

Enhancing capacity of scientists and practitioners for promoting more sustainable and resilient food systems in Indonesia and the South Pacific

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ABSTRACT

Three Resilient Food Systems training workshops were delivered in Bogor, Indonesia, Suva, Fiji, and Port Vila, Vanuatu. The workshops provided young and early-career professionals with the latest international thinking on food systems and resilience. The workshop teaching material was based on the IFSTAL (Interdisciplinary Food System Teaching and Learning; www.ifstal.ac.uk) programme initially developed in the United Kingdom. The intensive six-day workshop programme integrates learning across three connected themes: food systems and resilience concepts, soft system methodology, and personal skills and development. Each workshop is locally contextualised with field trips, local inspirational guest speakers, and local real-world food system case studies. Throughout the duration of the workshop, participants apply new concepts and methodologies to their case studies, thereby enhancing their understanding and learning. Participant evaluation of the workshops was overwhelmingly positive, and pleasingly, participants reported positive learning outcomes across all three learning themes. These workshops represent just the initial step in a necessarily long and sustained effort to establish a community of food system professionals across Indonesia and Pacific Island states.

KEYWORDS

Food systems, resilience, food security, Indonesia, Pacific Island States



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HIGHLIGHTS

- Human capacity for food systems analysis, design and intervention is very low in target countries.
- Demand for professional training for developing resilient food systems was high.
- Innovative training workshops were very positively received by participants.
- There is an ongoing need to embed these teaching resources in local education and training institutions.

1. INTRODUCTION

Food insecurity remains a complex challenge for both developed and developing countries. Recent developments, such as the global pandemic, have highlighted vulnerabilities in current food systems and pushed millions more into food insecurity. The ongoing war in Ukraine has highlighted the unpredictable nature of geopolitical shocks and their consequences for global food commodity markets. Even before these two recent examples, traditional challenges such as global climate change, dietary changes, population growth, poverty, and environmental degradation have emphasised the dynamic, complex, and contested nature of food security.

It is precisely because of the complex nature of food security that a food systems approach is needed. This has promoted recognition of the need to ‘transform the food system’, a phrase now often seen in academic (Fanzo et al., 2021; InterAcademy Partnership, 2018; Ruben, Cavatassi, Lipper, Smailing, & Winters, 2021) and policy (e.g. Sonnino et al., 2020; USDA, 2022) literatures. But what is meant by these calls to transform the food system? Transformation from whose perspective? What will be the balance between winners and losers from the proposed transformation? Will the transformation require a transition period? Is their political will in support of the transformation, or perhaps more likely, resistance to the transformation from powerful vested interests? What is the time frame for the transformation? And perhaps most importantly,

what exactly needs to be transformed? (Ingram & Thornton, 2022). These are essential questions if we are to develop healthier, more sustainable and resilient, and fairer food systems. The pathways to such food systems will be complex and contested, and a new kind of food system professional is required to guide this transformation.

Furthermore, most scientists and professionals currently engaged in food security and related challenges listed above have not received formal training in food systems. This capacity building project represents the beginning of an educational and training journey to build capacity for developing food systems resilience in Indonesia and the Pacific Island states of Solomon Islands, Vanuatu, Fiji, and Samoa. This paper describes the demand for food systems training in the target countries, novel aspects of the training workshops, participant outputs and participant evaluation of the workshops. We conclude with suggestions for future activity to enhance food system resilience in Indonesia and the Pacific.

2. KEY CONCEPTS FOR RESILIENT FOOD SYSTEMS

By necessity, food system approaches engage many actors, ranging from producers to consumers, from researchers to policymakers, and from public to private sectors. This diversity of actors (and their associated motives and purposes) creates a communication challenge and food system researchers need to strive for shared understanding of key terms and concepts. Several food system frameworks have

been developed for different purposes (Ingram, 2020; Hasnain, Ingram, & Zurek, 2020), and a common feature is linking food system activities (producing, processing, distributing, consuming food) with food system outcomes (food security, economic, social, health, environmental) and food system drivers (e.g., climate change, global pandemic, war, etc.)

