

Integrating Green and Gray Infrastructure to Support Urban Water Security, Climate Resilience, and Biodiversity

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INTEGRATING GREEN & GRAY FOR URBAN WATER SECURITY, CLIMATE RESILIENCE, AND BIODIVERSITY

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Cities4Forests



60 cities (and growing) = a pipeline for investment

Cities4Forests



PRESENTATION STRUCTURE

- Integrating green & gray infrastructure for cities
- New report on integrating green and gray
- World Bank NBS efforts and broader alignments
- Examples of World Bank NBS projects
- Discussion

MANY TERMS FOR “NATURE-BASED SOLUTIONS”



URBAN CHALLENGES

- Urban stormwater flooding
- Coastal flooding and erosion
- River flooding
- Water insecurity
- Landslides
- Extreme heat



ADVANTAGES OF GREEN INFRASTRUCTURE

- Can be more **cost-effective**
- Can be designed as **resilient, flexible, and reversible**
- Attracts “green” **investors**
- Provides **co-benefits**
 - Sustaining livelihoods
 - Improving food security
 - Carbon sequestration
 - Improving air quality
 - Protecting biodiversity & habitat

Photo credit: Flickr/Payton Chung



GFDRI
GLOBAL FACILITY FOR DISASTER REDUCTION AND RECOVERY



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NEW RESOURCES FROM WORLD BANK AND WRI

Report

Overview Booklet for Disaster Risk Managers

PPTs:

- NBS for coastal flooding and erosion control
- NBS for urban stormwater flooding management
- NBS for river flood risk reduction

Available at:

<https://www.wri.org/publication/integrating-green-gray>



INTEGRATING GREEN & GRAY FRAMEWORK

Technical
performance



Social



Economy

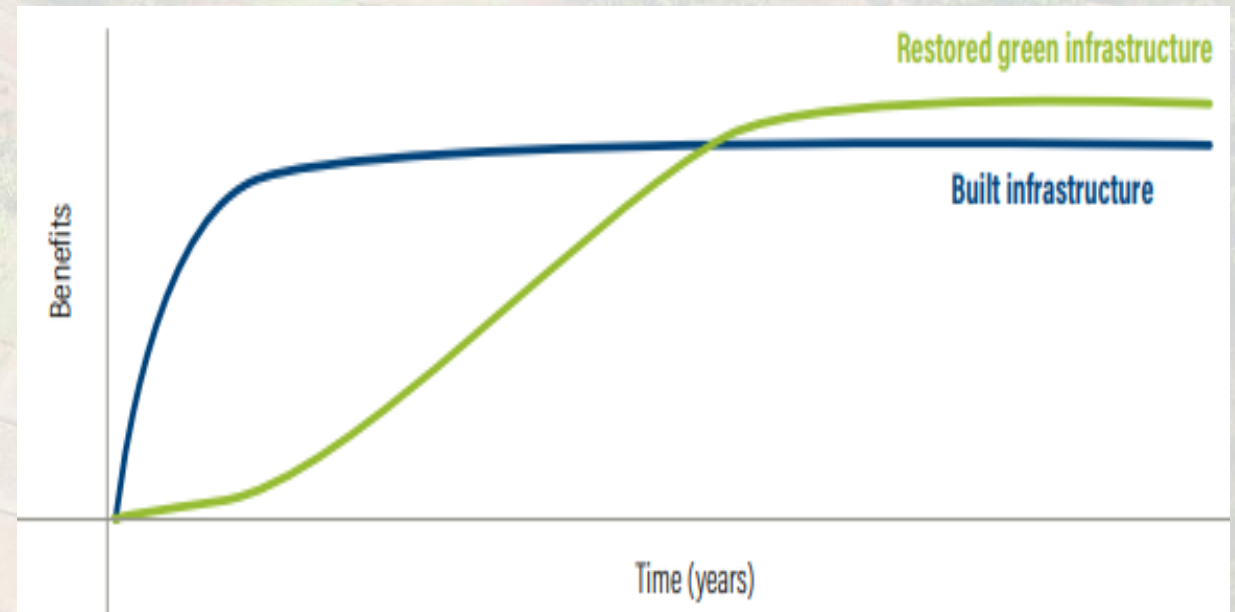


ENABLING CONDITINS: POLICY AND FINANCE



TECHNICAL CONSIDERATIONS FOR GREEN INFRASTRUCTURE PERFORMANCE

- Shift engineer perspectives
- Innovate sequencing strategies
- Improve monitoring and science
- Integrate into planning





