Environmentally Sound Recovery: From an Economist's Perspective

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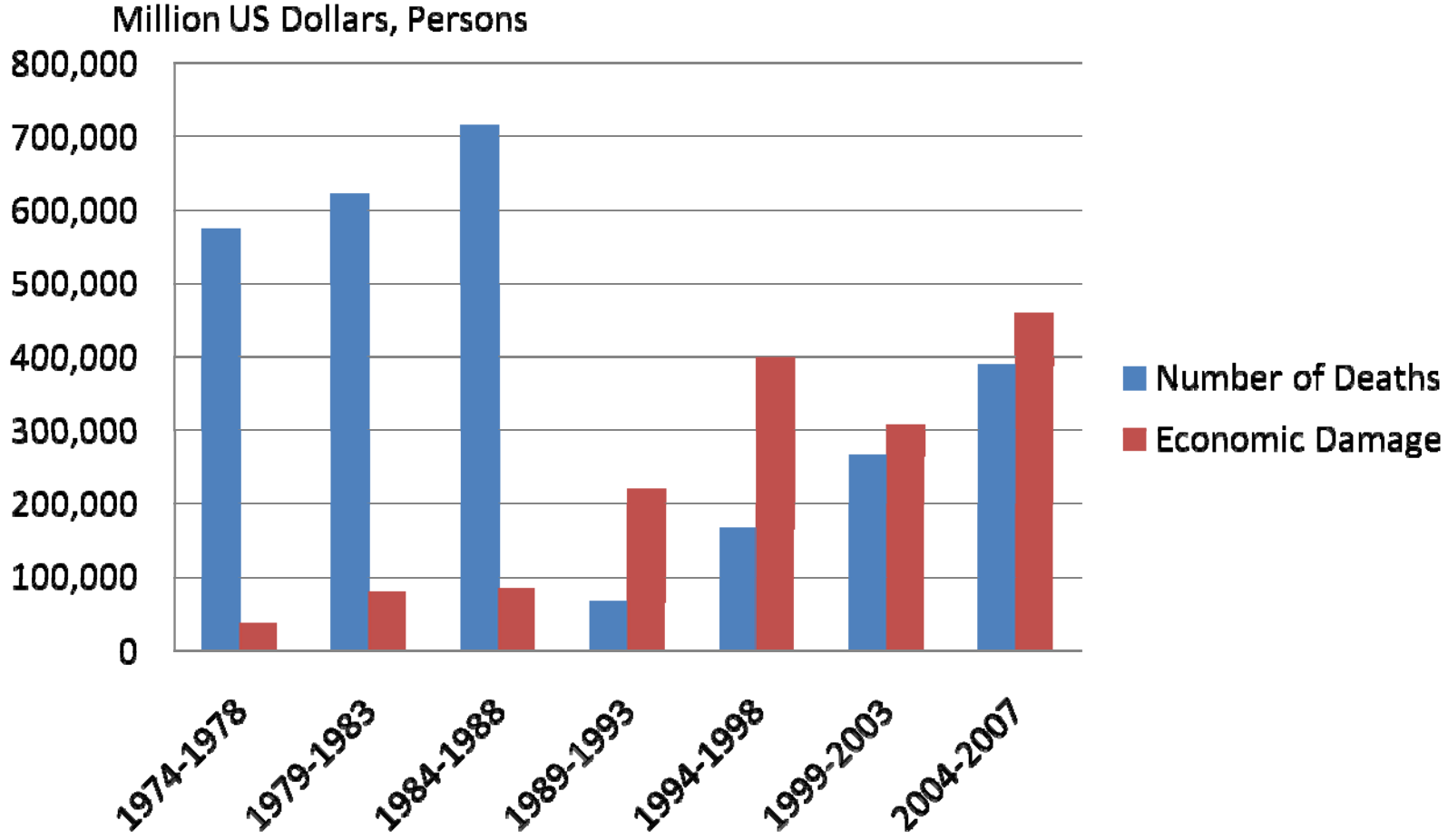
Environmentally Sound Recovery: From an Economist's Perspective

1. Overview from an Economist's Perspective
2. Environmentally Sound Recovery
3. International Disaster Recovery Fund: A Proposal
4. Instituting Incentives

Economic Dimensions of Disasters

- Direct Impacts
  - Loss of physical assets
  - Loss of human capital
  - Loss of businesses
  - Financing immediate response
- Indirect and Long-Lasting Effects
  - Lost business opportunities
  - Delayed economic development
  - Financing long-run recovery

