Flood Risk from Dams

TA 9634 Work with IWUMD in Myanmar

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TA 9634-REG: Strengthening Integrated Flood Risk Management

Introduction

- High Rainfall events in 2018 caused extensive floods including areas of southern Laos and central Myanmar
- In Lao over 600,000 people were impacted and one dam under construction failed destroying a number of villages, agricultural land and access infrastructure.
- In Myanmar there was also extensive flooding. Failure of the Swar Chaung Dam spillway and damage to spillways at a number of other dams where unprecedented flows exceeded that expected design values. Around 150,000 people were affected by flooding and the main Yangon to Mandalay road was damaged by scour.

Dam Safety – spillway capacity

Background

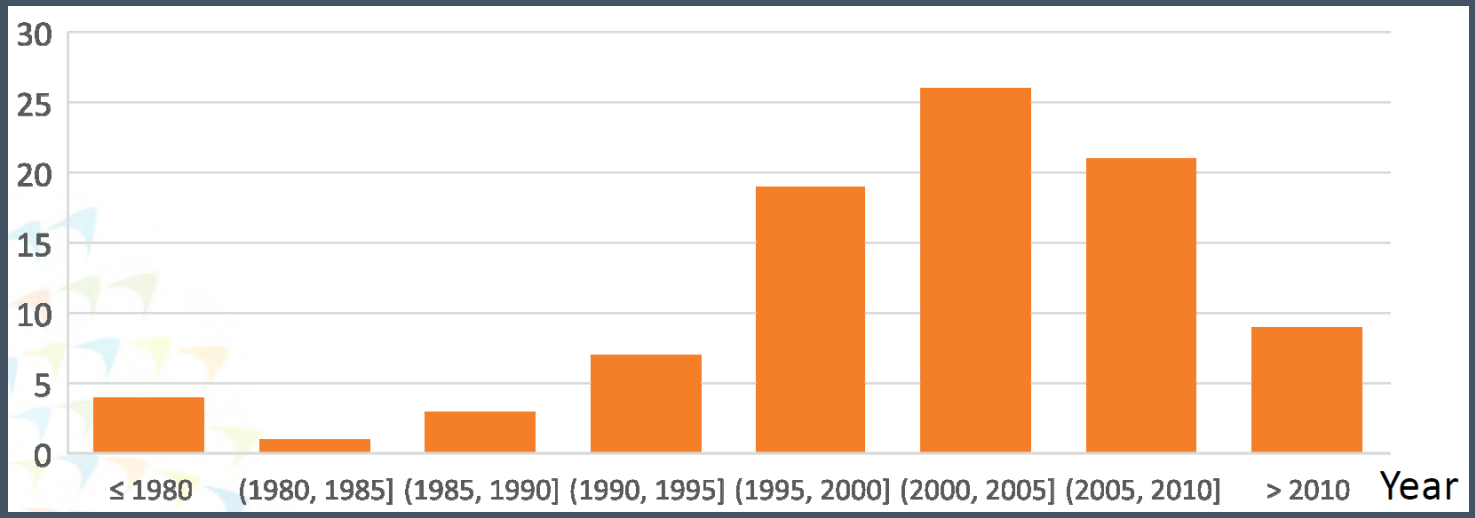
- ✓ Swar Chaung Dam:
  - H=29.6m, L=2011.7m, Storage=281MCM, Earth-Fill, Constructed in 2002
  - World Bank will rehabilitate this dam.

ADB

Credit: ADB Tech Talk R Takaku and N. Mori

Dam Safety

- IWUMD of MOALI has 235 dams, including 90 “large” dams for irrigation and some multipurpose
- 83 of 90 large dams are Earth-Fill (Homogeneous)
- Most were completed relatively recently



Credit: ADB Tech Talk R Takaku and N. Mori

Dam Safety in Myanmar

- The Myanmar Action Plan on Disaster Risk Reduction (MAPDRR) includes sub-paragraph 1-4 of Pillar 1 of the Sendai Framework has stated the need to make assessment of dam safety and reservoir, critical infrastructure and vital government and lifeline buildings in Myanmar.
- There is concern amongst local politicians and the public about the issue.
- IWUMD is thus giving high priority to dam safety. ADB will support them in this.
- TA 9634 is working to reassess the hydrological and hydraulics of a number of spillways. Others will assess the dam body/geotechnical issues.

