



# Topic Map

## Theme: Climate Change and Coastal Communities in Sulawesi

### Overview

PAIR's theme focuses on Climate Change and Coastal Communities. Coastal communities' cultures and livelihoods are intertwined. Their traditions and knowledge, passed down through generations, shape these communities. Their economic practices, from fishing and aquaculture to trade, tourism, and natural resource extraction, are tied to land and sea. Despite their deep connection to land and sea, coastal communities face significant challenges. They stand at the frontline of climate change and declining marine biodiversity. Changing ocean conditions, destructive fishing practices, and large-scale mining operations threaten the delicate marine balance. These factors harm both human health and ecosystems. PAIR explores ways to help coastal communities cope with, adapt to, and thrive in the face of climate change's growing impact.

### Research focus:

There will be three research areas in the first investment call (see below). These areas are guided by PAIR's previous work in South Sulawesi and consultations with government stakeholders, university partners, and community groups. This ensures the research is demand-driven and responds to relevant development policies and priorities. Within each research area, there are six projects, as listed below.

THEME	CLIMATE CHANGE AND COASTAL COMMUNITIES
Research area 1:	<b>Circular Economy: Solutions in the seaweed sector</b>
Locations:	South Sulawesi and West Sulawesi
Context	Indonesia is the world's largest producer of carrageenan seaweeds. Seaweed farming contributes to the livelihoods of at least 66,000 generally low-income coastal households and communities across Indonesia. Despite its economic benefits, the industry faces significant environmental challenges, primarily driven by climate change. The resilience of the sector and coastal communities are crucial in facing these challenges. This research area seeks to explore innovative circular economy solutions and strategies to increase the sustainability and environmental performance of seaweed farming and processing. Gender Equality, Disability and Social Inclusion need to be considered in projects.
Project topics	<b>Examples of sub-topics of interest</b> - <i>listed below are some key areas crucial to coastal communities based on current research gaps, policy priorities and industry needs.</i>

<b>1. Farming</b>	<ul style="list-style-type: none"> <li>● Climate-resilient seaweed cultivation techniques</li> <li>● Sustainable farming practices and resource efficiency</li> <li>● Ecosystem impact assessment and mitigation strategies</li> </ul>
<b>2. Processing</b>	<ul style="list-style-type: none"> <li>● Circular approaches in seaweed processing</li> <li>● Energy and water efficiency in processing facilities</li> <li>● Quality control and traceability systems</li> </ul>
<b>3. Plastic Pollution</b>	<ul style="list-style-type: none"> <li>● Alternatives to plastic use in seaweed farming</li> <li>● Recycling and upcycling of seaweed farming materials</li> <li>● Microplastic impact assessment and mitigation in seaweed farms</li> </ul>
<b>4. Policy and Governance</b>	<ul style="list-style-type: none"> <li>● Regulatory frameworks for sustainable seaweed industry</li> <li>● Cross-provincial and national policy alignment for circular economy practices</li> <li>● Incentive structures for adopting circular economy principles</li> </ul>
<b>5. Capacity Building (professionalising industry)</b>	<ul style="list-style-type: none"> <li>● Capacity building for seaweed farmers and processors</li> <li>● Developing and strengthening seaweed cooperatives</li> <li>● Promoting social inclusion and gender equality in the industry</li> </ul>
<b>6. Technology</b>	<ul style="list-style-type: none"> <li>● Digital tools for seaweed farm management and monitoring</li> <li>● Innovative processing technologies for increased efficiency</li> </ul>
<b>References:</b>	<p>Komarek, A., Cahyadi, E., Zhang, J., Fariyanti, A., Julianto, B., Arsyi, R., Laping, I., Langford, A., Waldron, S and Grist, M. (2023). '<a href="#">Increasing incomes in carrageenan seaweed value changes in Takalar, South Sulawesi</a>', the Australia-Indonesia Centre.</p> <p>Langford, A., Waldron, S., Nuryartono, N., Pasaribu, S., Julianto, B. Siradjuddin, I., Ruhon, R., Walyandra,, Z., Laping, M., Armis, R., Zhang, J. (2023). '<a href="#">Sustainable upgrading of the South Sulawesi seaweed industry</a>', the Australia Indonesia Centre.</p> <p>Nuryartono N., Waldron S., Tarman K., Siregar U., Pasaribu, S., Langford A., Farid M., and Sulfahri, (2021), <a href="#">An Analysis of the South Sulawesi Seaweed Industry</a>', The Australia-Indonesia Centre.</p> <p>Werorilangi, S., Hovey, R., Umar, W., Hasyim, H., Harusi, N.M.R., Dexter, K.F., Langford, A., Ruhon, R., Zach, Z. (2023). '<a href="#">End of life of plastics used in seaweed aquaculture in South Sulawesi</a>', the Australia-Indonesia Centre.</p>

