Flood Risk Management

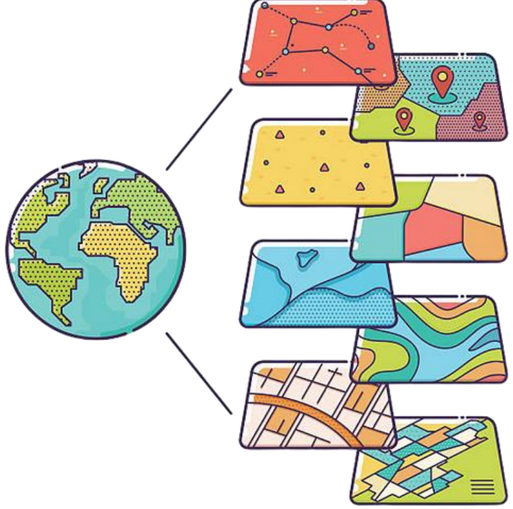
Insights from Japan for Fiji

Disclaimer

This report was compiled by an ADRC visiting researcher (VR) from ADRC member countries.

The views expressed in the report do not necessarily reflect the views of the ADRC. The boundaries and names shown and the designations used on the maps in the report also do not imply official endorsement or acceptance by the ADRC.

Background



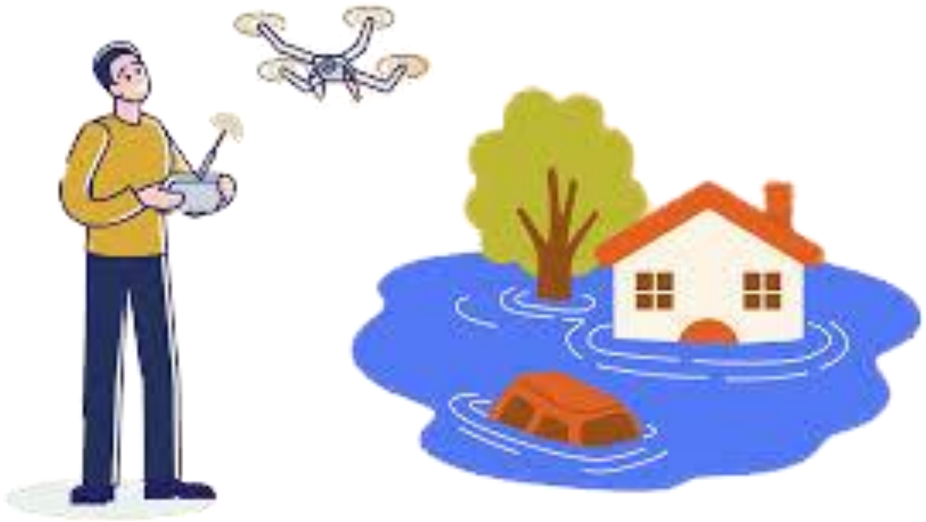
1.Rationale

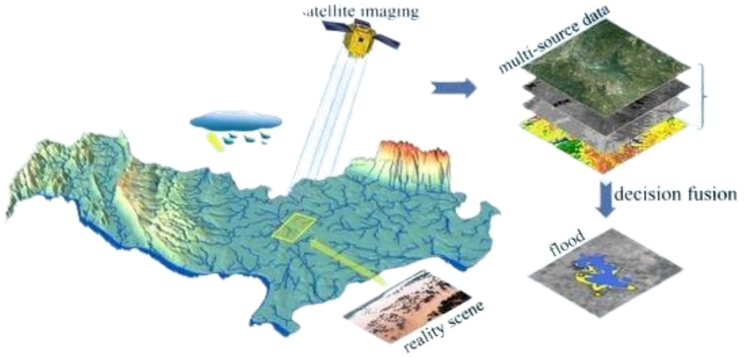
- Fiji continues to face fequent and severe flood events due to heavy rainfall and cyclones.
- Despite existing flood management plans, the impact of flooding continues to worsen.
- Current flood management efforts include flood modelling, early warning systems and structural mitigation measures.

