ponds, preparing feed, feeding the fish, fertilizing to stimulate the growth of water plants, and harvesting fish to feed their families. They also sort, and grade fish for the market (Kruijssen et al. 2016).

### A future AR4D agenda

Innovations in genetic gains at CGIAR could be packaged with innovations in successful business models to regain livelihoods and empower women in conflict-affected settings through the SAAF science program. There are business models that could be leveraged to rebuild livelihoods in post-conflict settings and create jobs in AAFS. The Women in Business (WiB) model of ILRI could be contextualized to post-conflict settings. This successful business model improves women's control of income, creates jobs, increases adoption of improved hens, and allows households to eat more eggs and chickens (Goromela et al. 2022). This model was built during peacetime, but it should be implemented in conflict and fragile settings, to create jobs for women and youth.

Gender-responsive climate-smart innovations in livestock (Mekuriaw et al. 2024) could also be contextualized, and scaled for equitable climate solutions in the livestock sector. Those innovations could be tested for other livestock species. Emerging value chains have the potential for climate mitigation and adaptation for socio-ecological resilience. Examples include seaweed farming and processing, as in the Indonesia seaweed value chain, through the "Fisher's Community Empowerment" Initiative (Rimmer et al. 2021; Sultana and Wahab 2023) and in Zanzibar through various initiatives including the Zanzibar Seaweed Cluster Initiative (ZaSCI) (Msuya 2021). We will also seek to understand the cost-effectiveness and sustainability of climate-smart fish handling technologies (e.g., solar-freezers, solar-tent driers and fish smoking kilns) that are shared with women and youth self-help groups to facilitate better and safer fish processing.

Frontier research to build the resilience of women and youth in fra-

gile settings through innovations in SAAF is essential to identify innovations and business models to empower women and youth. The target frontier research could be bundling genetic innovations with successful business models in conflict-affected and fragile settings to build equitable livelihoods and create jobs for women, youth and marginalized individuals. Documenting learnings from using these innovations will be a key goal in this new area of research, building on metrics of women's empowerment to evaluate the impacts of interventions.

### Research questions are:

- **How can AAFs be leveraged to build the resilience of women and youth in fragile contexts or rebuild their livelihoods in post-conflict settings and with climate change?**
- **How can livestock and aquatic foods help rebuild livelihoods, empower women, youths and marginalized individuals and achieve equitable development outcomes in post-conflict settings?**
- **What are the ways to make climate-smart livestock and aquatic food innovations more equitable?**

*Purse seine fishermen fish for squid and cuttlefish - Central coast of Vietnam © David Mills, WorldFish*

## 5. ENABLING YOUTH TO THRIVE IN ANIMAL AND FISH-AGRIFOOD SYSTEMS THROUGH JOB CREATION AND INVOLVEMENT IN THE VALUE CHAINS.

Despite the potential that livestock and aquatic food systems have to benefit young people, there is limited empirical evidence about how youth engage in the value chains of livestock and aquatic food systems.

There is insufficient data on access to resources, and incentives for youth participation in livestock and aquatic food systems. Little research explores how livestock management knowledge is passed down from one generation to the next, or whether modern youth are prepared to adopt new, sustainable livestock practices. Youth are often more inclined than their elders to adopt technical innovations, but there is limited understanding of how youth use technologies in animal and aquatic food systems. Few studies focus on gender barriers and other factors that shape or limit youth's opportunities in these systems (Bullock et al. 2023).

**Key research method or solutions:** currently there are no methods specifically intended for youth studies in AAFS. However, the Technologies for African Agricultural Transformation (TAAT) project has successfully engaged youth in aquaculture in many African countries. Other initiatives have started in Zambia, where Technical and Vocational Education and Training (TVET) institutions have worked with WorldFish to develop curricular training in fisheries and aquaculture, for youth.