Human and Economic Dimensions



Source: EM-DAT, UN

Human Lives as Economic Damage

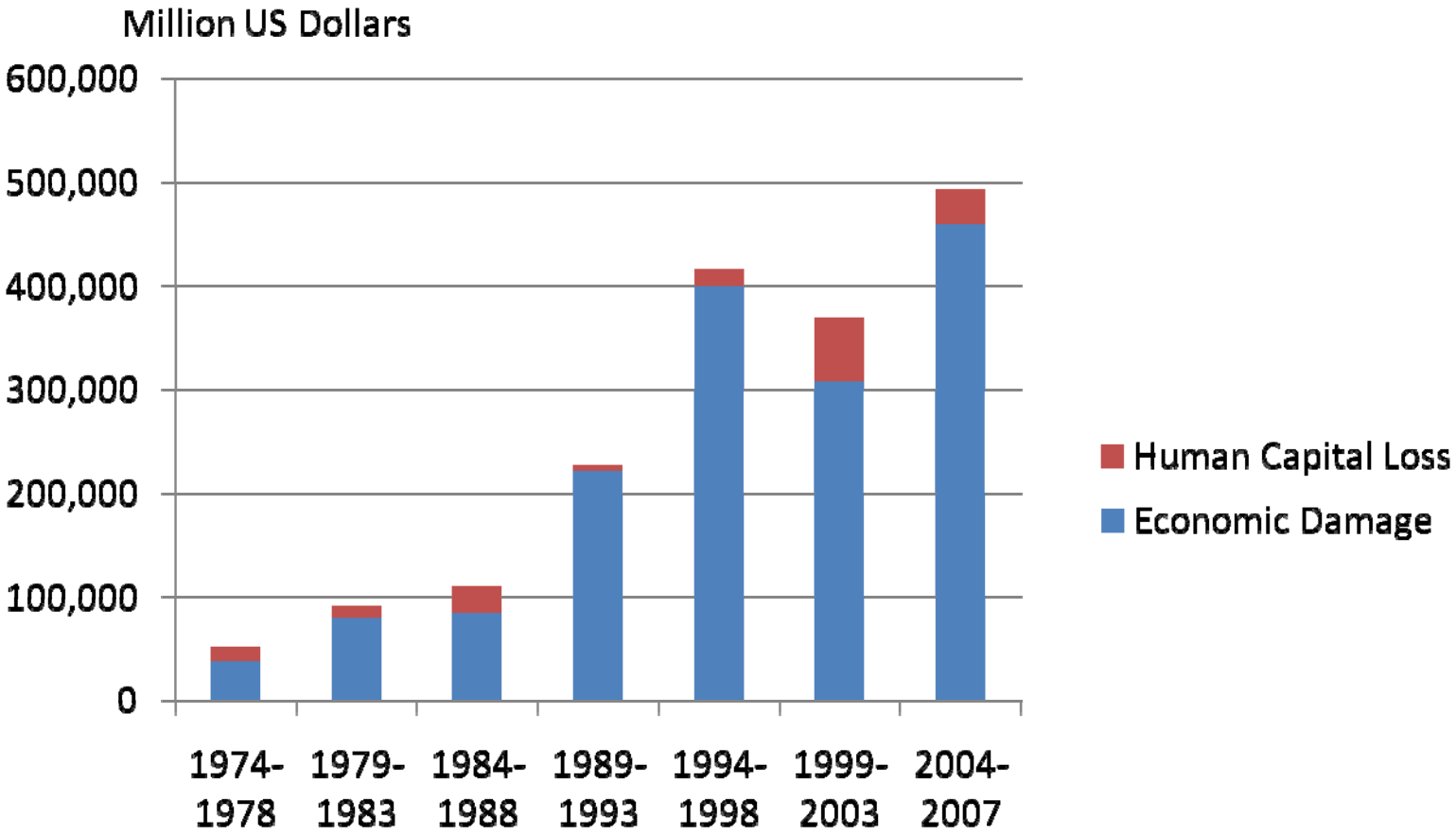
Using a simple calculation,

$$Human\ Capital\ Loss = Number\ of\ Deaths \times Per\ Capita\ GDP \times 20$$

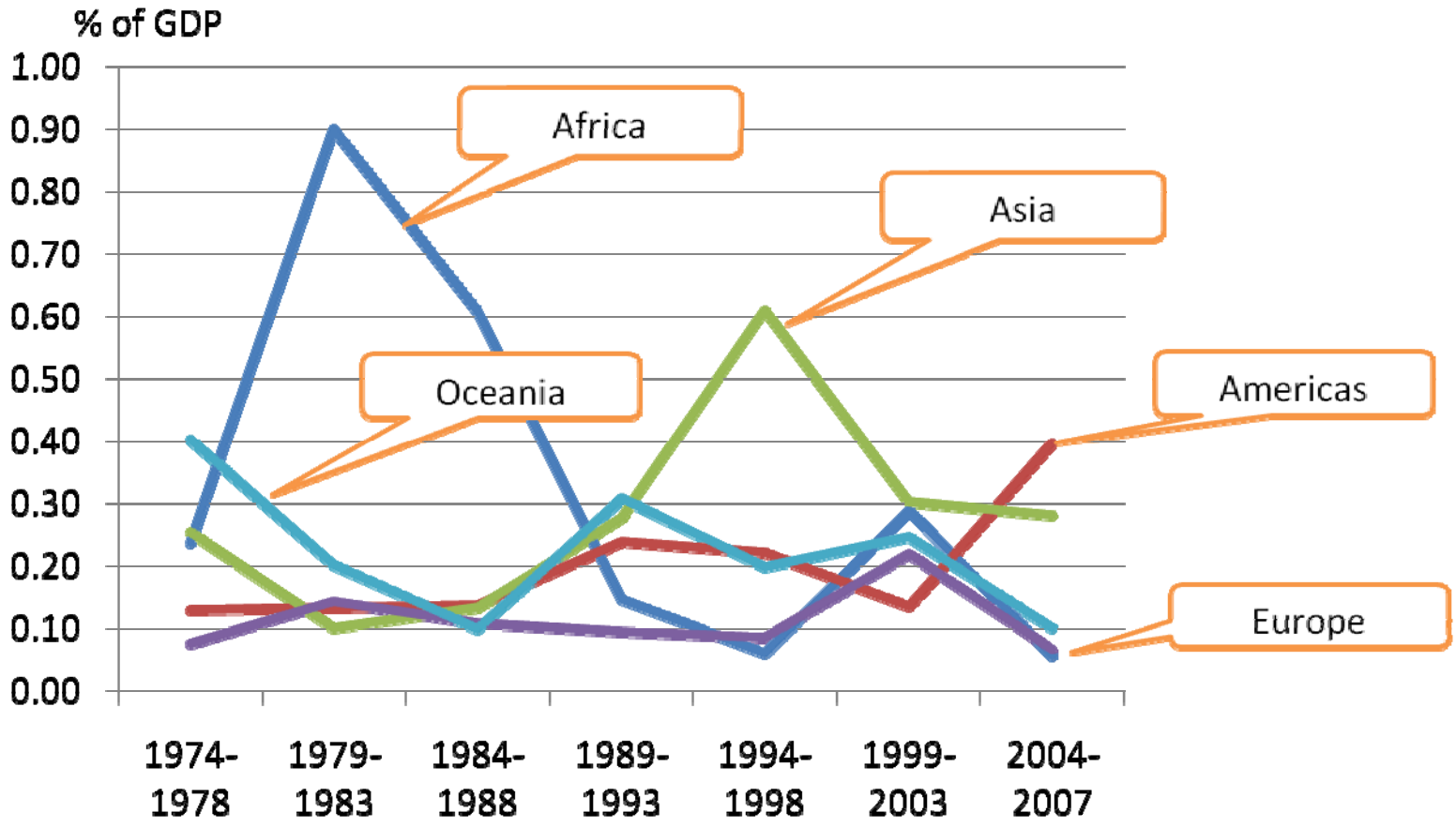
Kobe 1995	$ 5 billion
9.11 U.S. 2001*	$ 8.7 billion
Ache 2004	$ 3.9 billion
Sichuan 2008	$ 4 billion

