



Food System Pathways Storybook

Abaiang Island, Kiribati

English language



Acknowledgements

The Food System Pathways Storybook: Abaiang Island, Kiribati was produced by the Australian Centre for International Agriculture Research project, *Transformation Pathways for Pacific Coastal Food Systems* (CLIM-2020-178).

We thank community members from Tebero, Teburao and Tuarabu on Abaiang Island, who participated in the project. We especially thank the Abaiang volunteer knowledge brokers for their collaboration and commitment: Kaeiei Benetito, Kanraoi Uriam, Timeon Malcolm, Kiboboua Raiwan, Beia Tominiko, Terenga lauea and Rereniti Tiiman.

We also acknowledge the support of the Abaiang Island Council, the Kiribati Ministry of Environment, Lands and Agricultural Development (MELAD), Ministry of Education, the Office of the President, and the Ministry for Culture and Internal Affairs.

The Board of Live and Learn Environmental Education Kiribati provided valuable advice and guidance throughout the project.

Artwork was created by Natan Itonga and Ribabaiti Manikaa.

Graphic design was provided by Kirsten Revell of RevellDesign.

Photographs were taken by James Butler, Alaric McCarthy, Leo Dutra, Teera Eriuta, Willie Tabuia and Tearine Barnabas.

Suggested citation: Butler, J.R.A., McCarthy, A., Davila, F., Dutra, L., Boylan, S., Eriuta, T., Barnabas, T., Hunter, M., Tabuia, W., Lai, Y., Toatu, I., Toatu, B., Nenai, L., Lal, R., Magnan, A. and Teroroko, T. 2025. *Food System Pathways Storybook: Abaiang Island, Kiribati* - English Language. Cawthron Institute, Nelson, New Zealand. 53 pp.





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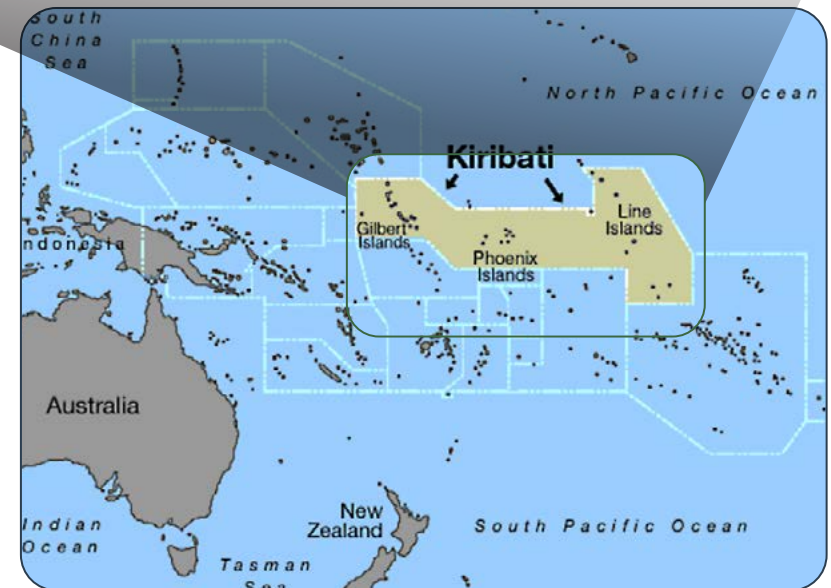
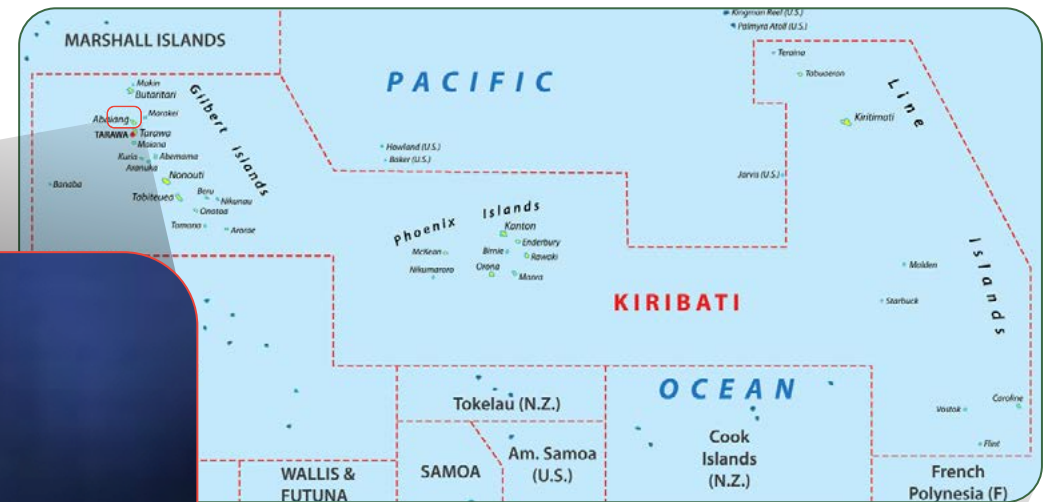
Introduction

Change is happening faster, and the future is uncertain. Climate change, population growth and technology bring risks, but also opportunities. Shocks like COVID-19, natural disasters and conflict are also affecting the world. Communities must be ready.

In August 2023 to March 2026, the Australian Centre for International Agriculture Research funded this project: *Transformation Pathways for Pacific Coastal Food Systems*. A partnership was formed between the Cawthron Institute, Live and Learn Environmental Education Kiribati, University of Technology Sydney, CSIRO and SPC. Abaiang Island was selected as a pilot site to build on Live and Learn's ongoing Atoll Food Futures work. The Abaiang community and Island Council agreed to host the project. This Storybook summarises the project's activities.



Abaiang Island, Kiribati



Project aims

- Move coastal food systems towards more climate resilient, prosperous and sustainable futures
- Build community and stakeholders' capacity to make this change
- Develop a community-led planning process and tools



Opposite page:

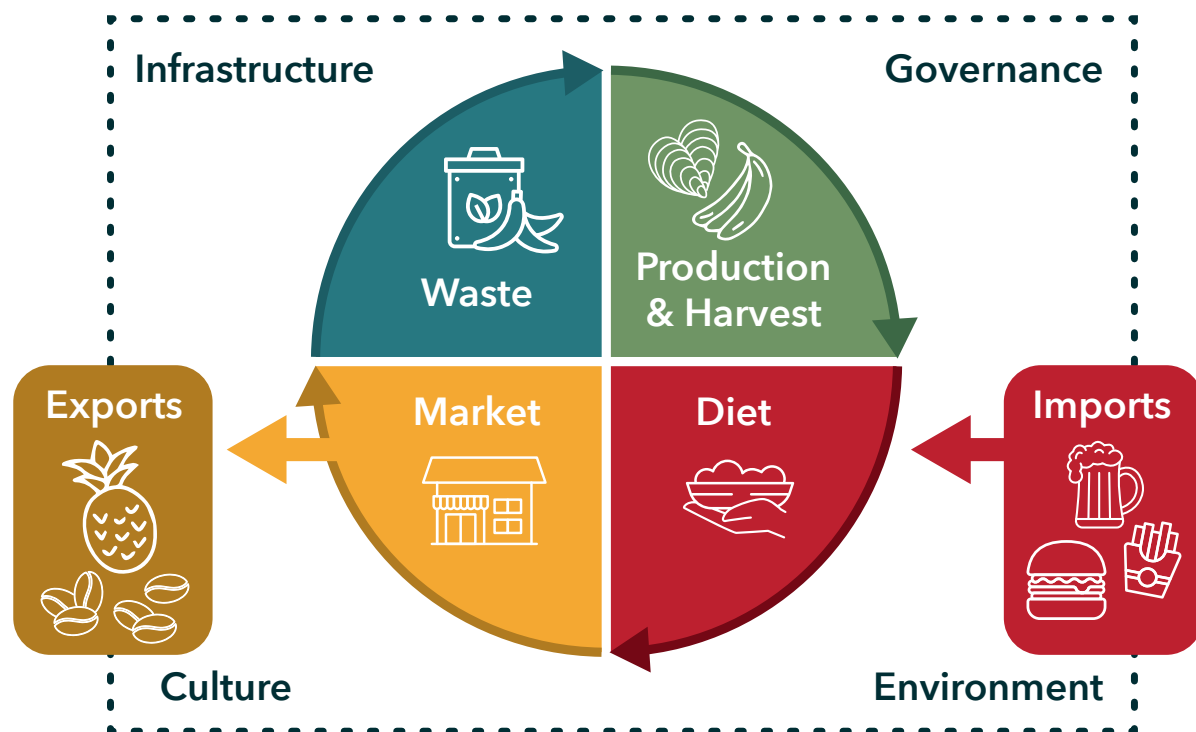
In Kiribati, there is a traditional ceremony called “kaiwa”, where an expert lights a fire within the “kaiwa” fireplace facing the east as the sun rises. He allows the leaves to burn and form smoke, and then breathes through the smoke. By doing this he can foretell the future, forecasting what lies ahead and how to find the best way forward. This ceremony was important to help seafarers navigate the ocean. The artist, Natan Itonga, has used the ceremony to explain the idea of adaptation pathways (“mwakuri ni kakatauroi”), which is also about planning a route ahead despite future uncertainty.



Credit: Natan Itonga

What is a food system?

Food systems are critical to communities' nutrition, livelihoods and well-being. A food system can be defined as: "all the elements (environment, people, inputs, processes, infrastructure, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the output of these activities, including socioeconomic and environmental outcomes".



For this project, Natan Itonga created the "Uamari" logo to illustrate an island food system in Kiribati.



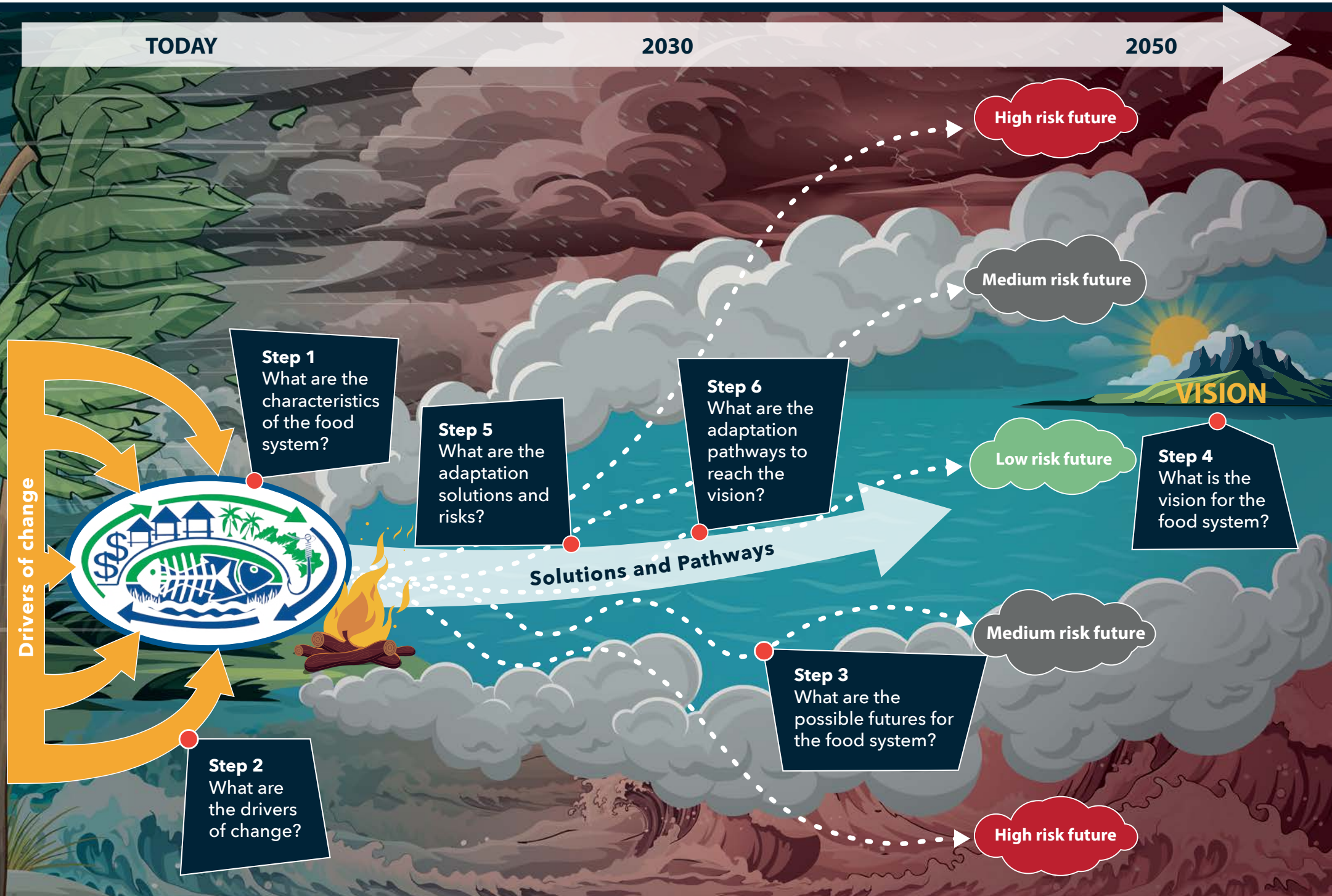
Planning food system adaptation

In August 2023 to June 2024 the project focussed on planning. Activities were based on six learning steps. These were designed to help participants understand their food system, anticipate future uncertainty, risk and opportunities, and agree adaptation pathways to transform their food.

Key learnings are summarised from each activity



Learning steps in the planning process



Step 1 What are the characteristics of the food system?

TODAY

2030

2050

Step 1

What are the characteristics of the food system?