The Foresight4Food (F4F) Initiative's conceptual model (Figure 1) brings these aspects together by combining:

- ▶ the GECAFS food system model (Ericksen, 2008) for the emphasis on trade-offs and direct and indirect drivers of change, and
- ▶ the Making Markets Work for the Poor (M4) approach (Springfield Centre, 2014) on the interface of system rules and supporting functions with a set of core activities organised around supply and demand functions.
- ▶ the Wageningen University and Research food system model (Van Berkum, Dengerink, & Ruben, 2018), distinguished particularly by detail of food environments, enabling environments, and business services, and by the breakdown of socio-economic and environmental drivers.

The clustering of drivers and outcomes allows for a multi-scale analysis at the state and regional levels, where the scale, programme objectives, and stakeholder insights will enable a structured determination of the depth of analysis. This enables a high-level exploration of the embeddedness of the activities and stakeholders within the system so that existing feedback mechanisms can be best taken advantage of in multiple spheres of interest.

The key function of the food system framework is to facilitate a shared understanding of a specific food system of concern and encourages the use of language in a deliberate and precise manner. The framework is used extensively throughout the training workshops to provide opportunities for in-depth discussion and debate, and to encourage participants to identify points of interventions and desired or undesired consequences, including feed-

back loops.

The food system framework also facilitates understanding and operationalising of the concept of resilience. But what is a resilient food system, and how do we move towards more resilient food systems? The term resilience has different meanings for different practitioners and scientific disciplines. This diversity of meanings can lead to confusion and unnecessary conflict among stakeholders.

In order to avoid the risk of resilience becoming a hollow concept and an empty statement and to further progress and operationalise the concept of resilience in food systems, we support the use of the four resilience framing questions proposed by Helfgott (2018) in the context of Figure 1:

1. Resilience of what? Is it the key outcomes we want from food systems that are food security, livelihoods, environmental sustainability, etc. or a given activity, such as farming?
2. Resilience to what? The focus here is on the disturbances or drivers of the system in question.
3. Resilience for whom? Perspectives on resilience differ among stakeholders, so it is important to be clear about whose perspective is being included or excluded from the system in question.
4. Over what time frame? Food systems are highly dynamic over various time scales, and various activities and outcomes operate over shorter or longer time frames.

In the process of working through these questions, stakeholders are required to confront their own assumptions and biases, including their preconceived notions of boundaries to the food system of interest, to achieve a common goal. This requires negotiation (Hansen, Ingram, & Midgley, 2020), and to this end, the food systems framework provides a valuable aid for facilitating these discussions.

Answering these four questions 'scopes' the nature of the issue, which then allows for a