* *Thompson Report*, 2002

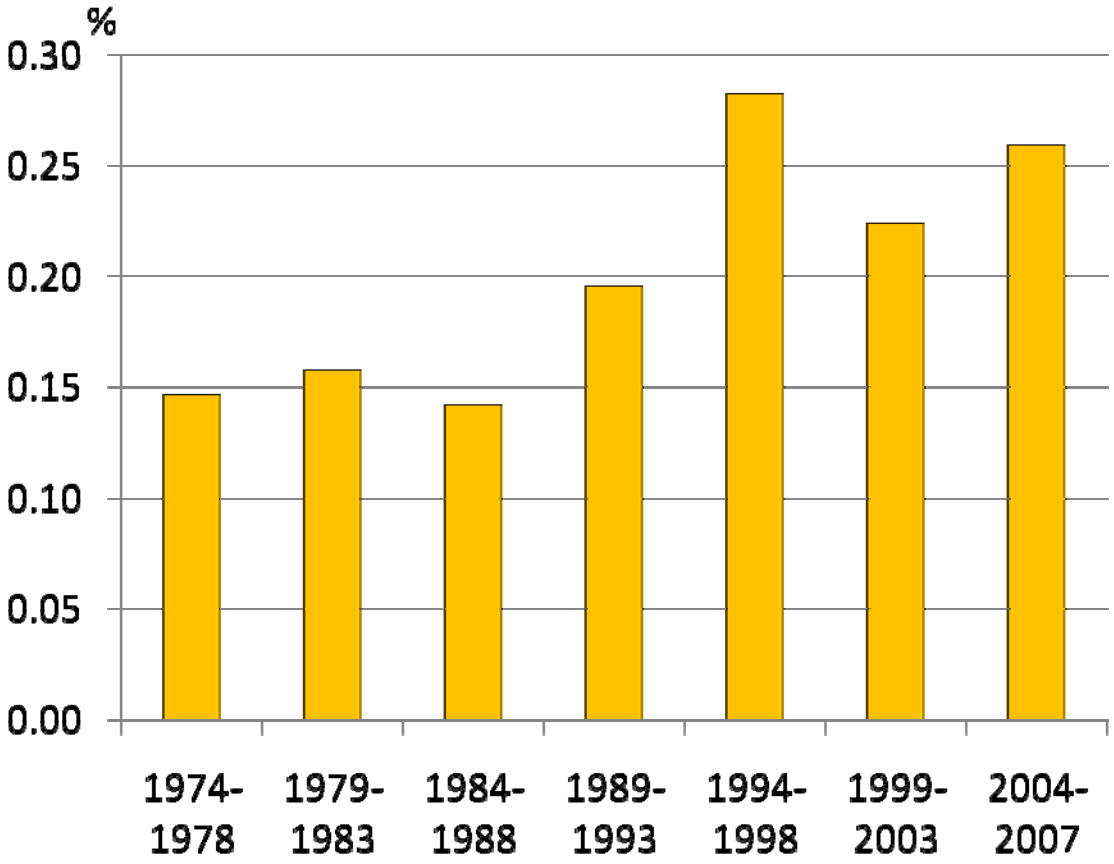
Total Economic Damages



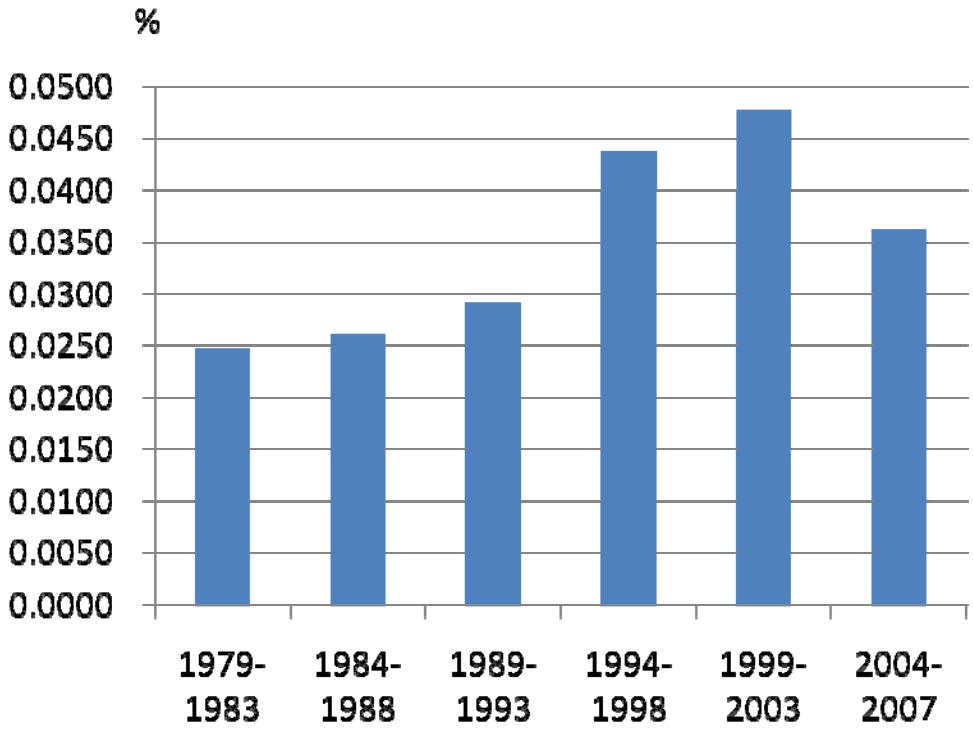
Regional Disparity



World Total Damage as % of GDP



Outlays Needed for Restoration as % of World GDP



