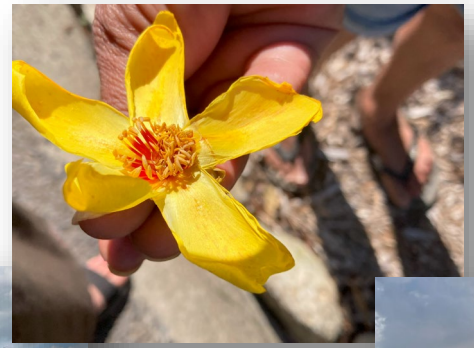
Ecosystem-based Adaptation to Climate Change of Indigenous Women in Indonesia (Sumatra) and Australia (Queensland)



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KONEKSI
Knowledge Partnership Platform
Australia - Indonesia

Meet our Team

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Why Indigenous Women?

1. Indigenous women are among the most vulnerable groups to climate change, despite contributing the least to it.
2. Indigenous women often live in remote or isolated locations, making them unprivileged and underrepresented in studies on how climate change affects them and how their perspectives can contribute to adaptation strategies.
3. Indigenous women directly depend on ecosystems and natural resources for their livelihoods and well-being, making the impact of climate change on ecosystems critical for them.
4. Indigenous women hold valuable traditional knowledge and practices that can strengthen climate adaptation strategies, yet their perspectives are often overlooked in policy and decision-making processes.
5. Empowering Indigenous women in climate resilience efforts fosters more inclusive and effective adaptation strategies, as they play a vital role in managing community resources and sustaining livelihoods.
6. Including Indigenous women in the study highlights their unique challenges and contributions, ensuring that adaptation policies are equitable and address the needs of marginalised communities.

Criteria:

- **Indigenous people are a majority** in the community
- The **willingness of Indigenous women** in the community to participate in the research (free, prior, informed consent)
- One **local Indigenous woman**:
  - willing to guide researchers through cultural norms,
  - with an ability to **speak either Indonesian or English (depending on the country) as well as the local dialect**,
  - with an ability to communicate via **WhatsApp, text message or email**.
- The ability of researchers to physically **access the community**
- The community is **located on a coastline**, with **some similarities in the ecosystems** on their traditional lands

Indonesia and Australia

Three Communities

- Mentawai Islands
- Aceh Singkil
- Country of the Guugu Yimithirr Language Group

Indigenous Local Guides

Lucia Herlina
(Mentawai Islands, Sumatra)

