Learning through practice: Bringing science and policy together for future scenario planning

Key Insights

- The ASC Explorer is an interactive digital platform that integrates climate information with agricultural and socio-economic data to help inform policy and planning discussions. Scenario planning under a changing climate is a complex task. Whilst the RIFA team brought scientific and technical expertise to the build of the ASCE, its co-development in Samoa had to be steered by local leadership to pursue the desired outcomes of a user-oriented design that could be embedded in local practice and context.
- Locally led collaborations require local governance mechanisms, deep and broad local engagement, and early planning for genuine ownership of the outputs by local stakeholders. International collaborators have to be flexible and willing to invest in relationship building and tailoring their approach to the local context.
- Both scientists and policy makers are trying to incorporate a systems perspective into complex challenges like navigating climate change and building resilient food systems. However, they are operating within structures that remain siloed and disconnected, and therefore have to be pragmatic about how broad a systems lens they can take. In this collaboration, a systems perspective was useful for aligning aspirations and for starting to tackle barriers such as siloed information and decision-making processes through initiating data sharing and integration mechanisms.
- Working in transdisciplinary teams not only involves the merging of different types of knowledge, but also different ways of working. It is important to have various “translators” within the team who can communicate across disciplines and cultural contexts, and who can coordinate engagement across different ways of working.
- Progressing ambitious systemic goals like transforming a food system requires capacity building across the various actors, networks, and enabling environment that make up that system. Locally led transdisciplinary collaborations can be the perfect test bed for learning from one another and through practical experience. This particular engagement not only provided such learning but also strengthened networks within Samoa and the Pacific region. The ASCE itself, as well as the data sharing and integration that it facilitated, also represents a strengthened enabling environment for decisionmakers to make evidence-based policy and investments in their agrifood system.

The Agrifood Systems and Climate (ASC) Explorer for Samoa

In 2023, the Resilience Initiative for Food and Agriculture (RIFA)[1] were engaged to explore what types (and delivery methods) of information could support Pacific Island and Territories' agri-food system stakeholders navigate policy and planning decisions within the context of a changing climate.

To explore this in detail, discussions between The Pacific Community (SPC) and its member countries resulted in the selection of the Ministry of Agriculture and Fisheries (MAF) in Samoa to co-develop a digital information platform with RIFA. The result of this collaboration was the Agri-Food Systems Climate (ASC) Explorer[2], an interactive platform displaying maps of current and long-term projections for key climatic variables, as well as potential risks and protective socio-economic factors to help inform policy and planning discussions for agrifood sectors (see Figure 1).

Neither the presentation style nor the types of information integrated into the ASC Explorer platform were pre-planned, but instead emerged from a transdisciplinary co-development process amongst local and international partners. This learning note discusses some insights around the principles, capabilities, and actions that facilitated co-development of the ASC Explorer.