In Step 1, six activities were carried out to:

- Understand the Abaiang food system
- Consider past shocks and changes
- Identify the most important foods
- Identify food system problems and solutions

The activities were:

1. Food System Wheel
2. Historical Timeline
3. Governance Analysis
4. Causal Loop Analysis
5. ADWIM (Assets-Drivers-Wellbeing-Impact-Model)
6. Diet survey

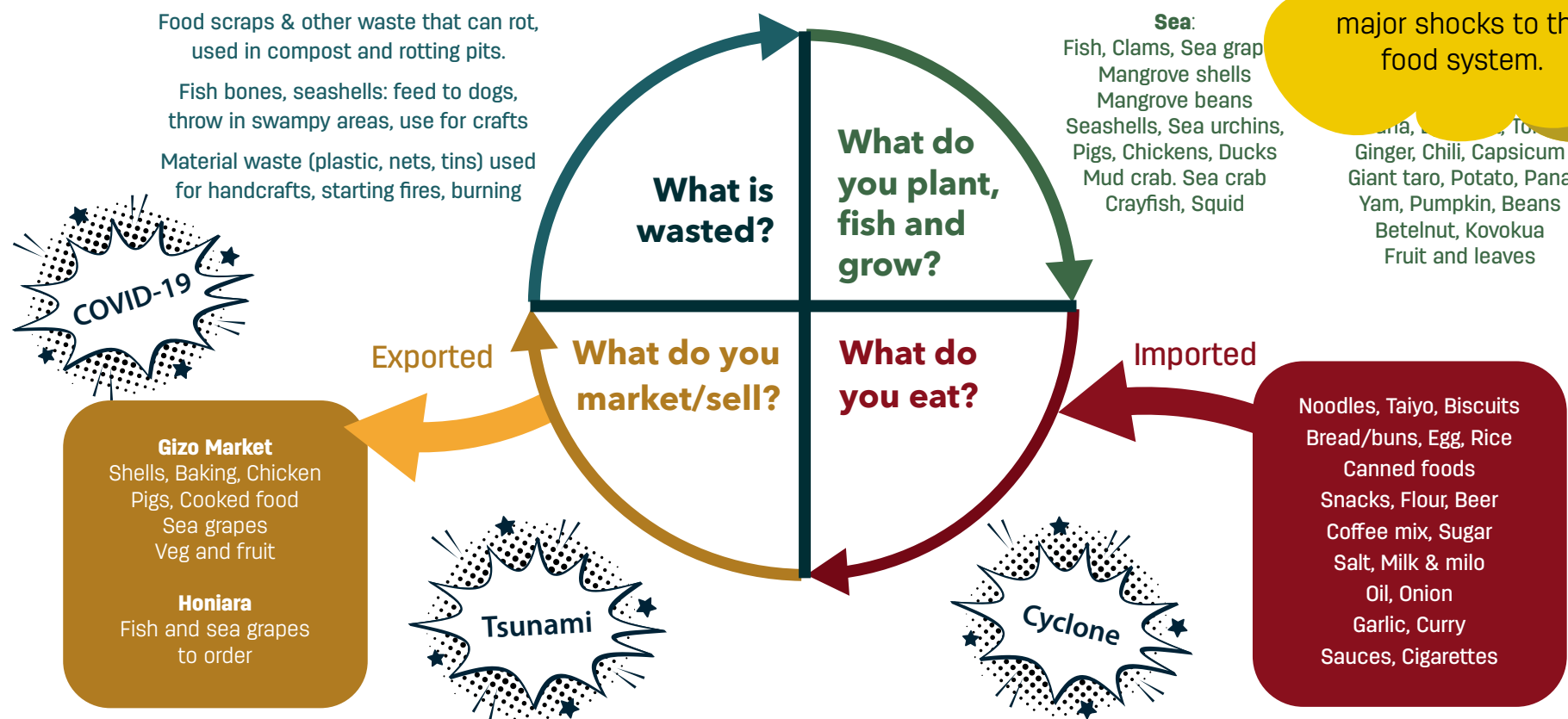


Activity 1: Food System Wheel



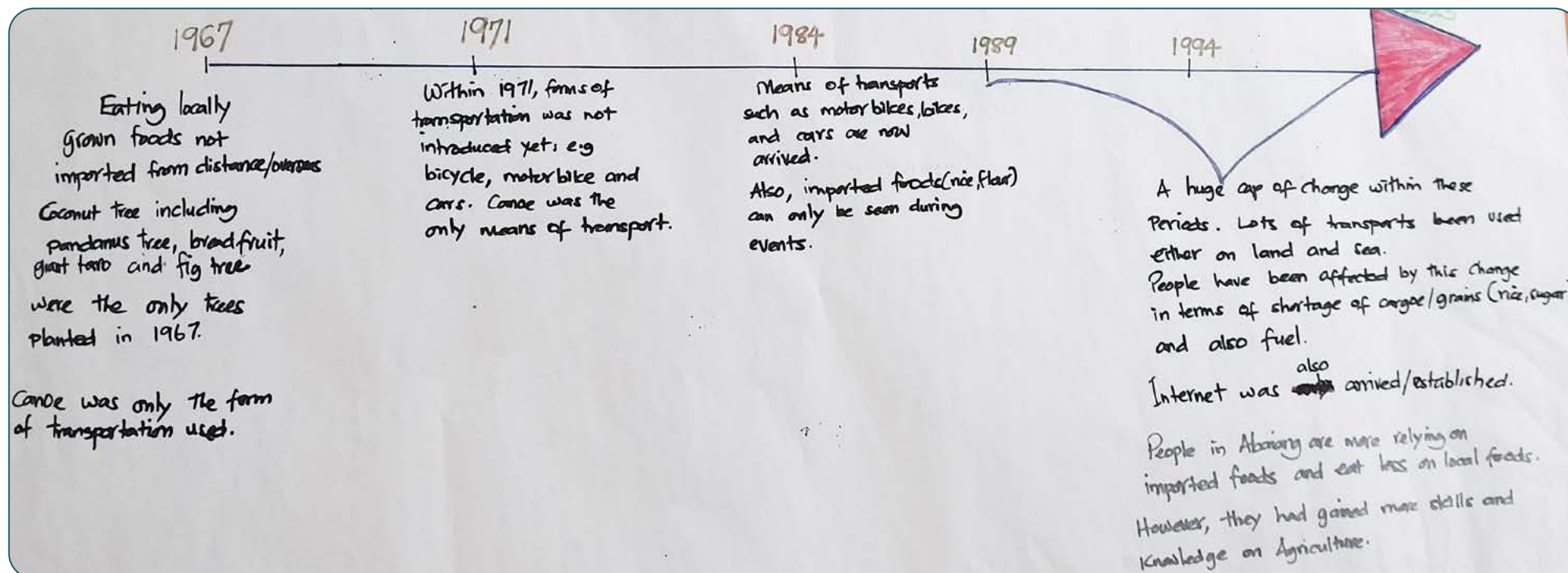


Abaiang Food System Wheel

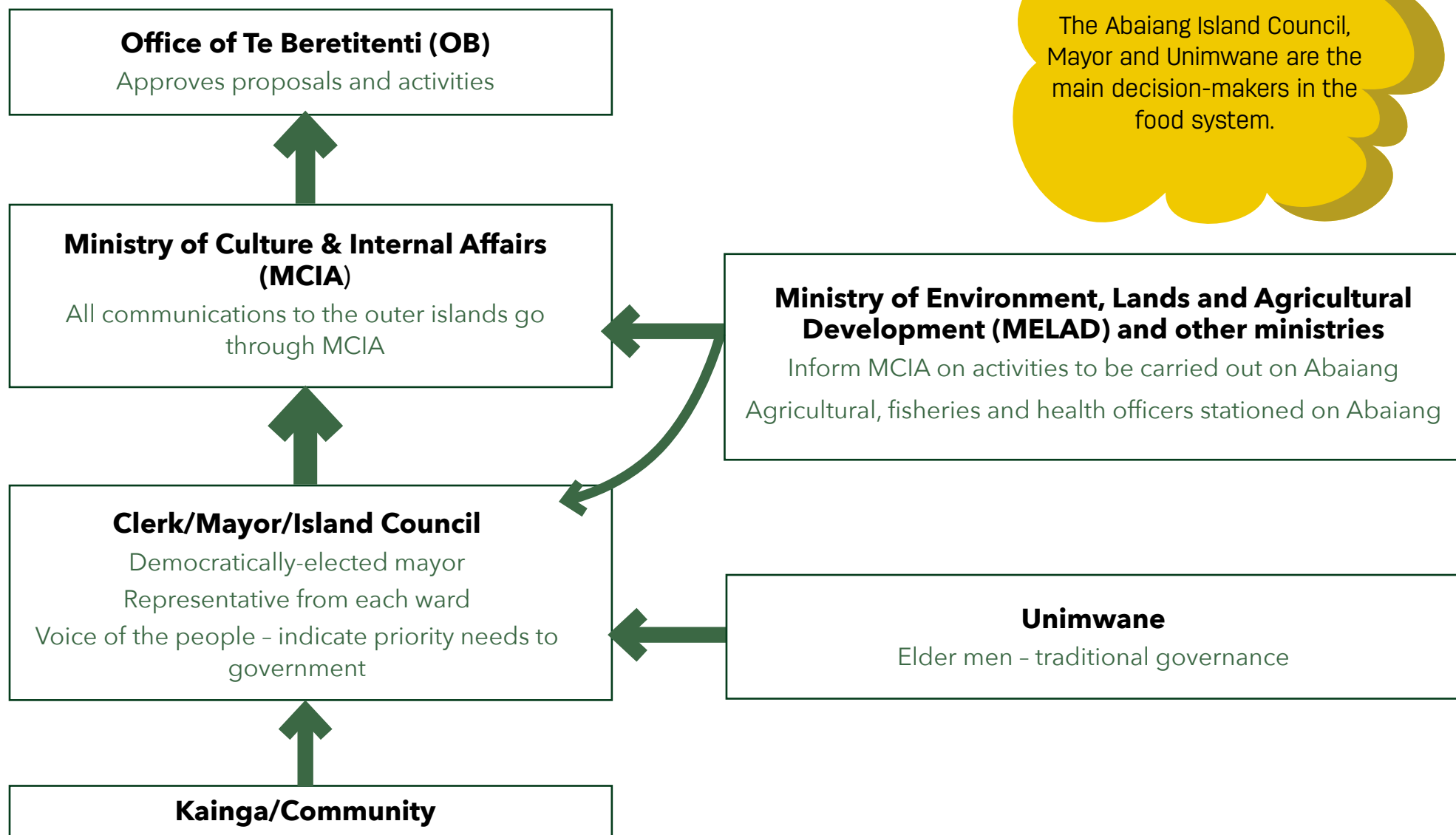


Activity 2: Historical Timeline

Since 1990, major changes have happened with a greater reliance on imported food, and better transport and communication.



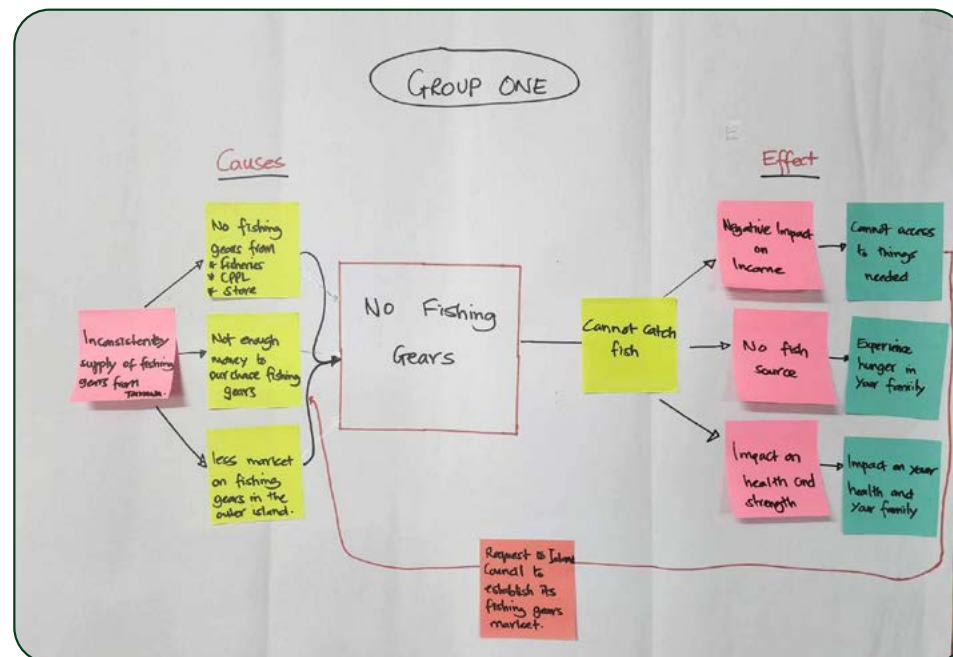
Activity 3: Governance Analysis



Activity 4: Causal Loop Analysis



Causal Loop Analysis was used to examine five major problems affecting the food system: people not eating enough local food; no fishing gear; less fish in the lagoon; inconsistent fuel supply, and freight costs. Participants identified solutions to tackle the underlying causes of the problems, and key decision-makers.