### A future AR4D agenda

Although there is little literature on approaches to enhance youth engagement in livestock and aquatic food systems, the two sectors have leveraged various approaches in education, entrepreneurship, and governance to enhance youth's skills, and livelihoods. **Technical and vocational education training (TVET) programs** have been widely implemented to give youth hands-on-training that meet labor market demands such as agriculture, information technology (IT), and livestock management (World Bank 2020). **Life skills education**, focusing on communication, financial literacy, and decision-making, has enabled meaningful participation of young people in economic activities (UNICEF 2019). **Incubators and accelerators** to provide mentorship, networking, and sometimes seed funding to young entrepreneurs are often combined with initiatives for **microfinance, access to capital, and youth savings** to overcome barriers such as limited access to capital. Some initiatives offer youth-friendly credit and financial literature to support entrepreneurial ventures (Esiebo 2019).

**Agri-preneurship initiatives and models** like those implemented by the International Institute of Tropical Agriculture (IITA) train youth in value-addition for modern farming, and value chain access (Adeyanju et al. 2023; Chitika et al. 2024). Youth agri-preneurship can create jobs and set out financial opportunities for youth (Ouko et al. 2022). Reforms to land policies or providing communal land for youth farming have also been used (Kathengeca and Karega 2023).

**At governance level, initiatives such as youth councils** are coupled with **national policies** to ensure their inclusion in decision making (UNDP 2019). **Youth advocacy and leadership training** have equipped youth with the skills to engage with policymakers and push for youth-friendly policies. Some governments have used quota systems to promote youth representation, ensuring their participation in political processes and decision-making (UNDP 2019). **Youth networks and peer learning** have been established by development practitioners to foster collaboration and knowledge-sharing among young professionals. This can be introduced into the SAAF science program.

Digital entrepreneurship and digital literacy have been promoted to encourage youth to start tech-based businesses, foster innovation, and connections to global markets. For example, coding initiatives, online learning platforms, and ICT training and digital literacy, all enable the youth to upskill and pursue new opportunities. Additionally, the **"opportunity space" model** has been employed in research to provide a dynamic conceptual lens for understanding young women's and men's livelihood options and the structural constraints that hamper their abilities to intensify agriculture (Sumberg et al. 2012). There is a need to develop research tools to measure engagement, empowerment and norms tailored for youth.

### Research questions are:

- **What are the research and evidence gaps related to youth inclusion in and benefits derived from AAFS? What solutions identified by youth (and other stakeholders), can increase their involvement in and benefits derived from AAFS? What are the best practices and effective interventions for youth engagement in AAFS related work?**
- **What types of AAFS related jobs have the highest potential to be considered decent and fulfilling for youth? What types of training are needed for youth to make a meaningful impact on AAFS?**

## 6. INCLUSIVE CONSUMPTION OF NUTRITIOUS AND SAFE ANIMAL AND AQUATIC FOODS TO SUPPORT HEALTHY DIETS FOR ALL

The suite of women's empowerment agriculture index (WEAI) tools sheds light on empowerment domains in livestock, fisheries and aquaculture, and their positive association with several child and maternal nutrition indicators (Quisumbing et al. 2021) including animal-sourced foods (Jin and Iannotti 2014; Bonis-Profumo et al. 2021).

Further validation is needed for the WELI and WEFI, which are newer and have only been implemented in a few countries. Another tool is the women's empowerment in nutrition index (WENI) (Narayanan et al. 2019). Nutrition research and interventions typically focus on women as mothers and nutrition managers, often ignoring the influence that key actors and norms have on women's ability to decide on, provide and eat nutritious diets.

Some recent efforts have involved men and other key influencers in nutrition programming, but methods to engage influencers in supporting nutrition-enhancing decisions have not been assessed in AAFS. ILRI has conducted research in Rwanda exploring how perceptions of masculinities affect the ability of men to get involved in nutrition decisions in the household, and in GTA. Community theatre

*Fololina Avia received help through the Small Business Development Project to expand her «Lady Edwina» fishing company and stall at the Apia fish market, Small Business Development Project in Samoa*

has been used to engage women and men in role playing about gender equitable roles in preparing and eating food, household decision-making, leadership in community-based natural resource management, among others. WorldFish is testing innovative nutrition education approaches in Timor-Leste, where malnutrition is pervasive, by engaging women, their husbands and older female relatives, to improve complementary feeding and eating aquatic foods. This approach adopts the socio-ecological framework to assess influences on individual behavior and to design interventions for change (Scarneo et al. 2019).