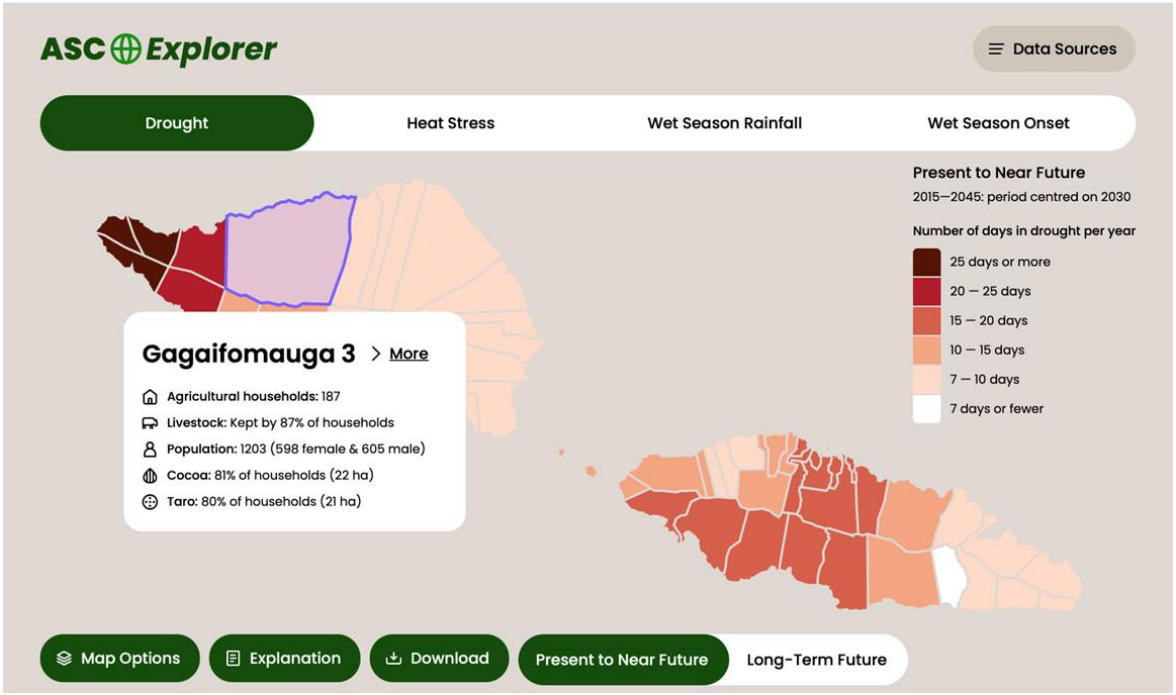

Figure 1. Sample screen from the ASC Explorer showing map of downscaled climate information and district-specific agricultural information. Clicking through to specific districts highlights socio-economic information related to the selected climate variable.

[1] A partnership between the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the Australian National University (ANU), and Australia's Department of Foreign Affairs and Trade (DFAT); https://rifa.org.au/about-the-resilience-initiative/

[2] https://www.maf.gov.ws/agri-food-systems-and-climate-explorer-for-samoa/

Co-development of the ASC Explorer

The request that came out of the Pacific Heads of Agriculture and Forestry (PHoAFs) meeting in 2023 was for a tool that would deliver climate information to agrifood policy makers to help them understand and prepare for upcoming risks. Of course, this is a big task facing governments all round the world, and simply providing climate information will not solve the complex problem of dealing with current and emerging challenges linked to climate change. It was therefore apparent that the ASC Explorer would have to integrate more than just climate data, and more than just agricultural data, to provide insights into Samoa's agrifood system and the risks faced by the population, livestock and crops. It was also apparent that the usefulness of the ASC Explorer would depend upon the tool being well-suited to its users, their jobs, and objectives, and that the tool would have to be embedded in broader practice and networks to be truly effective.

Locally led collaborations

Whilst the RIFA team brought together technical expertise to design and build the ASC Explorer, its development had to be locally led to make the platform relevant, useful, and usable for Samoan decision makers. In practice, this meant establishing governance mechanisms that were locally and regionally centred, utilising engagement processes that were culturally appropriate, allowing the design of the platform to be shaped by local priorities and perspectives, and ensuring that the end product would be locally owned and accessible.

Locally and regionally centred governance mechanisms

Not only did the request for a climate information platform come from regional leadership through the PHoAFs meeting in 2023, but the core team for developing the ASC Explorer was country-led (Samoa MAF) and supported by key regional stakeholders (SPC and FAO), as well as a local Advisory Committee that included the Ministry of Natural Resources and Environment, the Secretariat of the Pacific Regional Environment Programme (SPREP), the Scientific Research Organization of Samoa (SROS), the National University of Samoa (NUS), and the University of the South Pacific (USP).

An inception meeting in November 2023 brought together the Advisory Committee, along with the RIFA team, to socialise the aims of the project, solicit suggestions and recommendations, and explore potential linkages amongst ongoing related projects in the country and region. Suggested and designed by MAF, this meeting acted as a crucial consensus-building activity and conveyed legitimacy to the project for ongoing engagement and incorporation of multi-stakeholder perspectives throughout the development of the ASC Explorer.

Broad engagement and local governance of the ASC Explorer's development not only contributed to its design, but it also led to early envisioning of its uses, for example in the implementation of policies through Samoa's Food System Pathway 2030, making investment decisions at the district level, and in providing evidence-based advice to farmers. An inclusion of regional actors in the governance process also meant that the ASC Explorer was designed with potential transferability in mind. A Minimum Viable Product (MVP) was presented and endorsed at the 2024 meeting of PHoAFs and other Pacific nations have shown interest in adopting similar platforms to support their decision makers.

RIFA's user-oriented design approach

Once RIFA was engaged to co-develop the ASC Explorer, they assembled a multidisciplinary team to take an approach that prioritised understanding and catering to Samoan decisionmakers' needs and tasks at hand (for example, aligning the Explorer with implementation of Samoa's Food System Pathway 2030 plan and Community Integrated Management Plans), as well as accommodating Samoan operating environments (for example, making the digital infrastructure lightweight and including functionality to download and print PDFs across the platform).

