

No regrets – sustaining adaptive rural livelihoods in Eastern Indonesia

Enhancing the adaptive capacity of rural communities in Indonesia's Nusa Tenggara Barat Province, one of the world's least-developed regions.

The issue

The islands of eastern Indonesia have some of the highest levels of poverty and food insecurity in the country. In 2009, Nusa Tenggara Barat (NTB) Province had the second lowest Human Development Index amongst Indonesia's 33 provinces, reflecting low levels of life expectancy, literacy, education and per capita income. Sixty-one percent of rural sub-districts are reported to suffer chronic food insecurity, and the majority are on the island of Lombok. Most people live in rural communities and derive their livelihoods from farming, fishing and small-scale local industries. They are highly vulnerable to changes in rainfall and weather patterns that affect crop yields, livestock and fisheries. They are also susceptible to natural disasters such as floods, drought and storms, which are becoming more frequent and intense as the global climate changes, exacerbated by population growth, fluctuating commodity prices and rising costs of living. Currently, there is little information available to project the potential impacts of climate and other changes on rural communities, and no planning processes which can pro-actively anticipate them.

The project engaged provincial and local government, NGOs, businesses and communities to plan and test adaptation strategies that could enhance vulnerable communities' incomes, while building the resilience of all stakeholders to long term change and uncertainty.



Key lessons for development

- Climate change impacts vary widely across islands, requiring locally-specific adaptation planning. In many areas, population growth and the loss of agricultural land will have a far greater impact than climate change.
- Government, NGOs and science and community stakeholders have very different perspectives of livelihood problems and solutions. This requires multi-stakeholder planning processes to understand and integrate the different views.
- Multi-stakeholder planning, while time-consuming, enhances participants' adaptive capacity by catalysing innovation, new partnerships and empowering vulnerable communities.
- The causes of community vulnerability are highly complex and dynamic. Many values and rules governing decision-making are changing, such as women's empowerment. These trends also present some paradoxes. For example, the decline in traditional institutions precipitated by modernisation erodes customary ecosystem stewardship and mutual assistance practices that are important for the poor, but also enables women's education and leadership.

“Climate change is much more complex than just climate – it needs to consider all aspects of sustainable livelihoods and their drivers.”
(UNRAM research team member)

What did the project deliver?

A **participatory planning method** that co-produced knowledge and learning, mitigated power imbalances and created ownership of problems and solutions was developed by researchers from UNRAM and CSIRO, and the Indonesian agencies for Agricultural Technology Assessment and Meteorology. This process integrated the data, tools and facilitation skills necessary for adaptation planning.

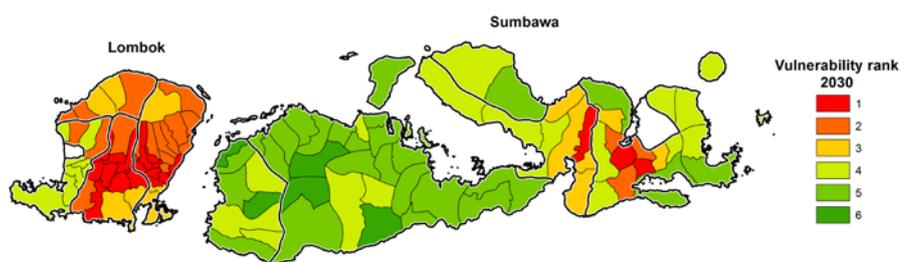
The method was successively applied and refined by the team through five sub-district case studies.

'No regrets' adaptation strategies (i.e. strategies that deliver benefits under any future conditions of change) were developed with vulnerable communities, based upon their specific local needs. The research team, local farmers and fishermen tested 12 strategies in Lombok. Several have

since been adopted, funded and scaled out by government agencies, the private sector and communities. These included:

- Alternative *bondre* seaweed production that is more resilient to storms than traditional methods: on average, this strategy could increase household welfare by \$500-600 AUD per annum, which is greater than the provincial GDP per capita.
- Inter-cropping of maize, castor and mung beans to increase productivity and reduce the risk of crop loss from variable weather: on average, this strategy could increase household welfare by \$300-400 AUD per year, roughly equivalent to the provincial GDP per capita.