Background

2. Research Objectives

This research aimed to assess the gaps in flood management in Fiji and draw lessons learnt from Japan's advanced flood management practices





Flood Management- Japan

- Typhoon Ise Bay (1959) prompted the creation and implementation of the Erosion and Flood Control Emergency Measures Law and the Flood Control Special Account Law.
- Timelines:
- 1896: Birth of modern river administration system
- 1964: Establishment of a systematic framework for flood management and water use
- 1997: Establishment of comprehensive river administration system for flood management, water use, and environmental conservation

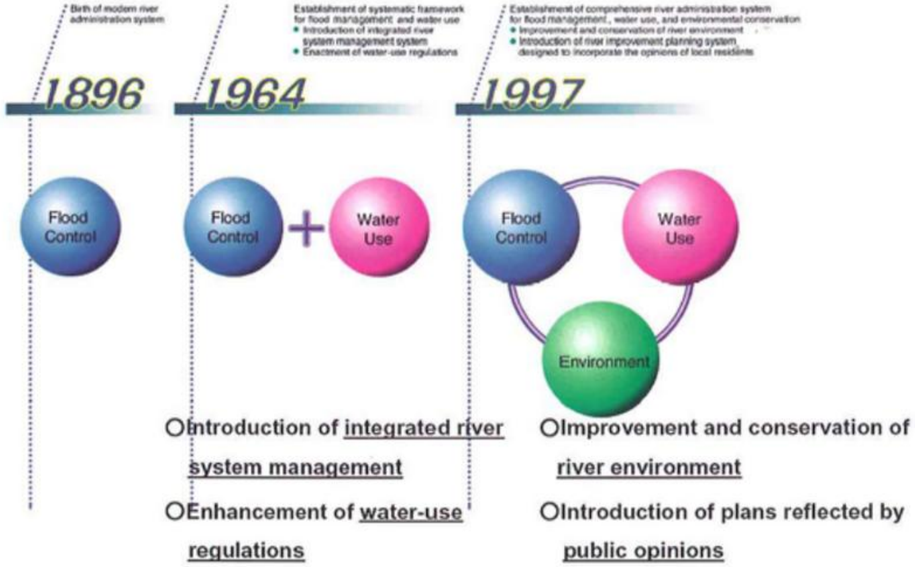


FIGURE 1: Changes in River Law (source: Flood Management in Japan)

1964:

- Flood Control
- Water Use
- Introduction of integrated river system management
- Enhancement of water-use regulations

1997:

- Flood Control, Water Use, Environment
- Improvement and conservation of river environment
- Introduction of plans reflected by public opinions

Flood Management- Fiji

- The National Disaster Plan 1995 is the central disaster framework.

Flood Management Projects/Plans:

- Two Flood Management Plans existing for Fiji
  - Integrated Flood Management—Rewa River Basin 2004
  - Integrated Flood Management in the Nadi River Basin

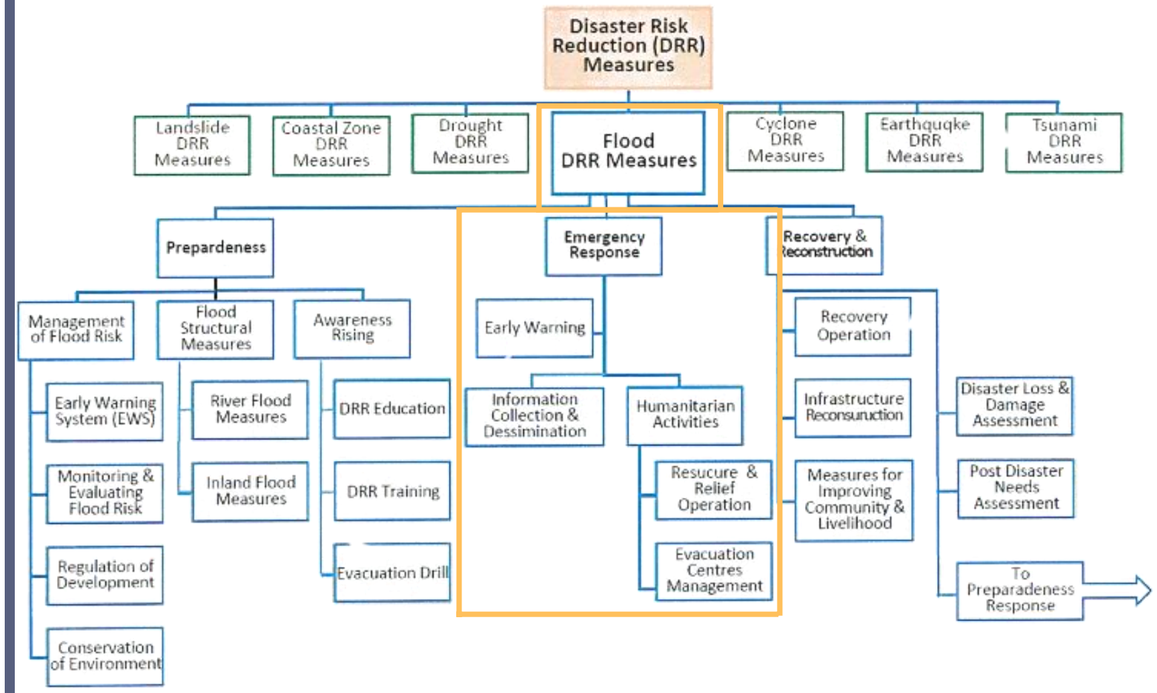
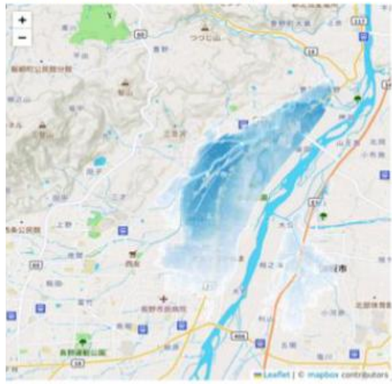