Animal and aquatic foods (AAF) offer an opportunity to address poor nutrition and to generate income. Engaging women and female youth as producers or retailers of AAF, such as fish powder, farmed tilapia or eggs, is a triple win strategy to foster women's economic participation, access to nutritious animal-sourced foods, and to support rural livelihoods. WorldFish has supported the development of fish-based products for over a decade in more than six countries across three continents, with a focus on the first 1000 days and, has recently engaged with school meal programs. Fish powder is an innovative, nutrient-dense product with a long shelf-life, suitable for nutritionally vulnerable groups. Fish powder can be sold on the market to reach populations that lack refrigeration. ILRI has developed a business model that encourages entrepreneurship by targeting women to retail eggs. These effective approaches should be scaled and used as platforms to also promote nutrition messaging.

### A future AR4D agenda

SAAF frontier research should further unpack the nutrition and gender nexus on AAF through transdisciplinary and participatory approaches, with a focus on systematizing evidence on how to transition from assessments and diagnostics to interventions, solutions and policy change. There are three priorities: First, address the triple burden of malnutrition (coexisting undernutrition, over-nutrition and and micronutrient deficiencies). However, the WENI was recently designed for contexts where undernourishment prevails and where it is crucial to develop metrics that also capture the drivers of over-nutrition and non-communicable diseases in the context of AAF. Second, adapt and test approaches used in public health nutrition and social behavior change (such as the socio-ecological framework) to understand the gender and nutrition nexus. The role of influencers on nutrition decisions is a clearly gendered domain, where research needs to test evidence-based methods for implementation. Third, it is critical to understand how food environments and gender dynamics shape access to and eating of AAF. Conceptualizations and tools to assess food environments are emerging (Turner et al. 2018; Bogard et al. 2021), yet these lack GESI integration, and a focus on AAF. There is an opportunity to innovate methodologically and to test how the implementation of findings can shape food environments for nutrition and equity improvements.

**Research questions are:**

- **What are effective approaches to increasing AAF consumption among nutritionally vulnerable and marginalized groups, and how can food environments be leveraged to support such an increase?**
- **What roles do gender and social norms play in influencing nutrition? For example, how do gender norms influence who is in charge of buying food; securing household nutrition; adopting hygienic practices; deciding which livestock and aquatic foods products are sold and which ones are eaten in the household; who is entitled to consume what foods; who has the ability to control resources needed to secure healthy, safe and nutritious foods?**

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# INTEGRATED WORK

This section speaks to other Science Programs which have synergies and linkages with the SAAF Science Program. These programs should identify gender and youth inclusion opportunities to achieve greater impact which connects the CGIAR's related science programs.

## PRODUCTIVITY +

Productivity+ goes beyond the usual aim to enhance productivity in AAFS. It aims to support producers to have access to productive and profitable innovations while reducing greenhouse gas emissions in AAFS. Previous gender research in AAFS largely focused on diagnostics. While these kinds of research provide a foundation, more compelling evidence is needed to influence policies towards gender equality and women's empowerment in AAFS. It is critical to embark on impact studies and causal analysis to demonstrate which innovations in SAAF could support equitable livelihoods outcomes and women's empowerment, and how. This looks at productivity for GESI.

## ONE HEALTH

The One Health (OH) approach is increasingly acknowledged across the globe to manage diseases that emerge from interactions of animals, humans and the environment, particularly zoonotic diseases. National governments, Ethiopia for example, are embracing OH approaches as effective ways to mitigate the risk of zoonoses (Nyokabi et al. 2023). There is currently a drive within the international community to integrate gender considerations into research, policy, and practice, including OH (Galiè et al. 2024). Gender considerations in OH at CGIAR are limited and more needs to be done. The recent framework to integrate gender in OH (Galiè et al. 2024), developed by CGIAR researchers, is a good opportunity to expand gender research in OH to produce compelling evidence towards equitable development outcomes in AAFS.

