



Building Urban Resilience

15th Kawasaki International Eco-Business Forum
Kawasaki City, 7 February 2019

Keith Alverson
International Environmental Technology Center
Osaka, Japan



The International Environmental Technology Centre's vision is for countries to implement sustainable solutions to environmental challenges, with focus on holistic waste management.



IETC Publications: Waste Management Outlooks and Thematic Assessments

- Global Waste Outlook
- Regional Waste Outlooks
- Mountain and SIDS Outlooks
- Mercury Waste Assessment



www.unep.org/publications/

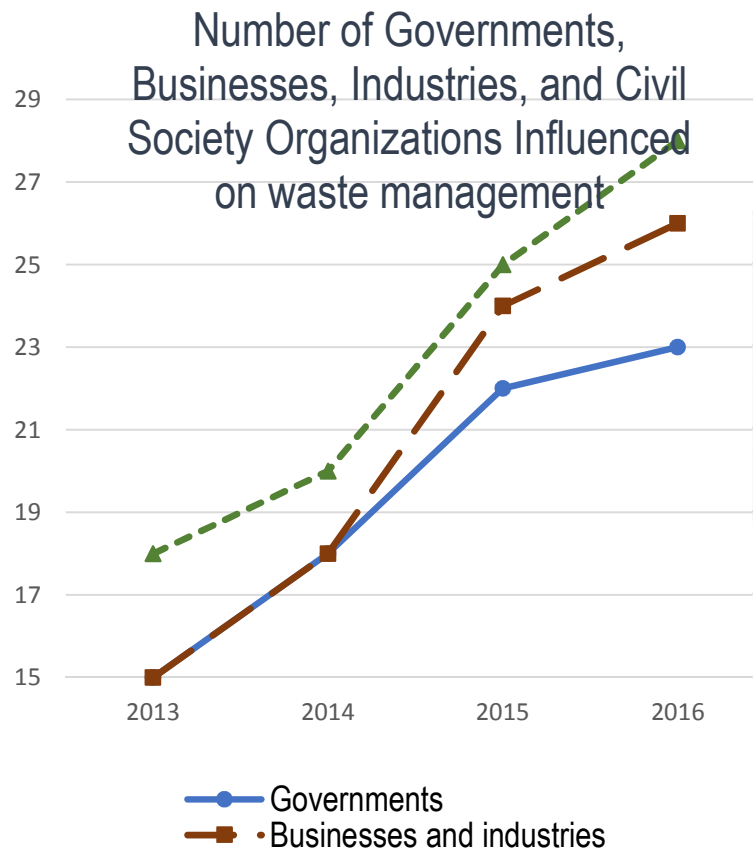
IETC Publications: Guidelines and Tools

- Guidelines for National Waste Management Strategies
- Guidelines for Framework Legislation for Integrated Waste Management
- Compendia of Technologies for the Recovery of Materials from Electronic Waste, Used Tyres, ...



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IETC: Results



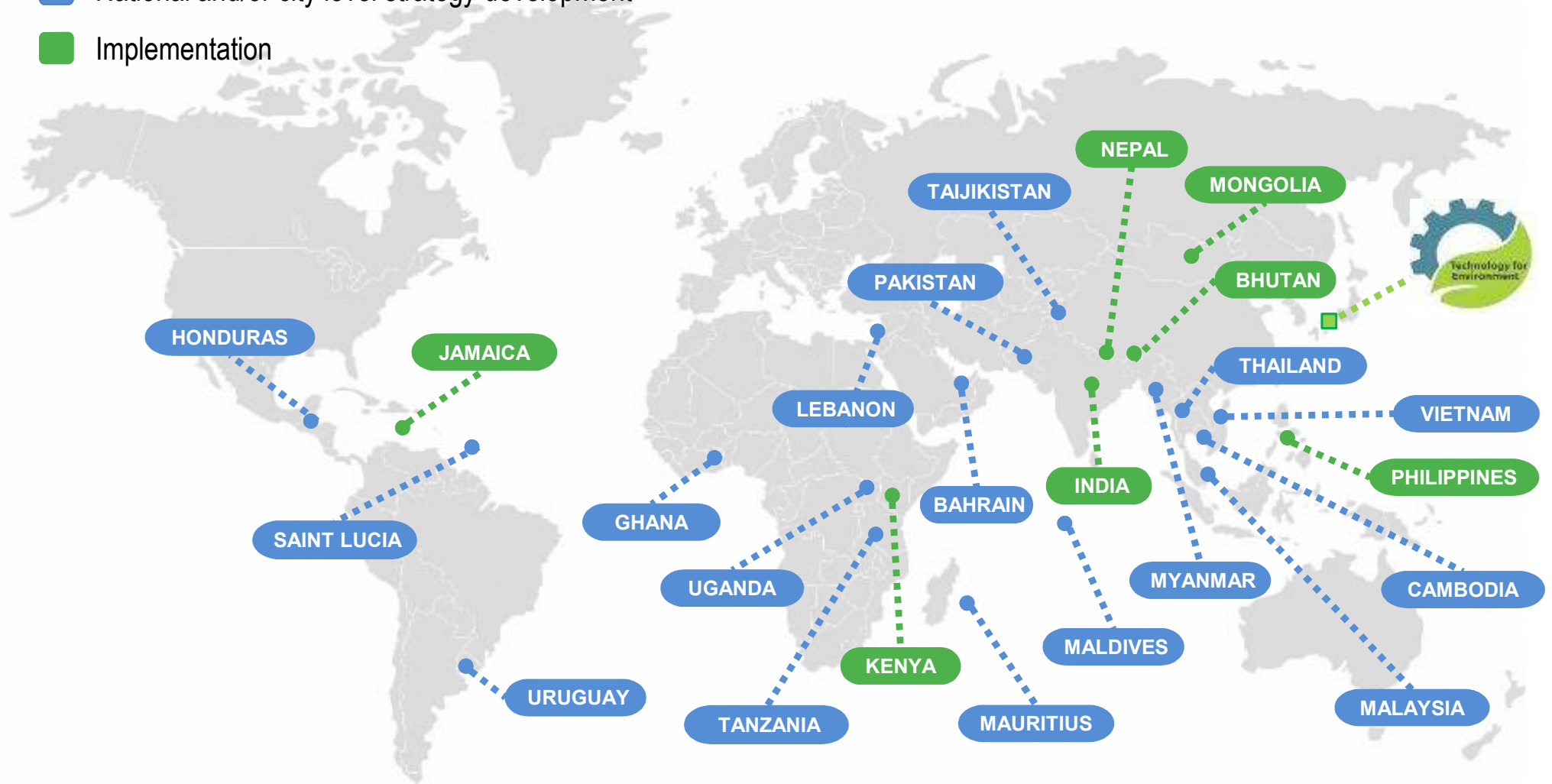
Penang, Malaysia



Bagan Ajam wet market waste composting plant

IETC support to countries around the world

- National and/or city level strategy development
- Implementation



Cities and countries are working with IETC to improve Waste Management Governance

Phnom Penh, Cambodia



Phnom Penh Capital Administration developed a Waste Management Strategy and Action Plan



Varanasi, India

Varanasi city developed a holistic waste management strategy for the city.