0.04% of annual GDP need be allocated for recovery every year.

Environmental Restoration

- Need to develop methodology for measurement and assessment.

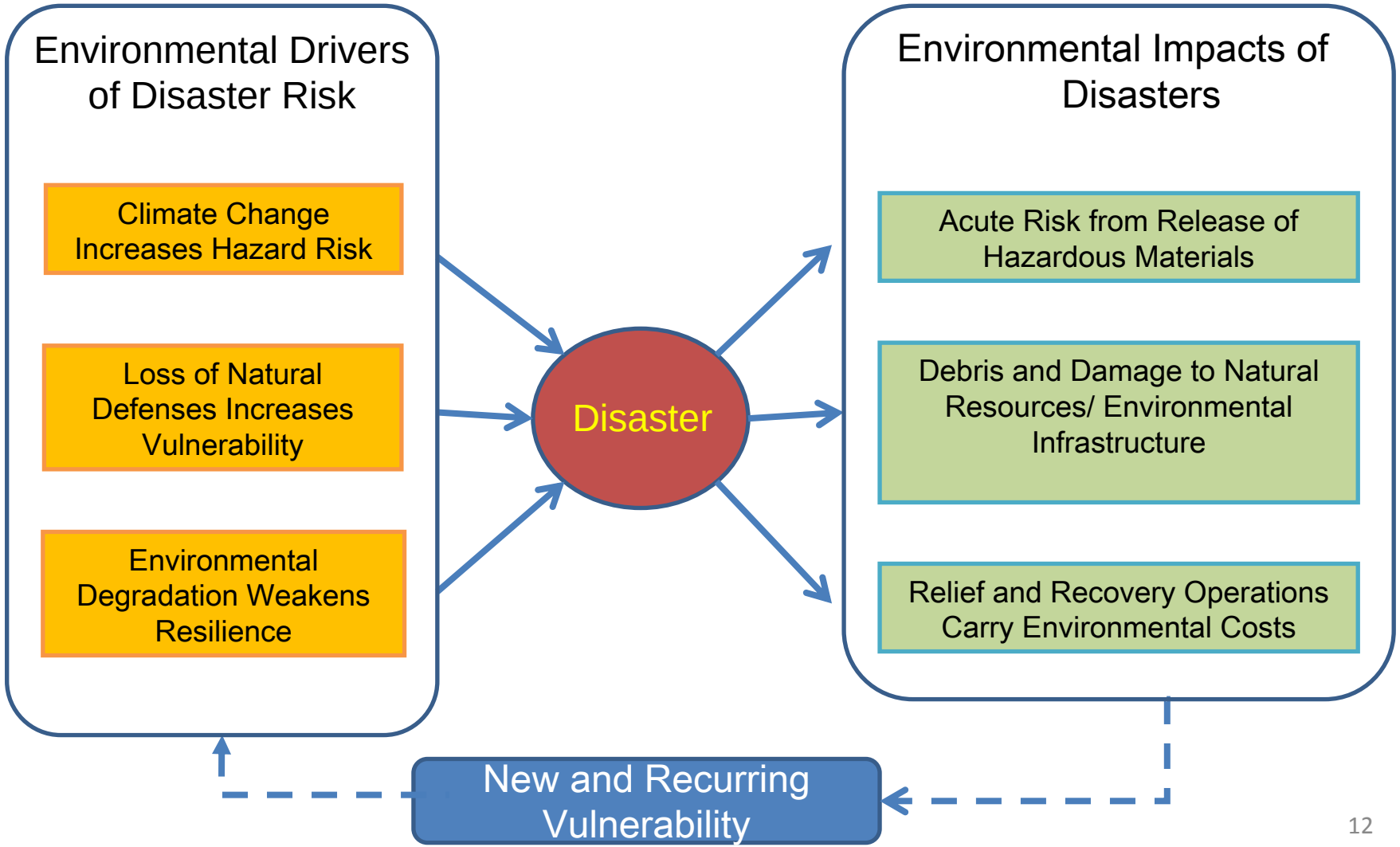
- Need to estimate environmental damages.