FIGURE 2: Outline of Framework of DRR Measures for Fiji in Case of Flood DRR Measures (source: NDDRP 2018-2030)

An integrated flood management plan is currently in draft stage for the country as a whole.

Flood Management Plan in Japan



Structural Measures

Flood levees, underground reservoirs, floodways, drainage channels, and floodgates.
Long-term planning for infrastructure resilience

Non-Structural Measures

Hazard mapping, community-based drills, early warning systems using AI and real-time monitoring
Integration of GIS for accurate hazard mapping and decision-making.

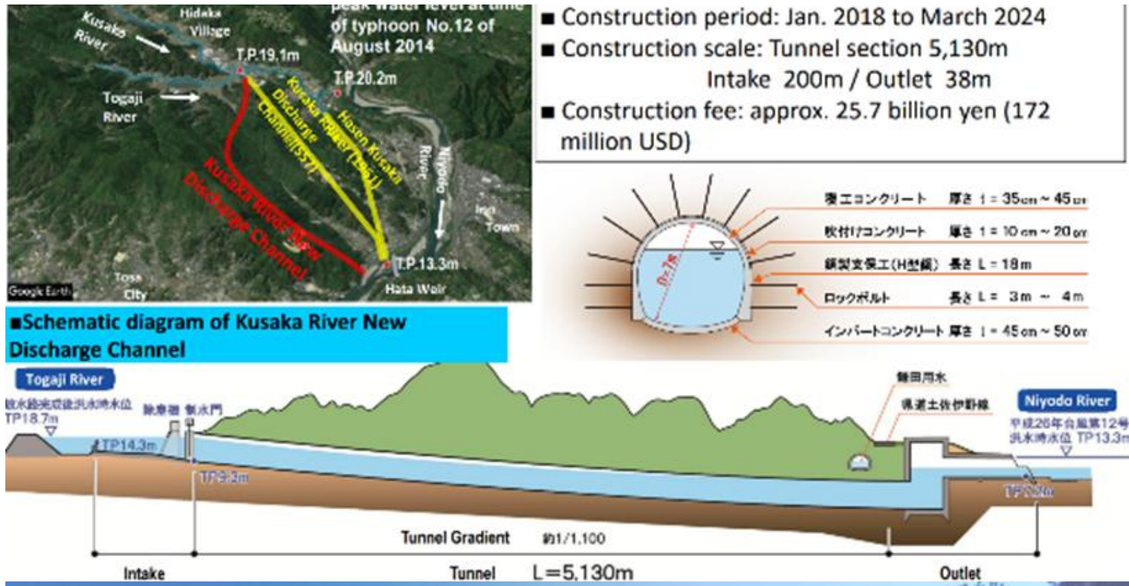
Examples of Flood Management in Japan

Structural Measures

- Flood levees, underground reservoirs, floodways, drainage channels, and floodgates