Waste characterization in residential and commercial units



Waste characterization in hotel, institutional and religious units



International Environmental Technology Centre



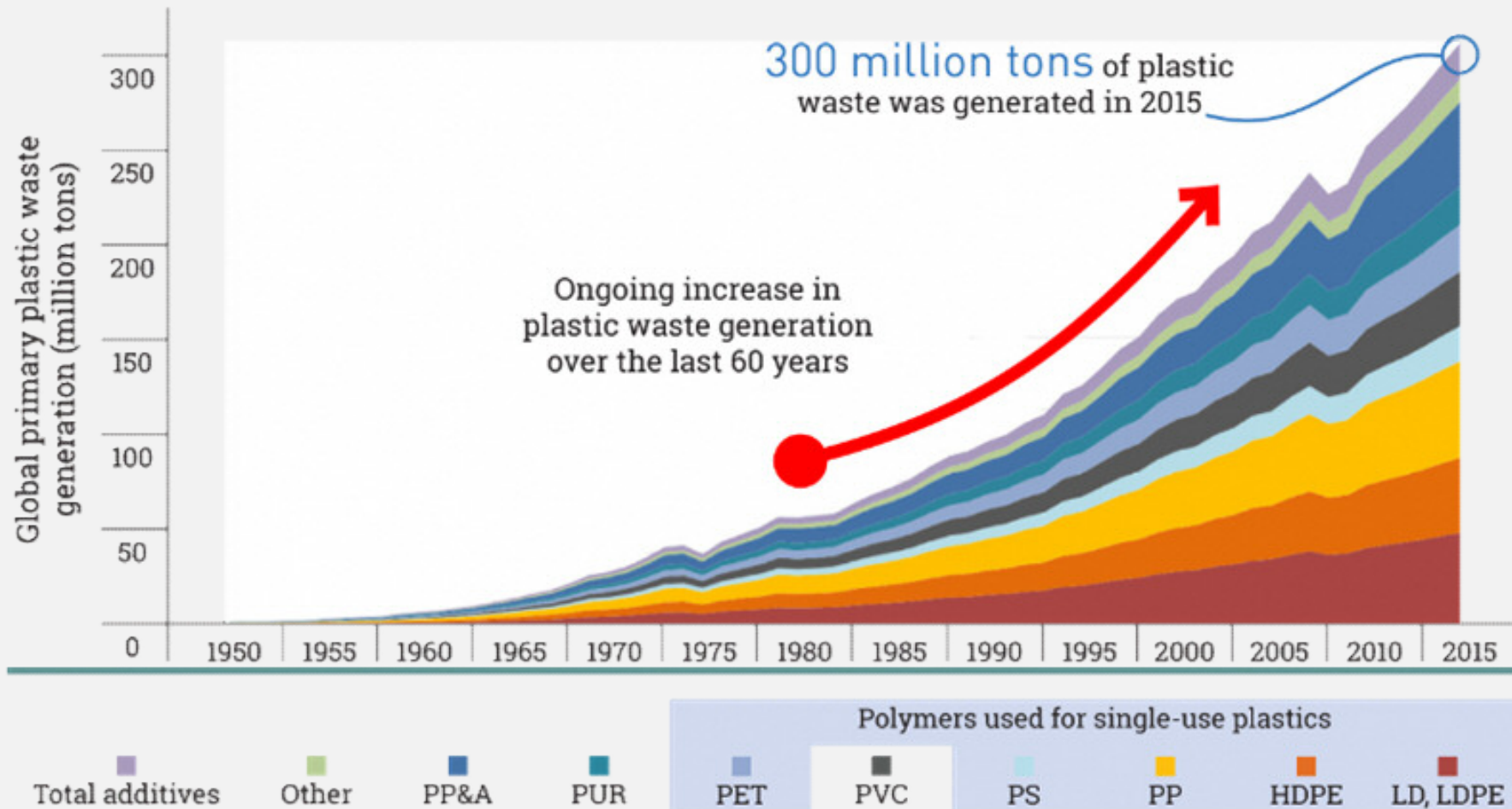
Our Vision

UN Environment IETC assists countries to identify and implement **sustainable technological solutions** to **environmental challenges**