THEME	CLIMATE CHANGE AND COASTAL COMMUNITIES
Research area 2:	<b>Net Zero: Transition in local healthcare facilities</b>
Locations:	Gorontalo and North Sulawesi
Context	As Sulawesi's coastal communities face the challenges of climate change and sustainable development, the transition to net zero emissions in key sectors such as healthcare, higher education and tourism becomes increasingly important. In this research area, we are seeking to develop innovative solutions and strategies to facilitate this transition of local healthcare facilities across coastal communities and extreme poverty locations in key provinces in Sulawesi.
Project topics	<b>Examples of sub-topics of interest - listed below are some key areas crucial to coastal communities based on current research gaps, policy priorities and industry needs.</b>
1. Technology and infrastructure	<ul style="list-style-type: none"> <li>● Energy efficient building design and retrofitting</li> <li>● Smart energy management systems</li> <li>●</li> </ul>
2. Policy and Governance	<ul style="list-style-type: none"> <li>● Regulatory frameworks for net zero transitions</li> <li>● Incentive structures for adopting sustainable practices</li> <li>● Monitoring and reporting mechanisms for emission reduction</li> </ul>
3. Capacity Building	<ul style="list-style-type: none"> <li>● Developing expertise in sustainable technologies</li> <li>● Change management for organisational sustainability</li> <li>● Integrating sustainability into curricula (vocation education and training and higher education)</li> </ul>
4. Economic Models and Financing	<ul style="list-style-type: none"> <li>● Cost-benefit analysis of net zero transition</li> <li>● Innovative financing mechanisms for net zero and sustainability projects</li> <li>● Green procurement strategies</li> </ul>
5. Waste Management and Circular Economy	<ul style="list-style-type: none"> <li>● Waste recovery and management</li> <li>● Sustainable supply chain management</li> </ul>
6. Community Engagement	<ul style="list-style-type: none"> <li>● Stakeholder engagement strategies for net zero initiatives</li> <li>● Public awareness and education campaigns</li> <li>● Partnership for broader community sustainability</li> </ul>

**References:**

[Healthcare sector emissions factsheet](#)

UNDP, 2024, [Indonesia Takes Bold, Transformative Step to Build a Climate-Resilient Health System](#)

Healthcare without harm, 2021, [Global roadmap for healthcare decarbonisation](#)

Prabhakaran, P., Armstrong, F., & Karliner, J., 2023, [Decarbonising the healthcare sector: a roadmap for G20 countries.](#)

UN Sustainable Development Solutions Network, 2022, [Net Zero on Campus](#)

Framework. [Net Zero on Campus website](#)

International Alliance of Research Universities - a [framework for integrating sustainability into the organisation.](#)

[Net Zero on Campus: All Resources](#)