Following the establishment of the governance mechanisms outlined above, the RIFA team conducted a series of interviews with organisations including ministries, research and educational institutions, non-governmental organisations, consultants, and civil society organisations. These interviews, informed by User Experience (UX) design expertise, allowed the RIFA team to build a rich understanding of the Samoan agrifood system, including its social, economic, environmental, and health aspects. Combined with the inception meeting and other group workshops, the user-oriented interviews facilitated challenge articulation, concept development, and iterative prototyping of the ASC Explorer – all steered by local stakeholders' context and needs.

There are, of course, challenges with managing and balancing the priorities of local, regional, and international partners in a co-development process, especially when those partners are geographically dispersed. This type of collaboration cannot be initiated overnight, and in this case was predicated by years of prior relationships and trust building amongst various partners. Maintenance of that trust during project delivery depended on several extended in-country visits where flexibility and openness was fundamental to orchestrating effective discussions amongst parties. Flexibility was also key in amending processes such as the UX interviews and stakeholder workshops to be more culturally and context appropriate, as well as in troubleshooting technical barriers around data collation and software compatibility requirements as and when they came up.

There are lessons here for traditional "service providers" looking to engage in more collaborative and locally led projects. There has to be time and resources invested in understanding and immersing the delivery team in local context, as well as building trust with collaborators. And building that trust requires assembling a team with a range of skills to address varied and emerging dimensions of a challenge, and with flexibility to tailor their approach rather than stick within disciplinary boundaries. These considerations are discussed further in the sections below.

Local ownership of outputs from co-development

From early in the co-development process, Samoan stakeholders highlighted that it was important they had ownership over the ASC Explorer, its data and its management. Interviews and desktop research revealed that whilst Samoa had access to climate data and various digital tools, they did not necessarily feel they were theirs to use. During co-development of the ASC Explorer, opportunities were identified to incorporate local data and data collection processes, and to design for compatibility with local data formats and capability for updating and maintaining tool, as well as with local norms and preferences for data presentation. The tool was purposefully designed to be lightweight and easily transferrable to local hosting platforms, and there was a technical handover of the tool in November 2024 to embed the ASC Explorer in the MAF website. These design considerations were all included to facilitate local ownership of the ASC Explorer and increase the chances of engagement and embedded use of the tool after its delivery.

"It was important to Samoa that we had the tool on our systems, as this has not happened in the past and consequently the tools are not fully understood or used by relevant stakeholders in Samoa" – Samoa MAF representative

Taking a systems perspective

From the start, the RIFA team aimed to bring a systems perspective to the co-development and potential uses of the ASC Explorer. In the broader context, food systems have become common framing for national and international discussions about shifting to more resilient and sustainable practices around agriculture, food production and consumption, and waste. Samoa, amongst other countries, has produced a Food Systems Pathway (FSP) for 2030 Action Plan.[3] However, the reality is that these discussions and plans exist within and amongst institutions that remain siloed, bound by structures and processes preventing connection and oversight across different elements of the food system.

Aligning aspirations and connecting food system elements

In the context of this project, several stakeholders entered the collaboration with ambitions to make the ASC Explorer more system-oriented in its provision of information for scenario planning under a changing climate. However, in reality, the project was led by Samoa's MAF who - like most national ministries - have a relatively siloed remit and set of responsibilities.

Not only does this current structure limit climate discussions and scenario planning across ministries, but also the infrastructure and tools for sharing and integrating information across different stakeholders. Before conducting in-country interviews, the RIFA team used Samoa's Food Systems Pathway Action Plan as a way to align their systems approach with the local system perspective, and to get a sense of the spread of stakeholders affiliated with the plan (see Figure 2).

