DOES THE COMMUNITY HEAR TSUNAMI EARLY WARNINGS?

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Pakistan's coastal belt is divided between the provinces of Baluchistan which comprises of 75% of the Makran coast and Sindh which covers the remaining 25%. Except Karachi, all the other cities are small villages that are concerned with fishing in general. Lying close to the Makran Subduction Zone (Byrne et al., 1992) these cities are exposed to natural hazards such as earthquake, tsunami and cyclone. These small fishing communities dotted along the coast of Makran and Sindh are at a greater degree of exposure and vulnerability both in terms of lives and assets.

In order to address these problems, an efficient early warning system is essential for coastal hazards. This is to register warnings like tsunami; both from national and international sources; and then disseminate the information among all those who are vulnerable. This is important so that the people would leave the coast; stop fishing activities and move inland. In case of severe tsunami chances where evacuation of the whole area is necessary, there is a need for efficient warning dissemination through various medium and channels.

Figure 1. Map of the coastal belt of Pakistan with major district/ cities in circle. HDI means Human Development Index (A tool to measure and rank countries' levels of social and economic development)

The study presents an overview (based on the field observation and secondary data) of the possible gaps in dissemination of the official warning for tsunami in selected communities of district Gwadar, Makran region, Pakistan. No matter how

timely a warning is issued from various authorities and how timely it is received by the authorities responsible for emergency management in the coastal areas, devastation cannot be escaped until and unless this warning is disseminated well to all of the "vulnerable". The efficient promulgation of information is only possible if there is sufficiently reliable information broadcasting channels and medium established in the susceptible areas along the coast.

The Gwadar was notified as a district on July 1, 1977 with its headquarters at Gwadar city. Administratively it is divided into four tehsils (sub-division of a district) namely Gwadar, Jewani, Pasni and Ormara interlinked through 500 km long Makran Costal Highway. On west, district Gwadar is also linked to Iran by RCD Highway and also by sea routs passing through Jewni.

The first pilot community, the **Ganz** is located about 18 km on east of Tehsil Headquarter Jewni. Second is the **Kalmat**, about 115 km away on east coastline from Pasni city; the Tehsil Headquarter. Taak and Ball villages, (the 3rd and fourth pilot communities) are situated in Tehsil Ormaras' territorial area. The village Taak lies on west coast at a distance of 20 km, whereas the 'Ball', also on west coast, lies at a distance of 45 km from Ormara city.

Four selected communities were assessed and analyzed that how far from respective tehsil headquarter are located and how many communication links are available vital for the official early warning dissemination. Socio-economic and infrastructure details provided an overview of the 'access of the information' standard of the people living in the area. Education including literacy rate and ratio of the boys and girls schools within the community indicates how people in that particular community can understand well the information reaching to them and how they can behave accordingly. Communication links like road network, telephone & fax lines, internet, radio, TV, satellite & mobile/ cellular phone network and other links were studied to explore various means of dissemination of the early warning messages passed on by the concerned authority (i.e. Pakistan Meteorological Department). Topographic, geographical and built environment features of a particular community were studied to understand feasibility of evacuation and emergency response in case of disaster warning is issued.

Table 1. Communication networks available in selected communities

Community	Fixed Line Telephone	PTCL Wireless phones	GSM Networks	Satellite phone	TV Cable Networks	Coast Guard Radio	FM Radio	Electricity	Police station/ wireless
Ganz	Not Available	Available	Not Available	Not Available	Local Cable Network	Adjacent to Village	FM Gwadar	Yes	Not available
Kalmat	Not Available	Not Available	Not Available	Not Available	Not Available	2-3 Km away	Not Available	Partially Available Not 24/7	Not available
Taak	Not Available	Available	Not Available	Not Available	Not Available	3-4Km away with Terrain Issues	Not Available	Not Available	Not available
Ball	Not Available	Not Available	Not Available	Not Available	Not Available	2-3 Km away	Not Available	Not Available	Not Available

The study reveals, though technology exists, at national to district level, to deliver warnings that are much more accurately targeted to the people at risk, however its application is limited because of several limitations for instance their high cost. Once gaps and weaknesses of the existing early warning system are known and a detailed situation analysis of the target communities is made, only then is it possible to bridge these gaps and bring about improvements; both on community level and on governmental/nongovernmental organizational level.

REFERENCES

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