THEME	CLIMATE CHANGE AND COASTAL COMMUNITIES
<b>Research area 3:</b>	<b>Climate change and health</b>
<b>Locations:</b>	Central Sulawesi and Southeast Sulawesi
<b>Context</b>	<p>This is the replacement section to the Climate and Health context: Indonesia ranks in the top third of countries in terms of climate risk, from flooding to extreme weather. Sulawesi's coastal communities are particularly vulnerable. This research area examines the impact of climate change on health in these regions, focusing on:</p> <ul style="list-style-type: none"> <li>Mental health effects</li> <li>Nutrition challenges, including stunting</li> <li>Social issues like family and domestic violence</li> <li>Vulnerabilities of marginalised groups (women, youth, people with disabilities)</li> <li>Health system resilience and adaptive social policy interventions.</li> </ul>
<b>Project topics</b>	<b>Examples of sub-topics of interest</b> - <i>listed below are some key areas crucial to coastal communities based on current research gaps, policy priorities and industry needs.</i>
<b>1. Climate and Health Risk Assessment</b>	<ul style="list-style-type: none"> <li>● Hazards, exposure and vulnerability mapping in coastal communities</li> <li>● Mental health in the context of climate change</li> <li>● Stunting and climate-related food insecurity</li> </ul>
<b>2. Health System Strengthening</b>	<ul style="list-style-type: none"> <li>● Climate-proofing health facilities</li> <li>● Integration of Family Domestic Violence services in healthcare and social services settings</li> </ul>
<b>3. Adaptive Social Protection</b>	<ul style="list-style-type: none"> <li>● Designing adaptive social protection programs in response to hazards</li> <li>● Community-based early warning systems</li> <li>● Gender-responsive disaster preparedness</li> <li>● People with disability and disaster preparedness</li> </ul>
<b>4. Policy and Governance</b>	<ul style="list-style-type: none"> <li>● Cross-sectoral and national policy alignment (health, climate and social services)</li> <li>● Regulatory frameworks for integrated service delivery</li> <li>● Monitoring and evaluation of integrated interventions</li> <li>● Stakeholder engagement in policy development</li> </ul>
<b>5. Capacity Building</b>	<ul style="list-style-type: none"> <li>● Healthcare and social workers on climate risks</li> <li>● Healthcare and social workers on Family Domestic Violence</li> <li>● Building community resilience through</li> </ul>

	education and public awareness campaigns
<b>6. Technology</b>	<ul style="list-style-type: none"> <li>• Integrated data systems for health, climate and social services</li> <li>• Use of technology for service coordination and referrals</li> <li>• Digital tools for Family Domestic Violence prevention and support</li> </ul>
<b>References:</b>	<p>World Health Organization (WHO), 2021, <a href="#">Climate change and health: vulnerability and adaptation assessment</a>.</p> <p>Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW), <a href="#">National Climate Risk Assessment</a>: Methodology, DCCEEW, Australian Government, 2023.</p> <p>Department of Health and Aged Care, 2023, <a href="#">National health and climate change strategy</a>, Commonwealth of Australia, Canberra, pp.26-30</p> <p>UNU-EHS, 2022, <a href="#">Hazards, exposure and vulnerability in Indonesia: A risk assessment across regions and provinces to inform the development of an Adaptive Social Protection Road Map</a></p> <p>Yunus, R., Davies, S., Irwan, A.M., Batagol, B., Yani, A.A., Arundhana, A.I., Putri, A.P., Keam, G., Ramadhan, N.S. (2023). '<a href="#">Evaluating services provided to women in Makassar experiencing family violence: best practice and recommendations for better support</a>', the Australia-Indonesia Centre.</p> <p>World Health Organization. (2013). <a href="#">Responding to intimate partner violence and sexual violence against women: WHO clinical and policy guidelines</a>. Geneva: World Health Organisation.</p> <p>García-Moreno, C., Hegarty, K., d'Oliveira, A. F. L., Koziol-McLain, J., Colombini, M., &amp; Feder, G. (2015). <a href="#">The health-systems response to violence against women</a>. The Lancet, 385(9977), pp. 1567-1579</p>