The Plastic Challenge

Global primary plastics waste generation, 1950 – 2015



Priority actions to minimize single-use plastics

1

Improve waste management

2

Promote eco-friendly alternatives to phase out single-use plastics

3

Educate consumers to make environmentally friendly choices

4

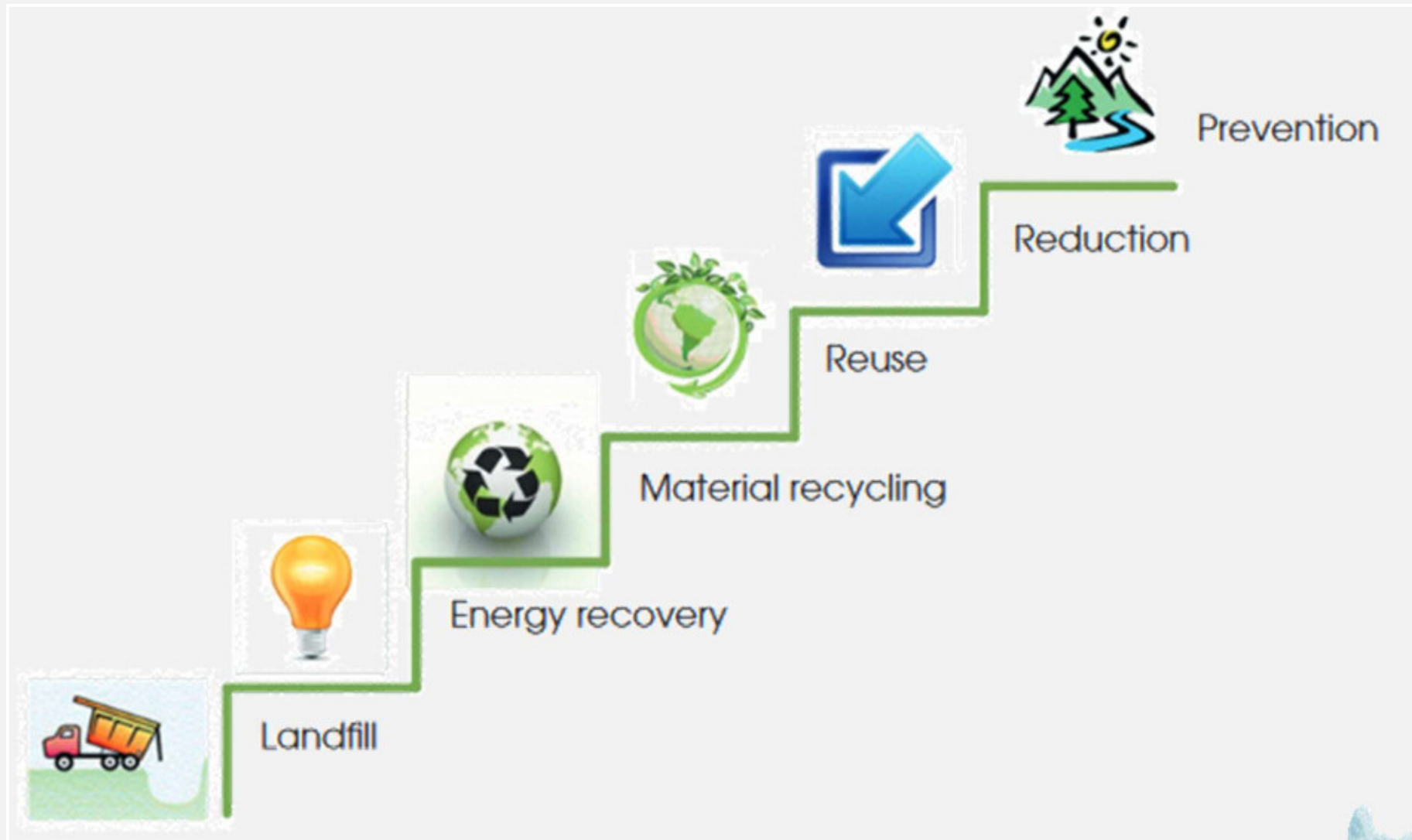
Enable voluntary reduction strategies

5

Ban or introduce levies on the use and sale of single-use plastic items

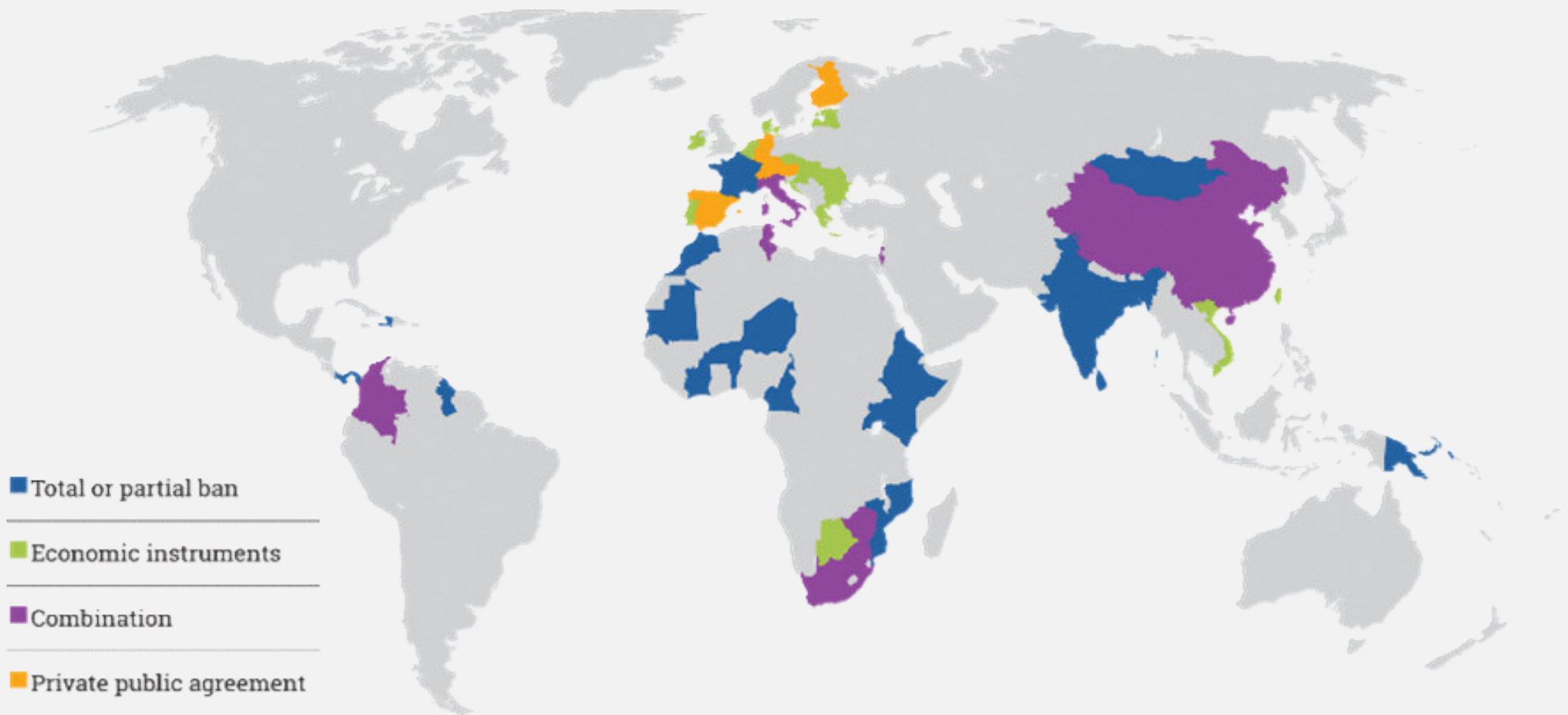
1

Improve waste management



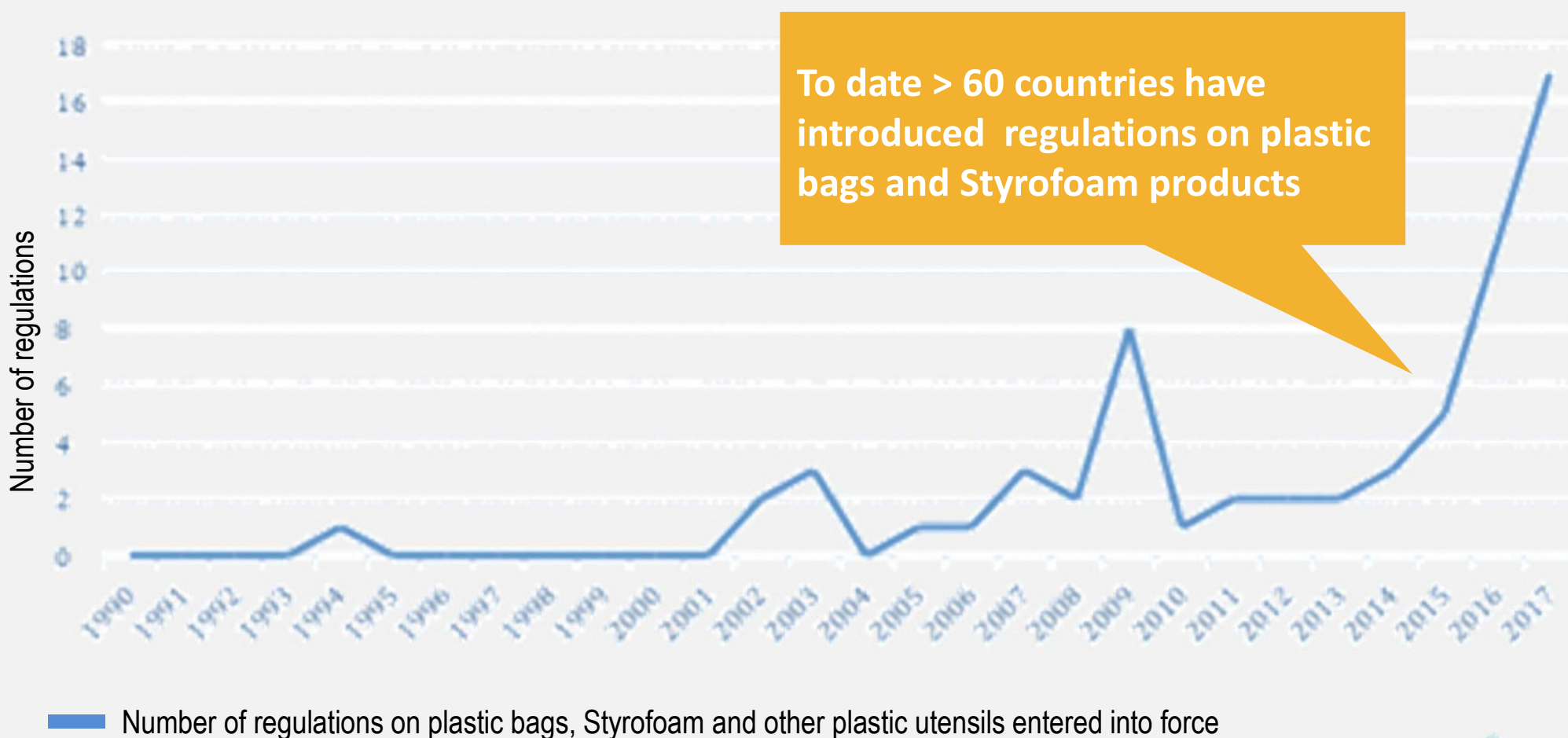
Global trends: types of regulations

National level plastic bag bans and Styrofoam regulations