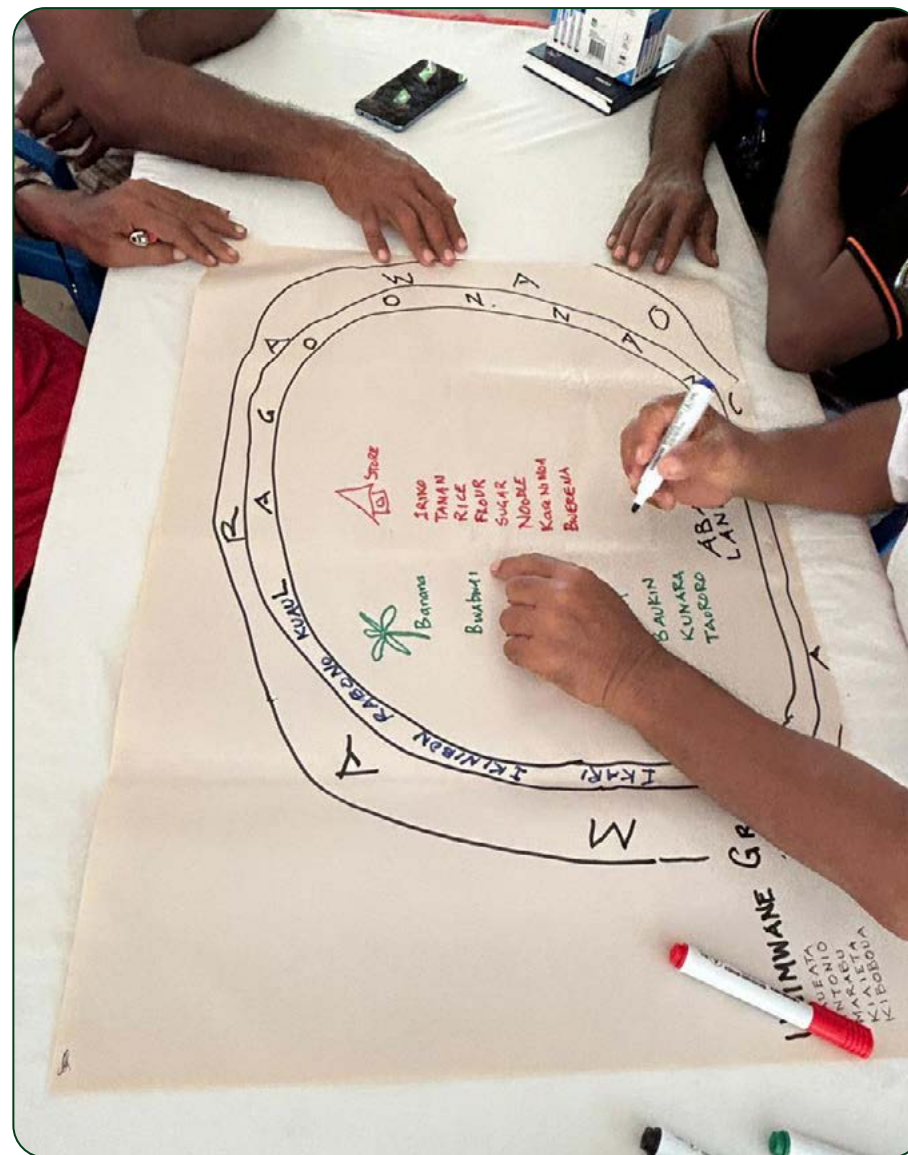


	Abaiang food system problem	Solutions to tackle underlying causes	Key decision-makers
	People not eating enough local food	- Community farming/fishing knowledge-sharing activities - Financial management training	ALD rep, nursery man, elders with knowledge, Island Council, Ministry for Education, School board rep, local NGOs
	No fishing gear	- Request Island Council to establish a fishing gear market	Island Council
	Less fish in the lagoon	- Education and signs to 1) reduce use of fishing nets and 2) reduce take of young fish - Family planning	MFMRD (Fisheries Division), Island Council, Village community, Health Centre
	Inconsistent fuel supply affecting fishing and transport	- Fishing bylaws - Practice sustainable fishing without boats - Consider simple aquaculture options	MFMRD (Fisheries Division), Ministry of Commerce, Island Council
	Expensive freight costs	- Establish a cooperative for local market - Sell products locally/domestically	Ministry of Commerce, Women's Group, Island Council

Activity 5: ADWIM

(Assets-Drivers-Wellbeing-Impact-Model)

Participants listed and valued their foods in terms of income, health, food security and culture.



1.



2.

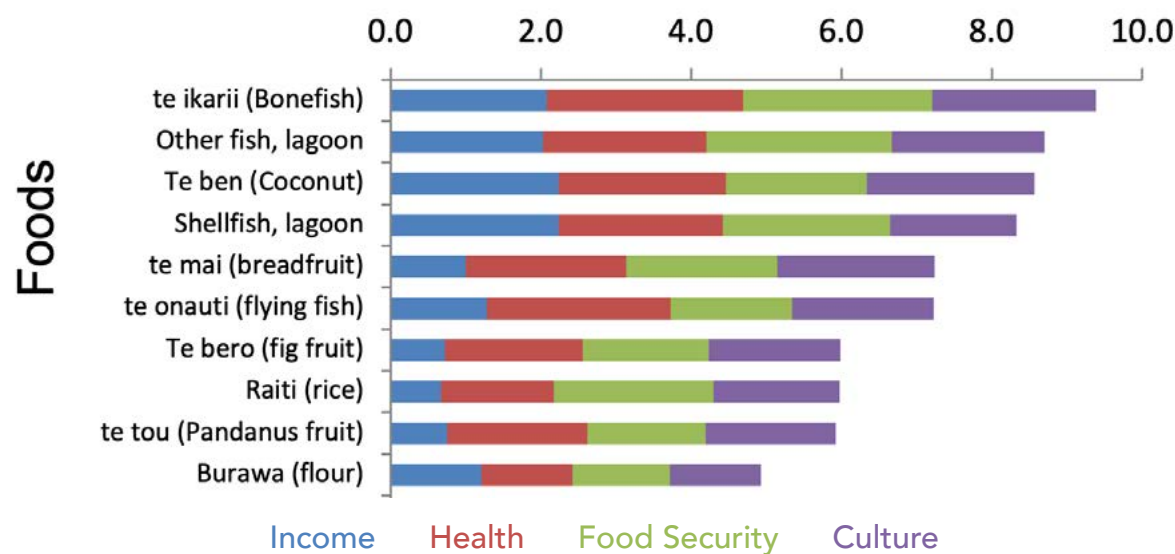


3.



The ADWIM tool showed that out of 67 different foods, bonefish, other lagoon fish and coconuts contributed the most to well-being.

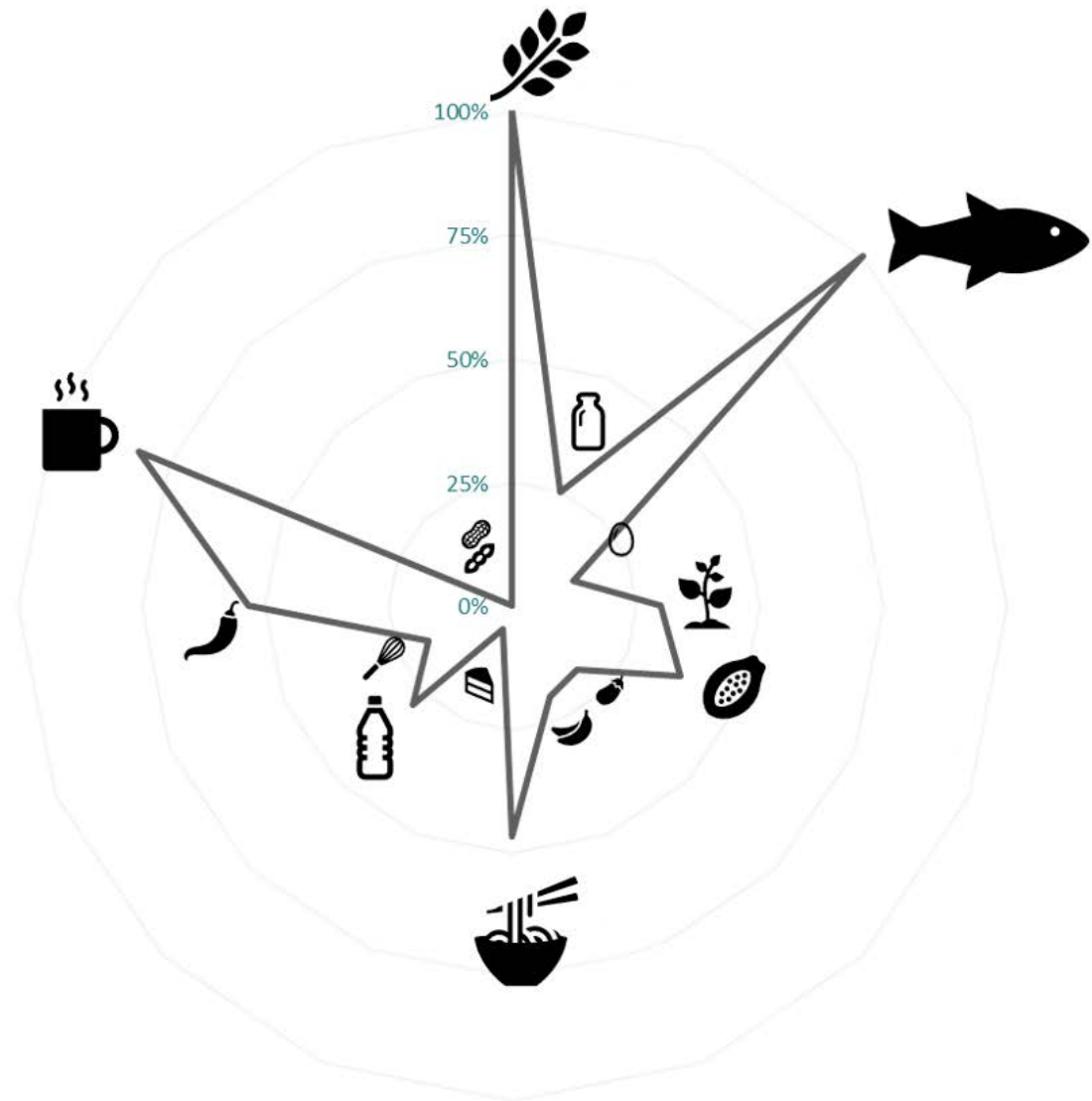
Well-being importance %



Activity 6: Diet survey

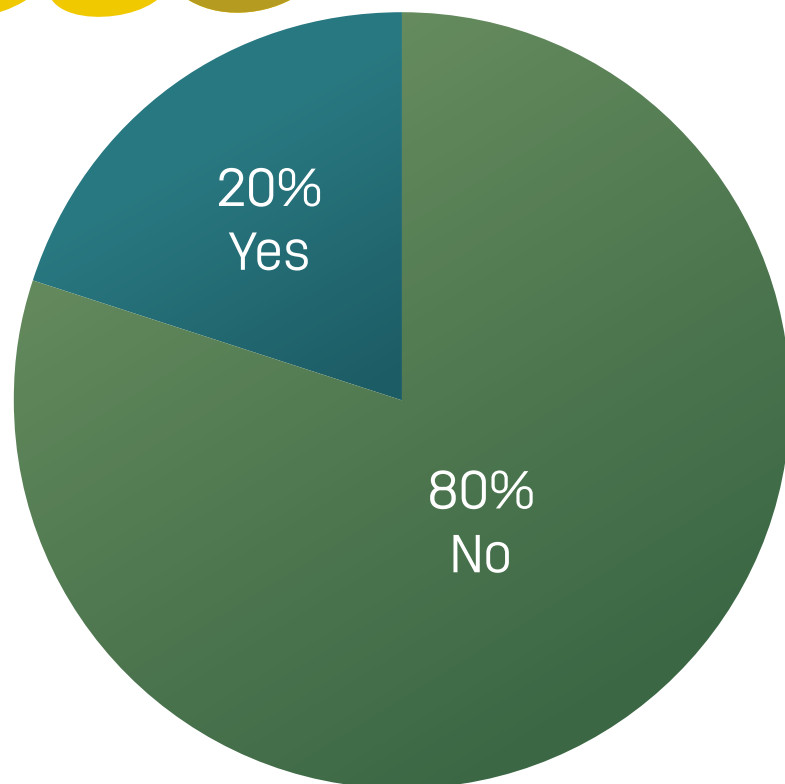
(24-hour diet re-call)

60 people were surveyed about what they had eaten in the past 24 hours. Rice and bread, bonefish and tuna had been eaten by everyone. Noodles had been eaten by 50%, and fruit and green vegetables had been eaten by 25%.