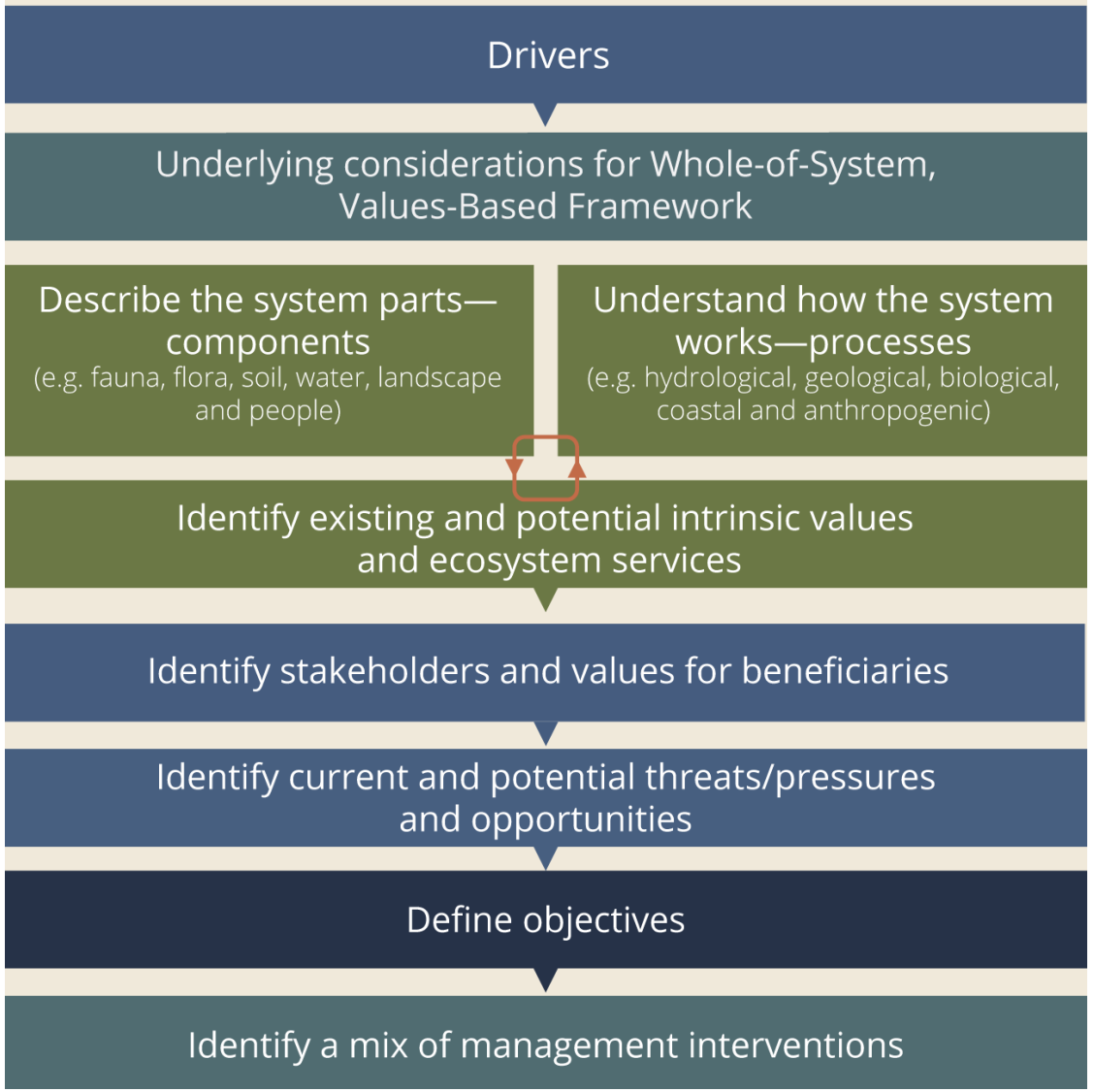
Asmaini
(Aceh Singkil, Sumatra)

Sonja Gibson
(Far North Queensland, Australia)

Research Approach

(combining traditional Indigenous knowledge with western science)

- Whole of System, Value-based Framework
- Semi-structured Interviews
  - 18 – 30 yrs, 31 – 45 yrs, 46 – 60 yrs, 61 yrs+
  - ES assessments
  - Observed climate change and non-climate change impacts
- Climate change analysis
- Vulnerability assessments
- Focus group discussions
  - Visioning
  - Identifying adaptation actions



https://wetlandinfo.des.qld.gov.au/wetlands/management/whole-system-values-framework/

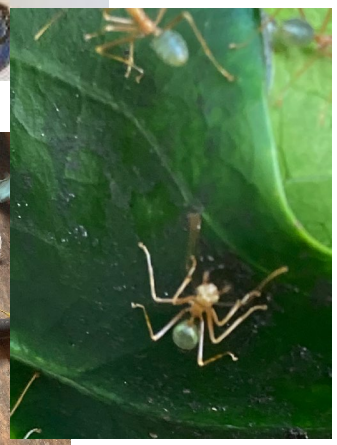
Interviews – Ecosystem Dependency

Community / Ecosystem	Open Water	Mangrove	Beach	River	Forest	Agriculture	Urban
Mentawai Islands	HIGH	HIGH	LOW	LOW / MEDIUM	HIGH	HIGH	MEDIUM
Aceh Singkil	HIGH	MEDIUM / HIGH	HIGH	HIGH	HIGH	-	MEDIUM
Guugu Yimithirr Country	HIGH	HIGH	HIGH	HIGH	HIGH	-	MEDIUM

Interviews - Ecosystem Services

(knowledge handed down through generations)