Global trends: number of regulations

Estimated number of new regulations on single-use plastics entering into force at the national and worldwide



Global trends: Impact

Impact of national bans and levies on plastic bags



No to little impact

20%

Reduced consumption
or less pollution

30%

No data on impact

50%

Main issues of reported no or little impact seems to be:

- i) Lack of enforcement
- ii) Lack of affordable alternatives

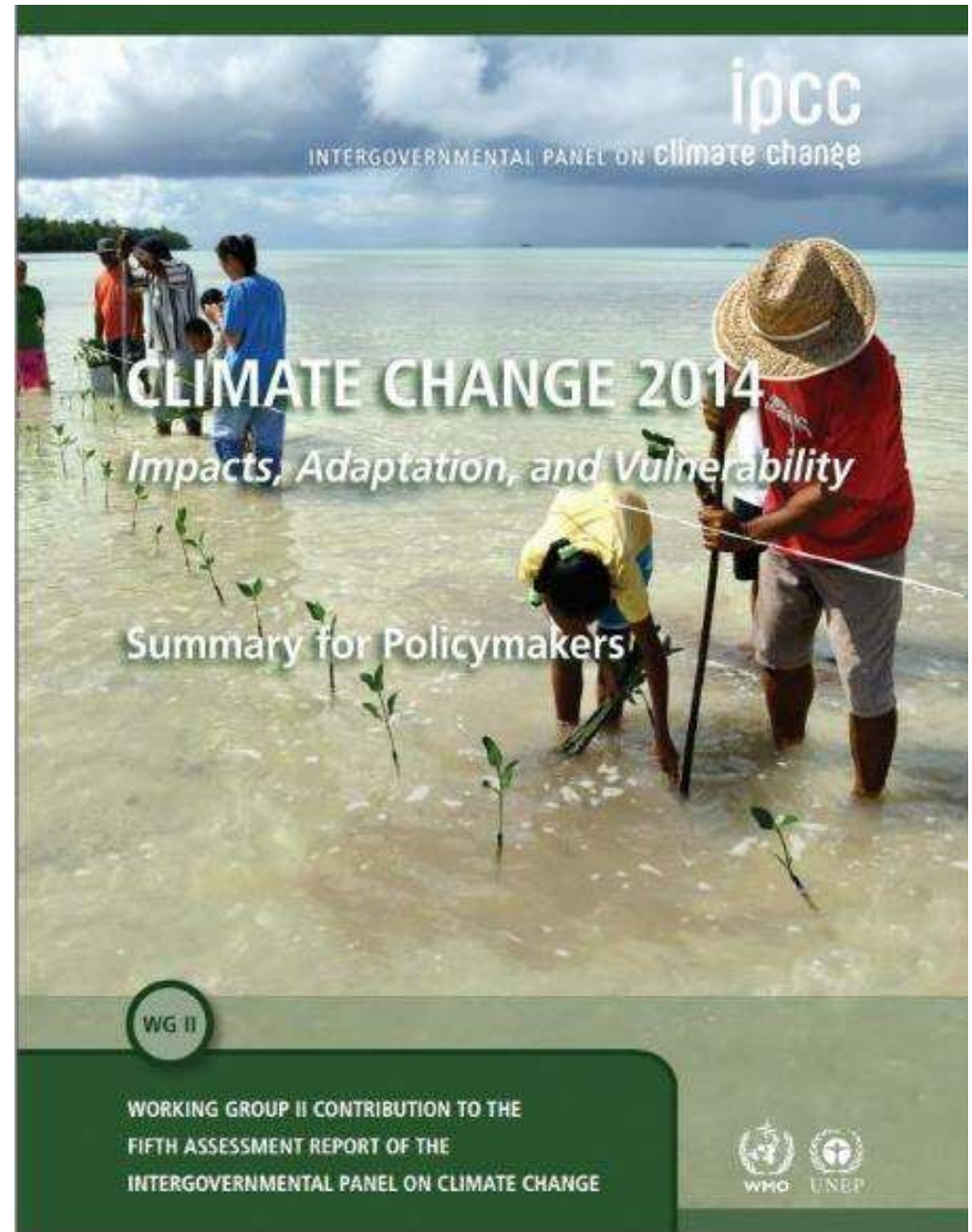
Some Definitions (IPCC AR5 WG2)

Vulnerability: The propensity...to be adversely affected ... including sensitivity or susceptibility ... and lack of capacity to ... adapt.

