

AGAM REGENCY – DISASTER RISK REDUCTION PROFILE

This profile summarises the Natural, Built, Social and Cultural, and Economic environments of Agam Regency and their susceptibility to natural hazards. The Disaster Risk Reduction initiatives of the local government are also described.

2016



Intensive fish farming on Lake Maninjau, a large volcanic caldera, is a major source of income in Agam.



NATURAL ENVIRONMENT

Agam Regency is situated on the west coast of Sumatra, Indonesia. Agam Regency's capital city is Lubuk Basung, which is one of the 16 sub-districts that make up the regency. With a land area of 2,232 km², the region occupies low coastal plains, small river basins, raised coastal terraces and variable hill terrain.

Hazards and Risks

Agam is located near the Sunda tectonic subduction margin and like most of Sumatra has a wet and dry season. The close proximity to a major tectonic fault means that Agam is particularly prone to strong earthquakes. Offshore fault rupture has the potential to generate significant tsunami. Intensive land use exacerbates coastal erosion, and flooding. Volcanic eruption is also a hazard. Agam has a BNPB Disaster Risk Index score of 209 (high) and it is ranked 35th out of 496 districts assessed (BNPB 2013).

Natural Environment Vulnerability

The geography of Agam consists of low coastal plains, small river basins, raised coastal terraces and variable hill terrain. High angle slopes are located to the east and south of the region, which are susceptible to landslides and debris flows. Two recently active volcanoes are located to the east, namely Gunung Marapi and Gunung Singgalang. Lake Maninjau – a volcanic caldera, is a prominent feature of the district.

Agam's coastline is vulnerable to erosion and aggradation and potential loss of mangroves; a key coastal ecology for fisheries. Groundwater and low-lying land are susceptible to salt water contamination from tsunami inundation, as are mangroves. River drainage patterns may change in the event of an earthquake, volcanic eruption, or flood, potentially affecting land-use. Forest and crop cover will change with Climate Change phenomena,



and forest and crops could well be damaged by volcanic ash from an eruption. Periodic sulphur toxicity at Lake Maninjau causes regular and extensive fish deaths.

Table 1. Assessment of risk from hazards for Agam (Disaster Risk Index– 2013).

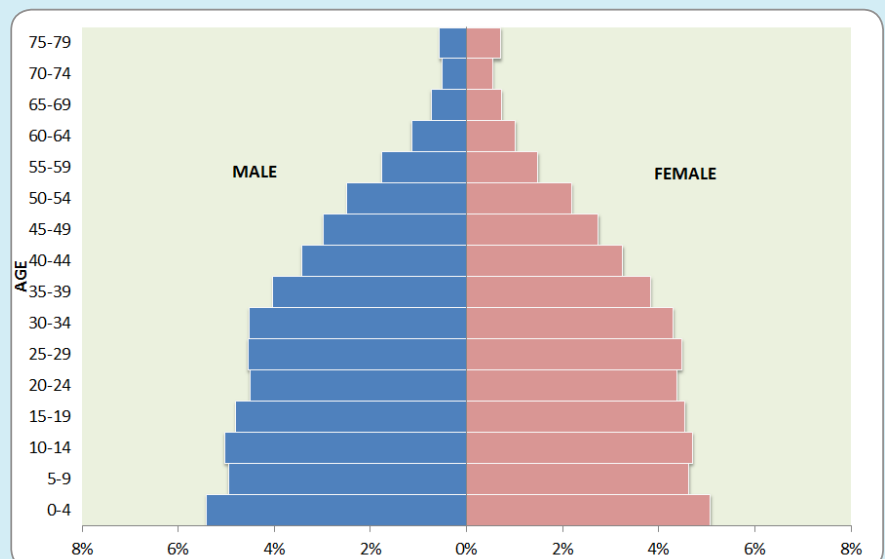
Threat	Earthquake	Tsunami	Flood	Landslide	Coastal Erosion	Forest fires	Extreme weather	Drought	Volcanic Eruption
Risk	High	High	High	Moderate	High	High	Moderate	High	Moderate

SOCIAL ENVIRONMENT

The population of Agam in 2013 was 466,978, with a relatively low average population density of about 209 people per km². The population is predominantly made up of Maningkabau peoples that are mainly Muslim.

Youthful Population

Agam has a youthful population with about 50% of the population under the age of 24. Younger people can be more vulnerable to disasters, but there is an opportunity to educate the population on hazards and potential impacts through schools. Educating young adults and youth should consider utilising social networking and the internet.



ECONOMIC ENVIRONMENT

Vulnerable Agriculture and Aquaculture

Agam Regency is predominantly an agricultural region with much of the local commodities growing in the flat-lying areas of the district. The bulk of the agricultural produce is rice, coffee, milk and chilli. Dairying is becoming a significant sector in this area. The agricultural-based economy is particularly vulnerable to tsunami, flood, and volcanic ash hazard, as well as drought and forest fire. At Lake Maninjau, over 2,000 floating net cages are used for fish farming. Periodic convection and overturn at Lake Maninjau results in the re-mobilisation of sulphur-rich waters. As a result, this causes extensive fish deaths due to sulphur toxicity.