Phyu Dam

Phyu Dam

- Bucket Spillway damaged
- Repaired using gabion but re-eroded
- Outlet valve vibration issue and hydropower outage -> more pressure on spillway
- https://www.youtube.com/watch?v=4yOXpSxyWNU

Sedagwi

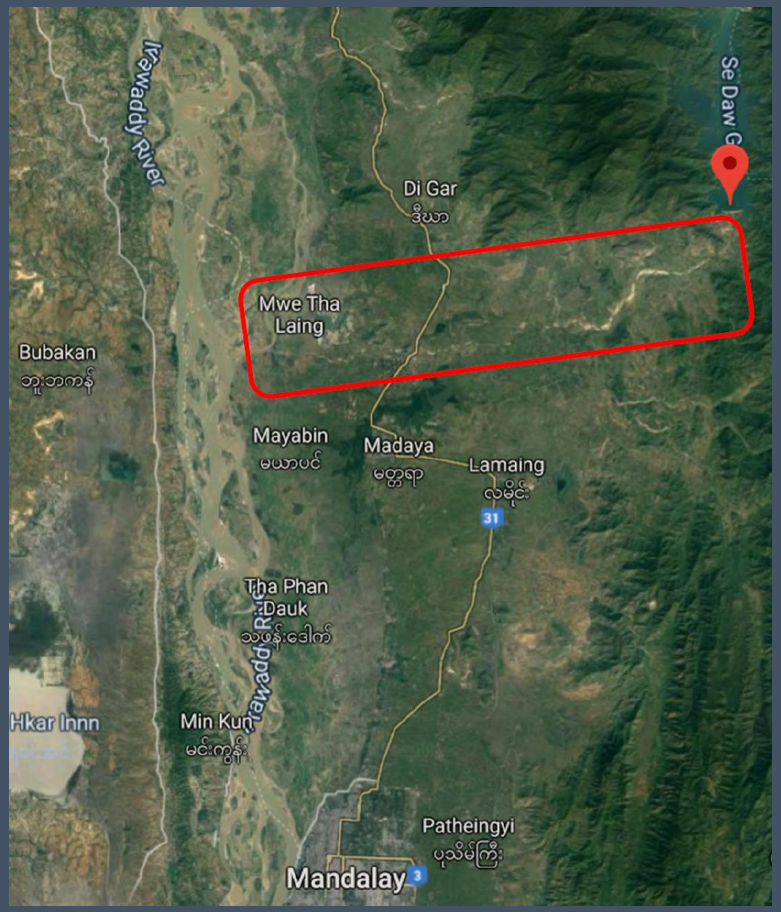
Issues

- Operations
- Downstream flood
- Gate malfunction

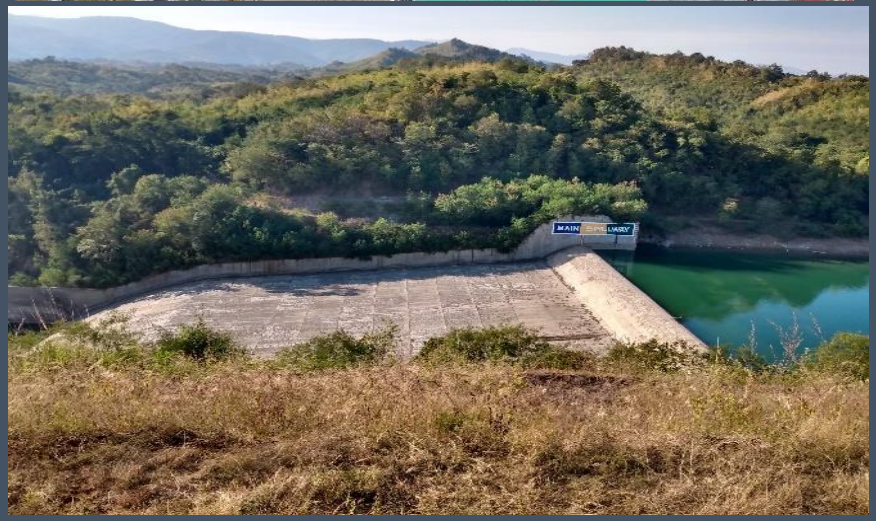
- Multipurpose
  - Irrigation
  - Hydrower
  - Potential flood alleviation
- H=40.5m
- C=447MCM,
- Completion 1987, ADB Funded