Interviews - observed climate changes

Community / CC Variable	Temperature	Rainfall	Sea Level Rise	Other Climate/ Weather	Health / Ecosystem / Species Impacts
Mentawai Islands	• increased Temperature	• unpredictable rainfall • dry season more dry	• no observation	• Increased wind/ waves	• head aches when fishing • lethargic • less access to mangroves, mangroves fall • sea more rough, can't fish as much • Can't go to farm island • Dry – agriculture harder to cultivate • Shrimp harder to find when more rain
Aceh Singkil	• increased temperature	• higher magnitude rainfall • raining longer • unpredictable – season changes • uneven rainfall in village	• land receding	• Increased wind/ waves • more storm and thunder	• more crocodiles – can't access mangroves • fear for husbands • flooding • unwell due to temperature
Guugu Yimithirr Country	• no observation	• less rain	• no observation	• reduced water flow, dried creek, silt build-up, changing directions of rivers entering the beach	• crocodiles – unsure if more, in more places - can't access river • declining rainforest areas • reduction in lady apples • changes in flowering patterns • More invasive weeds

Interviews – observed non-climate changes

	Mentawai Islands	Aceh Singkil	Queensland
Technology	Wifi – social media	Social media	-
Tools	Net Chainsaw Guns	Chainsaw Bombing Net	Guns
Infrastructure	Road	Road	-
Energy	Electricity	-	-
Markets	Fish Crafts Cakes	Embroidery Cakes	Art Crafts
Transportation	Ferry Boat Motor Motorcycle	Boat Motor Motorcycle Car	Single use vehicles
Legislation	Religion	Crocodile protection	Crocodile protection Religion Removal off Country
Economic	Sago processing	Palm oil	Mining
Programs	Crab farming	Mangrove restoration Buffalo program	My Pathways

Climate Change Projections

IPCC Scenarios

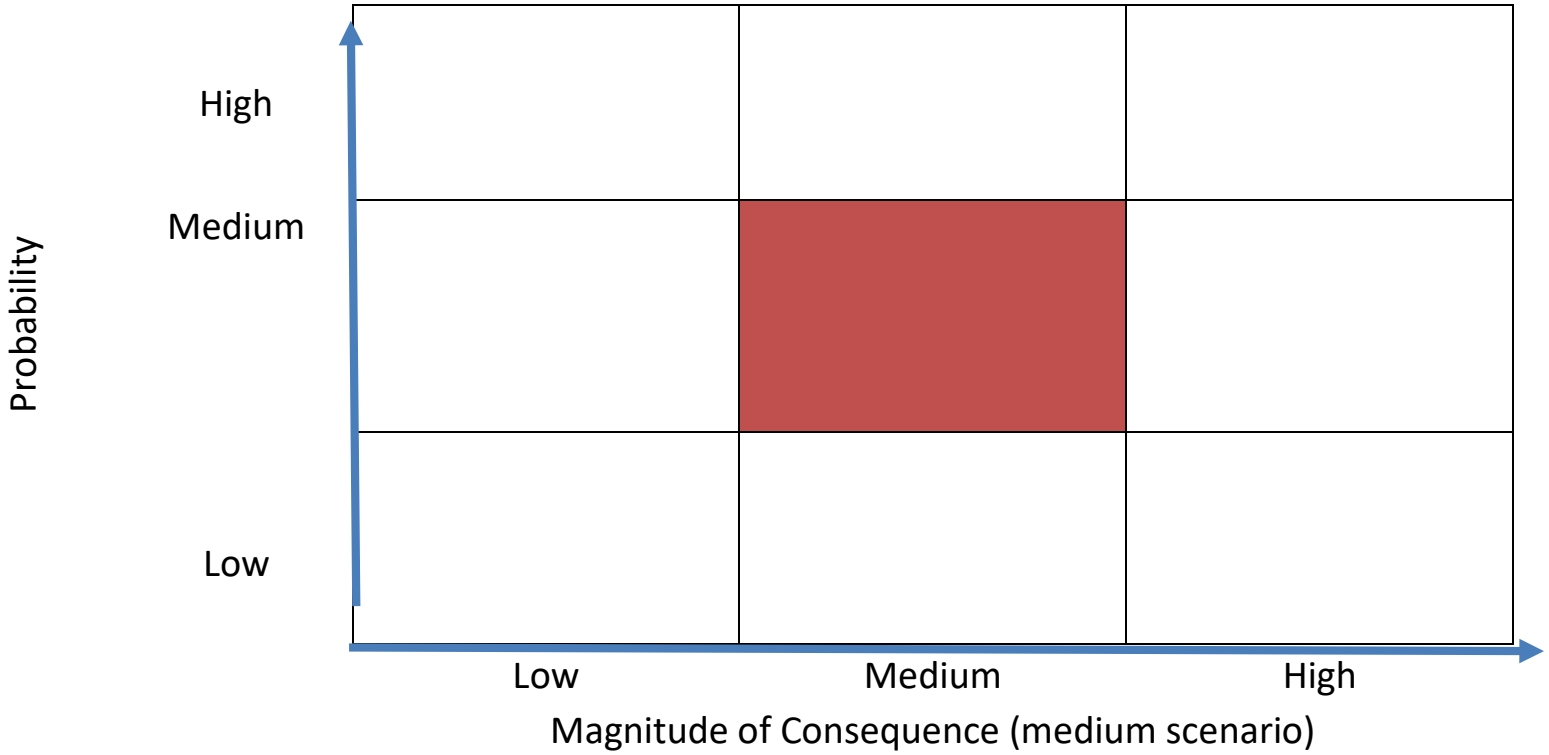
SSP (Shared Socioeconomic Pathways) are scenarios used to project climate and socioeconomic futures based on varying levels of development, emissions, and adaptation efforts. They rank from SSP1 to SSP5, with SSP1 being the most sustainable and SSP5 the most fossil fuel-intensive. Each scenario reflects a different combination of societal choices and their potential effects on climate mitigation and adaptation efforts.