Disaster Risk

$$Risk = \frac{Hazards \times Vulnerability}{Capacity}$$

International Strategy for Disaster Reduction, 2002

Environmental Causes and Consequences



The Hanshin-Awaji Earthquake 1995

Immediate Impact

Number of deaths = 6,434

Affected people = 316,678

Amount of debris = 20 million tons

Number of people who lost homes =647,260

Estimated economic damages = $ 100 billion

Gift economy = max 7% of market economy

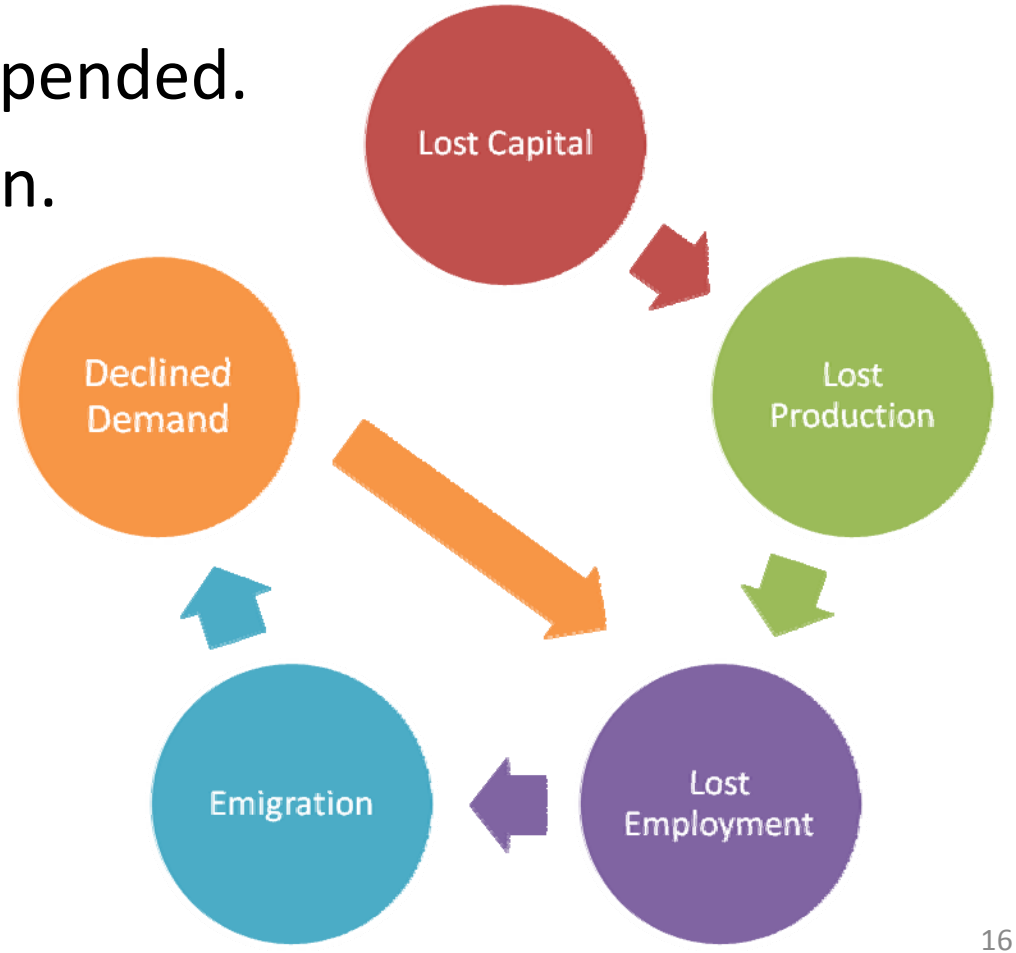
No looting or corruption reported.

Lost Physical Capital

- Buildings $ 58 billion
- Port Facilities $ 10 billion
- Industrial Facilities $ 6.3 billion
- Highways $ 5.5 billion
- Gas and Electricity's $ 4.2 billion
- Railways $ 3.4 billion
- Schools $ 3.4 billion

Indirect Economic Damages

– Lost regional GDP $ 26 billion
– Development suspended.
– Vicious cycle set in.



Cost of Recovery

- Reconstruction demand in value added term

  = $ 7.7 billion
- 70% provided by private sector
- 30% provided by public sector

Long-Run Effects on Local Finance

- Affected localities such as Kobe City and Ashiya City are still suffering from the legacy of the disaster.