Risk: ...results from the interaction of vulnerability, exposure and hazard.

Adaptation: The process of adjustment to ...climate and its effects...adaptation seeks to moderate or avoid harm or exploit beneficial opportunities.

Resilience: The capacity of social, economic and environmental systems to cope with a hazardous event or trend ... maintain their essential function ...while also maintaining the capacity for adaptation...



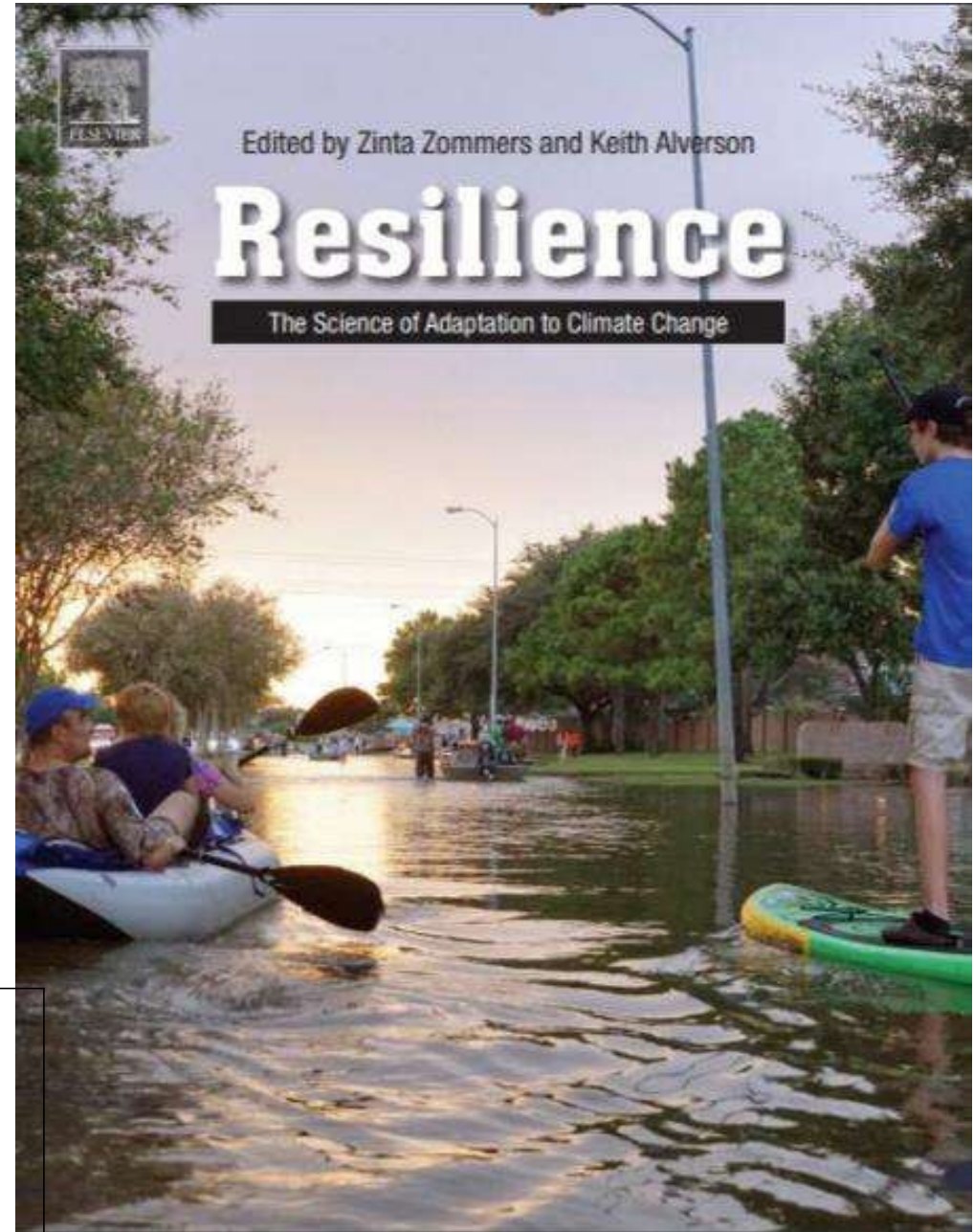
Zommers Z. and K. Alverson eds.
Elsevier, 2018
ISBN: 978-0-12-811891-7

KEY FEATURES

- Provides a summary of tools and methods used in adaptation including recent innovations
- Includes chapters from a diverse range of authors from academic institutions, humanitarian organizations, and the United Nations
- Evaluates adaptation options, highlighting gaps in knowledge where further research or new tools are needed

AUDIENCE

Scientists working in Climate Change adaptation, sustainable development, ecosystem management; environmental scientists, environmental managers, urban planners