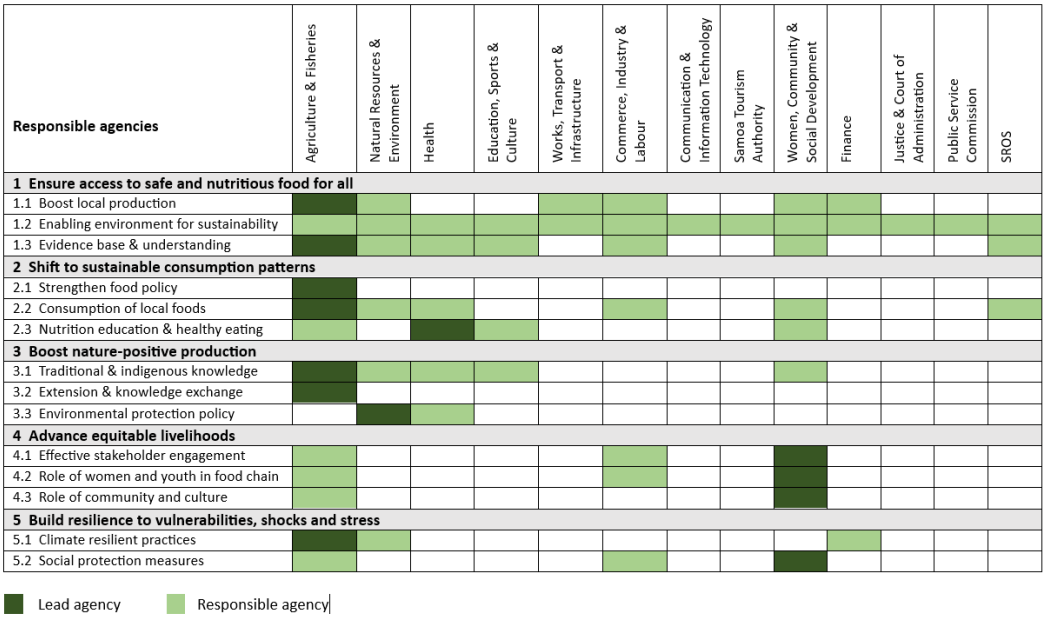

Figure 2. Mapping government ministries to FSP 2030 Action Plan

[3] https://summitdialogues.org/wp-content/uploads/2021/12/Samoa-Food-Systems-Pathway-2030-Official-version.pdf

This framing was used both as a guide for the types of variables that could be incorporated into the ASC Explorer, and for potential stakeholders to include in interviews and discussions for co-developing the tool. Implementation and monitoring of the FSP 2030 action plan was also identified as a current and complex priority for MAF, so there was a focus on making the ASC Explorer a support tool for this task.

Embedding a systems perspective in pragmatic project delivery

Whilst this provided a conceptual alignment of ambitions around "transforming food systems for a resilient and healthy Samoa where no one is left behind" (Samoa FSP 2030), the co-development of the ASC Explorer had to operate within MAF's reality and had to serve its pressing needs.

Thus, whilst early UX interviews gathered perspectives from a range of actors across the food system, including the Ministry of Natural Resources and Environment (MNRE), Ministry of Commerce, Industry and Labour (MCIL), and Ministry of Health (MoH), the MVP of the ASC Explorer had a primary focus on agricultural information alongside the climate variables. This resulted from the lead ministry's top priorities, and from both the questions and available data that felt top of mind for them.

Despite these constraints, it did not mean that ambitions had to be dropped around broadening the system view and coordination beyond agricultural production. Of course, just by providing clear and usable information about climate projections, the ASC Explorer broadens the lens through agricultural data can be assessed, for example by highlighting which parts of the country might have their crops affected by drought in the future, or might experience a change in the onset of the wet season. But beyond this, the ASC Explorer also integrates socio-economic data in its district profiles so that discussions about drought might also take into consideration the number of households who are fully dependent on rainfall for their food or income, or how prepared a district is in terms of water storage. Furthermore, a climate variable like heat stress – combined with information about the number of older labourers or livestock living in a district – highlights a health concern that is not necessarily a current priority for MAF or other ministries, but that might need a lot more attention in the coming decades.

To tackle complex systemic challenges like navigating climate change and building resilient food systems, governments around the world will have to find ways to break down the silos that prevent holistic approaches. Through this project, pragmatic conversations and agreements were facilitated to improve cross ministerial data sharing and integration amongst MAF, MNRE and the Samoan Bureau of Statistics, and a diverse range of agrifood system stakeholders were included in the platform's design and prototyping. In the future, perhaps these conversations could move from pragmatics to more cross-system scenario planning, with the integration of other types of data representing different elements of the agrifood system.