- Localities are heavily indebted which must be repaid by the next generation.

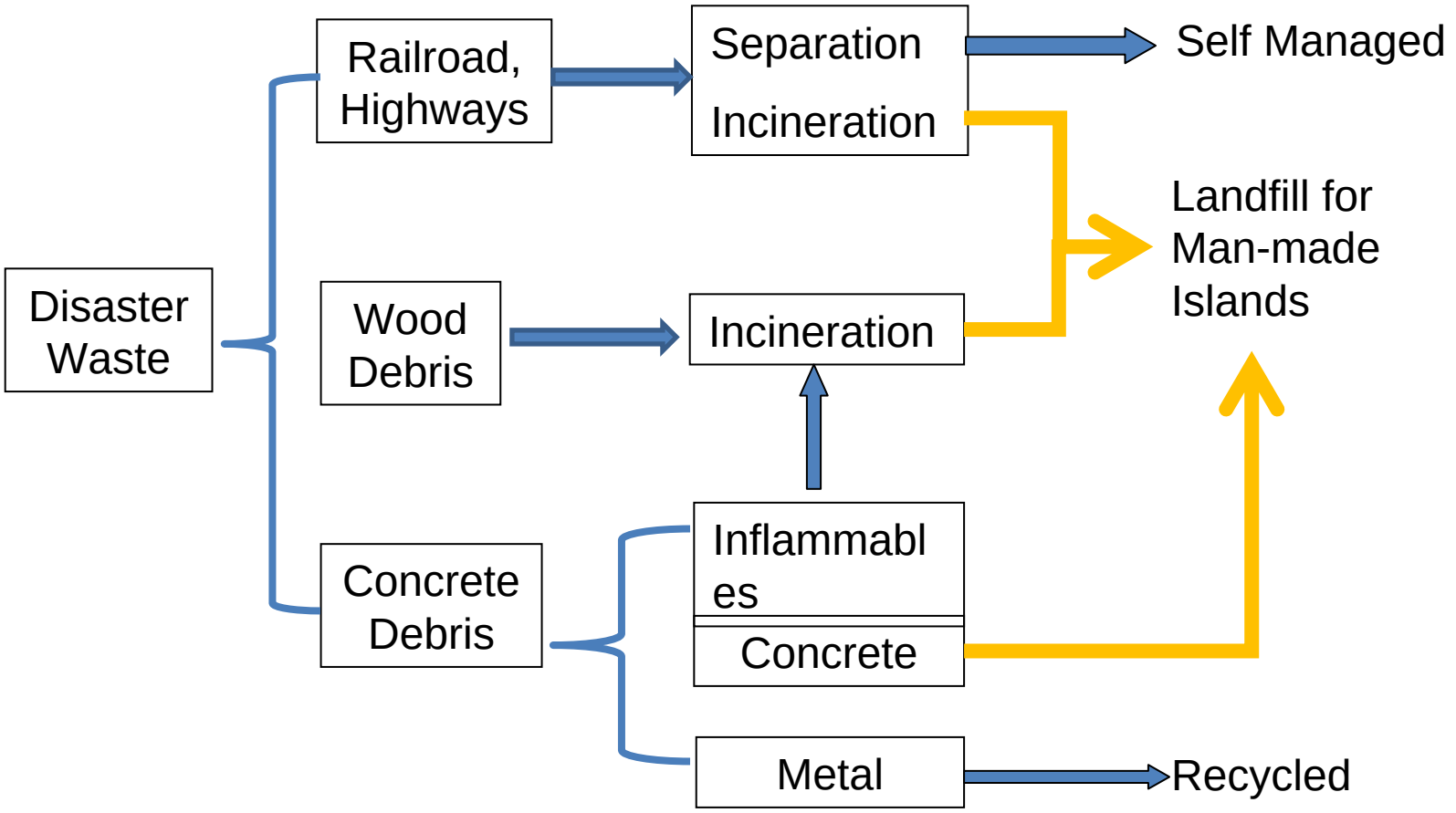
Possible Environmental Threats

- Emergency workers faced toxic chemicals
- Huge debris cleanup
- Rebuilding infrastructure
- Temporary housing
- Remodeling the city landscape

What Happened in Kobe

- Debris Cleanup
  - 20 million Tons of debris needed cleanup immediately.
  - Most of them used to landfill for man-made islands along the shore.
  - No case of environmental degradation reported.
  - No case of violation of the Inland Sea Law reported.
  - Long-run effect is yet to be seen.

Waste Disposal Scheme



What Happened in Kobe

- Rebuilding Infrastructure
  - The fallen part of the Hanshin Highway was rebuilt in the same place with reinforced structure.
  - Building an underground pass or re-routing over the sea was vigorously debated to reduce air pollution but only to fail. The construction cost was cited as the main reason.

What Happened in Kobe

- Temporary Housing
  - 48,300 units of temporary housing were built by local governments in a number of locations.
  - They were supposed to cater for emergency needs for 3 months, But it was after 5 years that the last family could move out.
  - The temporary houses were prefabricated buildings. They were reused for the Turkey-2,700units Taiwan-600units disaster by the Japanese Government.