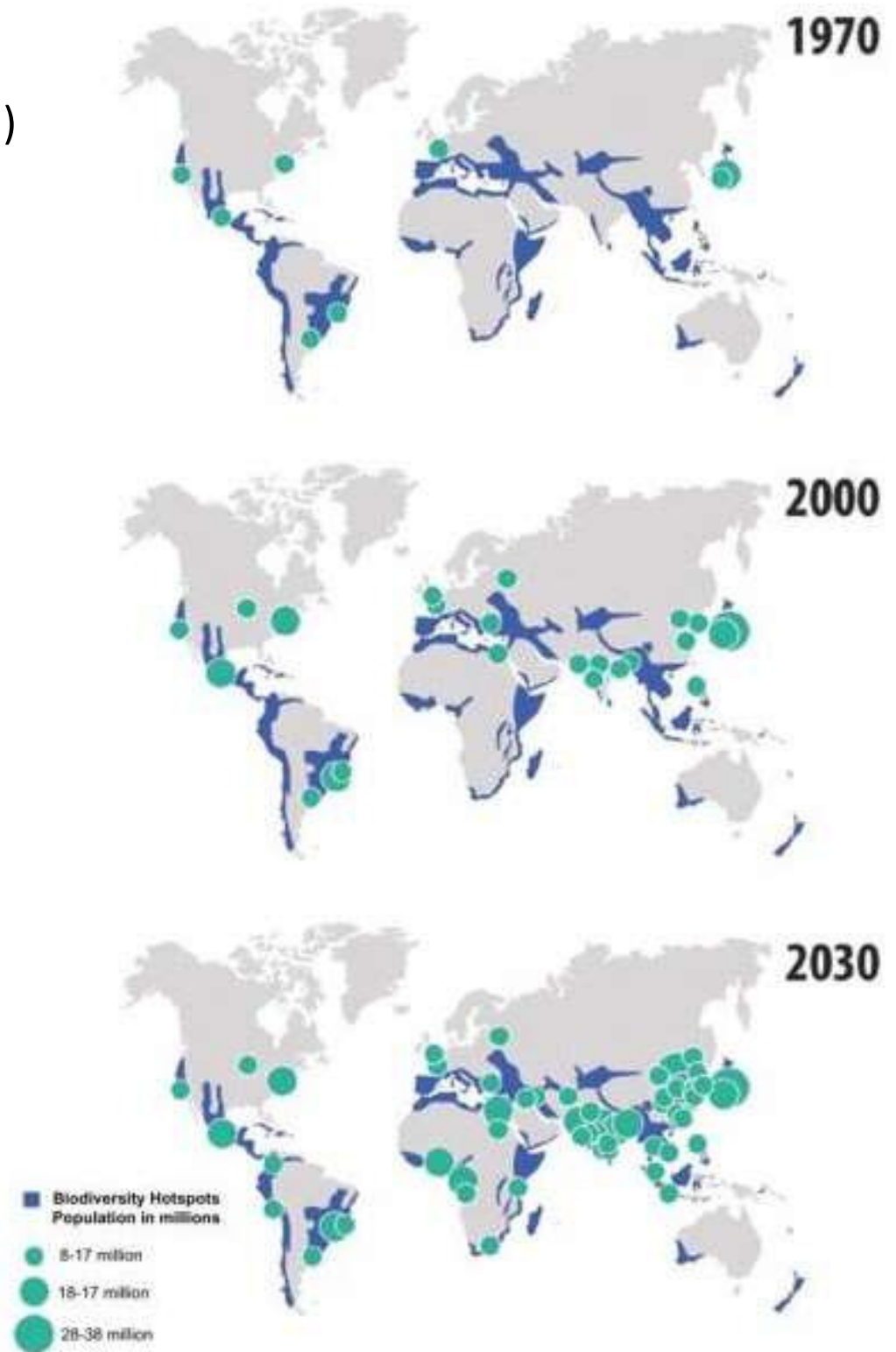
Urban Resilience

Greenwalt, Raasakka and Alverson (Ch.12)

Traditional geographic 'vulnerability impact analysis' makes little sense. Most Vulnerable and least vulnerable Populations may live in the same building! **Vulnerability is not mappable.**

Development Paradox. Least Developed countries are considered the 'most vulnerable'. Are developed **cities** the least vulnerable (compared to, say rural areas in developing countries)? What about Resilience. Just in USA can compare New Orleans after Hurricane Katrina to New York after Sandy to Puerto Rico after Maria – very different resilience challenges and successes.

Interlinkages with non-climate concerns. Example: Disaster Waste. Not separable! (GEF 'Additionality' and GCF "Climate Rationale" are dubious concepts)



Ecosystem Based Adaptation



Figure 1: Ecosystem-based Adaptation conceptualized in the Driving Forces-Pressures-State-Impacts-Responses (DPSIR) framework.

Making the Case for Ecosystem-based Adaptation

Building Resilience to Climate Change

Support by:

Support by:
 Ministry of the Environment, Planning and Economic Affairs
 Ministry of Natural Resources and Environmental Conservation
 Ministry of Agriculture, Forestry and Fisheries
 Ministry of Health and Social Services
 Ministry of Lands, Housing and Urban Planning
 Ministry of Transport and Infrastructure
 Ministry of Water Resources, Energy and Power
 Ministry of Youth, Sports and Recreation
 Ministry of Gender, Labour and Social Protection
 Ministry of Information and Public Relations
 Ministry of Education, Science and Technology
 Ministry of Home Affairs
 Ministry of Defence
 Ministry of State
 Ministry of the Interior
 Ministry of the Prime Minister's Office
 Ministry of the President's Office
 Ministry of the Vice President's Office
 Ministry of the Attorney General's Office
 Ministry of the Auditor General's Office
 Ministry of the Electoral Commission
 Ministry of the Independent Electoral and Boundaries Commission
 Ministry of the Judiciary
 Ministry of the Public Service Commission
 Ministry of the Revenue Authority
 Ministry of the Tax Authority
 Ministry of the Zamboni Corporation
 Ministry of the Zamboni Corporation
 Ministry of the Zamboni Corporation