SOCIAL CONSIDERATIONS: COMMUNITIES ARE THE PILLAR OF GREEN INFRASTRUCTURE

- Communities own, operate, and influence green infrastructure
- Huge potential for multiple benefits to communities
- Social safeguards are a start, but not enough



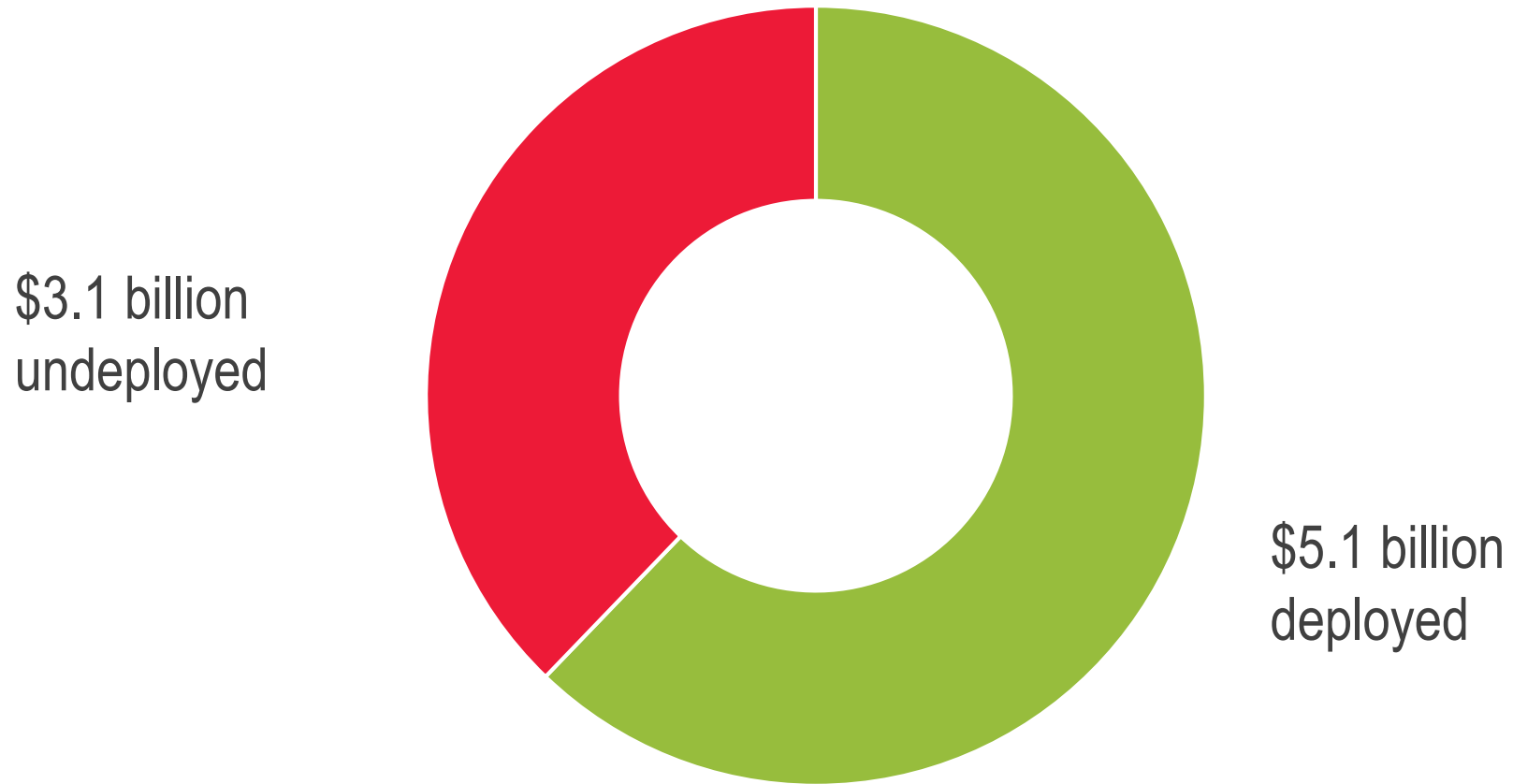


MULTI-CRITERIA ECONOMIC ANALYSIS AND GREEN FINANCING



CAPITAL IS NOT THE LIMITING FACTOR

Over 1/3rd of private capital for conservation remains undeployed





LAWS AND POLICIES



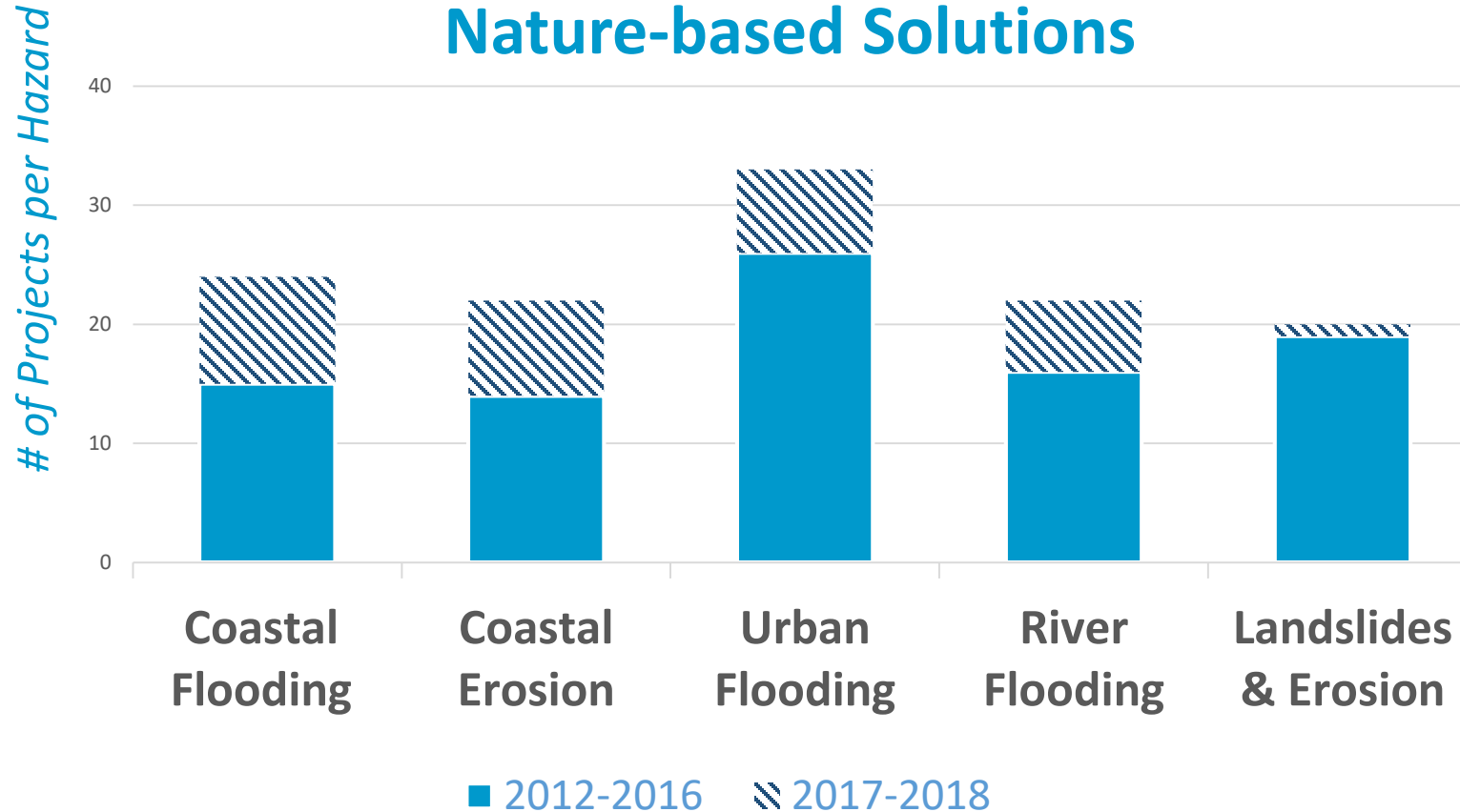
Utility Owned



Govt, Individual, or
Community Owned

WORLD BANK PROJECTS WITH NBS COMPONENTS

Hazards Targeted by Projects Containing Nature-based Solutions