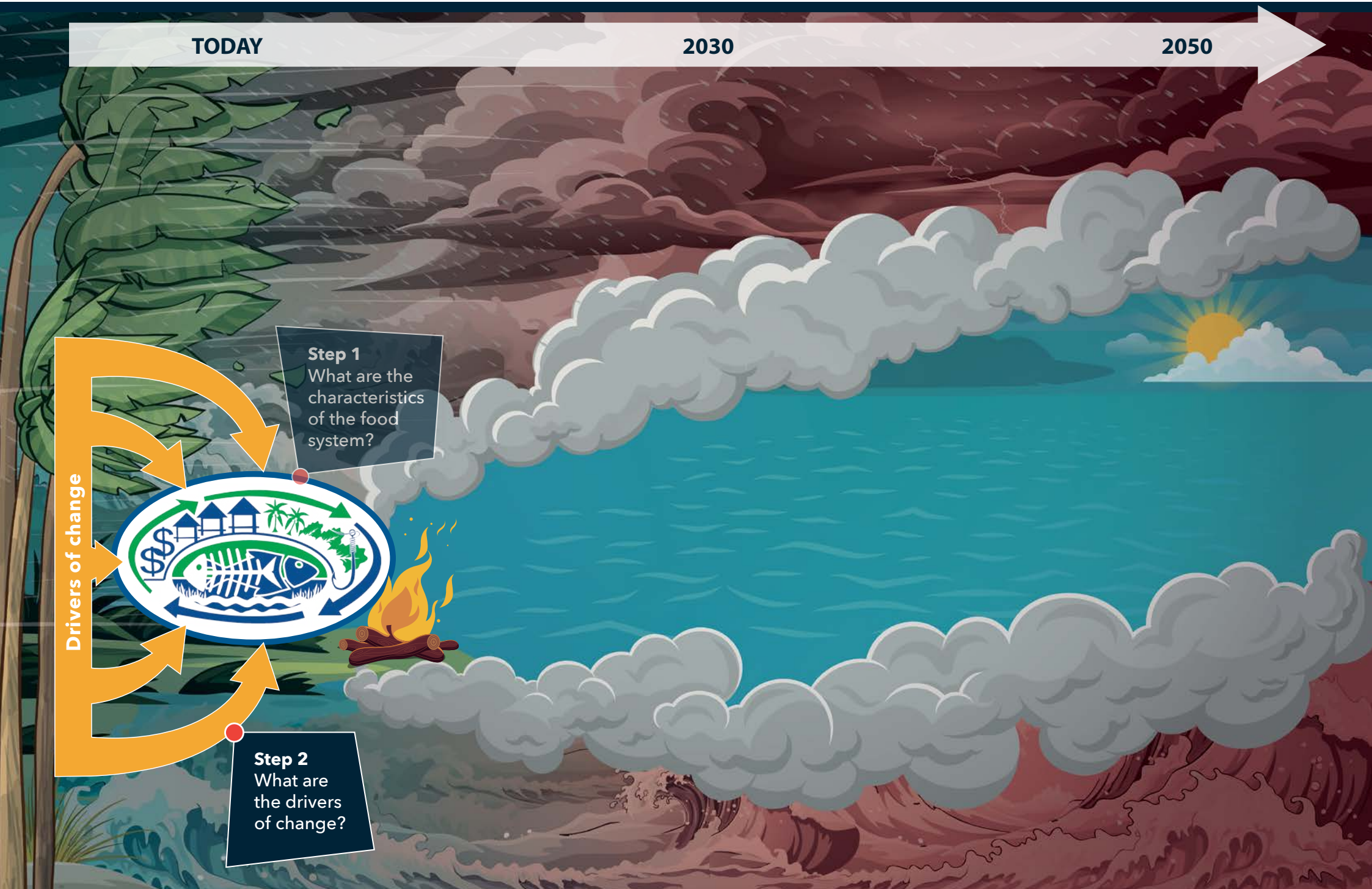


5 or more healthy food groups?

20% of people had eaten more than five healthy food groups, and 80% had not.



Step 2 What are the drivers of change?



Activity 7: Food System Drivers

This activity was carried out to:

- Draw on Step 1 and other information to understand the drivers of the Abaiang food system
- Decide which drivers are most important

A driver of change is any natural or human factor that causes a change in the food system. Examples include climate change and population growth.



Climate Change



Air and sea temperatures are increasing, and storms and droughts will become more intense.

Sea level rise is causing coastal erosion and saltwater intrusion of groundwater. More coastal inundation is predicted by 2050.



Population



Population is growing on Abaiang to more than 6,000 people. With less land due to sea level rise, population density will increase quickly. The Tarawa population could increase to 100,000 by 2050.



Most impacted foods in 2050

The ADWIM tool identified the foods that will be most impacted by climate change and population growth. The important foods at most risk by 2050 are:

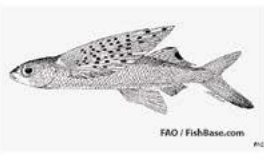
Lagoon fish Reef fish
Dogshark Pumpkin

Food item (land) Aon te aba	Wellbeing importance	Key risks	Food item (marine) Aontoora & Marawa	Wellbeing importance	Key risks
 beki (pig)	karekewane / income te mauri health kawakinan / te food security te katei / culture	  	 Other lagoon fish (e.g. te okaka / orange striped emperor)	karekewane / income te mauri health kawakinan / te food security te katei / culture	  
 mwanai (land crab)		  	 forereef fish (e.g. te bwawa / yellow snapper)		  
 te moa (chicken)		  	 te tabena (crab, lagoon)		  
 te bwaukin (pumpkin)		  	 te bakoa (dogshark)		  
 kabiti (lettuce, pak choy)		  	 te on (green turtle)		  

Least impacted foods in 2050

The ADWIM tool also showed that several important foods will be less impacted. These provide future opportunities, especially:

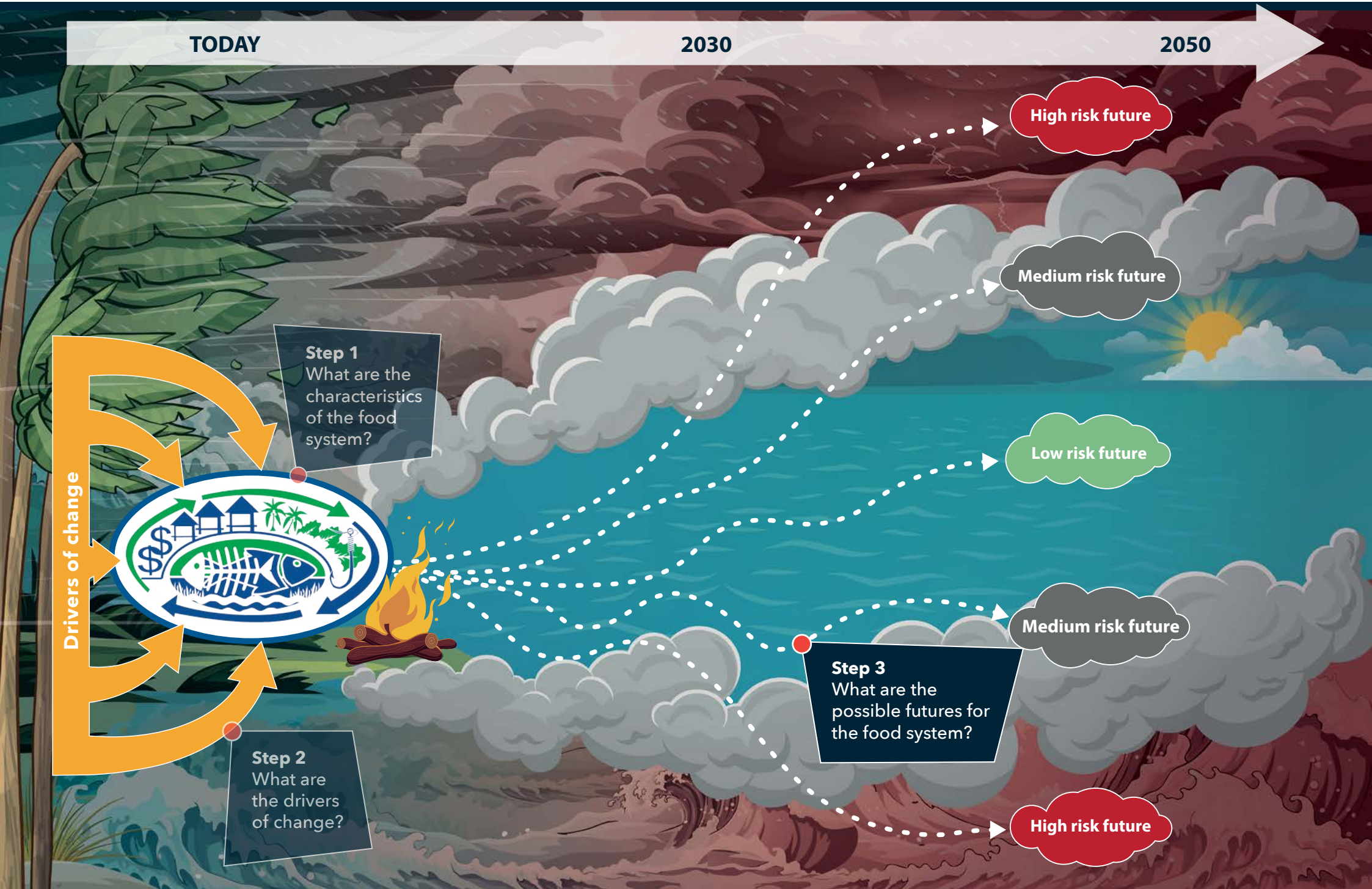
Bonefish Flying fish
Skipjack tuna
Coconut Breadfruit
Shellfish Swamp taro
Sweet potato Pandanus

Food item (land) Aon te aba	Wellbeing importance	Key risk	Why least impacted?	Food item (marine) Aontoora & Marawa	Wellbeing importance	Key risks	Why least impacted?
	karekewane income te mauri health kawakinan te food security te katei culture		 		karekewane income te mauri health kawakinan te food security te katei culture	  	
			 				
			 			  	
							
						  	

Using this information, and their own knowledge, participants identified economic, social and cultural, climate change, natural resource management and technology drivers. Poor use of money, lack of tools, reliance on benefits, freight costs, financial illiteracy, changing lifestyles, laziness, lack of knowledge transfer between elders and youth, and sea level rise were the most important.



Step 3 What are the possible futures for the food system?



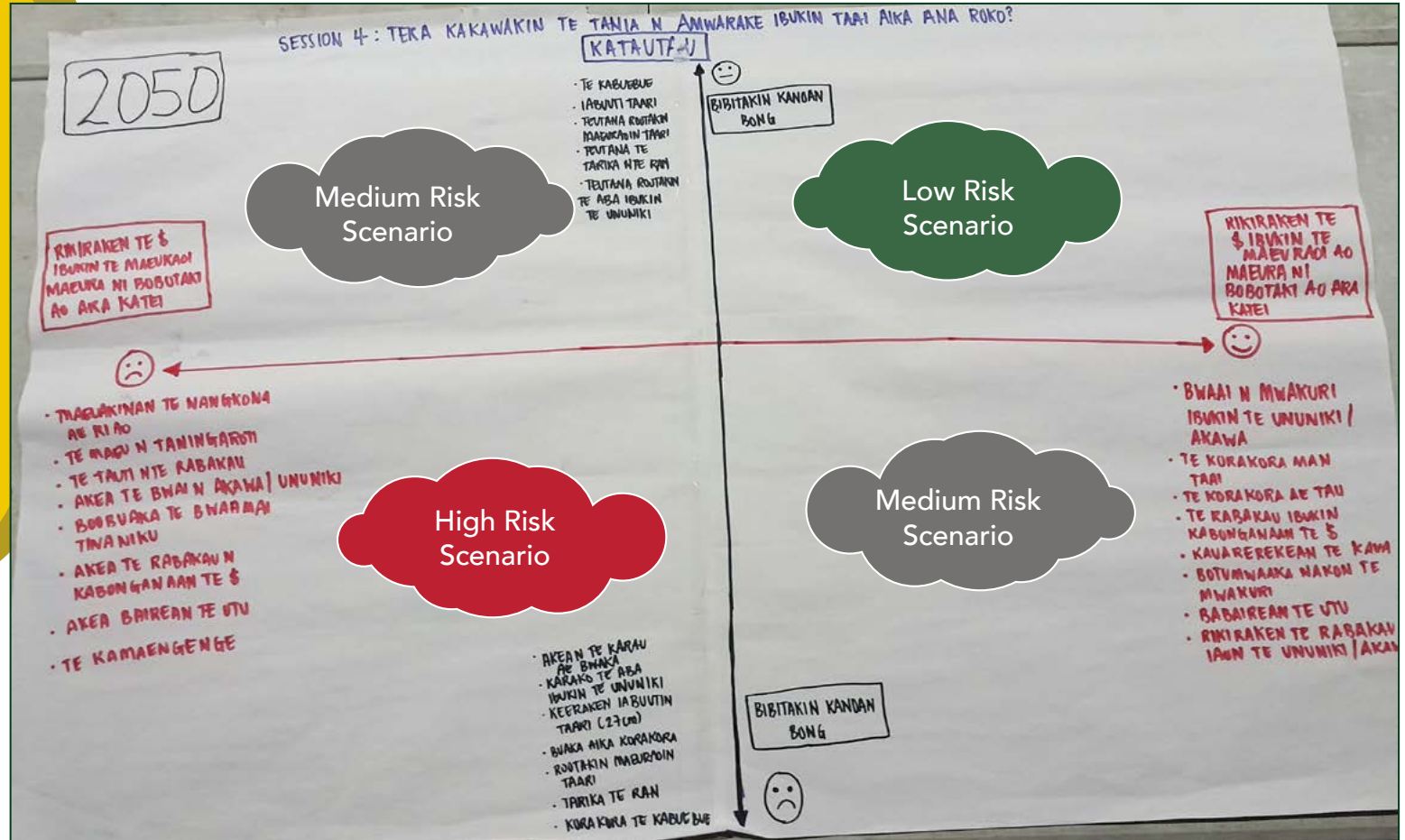
Activity 8: Future Scenarios

This activity was carried out to:

- Think about future uncertainty and risk caused by the important drivers listed in Step 2



Facilitators took the main economic, social, cultural and climate change drivers from Step 2 and created a range of future scenarios. The 'low risk scenario' was good economic and social conditions, and less severe climate change. The 'high risk scenario' was poor economic and social conditions, and severe climate change.



Participants drew pictures of these different food system scenarios, thinking of 2050.