Vulnerable tourist industry

Tourism is primarily based along the beaches near Tiku, Tanjung Mutiara and lakeside at Lake Maninjau, Tanjung Raya. The beaches near Tiku are susceptible to earthquakes, tsunami and in

the long term, sea level rise and coastal erosion. Lake Maninjau occupies the depression formed during a large volcanic eruption (caldera) that erupted ~ 50,000 years ago, so is still considered an active volcano.

External impacts

Deforestation, illegal logging and conversion of forests to palm plantations modifies catchments, increases and concentrates run-off, increases erosion and flood potential, and potentially exacerbates the forest fire hazard.

BUILT ENVIRONMENT

Poor construction and development control

Many buildings and developments in Agam do not have permits and commonly do not adhere to spatial planning and building regulations. Land conditions, including hazards, are often not considered despite hazard/risk maps being available and risk reduction being included in spatial plans. The economy can also be vulnerable to disruption of the transport network.

DISASTER RISK REDUCTION CAPABILITY

The budget for Disaster Management is mostly allocated from the national budget of the BNPB (National Disaster Management Agency). The local BPBD (Disaster Management Agency) budget has increased since 2013 from 4,290 M Rupiah to 4,847 M Rupiah (USD \$336,500) in 2014:

A key Disaster Management plan strategic objective is "A strong and independent Agam". Disaster management initiatives already implemented include:

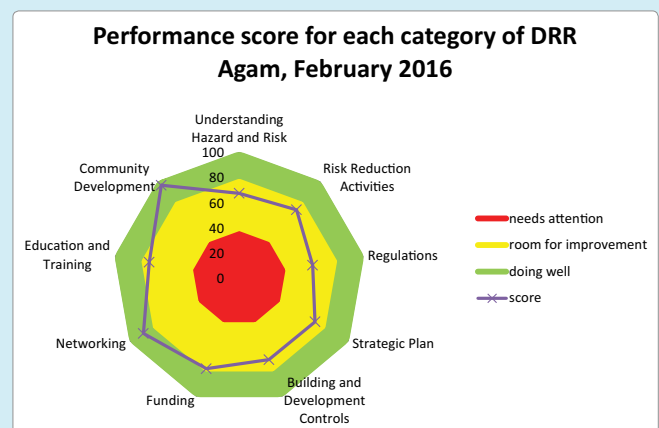
- Some sub-districts are well organized in terms of disaster management committees
- NGO's are delivering programs in some sub-districts
- Spatial Plans already consider hazards and risk
- Volcano and some landslide Early Warning Systems are in place
- The BPBD has an MoU with journalists regarding emergency communications
- Some agencies (Spatial Planning and Public Works) seem reasonably well integrated with BPBD
- Existing collaboration with Andalas University on water toxicity in Lake Maninjau
- The relocation of flood affected villages near the coast

Issues in the DRR Environment

The radar diagram summarises the strengths and weaknesses of the DRR environment of Agam Regency. It is based on a Disaster Risk Reduction, Local Government – Self Assessment Tool (LG-SAT) survey. The survey indicates that there seems to be good networking, community development, education and training, and adequate funding. All other areas require improvement.

Coordination and networking

Activities within Agam Regency are well coordinated with the regulations, policies and plans for DRR. Along with a good BPBD structure, stakeholder interaction and integration across all agencies in Agam is working relatively well. More interaction with the private sector could be used to bridge the gap between public



The Local Government – Self Assessment Survey (LG-SAT) diagram summarises the strengths and weaknesses of the DRR environment in Agam Regency, February 2016.

and private interests. There is a general lack of awareness from the private sector for DRR and the benefits that may accrue.

The Disaster Risk Management Budget for Agam was underspent in 2014, and many initiatives were not implemented.

Community Development

A clear strength according to the self-assessment exercise is that communities are developing useful plans for DRR. This is particularly strong where NGO's are involved in some aspects of village preparedness. Discussions around this however suggest that some of these successes are restricted to a limited number of villages. Those areas with good plans in place could be used as examples for those less well prepared. In this way, a village to village discussion or forum may be useful.

Resources

Suitable education materials need to be developed for a variety of community groups. Staff rotation at BPBD is very high, thus it is difficult to maintain capability and continuity of effort. The human resources at the BPBD need to be developed through training.

ABOUT StIRRRD

STRENGTHENED INDONESIAN RESILIENCE: REDUCING RISK FROM DISASTERS



With funding support from the New Zealand Aid Programme, Universitas Gadjah Mada (UGM) is partnering with GNS Science in an Activity which supports the Indonesian Government to reduce the impacts of natural disasters through increasing the disaster risk reduction (DRR) capability of local government and local universities. The Activity assists 10 districts and associated universities to understand their DRR issues and priorities, helps develop their capability to understand and manage these issues, and then to develop an action plan and implementation programme.

A key part of this involves cementing relationships between local government and local universities who will develop teaching and research programmes in aspects of disaster risk management to support their local communities. The districts involved in the Activity will also provide peer support to each other on the learning journey. The Project is supported by the Indonesian National Agency for Disaster Mitigation (BNPB) and Kemendesa.

Sources:

BNPB, 2013. *Indeks Rawan Bencana Indonesia*. Badan Nasional Penanggulangan Bencana, 2013.

BPS 2014: *Agam Dalam Angka 2014 (Agam in Figures 2014)*. Badan Pusat Statistik, Kabupaten Agam, 2014.

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<http://floodlist.com/asia>

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<http://reliefweb.int>

FOR MORE INFORMATION:

<http://StIRRRD.org> or

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