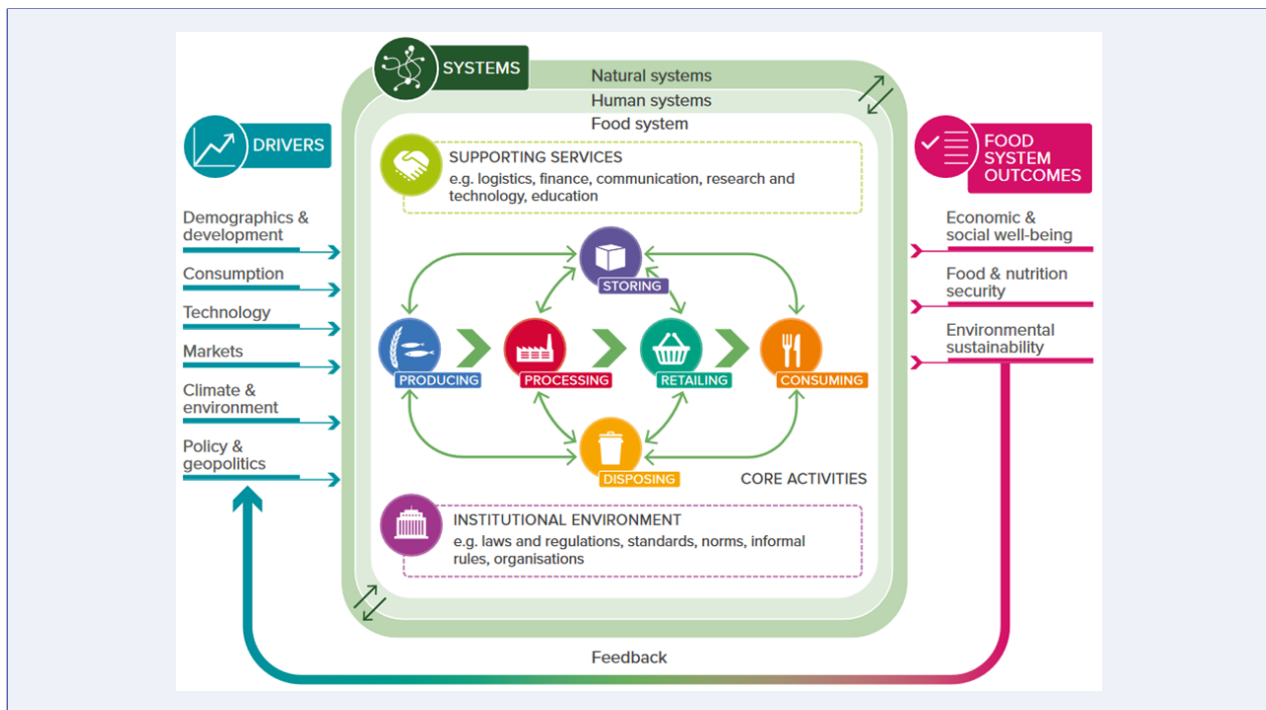


FIGURE 1. The food system framework developed by Foresight4Food (<https://foresight4food.net/>).

clear discussion about what action to take to enhance resilience. Here we recognise three broad approaches as described by Zurek et al. (2022) :

1. Robustness, where the aim is to resist the shock or stress so as to maintain existing functions and outcomes; preserve the status quo.
2. Recovery, where the system of interest recovers from a disturbance to deliver pre-disturbance functions and outcomes; return to the status quo.
3. Reorientation, where alternative systems outcomes are accepted; reject the status quo.

3. CURRENT CAPACITY AND DEMAND FOR FOOD SYSTEMS TRAINING

Prior to delivering the training workshops, each country was visited by the project leaders. The purpose of these visits was to:

- ▶ communicate the key concepts underpinning resilient food systems,
- ▶ promote awareness of the opportunity to attend the training workshops,
- ▶ identify local champions who could assist with practical organisation and delivery,

- ▶ identify local keynote speakers,
- ▶ select potential businesses or organisations that could host a field visit,
- ▶ identify local food system case studies to be used by workshop participants, and
- ▶ select the workshop dates, venue, accommodation and catering.

In addition to these core tasks, the project leaders were able to gain an overall impression of the current state of capacity for the analysis of food systems and the potential demand for food system resilience training. Key observations include:

1. There was weak capacity for analysing existing food systems or for designing interventions aimed at delivering more resilient food systems. This was despite all countries recognising the acute need for healthier, more sustainable, and more equitable food systems. There are, however, many people working in specific separate aspects of food systems, especially agriculture and fisheries.
2. There was a large gap between national strategies and capacity to deliver at the local level. For example, all countries had excellent high-level national food security strate-

- gies, but capacity to deliver these strategies at the local level was weak.
3. There was a very high level of ‘siloining’ between different government departments and other organisations. One very common example; government departments of health had only weak engagement with departments of agriculture, if any, although both stated that they were addressing food security. Similarly, departments of trade, business, environment, rural development, etc., were mainly working in isolation from each other.
 4. Human capacity and physical infrastructure is often very limited at the local level. This is a well-recognised constraint in geographically large and distributed island nations such as Indonesia and the Pacific. The reality is that this constraint will continue to stretch budgets, making it difficult to allocate new funding to food system resilience, even though such an investment would deliver greater returns than business-as-usual.
 5. There was wide-ranging support for the notion of enhancing capacity for developing resilient food systems. This was expressed by the number of young and early-career applicants for the limited workshop places and by senior managers and leaders of government, business and civil society organisations.

4. RESILIENT FOOD SYSTEMS TRAINING WORKSHOPS

The aims of the workshops were to raise awareness of food systems approaches and equip participants with new concepts and practical skills they could apply in their daily work practice. The workshop programme was designed to integrate three learning themes:

1. Resilient food systems concepts,
2. Soft systems methodologies, and
3. Personal skills and development.

The first strand covers key food systems concepts, including the food systems framework (Figure 1) that integrates Drivers, Activities and Outcomes; and a definition of resilience that requires the four questions introduced above to be answered. The second strand includes Soft Systems Methodologies, including Rich Picture Framing, Stakeholder Analysis, BATWOVE (Beneficiaries, Actors, Transformation, Worldview, Owners, Victims, Environment) and Theory of Change. These methodologies were applied within the resilient food system framework. The third strand developed personal skills in communication (listening, speaking), teamwork, and leadership. All three strands are closely integrated through participant group work on real-world local food system Case Studies. Throughout the week-long workshop, participants returned to their Case Studies to apply newly introduced concepts and methodologies. In this manner, participant-to-participant teaching and learning were maximised. The group work culminated in participant presentations on their proposed food system intervention.

