



INTEGRATED DEVELOPMENT OF EARLY WARNING SYSTEMS

Innovation through
Partnership

Tsunami Early Warning in Indonesia

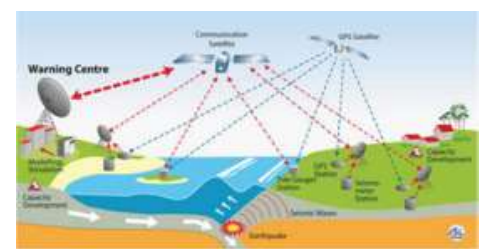
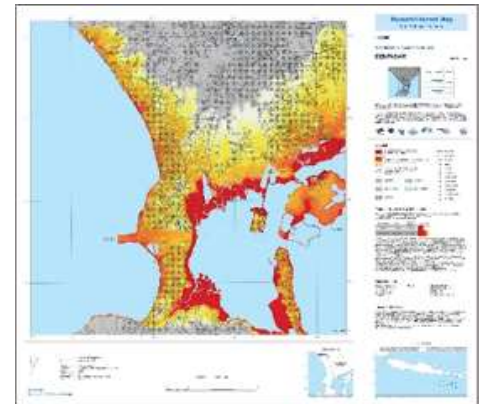
The German-Indonesian Cooperation for tsunami early warning was an initiative of the German Government to support the development of a Tsunami Early Warning System (TEWS) in the Indian Ocean. It was part of the German support for the reconstruction of the tsunami-affected region of the Indian Ocean. All TEWS activities in the Indian Ocean Region have been and are still coordinated by an Intergovernmental Coordination Group (ICG) of the Intergovernmental Oceanic Commission (IOC) of UNESCO. The Federal Ministry of Education and Research (BMBF) funded the project.

GITEWS

Since March 2005 Indonesia and Germany have been officially working together to implement a TEWS in Indonesia within the German-Indonesian Cooperation for a Tsunami Early Warning System (GITEWS) project. GITEWS forms the core structure of the Indonesian Tsunami Early Warning System (InaTEWS), one of the most advanced tsunami early warning systems existing.

GITEWS was planned from the beginning with an end-to-end approach. This included the creation of instrument networks to measure the natural hazard (earthquake, tsunami) in close cooperation with other countries like Japan, China or USA, the provision of decision support based on a modelling system to generate assessments of the situation, the execution of a nationwide risk assessment with the creation of hazard, vulnerability and risk maps as well as capacity development in the case of public authorities, local decision-makers and administrations as well as respective local communities and the hotel industry.

InaTEWS is operated by the Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG) and provides at least a five minute warning following an earthquake. The nationwide instrument networks include sensors such as seismometers, GPS receivers and tide gauges. The data from these sensors is transmitted in real time to the control room in the warning centre where, state-of-the-art analysis systems, such as the SeisComP3 developed at the GeoForschungsZentrum Potsdam (GFZ), are used to aggregate the data in a decision support system (DSS) to give





an overall situation picture. By comparing the real measurements with pre-calculated modelling results, wave heights and arrival times are predicted and corresponding warning levels for the affected coastline are issued.

As part of GITEWS, the project "Capacity Development in Local Communities" was implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH together with its Indonesian partners at national and local levels. The project aimed to strengthen the individual and institutional capacities to ensure that all tasks related to the implementation, maintenance and expansion of the EWS can be fulfilled.



By using a piloting approach with pilot areas in Sumatra, Java and Bali, the project supported its local partners in their preparedness process and simultaneously gathered experiences on how to best implement tsunami early warning at the local level. The project shared these best practices with national institutions that have the mandate to guide other tsunami-prone regions in their preparedness process, with the objective of building a consistent end-to-end early warning system throughout Indonesia. The experiences and best practices have been compiled and documented in the TSUNAMIKit.



Within the framework of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, a committee of experts involving the heads of all international tsunami early warning centres reviewed the project in September 2010. They gave a resounding positive assessment of the approach and implementation of GITEWS. By the end of 2009, implementation was largely completed. All system components developed by the German partners were officially handed over to Indonesia in March 2011.



Thanks to the successful development of the tsunami early warning system and the associated training, Indonesia, alongside Australia and India, was officially granted the status of a Tsunami Service Provider (TSP) for the Indian Ocean in November 2012 by UNESCO. In the event of a strong earthquake, the neighbouring states are notified by the respective TSP of a tsunami threat to their coast.

PROTECTS

With the hand-over it was agreed to continue the support to Indonesian partners during the first years of system operation with the Project for Training, Education and Consulting for Tsunami Early Warning Systems (PROTECTS), which provided education, training and scientific advice for the upstream as well as for the downstream part of the system from June 2011 to December 2013.

PROTECTS supported the Indonesian partner through selected training courses, internships and hands-on experience to ensure the sustainability of the InaTEWS. Further, it supported national government institutions, local governments and civil society actors to strengthen their capacities to provide the services necessary for sustainable tsunami preparedness. Since March 2014, Indonesia operates its tsunami early warning system entirely independently.

Further Information:

<http://www.gitews.org/en/homepage/>

http://www.gitews.org/tsunami-kit/index_en.html