What Did Not Happen in Kobe

- As part of revitalization plan, the idea of restaurant on the sea or pleasure Island were contemplated but did not materialize.
  - The main reason was that those projects would violate the inland sea of Seto law.

What Did Not Happen in Kobe

- Toxic chemicals like asbestos may take 15 years to cause lung cancer.
  - Concern on emergency workers health condition.
  - Concern on the long-run health implications for affected people.

What Did Not Happen in Kobe

- Landfill unchecked.
  - Apparently no laws were violated or regulations tolerated.
  - Long-run effect is yet to be seen.

What Did Not Happen in Kobe

- The city was rebuilt by the affected people, business and governments.
- New developments paid much attention to the safety and security conscerns.
- If people paid more attention to environment, a greener reconstruction including long-range city planning would have been possible.
- In reality, environment was not on the top priority list.

What Did Not Happen In Kobe

10 volumes of Annual Recovery Report

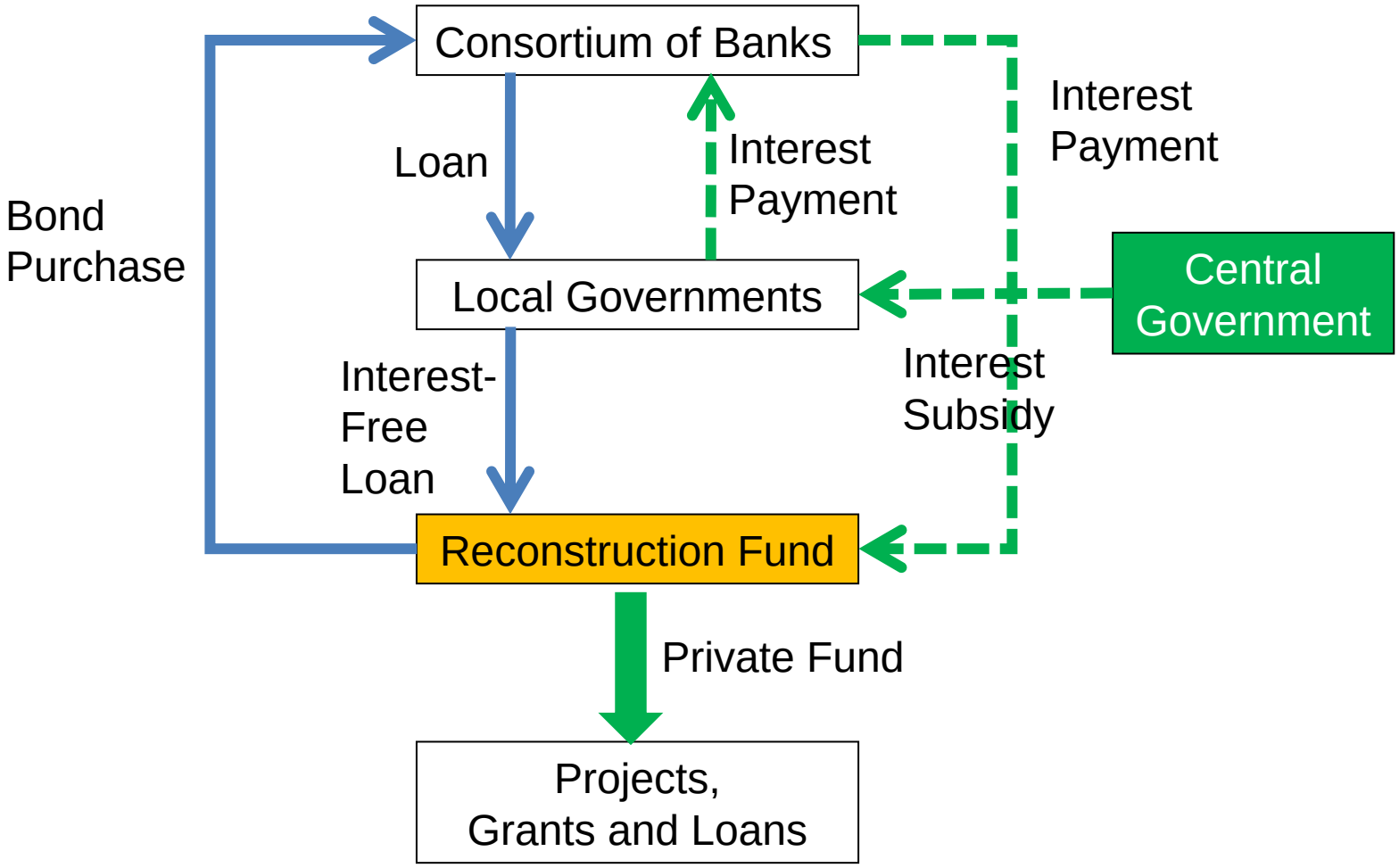
The 10th Anniversary Inspection Repot

- No particular mention to environment.

