



Natural and Nature Based Flood Management: A Green Guide

Woodrow Wilson Center

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WWF
Climate Adaptation & Resilience



ENVIRONMENT &
DISASTER MANAGEMENT





* Photos - Press

FLOOD
GREEN
GUIDE

NATURAL AND
NATURE-BASED
FLOOD
MANAGEMENT:
A GREEN GUIDE

The Flood Green Guide (FGG)



USAID
FROM THE AMERICAN PEOPLE



Flood Green Guide Framework

Stages and Steps

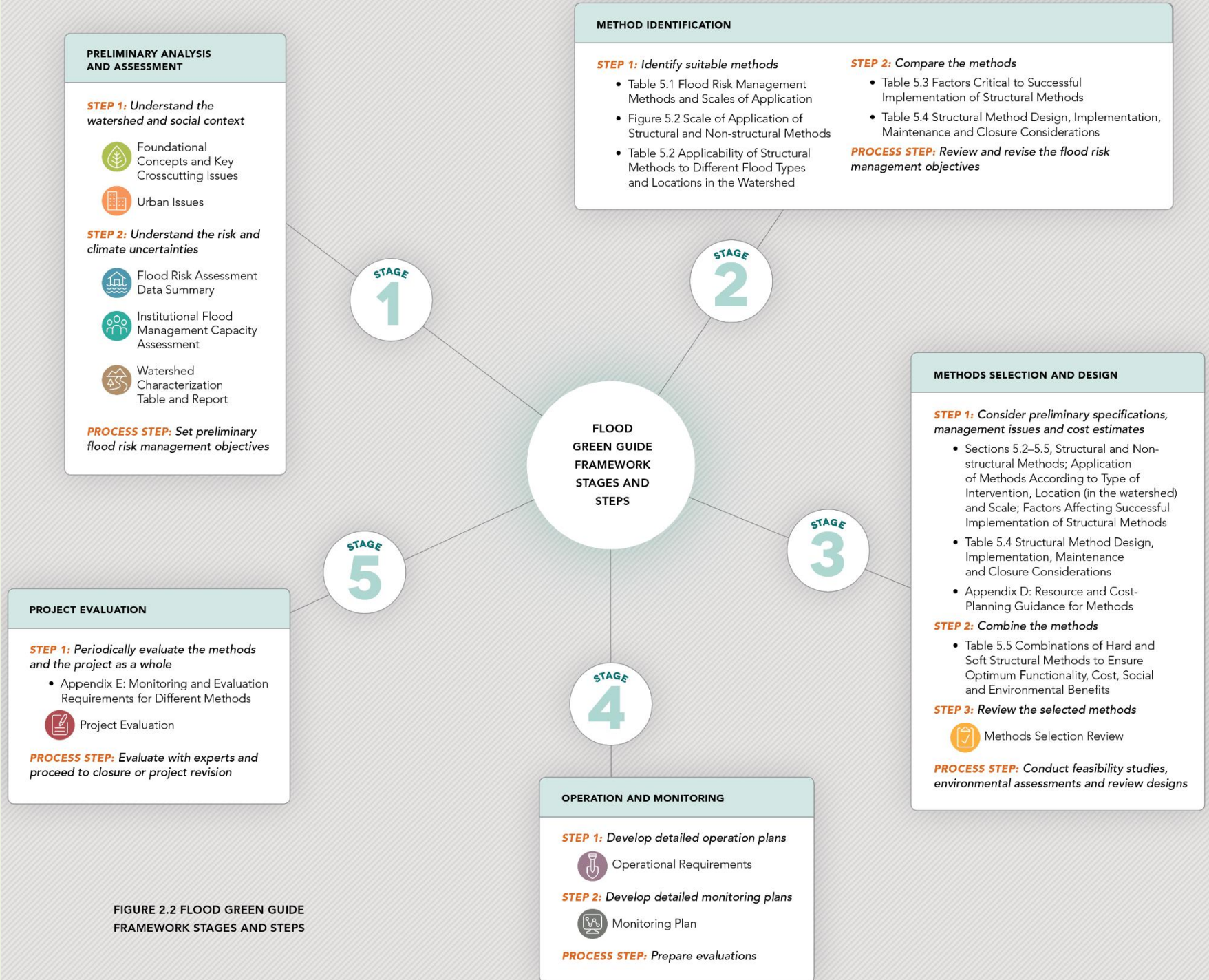


FIGURE 2.2 FLOOD GREEN GUIDE FRAMEWORK STAGES AND STEPS

Key Principles

1

In some cases **flooding is a natural process** that supports human wellbeing

2

Apply flood risk management with a **watershed perspective**

3

Consider nonstructural methods first, then as needed utilize **natural and nature-based** methods that complements any necessary or existing hard engineering

4

Emphasize multiple levels of **social, political and environmental factors** within a watershed

5

Flood recovery and reconstruction should be integrated with flood **risk reduction** and **adaptation** to a changing climate and other emerging issues.