Sedagwi gates

Sedagwi Channel



Mone Dam



- Irrigation and Hydropower
- Spillway capacity exceeded and damaged, weir remained intank despite some bypass
- Additional drop structures on spillway channel damaged
- New Auxillary spillway under construction

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Kyee-on Kyee-wa

Issues

- Spillway capacity
- Erosion
- Gates create backwater downstream of Mone

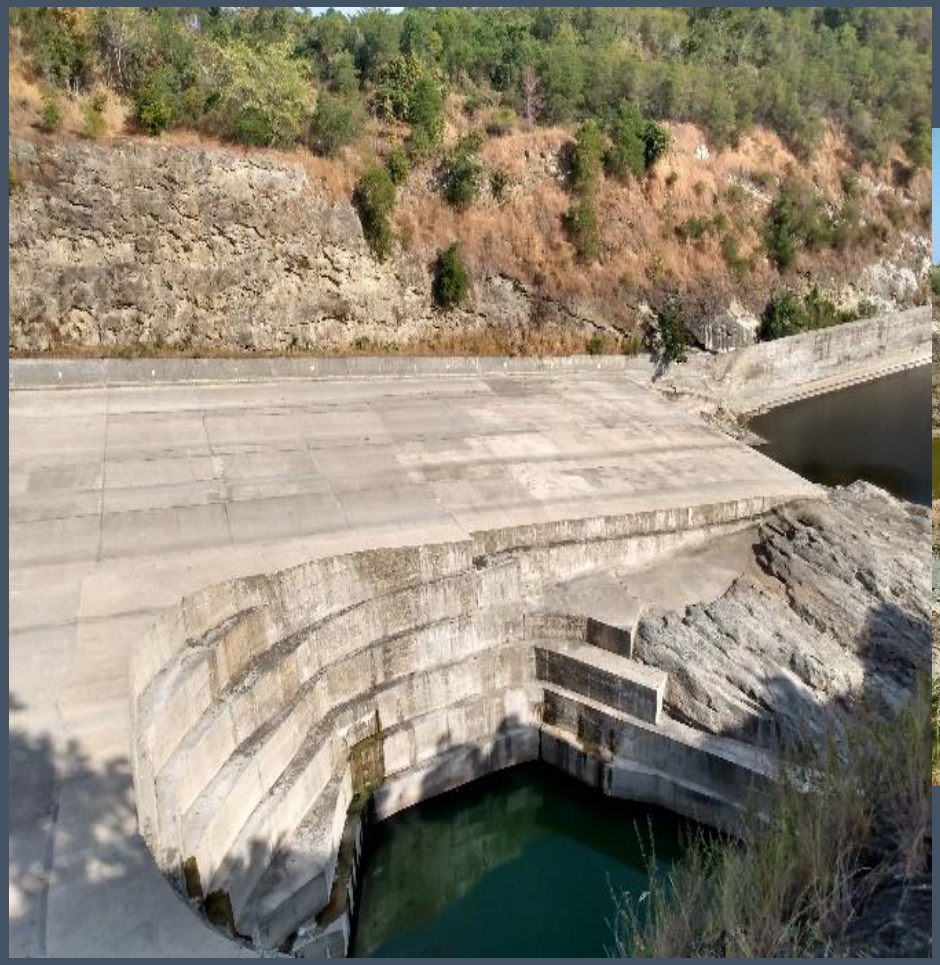
Kyee-on Kyee-wa

Kyee-on Kyee-wa

- Spillway Repairs

Kyee-on Kyee-wa

- Spillway Repairs



Auxillary Spillway

Dam Safety in Myanmar – common issues in dams visited

- Spillways not performing as intended
- Possible higher flows than designed for.
- Other issues such as outlet valve
- Need for emergency planning.
- No forecasting

Tasks:

Rainfall and hydrological extreme and climate change analysis

Modelling of downstream channel from Segdawi

Operation of dams

Possible forecasting

Dambreak

Capacity building in IWUMD for assessing all dams