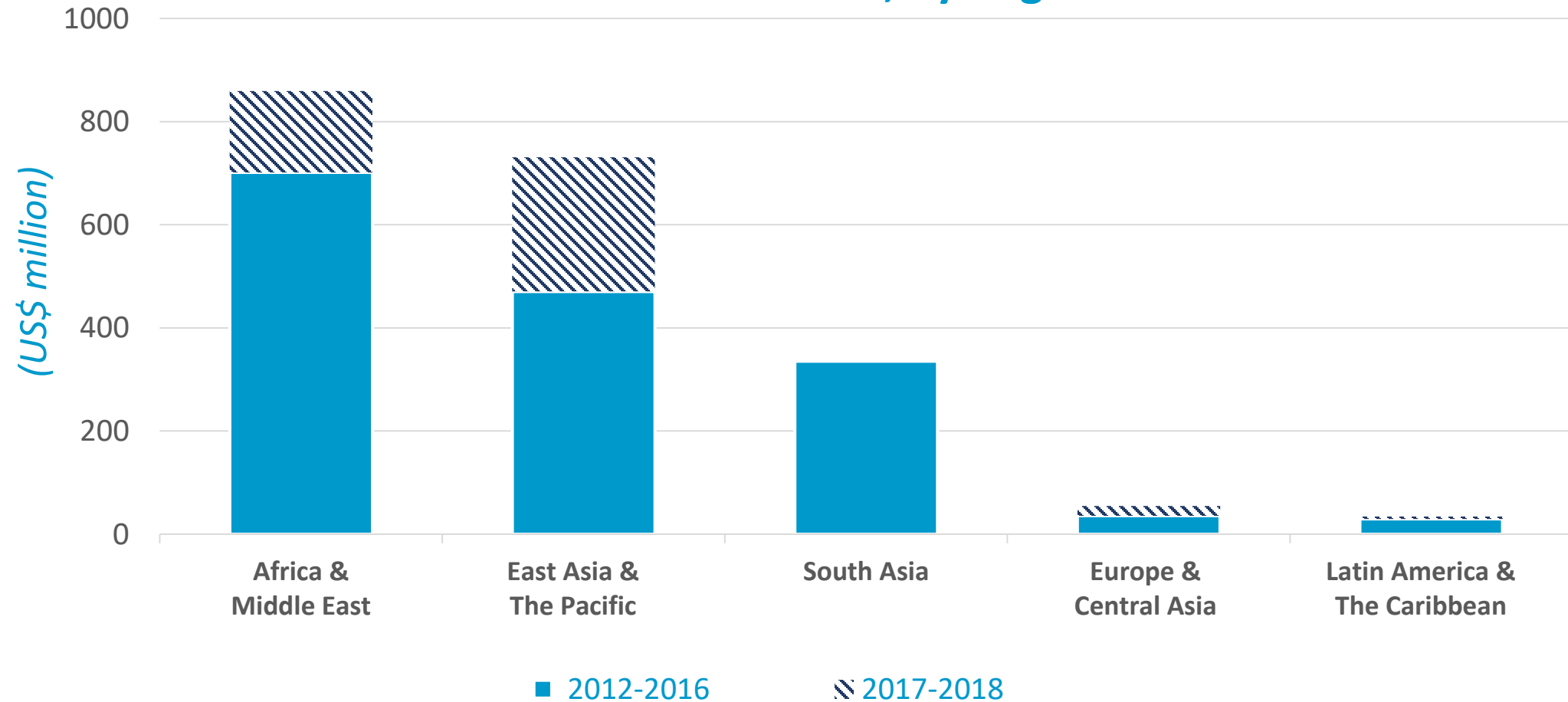


76 DRM projects with NBS components have been approved for implementation since 2012

Coastal hazards (flooding and erosion) comprise the most # of projects

WORLD BANK PROJECTS WITH NBS COMPONENTS

Investments in Project Components Containing Nature-based Solutions, by Region



WATER SUPPLY: VITORIA, ESPÍRITO SANTO, BRAZIL



Co-Benefits

- ✓ Biodiversity
- ✓ Carbon Storage
- ✓ Sustainable Forestry

Better Water Service

- ✓ Lower Cost
- ✓ More Resilient



STORMWATER: COLOMBO, SRI LANKA



Co-Benefits

- ✓ Recreation
- ✓ Biodiversity
- ✓ Climate Regulation

Reduced Flood Risk

- ✓ Lower Cost
- ✓ More Resilient

GUIDANCE BY THE WORLD BANK



Recent publications on NBS implementation

- Integrating Green and Gray: Creating Next-Generation Infrastructure (World Bank and WRI, 2019)
- Nature-based Solutions for Disaster Risk Management (2019)
- Implementing Nature-based Flood Protection: Principles and Implementation Guidance (2017)
- The Role of Green Infrastructure Solutions in Urban Flood Risk Management (2016)
- Managing Coasts with Natural Solutions: Guidelines for Measuring and Valuing the Coastal Protection Services of Mangroves and Coral Reefs (2016)

Thank you!

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Check out new NBS materials at:
www.wri.org/natural-infrastructure