- Long term planning for infrastructure resilience

Kusaka River Discharge Channel

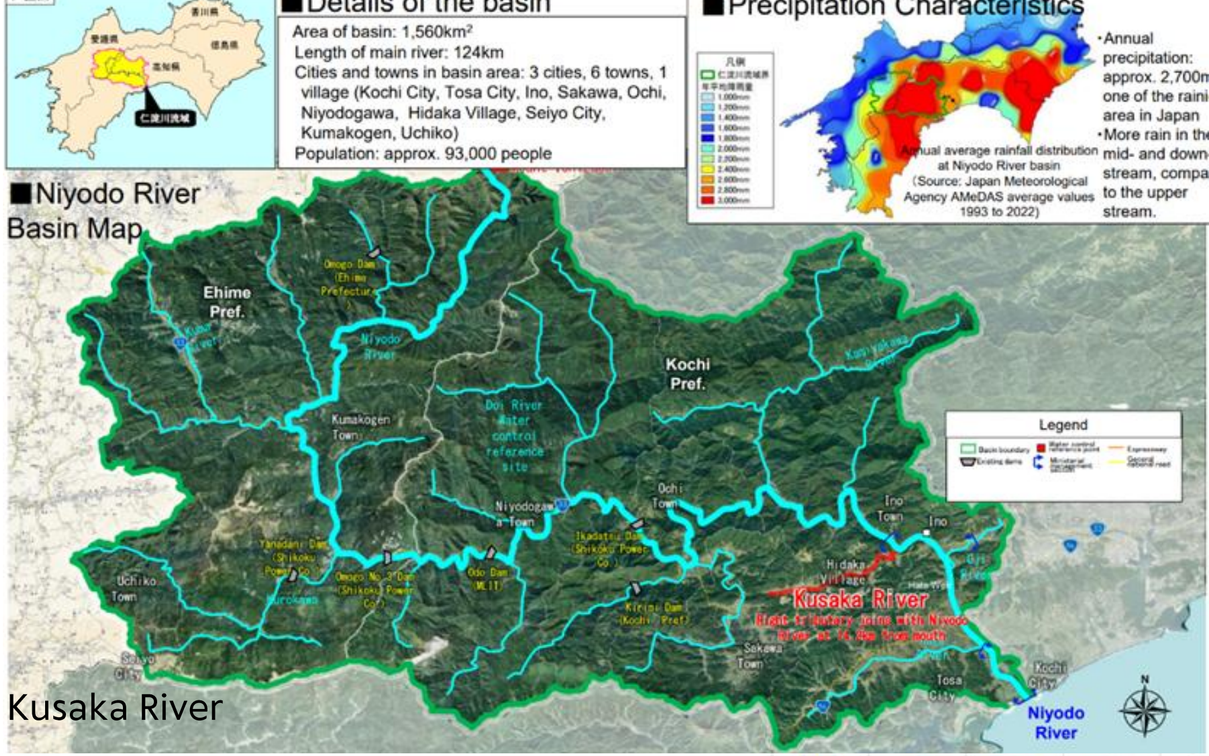


Kusaka River Discharge Channel

Non-Structural Measures

- Hazard mapping, community-based drills, early warning systems using AI and real-time monitoring

- Integration of GIS for accurate hazard mapping and decision-making



Kobe City Risk Information Platform

Flood Management in Fiji

Structural Measures

- River dredging and drainage systems

Non- Structural Measures

- Early warning systems, community-based preparedness, integrated watershed management

River Dredging-Ba River

Flood Early Warning-Ba River and Naitasiri

Challenges/Gaps in Fiji's Flood Management

- Lack of high-resolution digital elevation models and limited structural measures
- Insufficient flood modelling and historical geospatial data
- Lack of tailored structural measures ar the local level
- Weaknesses in flood hotspot mapping

Lessons learnt from Japan

- Long-term investment in flood infrastructure
- Community engagement through town-watching and hazard mapping
- Advanced technological integration for early warning and flood mapping (GIS, AI, drones)
- Importance of multi-layered early warning systems

Recommendations

- Invest in high-resolution digital elevation models for better flood prediction
- Strengthen early warning systems through AI integration and mobile-based alerts
- Promote community involvement in mapping and preparedness
- Enhance structural resilience with low-cost solutions like improved drainage systems and retention basins
- Foster internation partnerships for technical assistance

THANK YOU FOR LISTENING