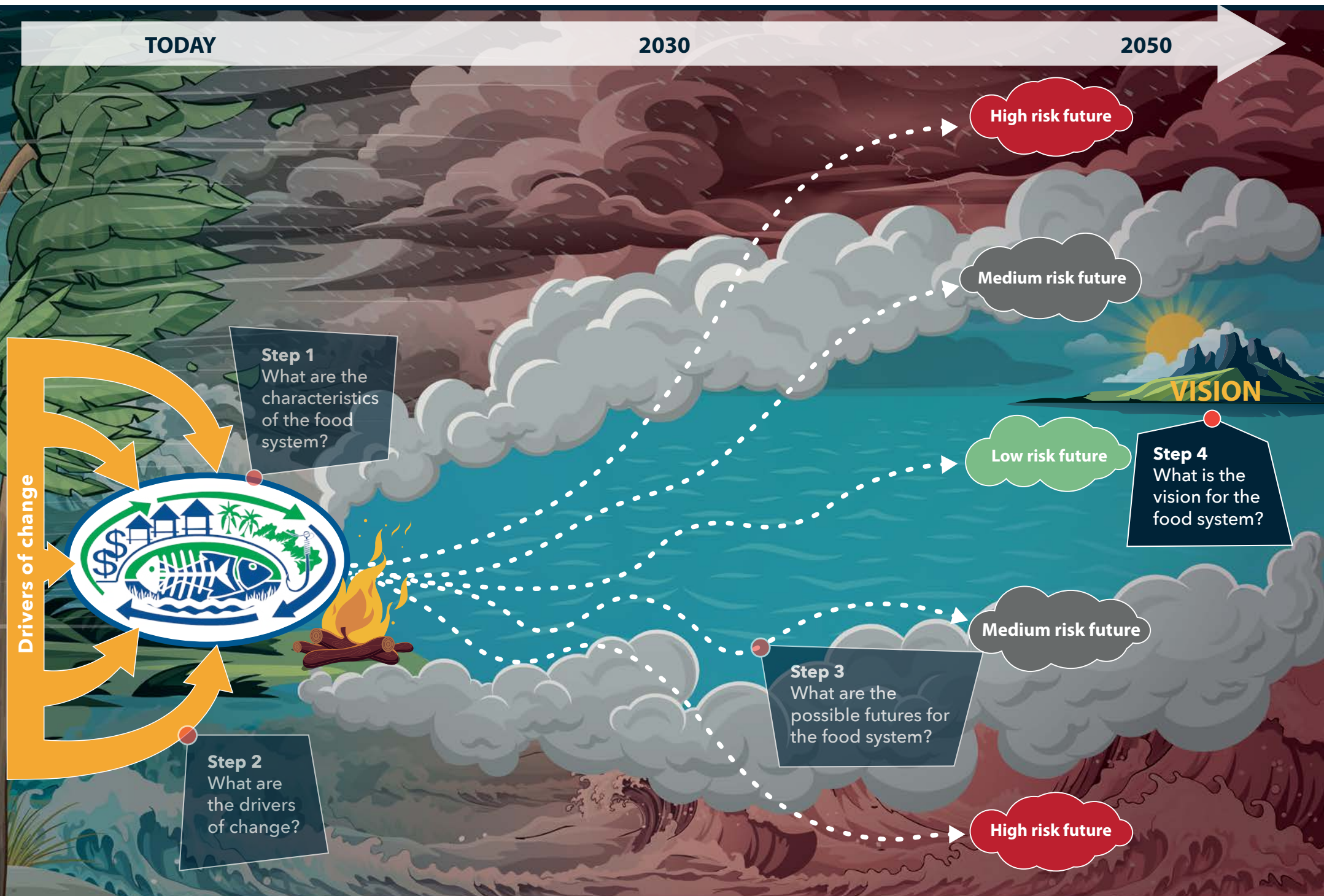
High Risk Scenario



Low Risk Scenario



Step 4 What is the vision for the food system?



Activity 9: Food System Vision

This activity was carried out to:

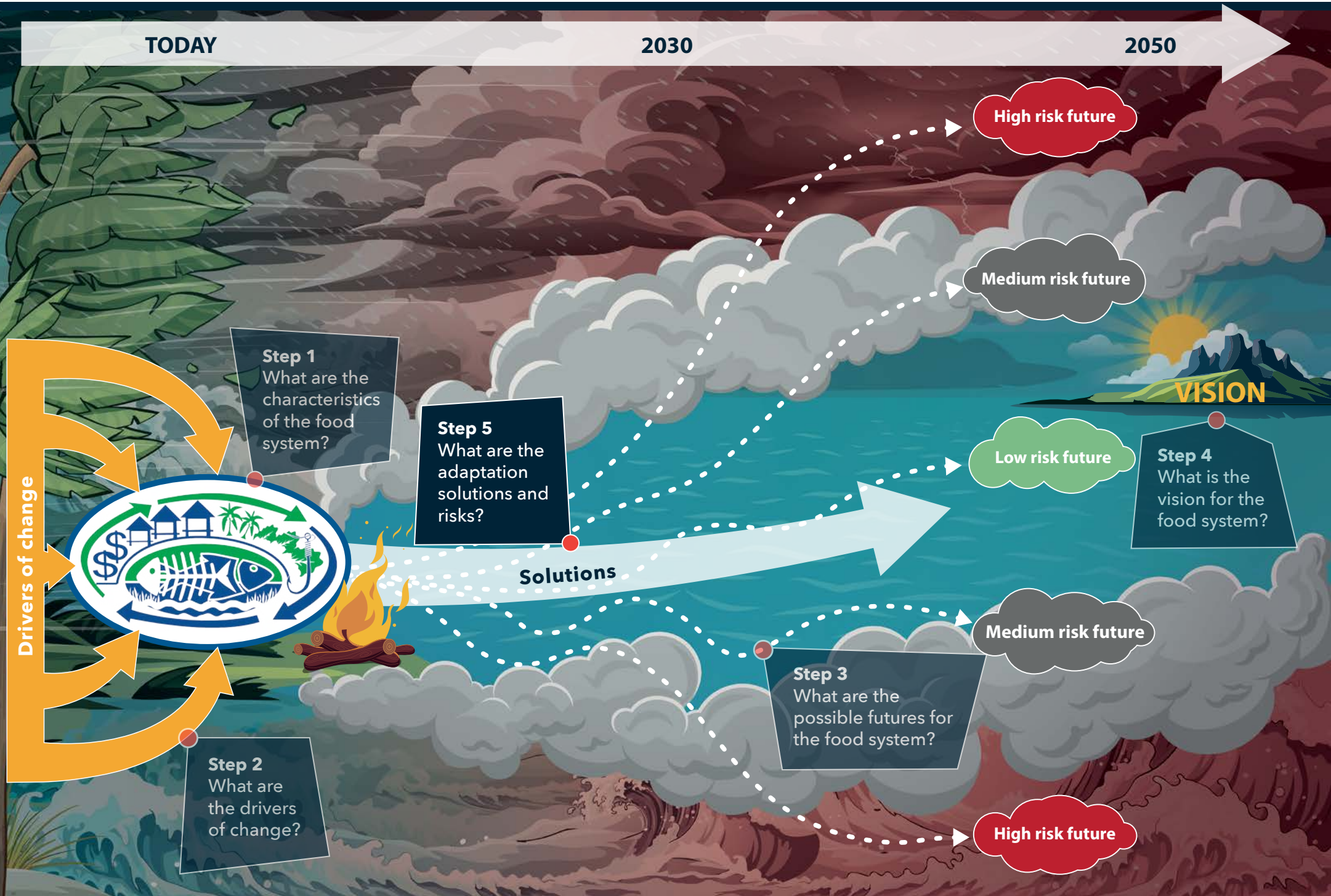
- Create desired visions for the food system
- Think about the well-being of future generations



Later, the artist Ribabaiti Manikaa combined the visions into one picture



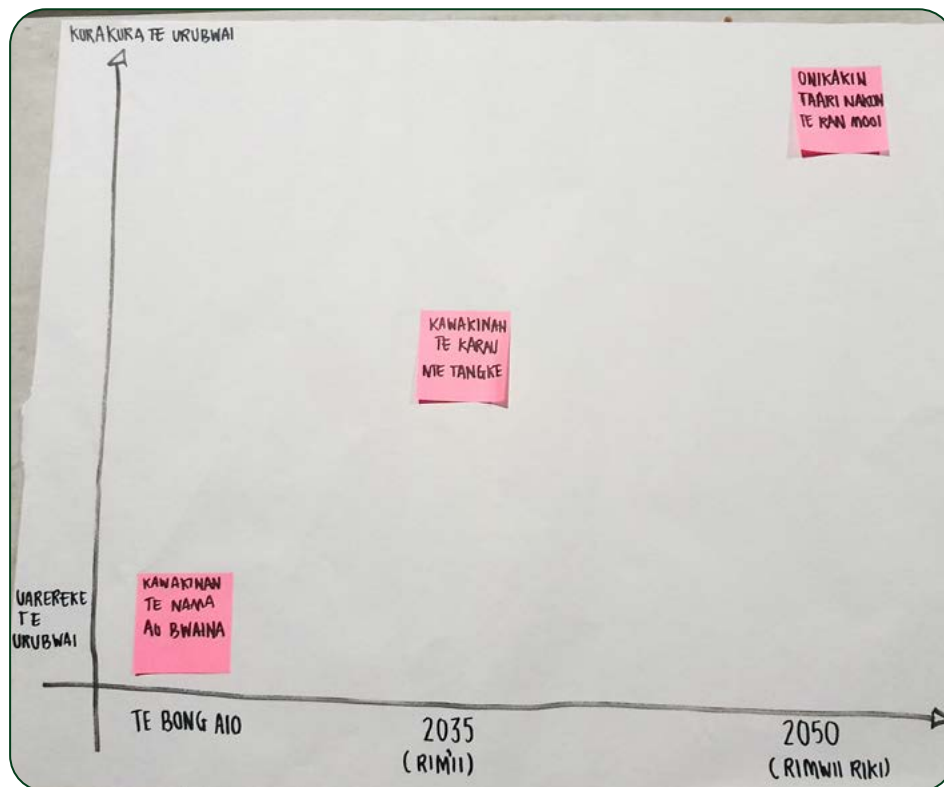
Step 5 What are the adaptation solutions and risks?



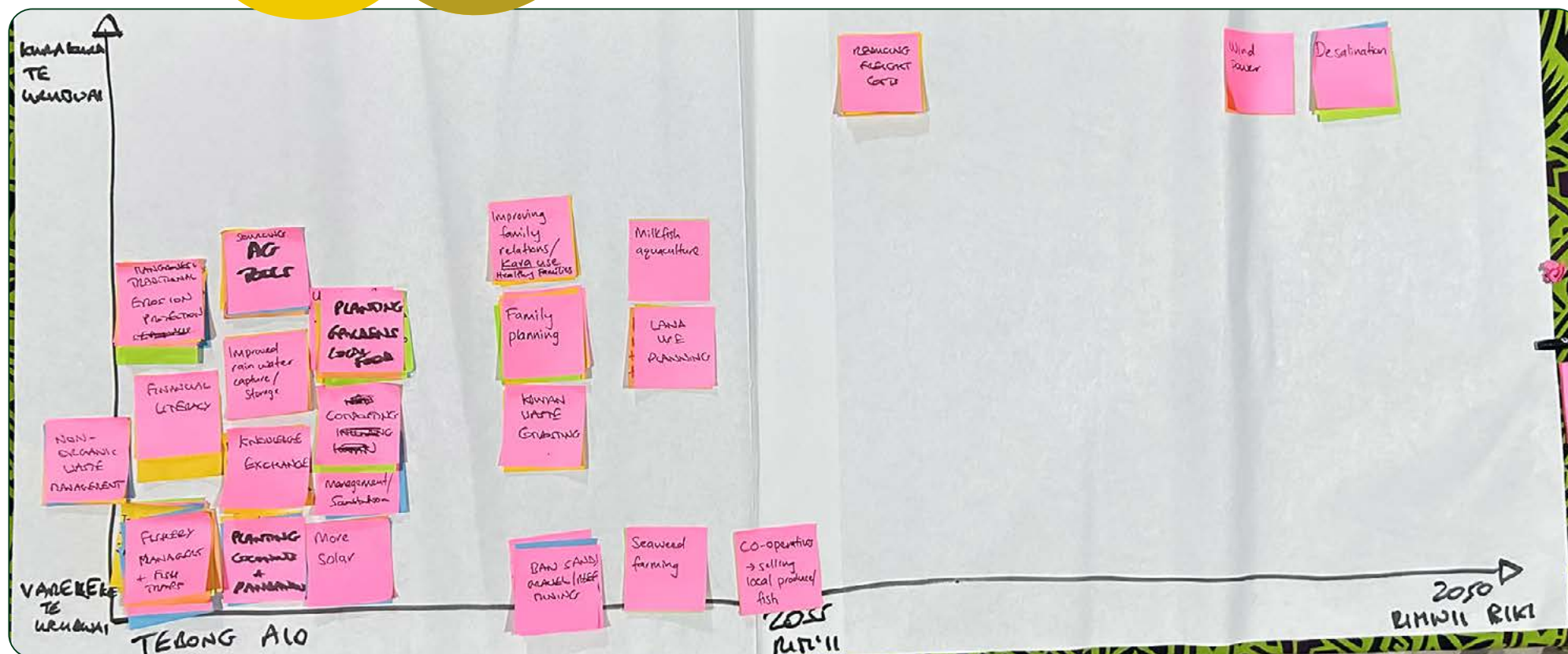
Activity 10: Solutions and Risks

This activity was carried out to:

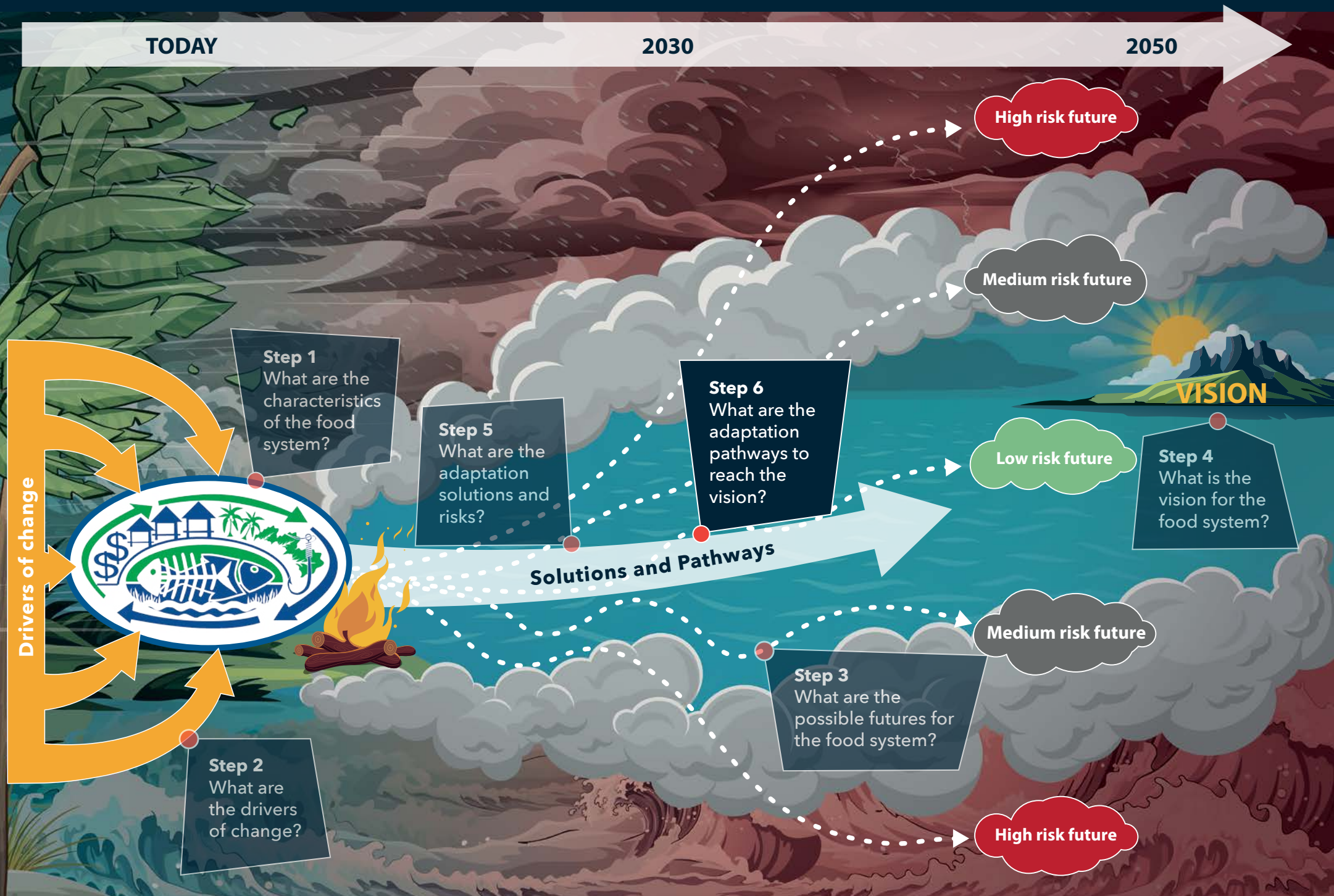
- Apply learnings from Steps 1, 2 and 3 to identify solutions that could achieve the vision, and their timing
- Prioritise solutions that are 'no regrets' (low risk and flexible) to cope with future uncertainty



Participants listed solutions covering social issues, agriculture, financial literacy, markets, energy and transport, fisheries and aquaculture, waste, water and sanitation. Most were 'no regrets' and could be introduced today.



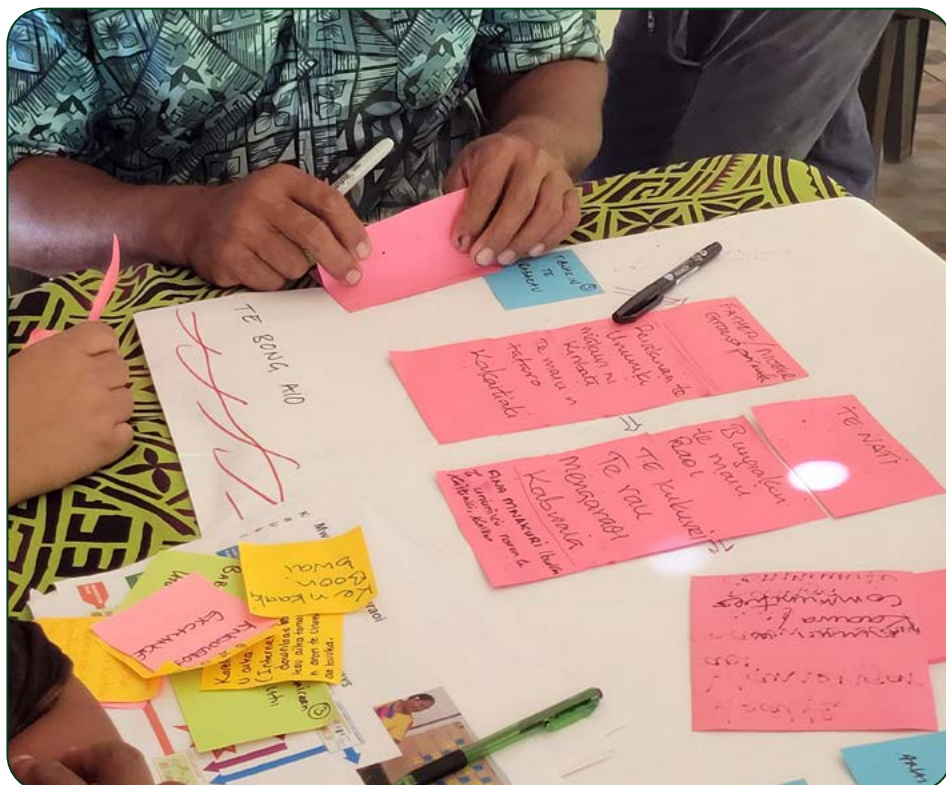
Step 6 What are the adaptation pathways to reach the vision?



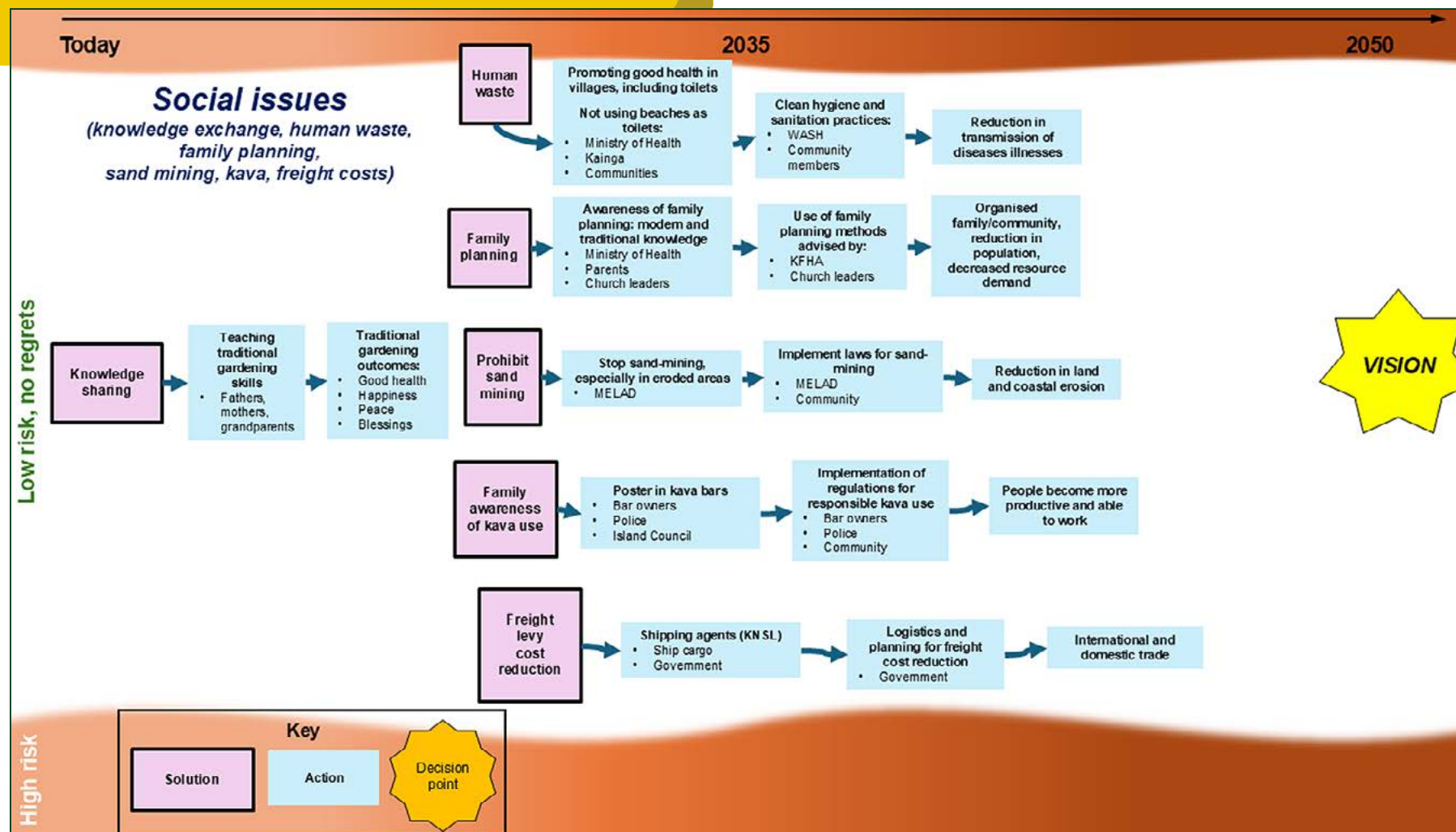
Activity 11: Adaptation Pathways

Adaptation pathways were drawn to:

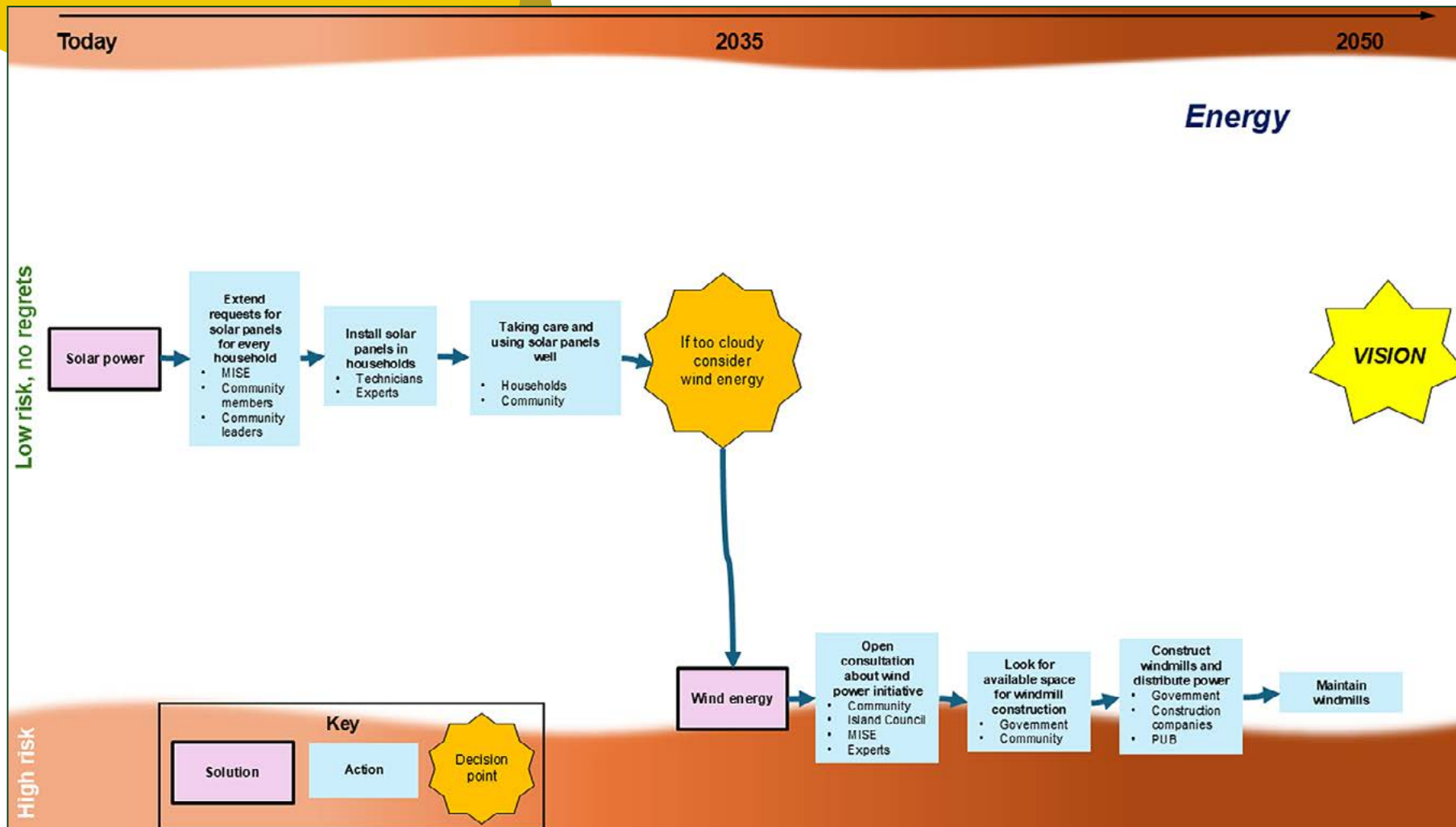
- Identify actions and decision-points to implement the solutions
- From Step 1, identify key people responsible for carrying out the actions