6

Support **social equity** and comply with local/national laws and institutions; including **informal social norms and customs**



INTEGRATED FLOOD RISK MANAGEMENT METHODS

STRUCTURAL

NON-STRUCTURAL

HARD

1. Dams and reservoirs
2. Diversions
3. Constructed wetlands
4. Levees
5. Canal widening and deepening
6. Floodways
7. Pumping
8. Engineered drainage systems
9. Groynes and revetments
10. Multipurpose infrastructure
11. Warning / evacuation infrastructure

SOFT

1. Upper watershed restoration
2. Soil conservation measures
3. Wetlands restoration
4. Swales and infiltration devices
5. Rainwater harvesting
6. Detention basins and retention ponds
7. Natural drainage path restoration
8. Riparian vegetation restoration
9. Removal of barriers
10. Green roofs/walls and blue roofs
11. Coastal and reef restoration

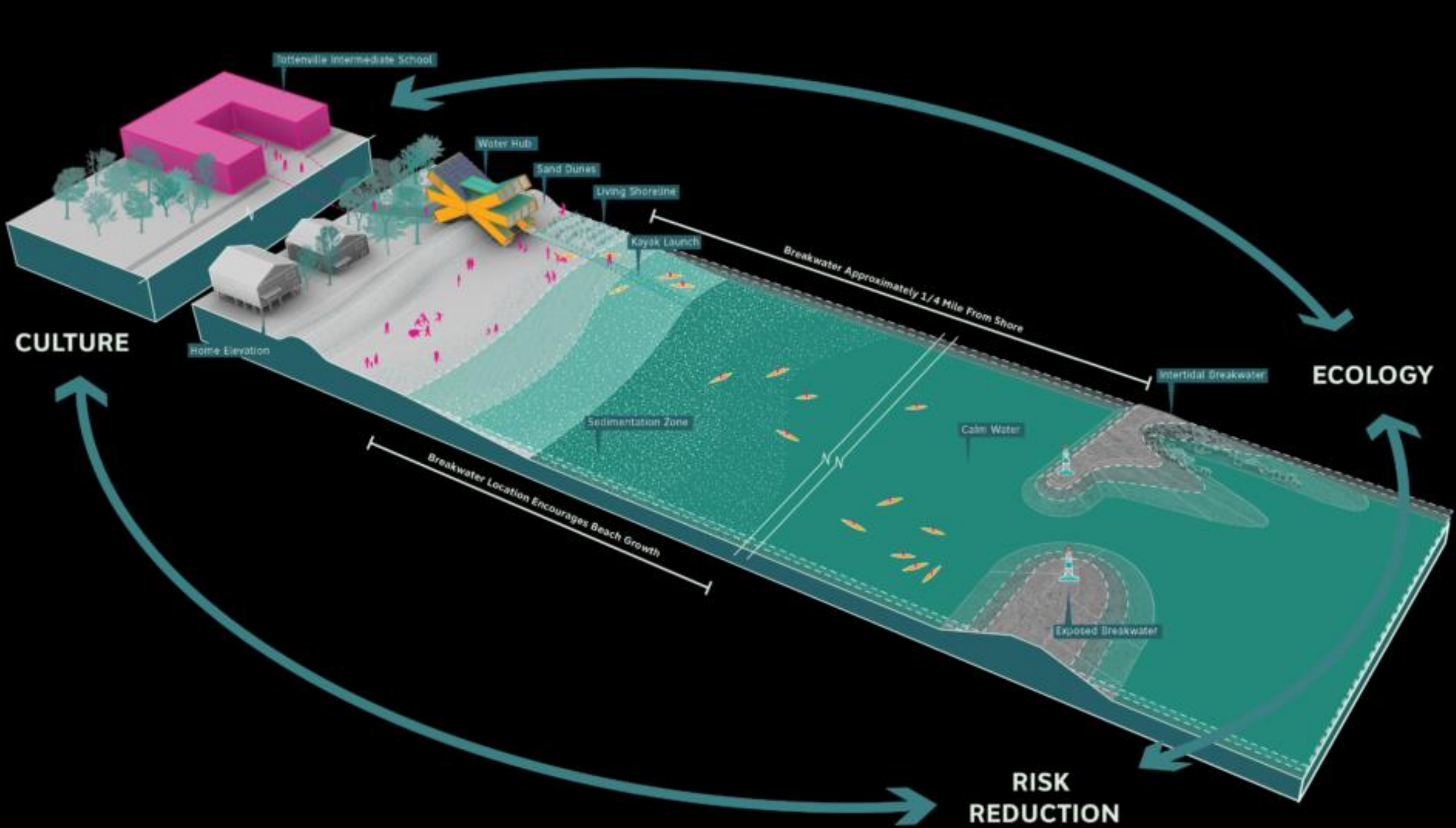
1. Soil and watershed protection legislation
2. Land use planning (regional/community)
3. Flood and water proofing (Building Regulations)
4. Regular maintenance of headworks
5. Flood monitoring and warning framework
6. Crop change and alternative land use
7. Community flood awareness and preparedness

Army engineers warn of brutal future for Ohio River region from climate change

James Bruggers, **Louisville Courier Journal** Published 11:10 a.m. ET Nov. 30, 2017 | **Updated 9:29 a.m. ET Dec. 1, 2017**

KEY RECOMMENDATIONS

- Fix flood control dams that are in poor condition.
- Modify reservoir operations and policies.
- Restore wetlands, which can soak up rain.
- Reconnect floodplains to their rivers, allowing for natural flood storage.
- Water conservation at farms and in cities.
- Build more storage basins to collect rain.
- Reduce the amount of hard-packed surfaces that repel water.
- Turn to so-called "green infrastructure" to make cities more like a sponge, to reduce flooding and replenish groundwater.
- Develop or update drought contingency plans.
- Modify thermoelectric power plant cooling systems.
- Better manage pollution washing off farms, cities and abandoned mines.



If we are not learning, we are not adapting...

Understanding future flood risk...

“Statistics, simulations, and sediment studies”

VS

“old data, poor data, or no data at all”



Observations and Recommendations



Thank you!

To find out more information:

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