4.1. Workshop Programme and Student Outputs

The workshop programme and pedagogy were based on the successful IFSTAL (Interdisciplinary Food System Teaching and Learning; www.ifstal.ac.uk) teaching resources developed in the United Kingdom. Local context was provided through local food system Case Studies, a mid-workshop Field Trip, and local guest speakers. The Resilient Food System workshops typically run for six days and an example programme from Bogor, Indonesia, is provided below (Table 1).

Workshop participants were randomly allocated to one of five groups. Each group of six participants would work on a local food system project for the duration of the training workshop. Group activities were designed to give participants experience in applying new food systems concepts and methodologies to their specific project topic (Figure 2). In Indonesia, the five project topics were:



FIGURE 2. Workshop participants applying new knowledge and skills to their specific food systems project (Suva, Fiji).

1. Delivering the national strategy on stunting at the local level
2. Adding value on-farm for local nutritious food
3. Socialisation the reduction of plastic bag use at the market or shopping mall
4. Diversification of staple foods in East Indonesia
5. Distribution and quality improvement of Bulog subsidised rice

As the participant groups worked through the different methodologies (Figure 2), their outputs were displayed on a wall in the main workshop room (Figure 3). In this way, all participants could compare their output with others and learn from each other. During morning and afternoon tea and during lunch, participants were encouraged to monitor the progress of the whole workshop as each day, new work was added to the wall. This ‘participant-to-participant’ learning led to deeper understanding, effective communication, and team building. The final workshop, ‘wall of wonder,’ is arranged with groups in columns and separate soft system methodologies in rows (Figure 3).

Similar workshop programmes and participant outputs were delivered in Suva, Fiji, and Port Vila, Vanuatu. The final day of the workshop was devoted to student group presentations (Figure 4) and participant evaluation of the workshops. A fourth workshop planned for Apia, Samoa, was abandoned due to the COVID-19 pandemic and associated travel restrictions.

4.2. Participant Evaluation

On completion of the workshop, participants were administered a survey seeking their reactions and feedback on the workshop. The results were anonymous. Nine questions used a Likert scale from ‘Strongly agree’ to ‘Strongly disagree’ (results from the Bogor Workshop are shown in Figure 5). Of these, the first three questions related to how the course was conducted and the overall management of expectations. The next three questions related to course content and accessibility of the course (including time management). Finally, the last three questions related to how the overall project was conducted including accommodation and catering facilities.

	Day 1	Day 2	Day 3	Day 4	Day 5
09:00	Opening LC scene setting PSD ice breaker	Introduction PSD Zoom teamwork game	LC Field trip to inspect local food businesses	Introduction SSM Theory of Change	PSD Group project presentations Five groups present and compete for judges scores
10:00	RFS Food system concepts	RFS Framing and Boundaries	Workshop participants apply new concepts and skills in real-world context	SSM Workshop: Implementing Theory of Change	
11:00	RFS Workshop: key features of Indonesian food systems	RFS Workshop: Identifying stakeholders			
13:00	LC Invited industry speaker	LC Invited government speaker		LC Invited NGO speaker	PSD Collaborate game
14:00	RFS Food system thinking	SSM BATWOVE tool		SSM Effective communication	Feedback from workshop participants
15:00	SSM Rich Picture	SSM Workshop: Applying BATWOVE		RFS Revision of key concepts	
16:00	PSD Group Project	PSD Group Project		PSD Group Project	Close of workshop
18:00	PSD Free to work on group projects	Workshop Dinner		PSD Free to work on projects	

TABLE 1. Resilient Food Systems training workshop programme. RFS – resilient food system concepts, SSM –soft system methodologies, PSD – personal skills and development, LC – local context. This is a generic outline only, and more detailed programmes were developed for each specific location.

Workshop participants responded mainly with ‘Strongly Agree’ or ‘Agree’ to all nine statements indicating a high overall satisfaction with the workshop content, processes, and general administration (Figure 5). Similar results were recorded for the Vanuatu and Fiji workshops.