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 ECOSYSTEM

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THE SOCIAL DIMENSION OF ECOSYSTEM-BASED ADAPTATION

Quantifying Adaptation Success and the importance of co-benefits

Ecosystem Based Adaptation

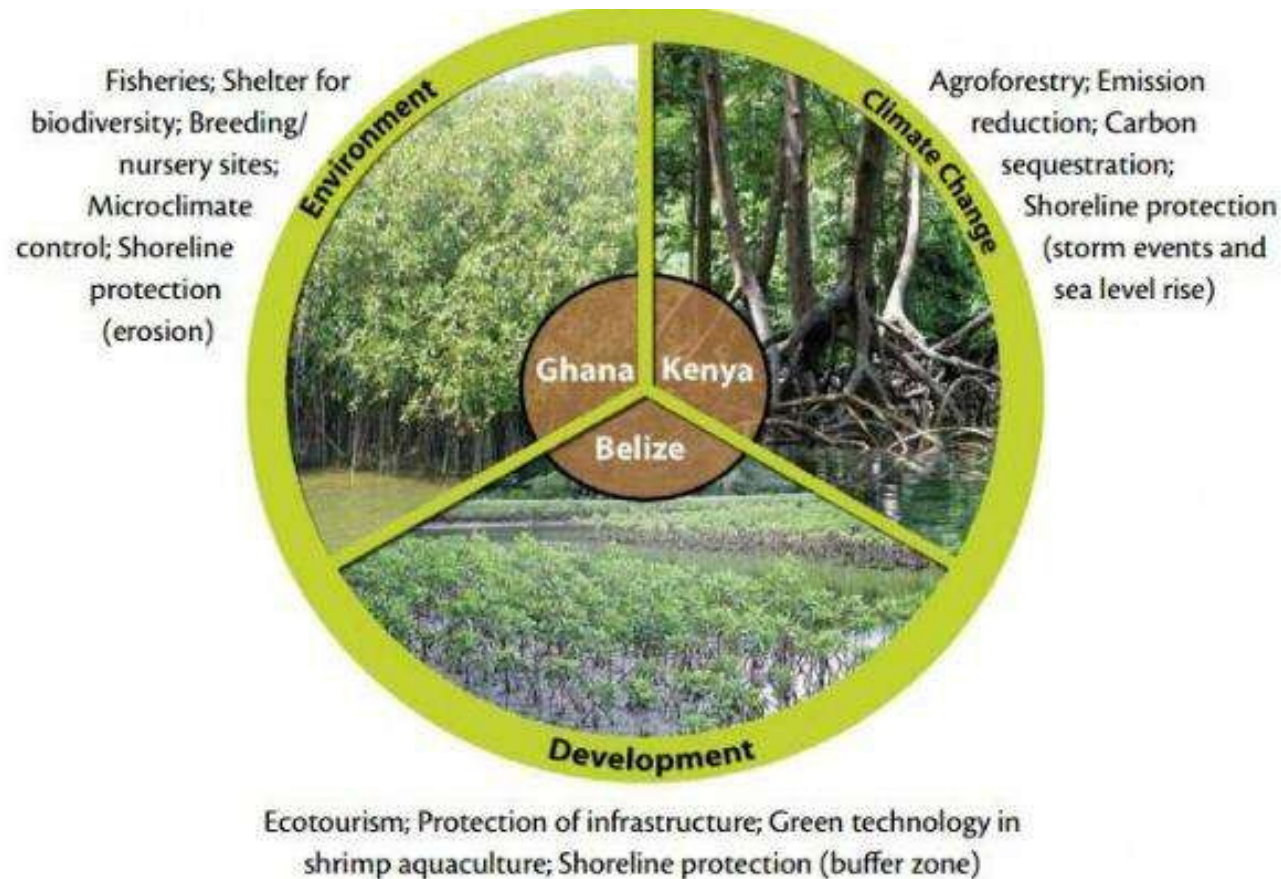


Figure 3. Mangroves occur in a wide variety of coastal habitats, protect against sea level rise, capture carbon, and provide a broad range of multiple benefits to local communities. This diagram was prepared based on activities undertaken as part of a Climate and Development Knowledge Network funded project called "Achieving triple wins: Identifying climate smart investment strategies for the coastal zone." Through case study work in coastal Ghana, Kenya, Belize, and Vietnam, the project aims to present the co-benefits (and damages) from actions that deliver climate change adaptation and mitigation. *Source: Adelina Mensah, University of Ghana*

Alverson, K. "Vulnerability, Impacts, and adaptation to sea level rise: Taking an ecosystem-based approach" *Oceanography* 25(3):231-235, 2012. <http://dx.doi.org/10.5670/oceanog.2012.101>



Analysis

Managing Climate Change Risks in Africa - A Global Perspective



Ademola A. Adenle ^{a,b,c,*}, James D. Ford ^d, John Morton ^e, Stephen Twomlow ^f, Keith Alverson ^g,
Andrea Cattaneo ^h, Raffaello Cervigni ⁱ, Pradeep Kurukulasuriya ^j, Saleemul Huq ^k,
Ariella Helfgott ^l, Jane O. Ebinger ^m

Conclusions:

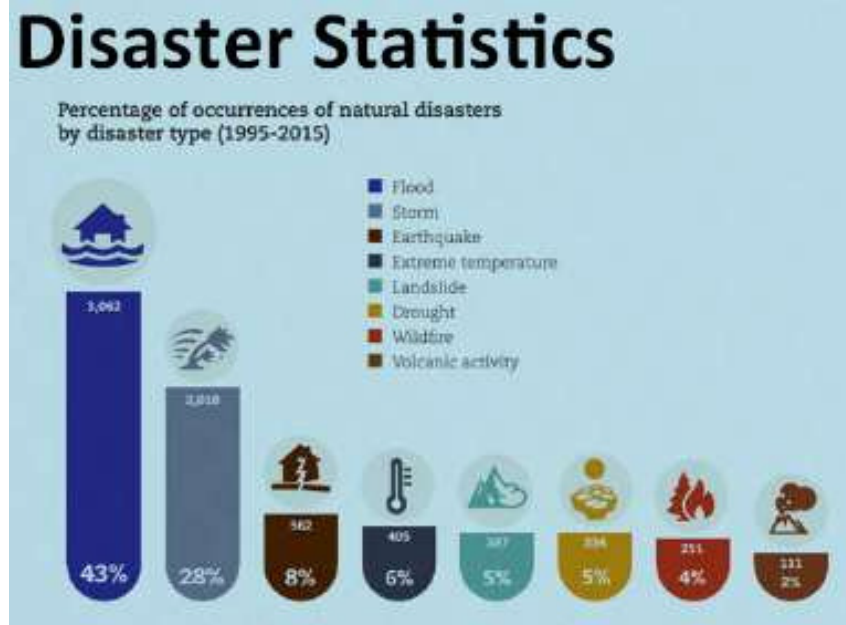
- 1) Climate data, scenarios and impact models are insufficient for supporting adaptation, particularly as they relate to food systems ...
- 2) The adaptation response to date has been limited, fragmented, divorced from national planning processes and with limited engagement with local expertise.
- 3) Adaptation policies and programs are too narrowly focused on explicit responses to climate change rather than responses to climate variability or broader development issues.
- 4) Adaptation finance is insufficient and procedures for accessing it present challenges for governments ...

Recent Disasters in Caribbean



Building Resilience - Disaster Waste Management

- Integrating disaster contingency planning in national and city level waste management strategies
- Mainstreaming waste management issues within broader disaster preparedness and response plans
- Projects in Nepal, Philippines, Dominica





Ministry of Infrastructure and Water Management



Swedish Civil Contingencies Agency

Disaster Waste Management Training for the Caribbean

Montego Bay, Jamaica, 9-10 October 2018



in conjunction with the 2nd High Level Forum for Caribbean Ministers Responsible for Waste Management. Over 25 representatives from 11 countries participated in the 2-day training programme.