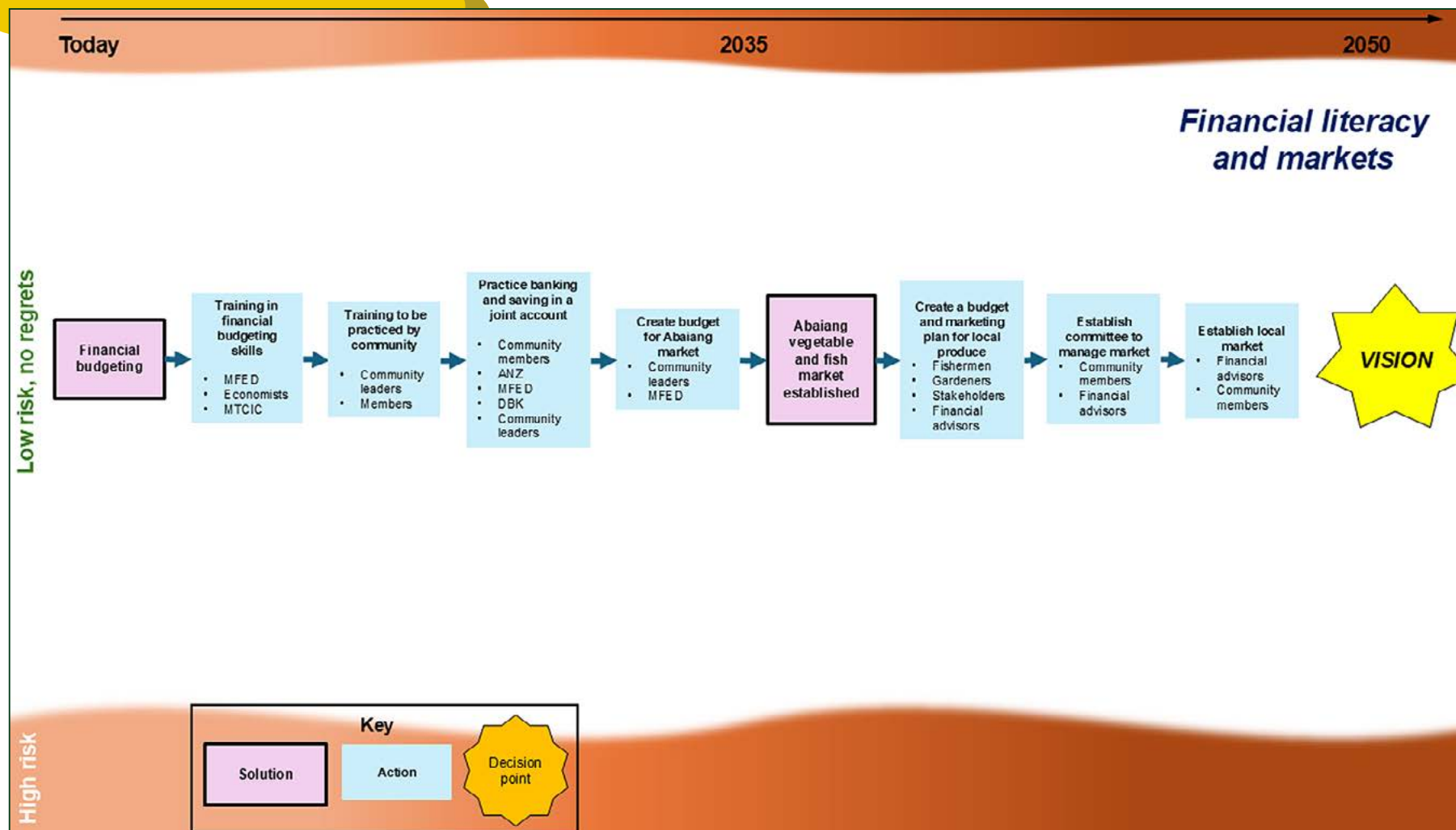
No regrets solutions for social issues were knowledge sharing, family planning, prohibiting sand-mining, awareness of kava use, and freight cost reduction. Human waste management was more risky due to cultural sensitivities.



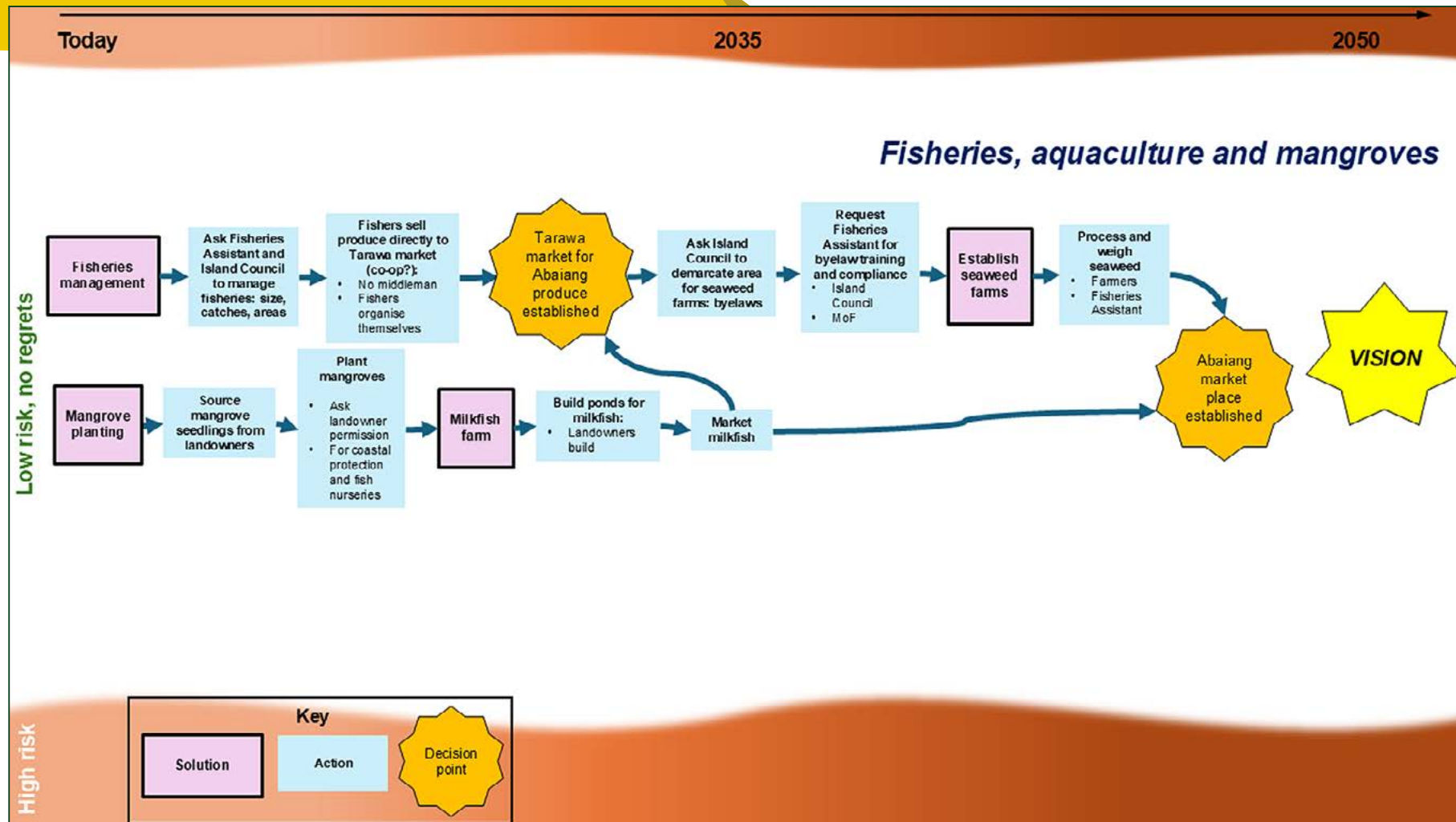
Solutions for energy began with solar power. If the climate becomes too cloudy, wind energy would be introduced, but this was more risky.



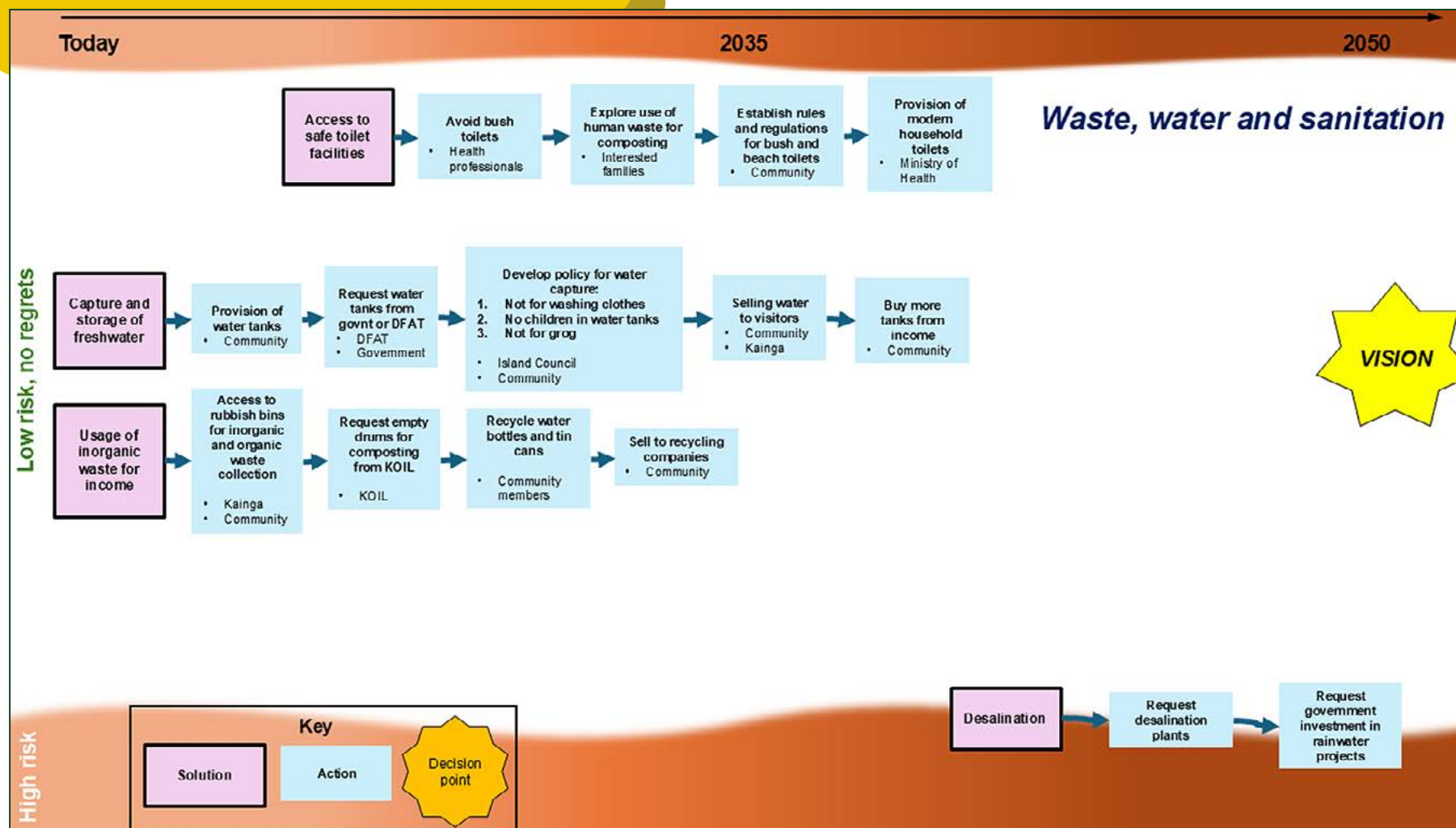
The pathway for financial literacy began with financial training. This would enable the establishment of a local market for vegetables and fish.



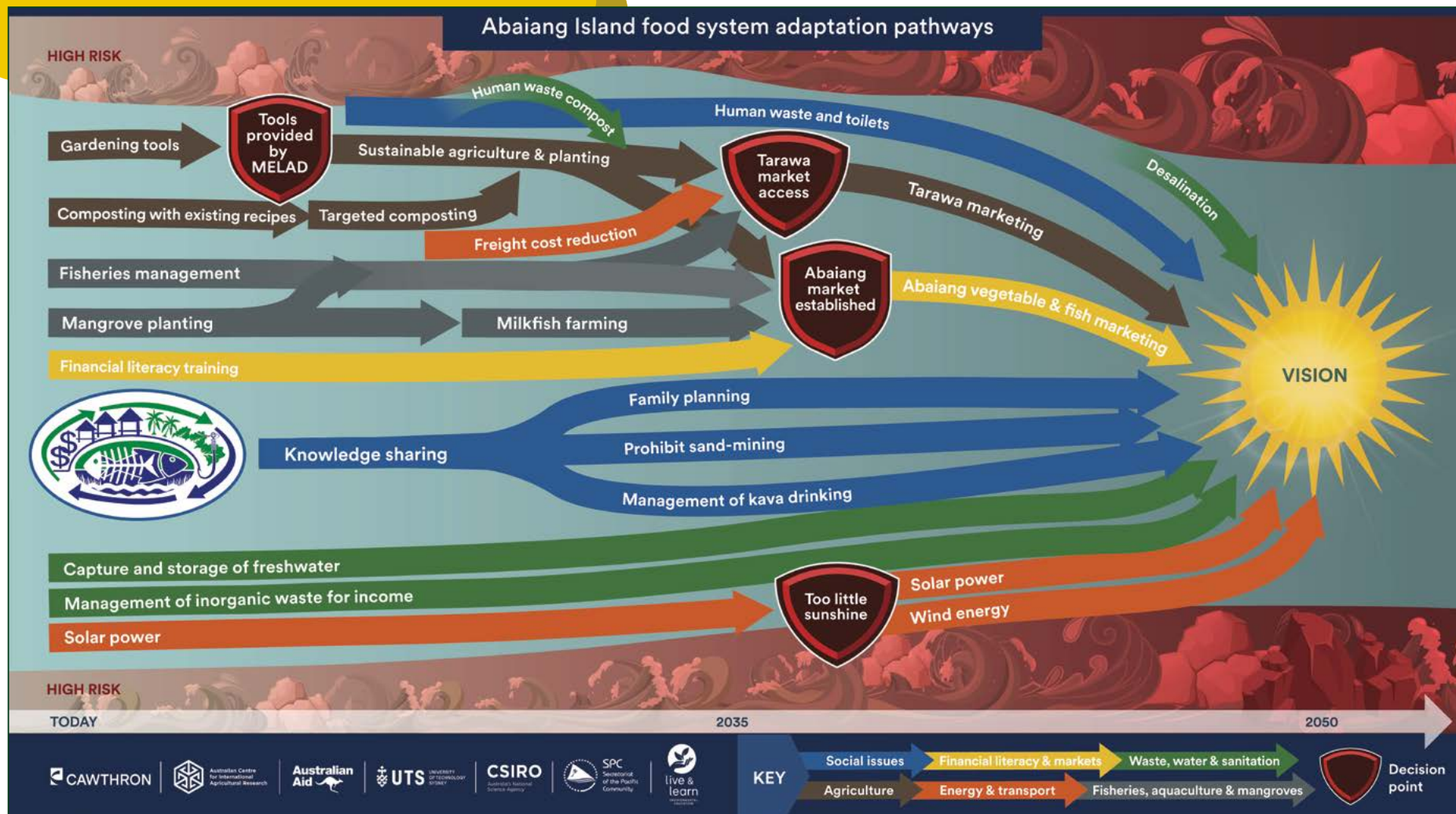
The solutions for fisheries and aquaculture began with improved fisheries management that could lead to marketing on Tarawa. Seaweed and milkfish farming could be established later, which are climate resilient. Mangrove planting would support milkfish farming, and future marketing to Tarawa and on Abaiang.



