A view from Pakistan: Recurrent flash floods in areas surrounding Nullah Lai, Rawalpindi, Pakistan

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Introduction

Nullah Lai, also called Nalla Lai is a rain water fed natural stream flowing through the city of Rawalpindi. Every year during monsoon season (July to September) it floods after heavy rains in its catchment basin in the Margalla hills in Islamabad. It has a catchment area of 234.8 km2, extending from Margalla Hills in Islamabad to the twin cities of Islamabad and Rawalpindi. [1] This stream / Nullah passes through different localities of the twin cities and turns steeper with many cascades finally entering in the Soan River, which is a tributary of the mighty river Indus.

Background

Monsoon rain is an every year usual and expected feature in most of Pakistan, especially in Rawalpindi. The Lai Nullah Basin receives heavy rainfall averaging 500 mm in the monsoon season, which normally leads to heavy flood discharge. During the last 60 years (1944 to 2004) a total of 19 flood events had occurred.[1] Extreme flood years were 1981, 1988, 1997 and 2001, the latter having been the largest among the recorded events. On July 23, 2001, an unprecedented rainfall occurred over Islamabad-Rawalpindi resulting in 620 mm of rain in a span of about 10 hours. [1]The intensity and amount of rainfall caused the water level of Nullah Lai and its tributaries to rise. The flood had caused the worst damage in Rawalpindi. A total of 74 human lives were lost, about 400,000 people were affected, 742 cattle head perished, 1,087 houses were completely and 2,448 partially damaged. Estimates indicate a damage/loss of more than USD 0.25 billion to infrastructure, Government and private property.[1]

Flash flood in Nullah Lai, September, 2014:

On this 4th September, continuous heavy rain started in the twin cities. A flood warning was issued on 5th September. 286 mm rainfall was recorded in Rawalpindi and 278 mm in Islamabad just in one day. This rainfall inundated several

low-lying areas. The water entered several homes located near the Nullah. The water level in Nullah Lai touched the maximum point of 18 feet at Katariyan and 11 feet at Gawalmandi - the two most dangerous points of Lai in Rawalpindi because of very close proximity of population density along its banks. The water level in Soan River broke the record of 22 years.

Major factors that aggravate recurrent flash floods in Nullah Lai:

This type of flood is seasonal. The situation could be very well anticipated mostly 10 to 12 hours before it happens but unfortunately action starts after the damage. When the water level starts rising in the initial stage children start swimming and enjoying without thinking of more water that is coming from the catchment basin. The following are the main aggravating factors of flash floods.

- The meteorology department predicted less rainfall for this monsoon season. As usual, the prediction turned out false in the first week of September and there was very heavy rain on 4th and 5th September.
- The flood commission does not take necessary steps to handle the flood situations.
- Lack of will to solve and address such situation on part of both the local residents and government.
- Absence of local government of people's own representatives.
- Encroachments along the banks of Nullah Lai throughout its course by local residents and land developers.
- Because of improper waste disposable and poor sewerage system of the city, people dump solid waste, human and animal excreta in Lai.
- No pre monsoon season cleaning and excavation of dumped solid waste in Lai Nullah to widen and deepen it.
- Non cooperative behavior of residents towards flood warnings. At many times, police and army have to be called in for forced evacuation of local residents.
- Non availability of reservoirs or small dams to store this rain water during monsoon. The government does not have any policy to work on this aspect.

What is the solution?

With proper planning and due anticipation, it is very much possible to avoid / lessen harmful and destructive effects of these seasonal flash floods. Since my early childhood, I am a witness to destruction caused by Lai in Rawalpindi. Things have not changed much and still after seventy years, there is no planning to address these issues. There is also no accountability of peoples responsible for mismanagement and mishandling of these seasonal floods.

Pakistan army is the main institution that plays the most vital part in rescue operations and helps every victim without fear of risks to their own lives. Their boats and helicopters remain busy round the clock until the operations are over. Rescue 1122 is also an emerging institution that provides dedicated free volunteer rescue and relief services to flood victims.

Recommendations for future:

Experts expect more severe floods in 2015 and 2016 due to climate changes in local, regional and global levels. Pakistan has a climate change policy but there is no minister to implant it. If we intend to prevent and reduce the losses of lives and properties, we have to undertake the following measures with full will and commitment;

1) There is an urgent need to work out policies to address the urban flash floods.

2) The radar system of meteorology department needs upgrading to avoid false predictions.

3) Capacity of flood commission needs to be enhanced for playing a more proactive role.

4) Pre monsoon cleaning of Nullah Lai to deepen and widen it so that it could accommodate more flow of water.

5) Establishment of a proper system of disposal of solid waste, human and animal excreta through people's elected local representatives. There should be strict legislation for illegal disposal of solid waste, human and animal excreta in Nullah Lai.

6) The most important issue of illegal encroachments along the banks of Lai should be addressed through people's local elected representatives. It is not an easy issue and needs strong political will and legislation.

7) The Japan International Cooperation Agency (JAICA) gave a grant of $5.5 million to set up a high tech flood early warning system on the Lai Nullah. Educating the local communities through their local elected representatives to respond timely to flood warning alarms is of the utmost importance. People do not bother to respond to these alarms and it is usual practice to call army and police for forced evacuation.

8) Safety first: Immediately after rain, there is always hazard of electric current from fallen polls and naked wires. Immediate action to shut off power and restore the normal situation can prevent loss of lives.

9) Risk of diarrhea, dengue, malaria, other fevers like typhoid and skin infections should be prevented by timely vaccination of humans and livestock as well as prompt treatment.

10) Building of reservoirs or small dams to store this rain water during monsoon. This will give added benefit of power generation if used wisely.

11) With a definite and well planed system it is also possible to decrease carbon emission and increase forest plantation on the banks of Nalla Lai and alongside the small reservoirs.

12) The most important and environmental friendly initiative should aim to keep this stream clean by avoiding dumping solid waste and human and animal excreta. There was a time when this stream was clean and people use to swim in it. This is still possible.

References

1) Strengthening of Flood Risk Management in Lai Nullah Basin, http://www.jica.go.jp/project/english/pakistan/0700597/01/01.html

2) Lai Nullah - Extreme Flood Years http://www.apfm.info/pdf/case_studies/cs_pakistan_nullah.pdf/

Photo Essay

Flood 2014

Encroachments along Lai

Flood warning station

Waste dumps along Lai