A Vulnerability Atlas of NTB was produced by combining a livelihoods typology with projected impacts of climate change and population growth, and current adaptive capacity. The Vulnerability Atlas highlighted sub-districts where adaptation planning should be prioritised. The United Nations World Food Program has applied the Atlas to guide their food security and resilience program, and has secured funding for the implementation of adaptation strategies. The Atlas was also incorporated into the NTB Government's Food and Nutrition Action Plan 2012, and the Strategy and Action Plan for Food Security and Climate Change.

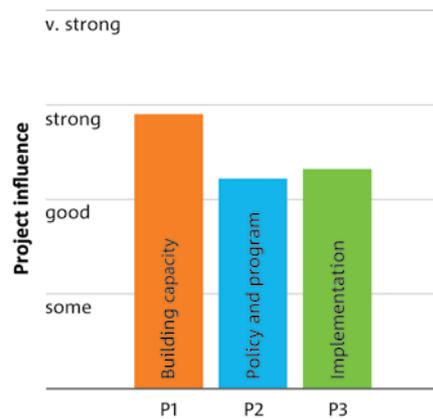


Vulnerability Atlas for NTB sub-districts, showing projections for 2030

Project evaluation and impact

In April 2014, UNRAM and CSIRO undertook an evaluation to assess the project's influence on participants' adaptive capacity. The project's intended impact pathway consisted of three linked phases. Phase 1 focused on 'building capacity' for planning. This enabled Phase 2 'policy and program development'. Following on from Phase 2, Phase 3 'implementation, adoption and scaling out' would occur. Phase 1 encompassed the project's activities, while Phases 2 and 3 were out of the project team's direct control. Parts of Phase 2 and all of Phase 3 'impact with beneficiaries' extend beyond the life of the individual projects and are dependent on key stakeholder support.

The results showed that the participatory modelling tools and training have significantly built the capacity of the research team to carry out vulnerability mapping, and to engage with communities to test 'no regrets' strategies. These skills and the project's participatory planning process have triggered innovation and cross-sectoral partnerships, resulting in unexpected outcomes in Phase 2, and impacts for vulnerable communities in Phase 3.



Summary evaluation results for the three phases of the project impact pathway

For example, EcoRegions Indonesia has adopted the adaptation strategies in one sub-district where they are implementing a novel eco-tourism development which promotes local food security. The strategies are also being adopted and scaled-out through new partnerships between UNRAM, district governments and the Indonesian Ministry for Regional Development, promoting greater adaptive capacity in the most vulnerable households and communities in NTB.

Project partners

This 4 year collaborative project was led by CSIRO and the University of Mataram (UNRAM) and involved local and Australian partners including the Indonesian Agricultural Technology Assessment Agency, Indonesian Bureau of Meteorology and Geosciences, NTB Government's Climate Change Task Force, NTB Planning Agency, NTB Environmental Research Board, NTB Food Security Agency, United Nations World Food Program, Indonesian Ministry of the Environment, and EcoRegions Indonesia.



DFAT-CSIRO RESEARCH FOR DEVELOPMENT ALLIANCE
This project was funded by the Research for Development Alliance, a strategic partnership tackling complex development challenges in the Asia Pacific region.

AT CSIRO WE SHAPE THE FUTURE
We do this by using science and technology to solve real issues. Our research makes a difference to industry, people and the planet.
WE ASK, WE SEEK AND WE SOLVE

FOR FURTHER INFORMATION
CSIRO Land and Water
James Butler
t +61 7 3833 5734
e james.butler@csiro.au
w www.csiro.au/LWF