Pathways for waste, water and sanitation began with rainwater capture and storage, and using inorganic waste for income. Safe toilets could lead to composting of human waste. In the future, desalination plants could be necessary, but more risky.



The individual pathways were summarised in one diagram. Key decision points were provision of tools by MELAD, access to Tarawa markets, and establishment of a market on Abaiang.



Implementing the pathways

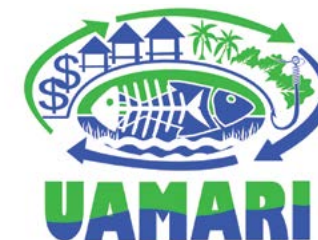
In July 2024 to March 2026 the project started to implement the food system pathways. The project team engaged with government agencies, donors and NGOs in Tarawa to seek input, advice and support.



Knowledge brokers

Participants were asked if anyone would like to volunteer to lead the pathways. Six 'knowledge brokers' volunteered to bring together different partners and information to design pilot projects, and to source funding. They coordinated activities with the Abaiang Island Council, and also met with national government and donors. Knowledge brokers were trained in writing community grant applications, project planning and management.





Uamari knowledge brokers

Project 1: Kateimatoaan ao Boutokaan
Marurungin te Utu (Family wellbeing)

Project 2: Te bao ni mamanananga
(Transport)



Kaeiei Benetito

Project 1: Te Tania n Amwarake mai
Taari (Resilient seafood systems)

Project 2: Te maange (Waste)



Kanraoi Uriam

Project: Kaataneiaakiia aomata ibukin
rabakau iaon tikoakin te mwane ao te
makete (Community financial literacy &
markets)



Beia Tominiko

Project: Te Ran ni Kamaeu (Water)



Timeon Malcolm

Project 1: Temaiuraoi (Agriculture)

Project 2: Kabonganaan raoi te
nangkona (Responsible kava
consumption)



Rereniti Tiiman

Project: Itinikarawa (Solar power)



Kiboboua Raiwan

Pilot projects

Nine pilot projects were designed to start the pathways:

1. Family well-being
2. Supercat transport
3. Resilient seafood systems
4. Waste
5. Financial literacy and markets
6. Water
7. Agriculture
8. Responsible kava consumption
9. Solar power



Project's name. Temaiuraoi Project.

Goal: Production nutritious, safe, climate resilient food crops in Abaiang to alleviate food security & NCDs.

Key Implementing Partners

- MELAD
- Live and Learn.
- SPC
- Child Fund.
- CSIRO

Funding Partners

- MFAT
- DFAT
- GGGI

Activities

- Provision of tools - irrigation, basic tool, cubes, solar pump / 80 Household
- Irrigation system
- Composting - Develop compost
- Provision of Resilient planting materials.
- Field testing of varieties (& compost)
- Develop targeted compost recipes (develop Youtube videos)
- Training and dissemination
- M & E.

Outputs.

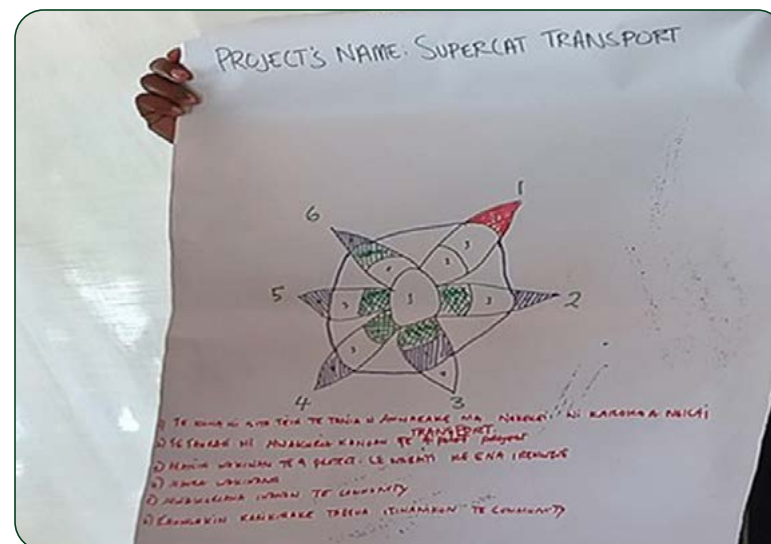
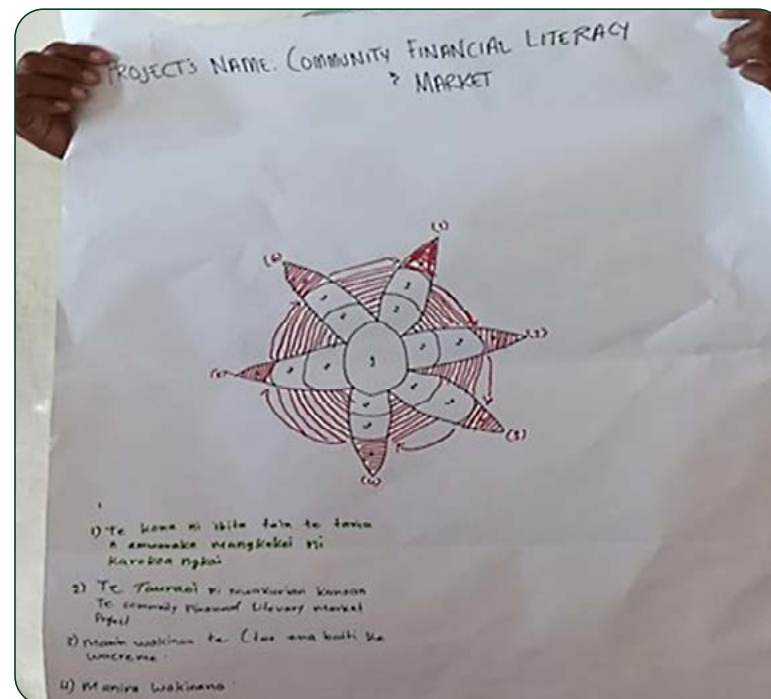
- Increase food production sources
- Actual One Garden per household
- Increased awareness on resilience food production.

TIME FRAME:
18 months.

Prioritising pilot projects

Knowledge brokers facilitated the prioritisation of pilot projects using the 'Flower Tool'. Community members and the Island Council scored projects with six indicators to identify which would have the greatest influence on transforming the food system:

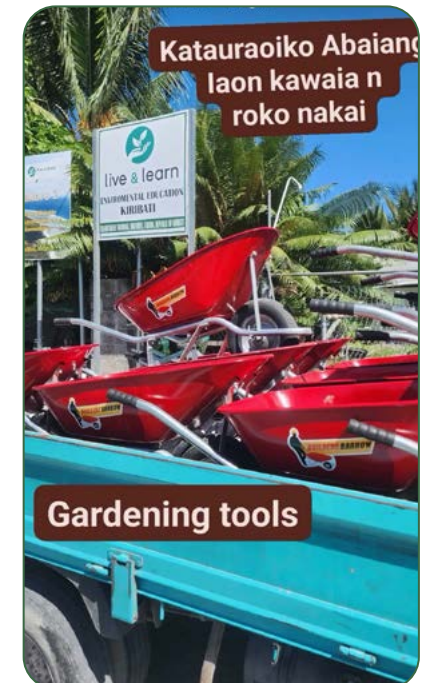
1. Ability to change the food system
2. Readiness to be implemented
3. Time until benefits are seen
4. Duration of the benefits
5. Potential to generate wider benefits
6. Potential to inspire other projects or communities



Temaiuraoi Project

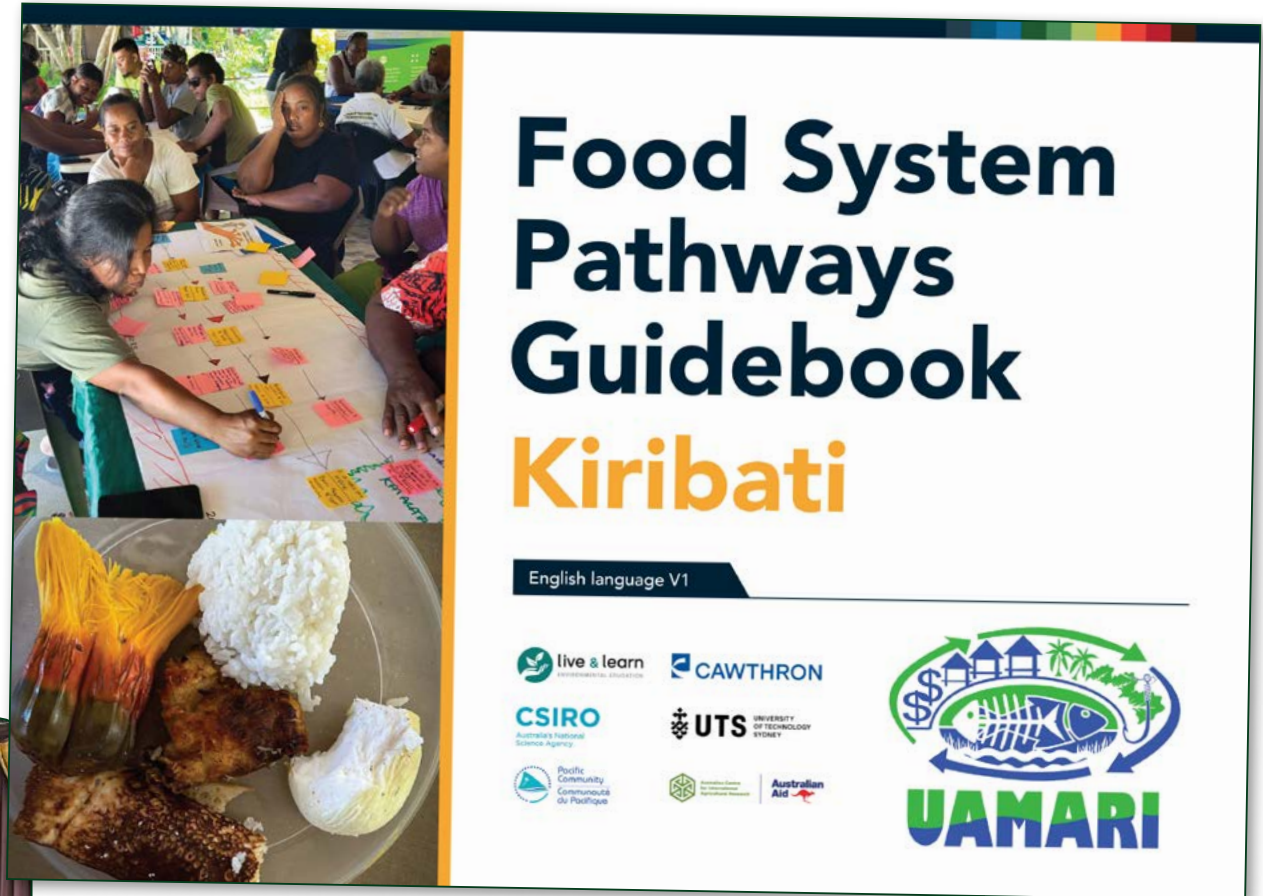
All of the pilot projects scored highly. With the Island Council, the knowledge brokers decided to focus on one pilot project: the agriculture pathway's Temaiuraoi Project. By working together on one example, the council, brokers and community are learning how to implement the other projects.

Composting training has been provided by SPC, and the Uamari project is funding the purchase of some agricultural tools. These will be shared and managed by the council through an agreement signed in September 2025.



Next steps

The Island Council and knowledge brokers will continue to implement the pathways on Abaiang, hopefully with support from MELAD, other government ministries and donors. In December 2025, Live and Learn and the knowledge brokers presented the Umari project to the Outer Island Mayor's Summit, and received requests from many mayors to carry out food system planning. The project has produced a Food System Pathways Guidebook to provide support for knowledge brokers and facilitators to carry out these exercises in the future.





Food System Pathways Storybook

Kiribati

English language