2018 Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR)

Ulaanbaatar, Mongolia, 3-6 July 2018

Special parallel session on Enhancing Resilience through Disaster Waste Management and Building Back Better



MINISTRY OF ENVIRONMENT AND TOURISM



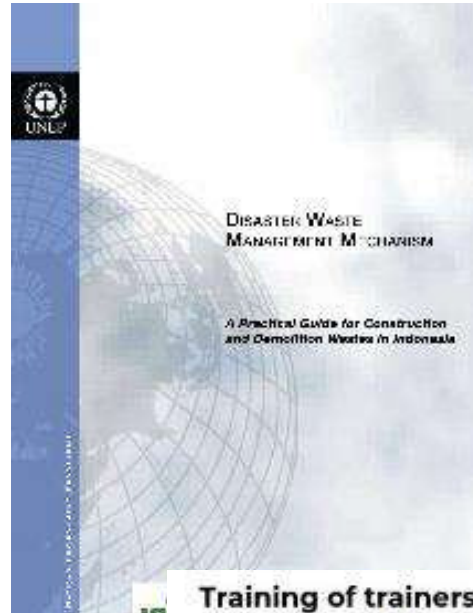
The Asia Foundation

IETC's Tools/guidelines

Guidelines on Disaster Waste Management for flooding for Local Administrations

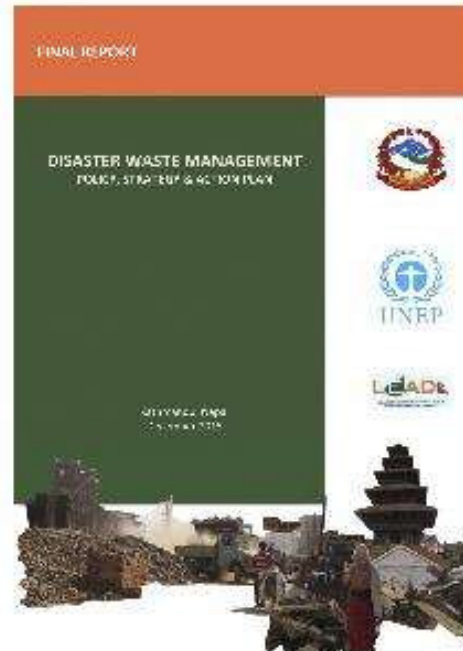


United Nations Environment Programme
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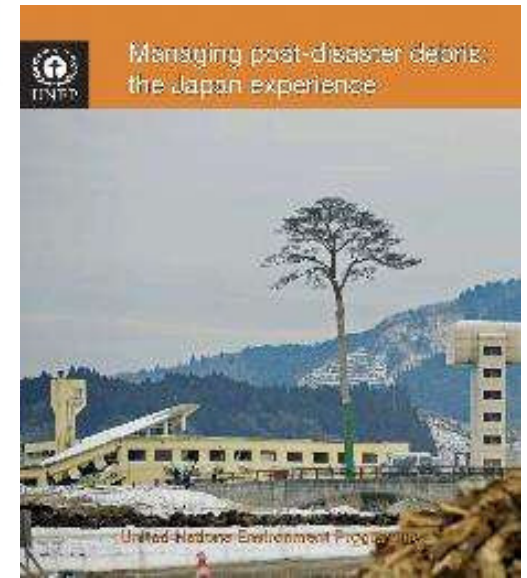
DISASTER WASTE MANAGEMENT MECHANISM

A Practical Guide for Construction and Demolition Wastes in Indonesia



FINAL REPORT

DISASTER WASTE MANAGEMENT: POLICY, STRATEGY & ACTION PLAN



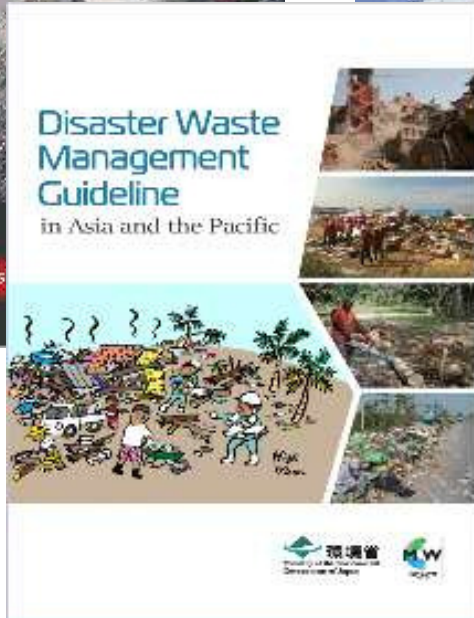
Managing post-disaster debris: the Japan experience

United Nations Environment Programme



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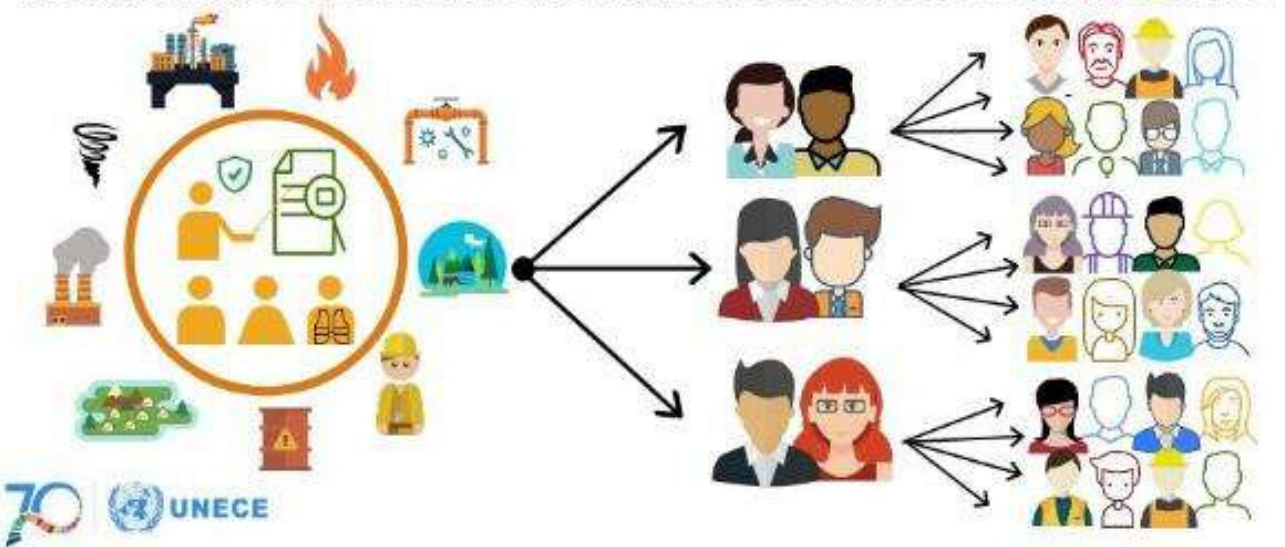
Disaster Waste Management Guidelines



Disaster Waste Management Guideline in Asia and the Pacific

環境省
Ministry of the Environment
UNEP
UNEP

Training of trainers on environmental emergencies and hazardous industrial activities



Thanks!

to our funders:

**Japan, Germany, Sweden, Norway
European Commission, GEF ...**



and our partners:

Osaka City, ISWA, GEC, IGES-CCET ...



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