Building transdisciplinarity into co-development

Transdisciplinarity is another feature needed for building less-siloed agrifood systems in the future. It is also fundamental as part of a true co-development process. Transdisciplinary approaches are action-oriented and aim to develop fit-for-purpose solutions to particular challenges, drawing from a range of theoretical and experiential knowledge types, rather than applying any particular theory or methodology to the challenge. Designing the ASC Explorer and its applications had to be

transdisciplinary from the start because its purpose was to serve the needs of agrifood policy makers, but it required input, data, and buy in from a broader set of ministries and organisations in Samoa, as well as engagement and coordination across that set of stakeholders. Its conceptual development and the effective presentation of different components of risk information also required the integration of climate, agricultural, and behavioural science, whilst the design of the platform itself required expertise in data analysis, software development, and UX design.

The inclusion of such a range of stakeholders and disciplines, and the fact that the ASC Explorer had to be delivered as a context and culturally appropriate platform, meant that there had to be broad and iterative discussion about the types of language, content, and risk framing included in the end product. As highlighted in the section on locally led collaborations, this required flexibility and open mindedness in all co-development participants, and key delivery partners had to be comfortable with ambiguity through a significant portion of the collaboration. However, because the desired end product was a digital platform which required clear delivery timelines, hard data, and structured workflows, there also had to be team members working under more rigid processes. Within this range of contributors to the co-development process, it was therefore crucial to have a number of people who could act as "translators" across research disciplines, cultural contexts, and organisational agendas, and who could coordinate across the logistics of multistakeholder engagement, processes of discovery and design for the tool, conceptual co-development, and practical implementation.

Multi-faceted capacity-building activities

To progress agendas like "transforming food systems for a resilient and healthy Samoa where no one is left behind" (Samoa FSP 2030), capacity building is needed across multiple levels. This is true for all governments facing complex sustainability challenges, and for all researchers wanting to move beyond descriptive analyses towards active contribution to paradigms, norms, behaviours, and values that promote more resilient and sustainable systems.[4] Like taking a systems perspective, a focus on strengthening capacity can feel like trying to do everything, everywhere, all at once. In practice, it too must be founded in pragmatism and should be built into multiple layers of a project's delivery.

Learning through doing

For example, the process of co-developing the ASC Explorer required Samoan, regional, and RIFA partners to learn through doing – building their own and each other's capacity in multi-stakeholder engagement, systems thinking, and transdisciplinary approaches. This not only provided partners with transferable experience and learnings that can be taken into future work with other collaborators, but it also built capacity in terms of new and strengthened networks amongst Samoan ministries, as well as between research institutions and policy makers. Such networks are necessary for collective scenario planning and navigating the impact of climate change on agrifood systems. And they can also be leaned on for knowledge sharing and collective action around other challenges and opportunities.

[4] https://www.cambridge.org/core/journals/global-sustainability/article/leveraging-capacity-for-transformative-sustainability-science-a-theory-of-change-from-the-future-earth-pathways-initiative/625179B3FC0741A0C5FF98DB80FFBE43

The co-development of the ASC Explorer also facilitated two-way capacity strengthening around building tools for evidence-based policy making. Climate and agricultural scientists often want their research findings to be useful and impactful in the wider world, but struggle to communicate or make those findings accessible beyond academic or niche audiences. Similarly, policy makers often want to make decisions informed by scientific information, but don't have clear channels by which to access or integrate the relevant information. Co-developing the ASC Explorer was thus an opportunity for both groups to iteratively strengthen their respective capacities to contribute to evidence-based policy change.

Strengthening the enabling environment

Additionally, the ASC Explorer platform itself expands the "enabling environment" of MAF (and other users) by providing functions like accessible climate projections, centralised infographic-style data integration, basic risk analysis and material for scenario planning. Another example of the strengthened enabling environment is the increased capacity for data sharing – facilitated both by the tool itself but also through the co-development process, which involved new formal and informal data sharing arrangements across Samoan ministries.

These examples highlight that producing the tool itself was not the primary output of the co-development process. All collaborators in the process have left with strengthened capacity in the way they work on complex systemic challenges, and Samoan policy makers are left with a richer enabling environment that could improve policy making and coordination, help decisionmakers identify and manage climate risks, and support them in consolidating data for funding proposals and program monitoring. Of course, making the most of the ASC Explorer's functions, along with strengthened data and knowledge sharing networks, will depend upon the longevity of the tool, and the capacity of users to maintain it and embed it into broader ways of working. To this end, time and resources were invested in the technical handover of the tool, as well as in iterative and ongoing discussions amongst the co-development team about applications of the Explorer and its integration with further development of tools, processes, and activities that will strengthen Samoa's agrifood system.