- **SSP1 ("Sustainability")**: Focuses on green growth, low emissions, and high adaptation. It represents the best-case scenario for limiting climate impacts.
- **SSP2 ("Middle of the Road")**: Assumes moderate development and emission trends, where challenges for adaptation and mitigation are manageable but not ideal.
- **SSP3 ("Regional Rivalry")**: Characterized by slow economic growth, high population, and limited global cooperation, leading to higher emissions and adaptation challenges.
- **SSP4 ("Inequality")**: Represents a world with significant inequality, where some regions adapt well while others face severe impacts.
- **SSP5 ("Fossil-Fueled Development")**: Envisions rapid economic growth reliant on fossil fuels, leading to very high emissions and significant climate challenges.

CC PROJECTIONS, MEDIUM SCENARIO SSP2-4.5 [MANAGEABLE WITH ADAPTATION]

CC Variable	Mentawai		Aceh		Queensland	
	2050	2100	2050	2100	2050	2100
Temperature	+1.5°C to +2°C	+2.5°C to +3°C	+1.5°C to +2°C	+2.5°C to +3.5°C	+1.0°C to +1.5°C	+2.0°C to +2.5°C
Rainfall	+5% to +10%	+10% to +15%	+5% to +8%	+8% to +12%	-5% to -10%	-10% to -15%
Sea level rise	+0.3 to +0.5m	+0.7 to +1.0 m	+0.3 to +0.5 m	+0.7 to +1.0 m	+0.2 to +0.3 m	+0.5 to +0.7 m

Vulnerability Assessments



Impact of rainfall changes on Mangrove

Medium Probability:

Under SSP2-4.5, **moderate increases in rainfall variability** and risks are expected, with impacts being less severe.

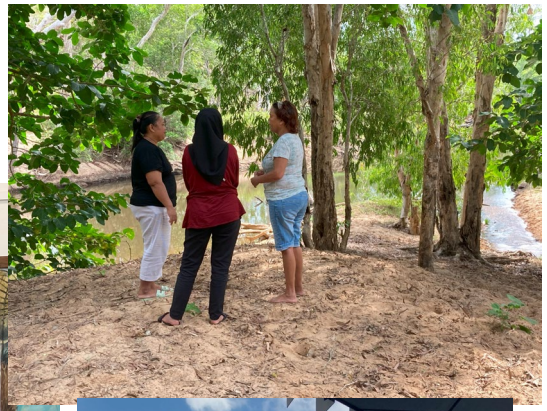
Medium Magnitude:

Under SSP2-4.5, **impacts are notable but manageable with targeted adaptation** measures.