A further four questions sought qualitative responses in the form of text (responses varied from one-word answers to several sentences) and are summarised below for the Bogor workshop (Table 2). Overall, participants provided positive responses to the four qualitative questions. Most participants enjoyed the workshop experience and reported a positive learning experience. However, there was criticism of the perceived level of repetition of key concepts and, conversely, a desire for wider coverage of topics related to food systems.

This feedback describes how the workshop largely met, and sometimes fell short of, participant expectations. Overall, quantitative and qualitative feedback was positive from all three workshops (Bogor, Port Vila, Suva). Pleasingly, participants reported positive learning experiences across all three learning themes (food system concepts, soft system methodology, and personal skills and development). Several negative responses were related to the intensity of the six-day workshop and the desire for greater time to explore new material in greater depth. This shortcoming is acknowledged and, in the long-term, this material would ideally be incorporated into more traditional delivery formats allowing participants greater time to digest and assimilate new information. Different participants have different learning styles, and



FIGURE 3. Bogor Wonder Wall showing outputs from five groups (columns) for Rich Picture (top), Stakeholder Analysis (middle) and BATWOVE (bottom) applied to local food system case studies.



FIGURE 4. Workshop participants presented a summary of their group projects on the final day of the workshop. These presentations provided an opportunity to showcase newly acquired knowledge and skills to a real world, local food security challenge (Suva, Fiji).

the format of these workshops was deliberately intensive and targeted towards young and early-career professionals.

5. KEY FINDINGS AND FUTURE DIRECTIONS

Key findings include:

- ▶ Demand for food systems training in Indonesia and the Pacific is high. Increasing

complexity and ongoing challenges to food security (e.g., climate change, pandemic, governance, trade and business, public health) have created greater awareness of the need for food systems approaches, but capacity to implement food systems interventions remains weak.

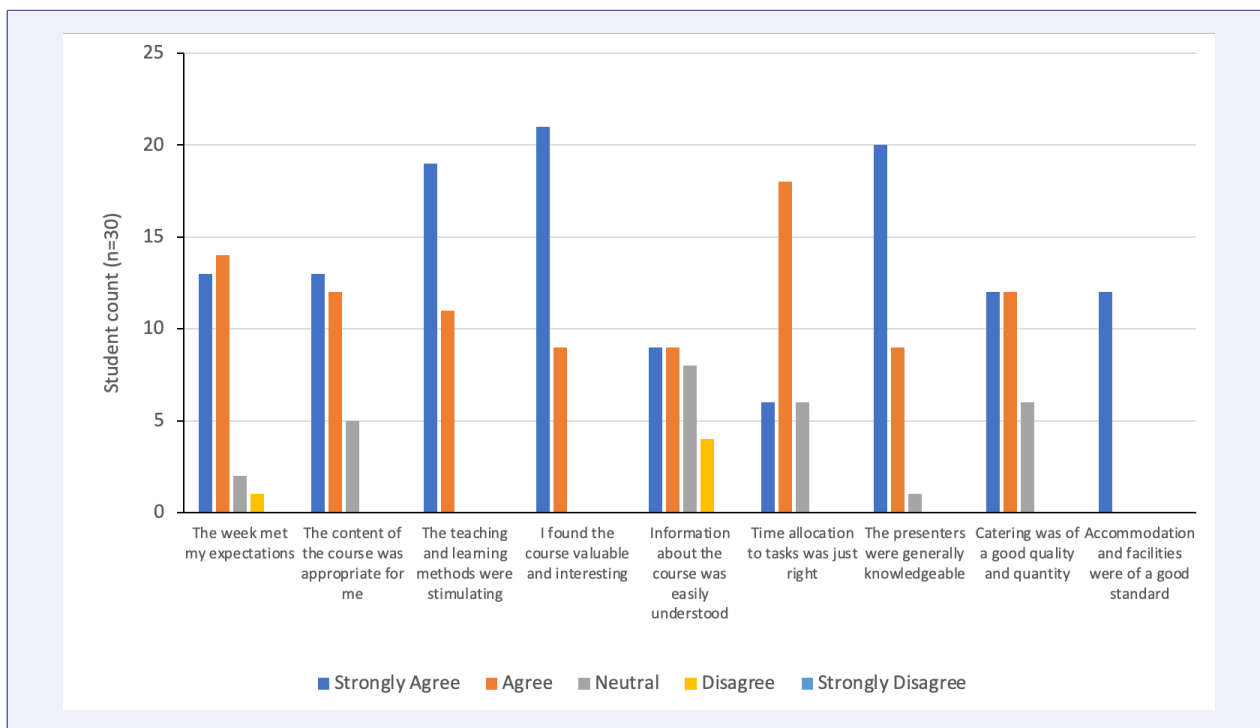


FIGURE 5. Feedback from Bogor workshop participants (number equals 30). Likert scores from Strongly Agree to Strongly Disagree, questions covered workshop content, delivery and general housekeeping.