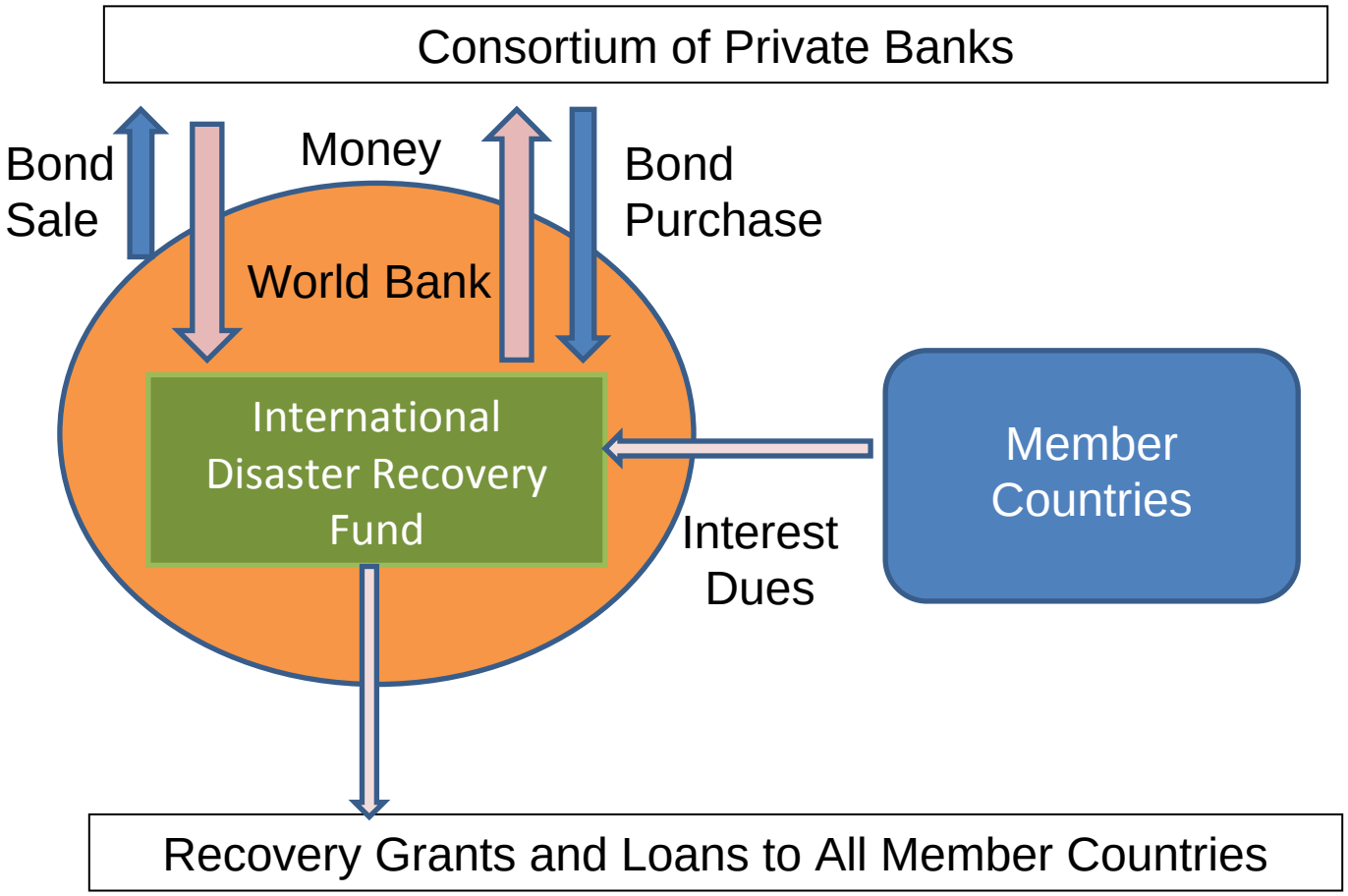
George D. Haddow and Jane A. Bullock, *Introduction to Emergency Management*

Long-term environmental recovery may include cleanup and restoration of public facilities, businesses, and residences; re-establishment of habitats and prevention of subsequent damage to natural resources; protection of cultural or archeological sites; and protection of natural, cultural, and historical resources from intentional damage during other recovery operations. (p.135)

The Earthquake Restoration Fund of Kobe

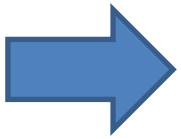


International Disaster Recovery Fund



Japan's ODA, FY2008

Source of Funds	
General Account	$7.00 billion
Special Account	$ 0.13 billion
Bond	$ 1.46 billion
FILP	$ 6.52 billion



Use of Funds	
Grant	$1.75 billion
Technology Assistance	$3.25 billion
UN and others	$0.6 billion
World Bank and others	$1.70 billion
Loan in Yen	$ 7.81 billion

Gross $ 15.1 billion

For Japanese Government

- 0.04% of GDP = $2 billion
- This amounts to a 13.2% of total ODA.
- Consolidating accounts Japanese Government should be able to meet the obligation when the fund is established.

Integrated Approach Needed

- Integration of human, economic and environmental recovery is the key.

- Coordination of the bottom-up approach and the objective of greener build-back is necessary.

The Instrument for Recovery

- IDRF must be administered as a fund in the World Bank.
- IDRF assistance should be applied to all disaster affected countries equally.
- IDRF should give preference to greener and safer recovery.

Incentive and Coordination

- International Disaster Recovery Fund can provide the platform for coordination for green recovery among:
  - Donors
  - Emergency Workers
  - Planners
  - Self-supporting people
  - Governments involved
  - Politicians

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Thank you for your attention.

Photos are adapted from
Hyogo Prefectural Environmental Create Center Public Corporation, 1997, *Saigai Haikibutsu no Shori no Kiroku* (Record of Disaster Waste Disposal), Disaster Reduction and Human Renovation Institution