SSP2-4.5:

Medium probability and medium magnitude of impacts result in Medium Risk, manageable through proactive measures such as mangrove restoration, improved drainage systems, and salinity control strategies.

Cross-Cultural Knowledge Exchange



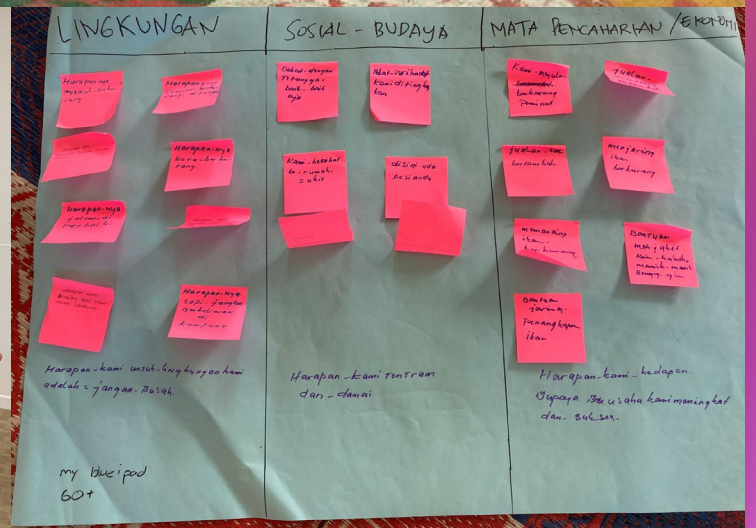
Focus Group Discussions

	Mentawai Islands	Aceh Singkil	Far North Queensland
# of Women	16	20	8
Village / Town of Residence	Katural Village Sarasau Village	Kualu Baru	Cooktown Hope Vale
Age Groups	2 (18 – 30 years) 3 (31 – 45 years) 2 (46 – 60 years) 1 (61 years+)	5 (18 – 30 years) 5 (31 – 45 years) 5 (46 – 60 years) 5 (61 years+)	1 (18 – 30 years) 1 (31 – 45 years) 4 (46 – 60 years) 2 (61 years+)

FGD - Visioning

Social

- "Our vision is to preserve and promote the cultural heritage of our village.“
- "Our vision for social and cultural life is to continue strengthening practices like *wirid yasin* (prayer gatherings), *rebana* music, wedding traditions, and community support in times of need."
- "Our vision for social and cultural development is to create a stronger, united, and harmonious community.“
- “Our vision is for the community to live in tranquility and harmony.”



Actions for Solutions

1. Create safe areas to **protect** endangered animals and plants.
2. **Monitor** animals and plants to observe any changes.
3. **Set limits** on the number of animals and plants that can be harvested or hunted.
4. **Inform others** about challenges and changes in ecosystems, species or weather.
5. **Form groups** to discuss issues regularly and make joint decisions.
6. **Collaborate with the government** to develop beneficial programs.
7. **Adjust hunting or gathering** times for better sustainability.
8. **Modify methods and practices** for gathering or hunting animals and plants.
9. **Create alternative job opportunities** to reduce dependence on ecosystems, animals and plants.
10. **Others??**

Rank	Action	Vision Objective	Who	Location
1				
2				
3				
4				
5				

Lessons Learnt

- ✓ **Ethics**, respect, building repour
- ✓ Appropriate **channels**
- ✓ Patience – perceptions of **time**
- ✓ **Communication** – own language
- ✓ **Local Guide**
- ✓ **Involve in research delivery** – FGD, interviews
- ✓ Role of **religion** in ecosystem management
- ✓ **Empowerment?**
- ✓ The richness of Indigenous **knowledge**
- ✓ Knowledge **payments**
- ✓ **Cross-cultural** – confidence, knowledge, resilience, security

Where to From Here?

- Project Report
- Developing audience relevant materials – policy briefs, stakeholder actions
- Cross-cultural natural medicinal / pharmaceutical guide
- Seasonal calendars with Sumatran communities
- 3 minute documentary
- Return to communities to present outcomes
- Future funding to continue implementation

We acknowledge the communities and traditional lands of the people on which this research was held – Mentawai Islands, Aceh Singkil and the Guugu Yimithirr Language Group.

We pay our respects to the Elders past, present and future.

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