ENGINEERING ASSOCIATION AKURANA

EAA Recommendations to Mitigate Flash Floods in Akurana

The Engineers' Association, Akurana (EAA) has been deeply concerned about the repeated flash flooding of Akurana from the Pinga Oya tributaries.
Since the late 1990s, there has been increased construction into the river channel, dumping of wastewater and other waste, loss of flood plains in the river margins, and a rapid increase of impervious surfaces in the Pinga Oya sub catchement around Akurana.
Here we set out the position of the EAA on the causes, proposed recent mitigation steps and its shortcomings and the principles for developing effective flood mitigation and river restoration.

Primary Causes of Flash Flooding

The primary causes of flooding are:

- The continued construction into the river and its margins.
- The filling of flood overflow zones.
- Land cover used for soil and vegetation beneficial in the infiltration of water to the ground is being reduced rapidly in the catchment.
- Dumping of solid waste and construction debris in the river.

Polgolla Reservoir Does Not Cause the Flash Floods

Some attribute the flood in Akurana as due to the impact of the Polgolla barrage. No one has provided any scientific evidence to support this claim. Instead, proponents recount anecdotes which they interpret as causal rather than coincidental.
The arguments as to why Polgolla could play a minor role are:

- The top barrage gates of Polgolla are about 10 meters below the road level of Akurana. Thus, closing the gates cannot cause backfilling of water. If the Polgolla barrage caused backfilling, then the Katugastota and Ambatenna areas and areas at lower elevations like Akurana should also be flooding. This is not the case.
- In all flash flooding events, water in the river in Akurana flows rapidly towards Katugastota.
- There was no flood reported in the first 10 tears after the barrage was constructed in the 1980s and very few floods were recorded in the 1990s.
- Some argue that the silt has built up in the reservoir leading silt upstream. There would be an impact due to silt accumulation, however the dominant presence of construction debris, mud and household waste accumulation on the riverbed has not been addressed.

Some speculate that Climate Change may be a cause. There is no evidence for that based on rainfall records. Rainfall intensity has not increased in the last two decades.

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Why have the Floods not been Mitigated?

Effective flood mitigation policies are unfortunately held back due to misinformation, misdirection, neglect of science and engineering, and even a lack of common sense.
At present,

- The public are unable to contribute to the governance of the river and its catchment.
- There is a lack of transparency and engagement of concerned experts , advocates and others. There are shortfalls in following regulations by officials.
- Monitoring and enforcement of regulations by officials are poor.
- Rigorous engineering and scientific analysis do not inform remedies and policies.

Recently Proposed Mitigation Steps

After the major floods of December 2022, the mitigation steps announced by the government officials led by the District Secretary were:

1. To remove silt from the riverbed.
2. To remove some structures on the river.
   - Widen the narrow (Mangos watte) bridge near the Akurana sign board at the 9th km post.
   - Widen the bridge going to Neeralla near the 10th km post.
3. Setting up an alert system for the Polgolla barrage to open its barrage gates at the time of flooding in Akurana.

Of these,

- The river silting has been carried out in a few flooded areas in early 2023.
- The central span of the Mangos Watte Bridge has been broken.

After Implementation of Few of the Proposed Mitigation Steps

However, even with these mitigation steps, the flood levels were higher in November 2023 with a daily rainfall of 120mm compared to December 2022 even though the daily rainfall was only 70mm.
However, various other construction and earth dumping in the river and its margins and catchment have enhanced the causes of flooding.
Excavating the river alone does not help except for a few months until the next flood.

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EAA Recommends the Following Principles for Flood Mitigation

After reviewing the evidence, the Engineers' Association, Akurana recommends:

Transparency and Public Engagement

1.Information about the governance of the river, its margins, and its basin should be widely available, particularly to women, youth, and concerned persons, such as engineers, scientists, and advocates.

Fix Shortcomings in Governance Problems

2.Better informed governance of the Pinga Oya and its catchment is the prime need.
3.Rules and Regulations about river and catchment need to be enforced.
4.Government officials engineers, scientists, and land use planners should be transparent.

Sound Technical Plans and Transparent Implementations

5.Sound Engineering and Science should inform the analysis.
6.Engineers and Scientists from the area should be involved.
7.Bold Long-Term regional planning priority in needed.

Holistic River Management considering people, pollution, and the environment

8.Restore and prioritize public access to the river, for washing, bathing, and recreation.
9.Prevent and reduce pollution and dumping.
10.Protect fauna and fauna to support ecosystem health

Afterword

As bad as the environment of the river and sub-catchment have become, further destruction must be prevented. Illegal constructions and catchment deterioration should be prevented. Further steps include identifying past illegal construction by developers and identifying illegal authorization from officials.
The public has to advocate for the common good so that politicians, officials, and individuals whose lobbying despoil the river do not continue to undermine sensible governance.
Without improved governance, no technical solution can be implemented effectively.

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