Positive feedback	Negative feedback
<p>1. What did you hope to gain from the week?</p> <ul style="list-style-type: none"> • Problem solving skills • Networking with peers • Confidence to apply new skills and knowledge • Food system approach to solve food security challenges 	<ul style="list-style-type: none"> • Not applicable
<p>2. What did you find most useful in the course and why?</p> <ul style="list-style-type: none"> • Developing systemic thinking • Games were brilliant • The field trip • Problem solving • Soft System Methodology and tools • Methods for engaging stakeholders • Informative lectures 	<ul style="list-style-type: none"> • No negatives
<p>3. What did you find least useful in the course and why?</p> <ul style="list-style-type: none"> • Nothing, all round great package 	<ul style="list-style-type: none"> • Repetition/Overlap • Need more time to process new concepts • ‘Ice-breakers’ unnecessary • Starting time was too late • Food system concepts not relevant to me • Would like to explore other group’s topics
<p>4. Were there any areas not covered in the course which you would like to have been addressed?</p> <ul style="list-style-type: none"> • Encourage more institutions to embrace food systems approach • Greater emphasis on selecting indicators for monitoring food system performance 	<ul style="list-style-type: none"> • Current status of food security • Food safety needs more attention • Greater business perspective • Gender and environment issues • Food regulations and laws relating to food • Greater focus on ‘Theory of Change’

TABLE 2. Summary of qualitative feedback from Bogor workshop participants.

- ▶ Full account of local environmental, social, and cultural diversity is necessary in designing locally relevant food systems workshops. The lesson is to establish local relations and identify local champions to drive local preparation for successful food system workshops.
- ▶ To the degree that it is possible, contingency plans need to be developed to prepare for unplanned absences of teaching staff and participants. This could take the place of flexible timing of workshops (difficult with international trainers) and identification of reserve participants who could step in at short notice.
- ▶ It follows from the considerations above that food systems workshops need to be in-country, and even regional within a country, to as great an extent as possible. Local food systems are nested within larger regional and international food systems, but the consumer is primarily a local actor.
- ▶ The COVID-19 pandemic has increased food insecurity, exposing shortcomings in existing food systems. Disruptions to livelihoods from trade and travel restrictions has emerged as a key vulnerability to food insecurity. New and innovative approaches are needed to address these systemic failings in food security.

6. FUTURE DIRECTIONS

This project represents just the first step in a necessarily long and sustained training and education journey. Ultimately, the desired outcome is a community of food systems professionals working across government, education, business, and civil society sectors. A crucial first step towards this outcome is to establish local ownership and stewardship of the teaching resources developed in this project. Suitable educational institutions exist in Indonesia and the Pacific. In Indonesia, the Bogor Agricultural University (IPB, Institut Pertanian Bogor) has the necessary breadth and depth to support resilient food systems training and edu-

cation. IBP has national reach and extensive experience in delivering training programmes to meet local needs. In the Pacific, The University of South Pacific (USP) is well placed to provide a 'home' for resilient food systems teaching resources. For vocational and professional participants, the USP CVET (College of Continuing Vocational Education and Training) would be a logical choice with existing processes and quality assurances and with reach across the Pacific. For postgraduate coursework participants, the USP Pace-SD (Pacific Centre for Environment and Sustainable Development) would be a great option. Both these USP units have an existing focus on climate change, resilience, development, and food.

The challenge of developing resilient food systems that can provide food security for all is an acute challenge for Indonesia and Pacific Island nations. Local capacity for analysis of food systems and design of systemic interventions will make a significant contribution to food security over the coming decades. For these reasons, it is important that the small steps described in this project are nurtured so that food systems thinking can continue to grow and flourish in Indonesia and the Pacific.

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