One Health research on food safety should focus on integrating a gender lens to technologies that enhance food safety through better processing, preservation and packaging. Identifying approaches that promote food safety that are gender-responsive can benefit women's economic participation and linkages within markets.

## MARKETS AND POLICIES

Increasing productivity in AAFS is important but it needs to be linked with increased access to markets for women and youth. Market access will enable women and youths to benefit from the increased productivity of the AAFS. Access to markets should empower women to access all the different nodes along the AAFS value chain. Women and youth will derive greater benefits if they can access the whole value chain, and not just the lower tiers.

Policies governing AAFS need to reflect the differential needs and support requirements to ensure that women and youth have a fair policy arena to enable them to engage in the markets. The institutions which also govern the AAFS needs to include women and youths as key actors who have a say and are equal stakeholders.

## CLIMATE AND THE ENVIRONMENT

Climate change impacts and will also be impacted by the AAFS. It is important that the SAAF science program understands how women, youths and marginalized people are impacted by climate change. Solutions such as participatory breeding also need to identify the requirements of women, youths and marginalized people to develop appropriate breeds to address climate challenges.

The different production systems also increase or decrease greenhouse gas emissions. The research will address how climate-smart AAFS can be tailored to the requirements of women and youths.

The different production systems for AAFS will also be designed in an inclusive manner to consider the requirements of women and youths and how the environment will impact on them.

## DIGITAL AND DATA

The persisting lack of gender-disaggregated data in livestock, fisheries and aquaculture hinders the recognition of women's contributions. Digital innovations can also be gender blind. For instance, Peskas[6] is an open-source web portal that provides analytics on small-scale fisheries, developed by WorldFish. The Peskas software was initially piloted and refined in Timor-Leste, a small island developing nation, showcasing its adaptability and scalability in a real-world context (Longobardi et al. 2025). Peskas is now being scaled up in eastern Africa countries. The platform uses catch data collected by local enumerators and vessel tracking data to show fishing trends over time and space (Longobardi et al. 2024). However, there is scant data on gleaning, an overlooked women-led fishery that targets nutrient-rich marine invertebrates (Tilley et al. 2021), but efforts are underway to systematically include this activity in countries that SAAF will be operating.

6) https://timor.peskas.org/

# CONCLUSION

This brief highlights some areas for GESI opportunities for the SAAF Science Program to enhance its inclusion and impact across study regions. This brief goes further by providing pathways of change to enhance gender equality, women's empowerment and youth inclusion in AAFs; it also identifies potential synergies with other CGIAR Science Programs that are important for the SAAF. Resource allocation will be essential for women, youths and marginalized people to have access to, control over, and benefit from the AAFS, which have great potential to reduce poverty and transform livelihoods. GESI should be an anchor for the success of the SAAF science program.

*Restoring Coastal Landscape for Adaptation-Integrated Mitigation Program © Rifky/CIFOR-ICRAF*



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## ABOUT THIS SERIES

This brief produced jointly by the CGIAR Gender Equality and Inclusion Accelerator and the CGIAR Science Programs, is one in a series of agenda-setting briefs that aim to further develop an agenda for strategic areas of gender and social inclusion research within the new portfolio of CGIAR Science Programs and Accelerators, and inform the development of gender and inclusion strategies for these moving forward. The briefs are the culmination of a collaborative work that started during the CGIAR GENDER Science Exchange 2024 that convened 72 gender researchers from across the CGIAR to bring together experiences, ideas and insights from across centres, that can help in developing a gender strategy for the SP in the future.

### About CGIAR Gender Equality and Inclusion (GENDER Accelerator)

CGIAR Gender Equality and Inclusion is CGIAR's Accelerator working to put equality and inclusion at the heart of food systems research and development. The Accelerator leads strategic and innovative research that advances gender equality, opportunities for youth, and social inclusion across CGIAR's Food, Land and Water Systems portfolio.

***Cover: Woman washing wheat (wafaa) © HJ Appleby (IWMI)***

CGIAR GENDER EQUALITY AND INCLUSION

CGIAR SUSTAINABLE ANIMAL AND AQUATIC FOODS