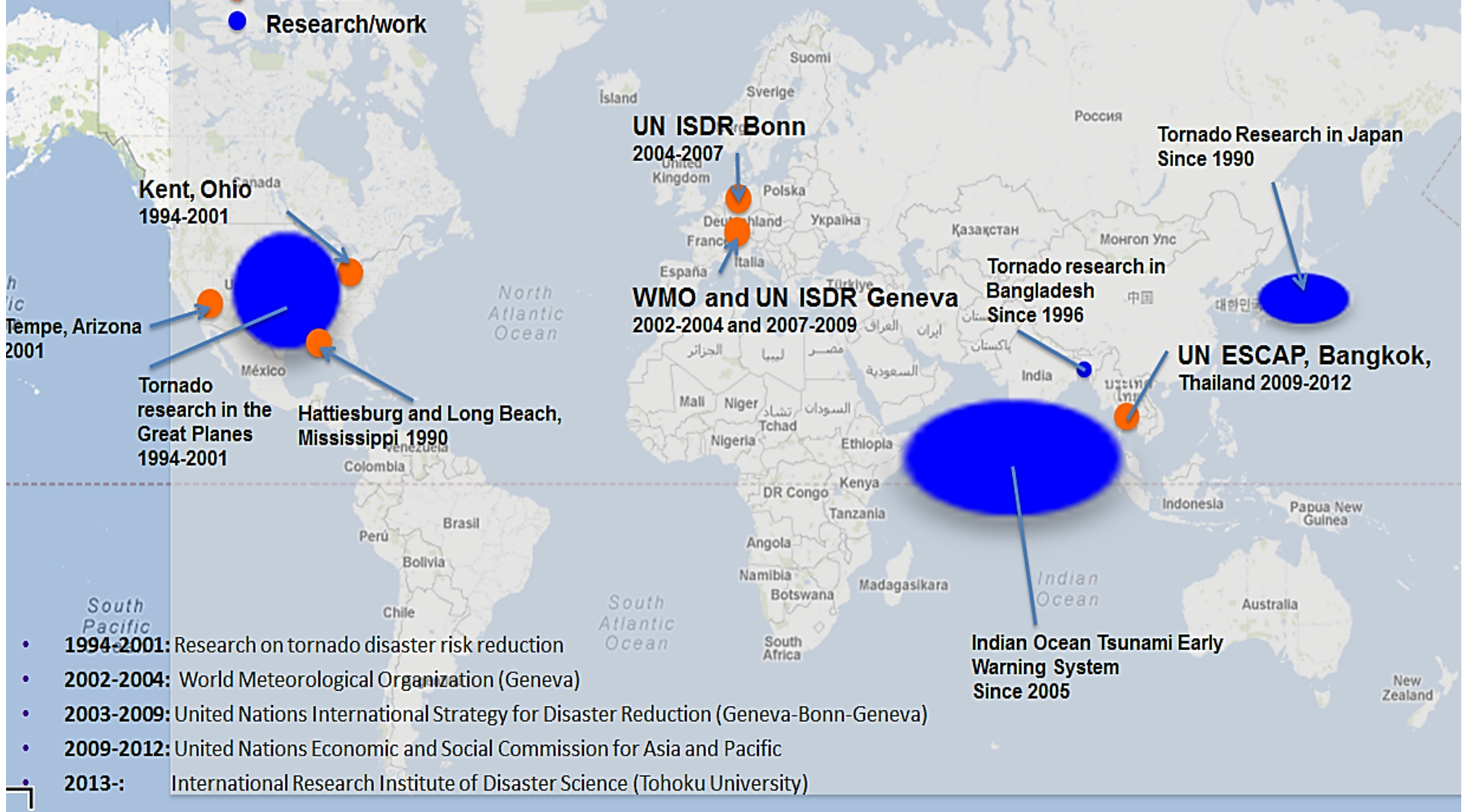


Follow up work on the Sendai Framework for Disaster Risk Reduction

Yuichi Ono / 小野 裕一
Assistant Director and Professor
International Research Institute of Disaster Science
Tohoku University

Past working experiences – Yuichi ONO

- Resident
- Research/work

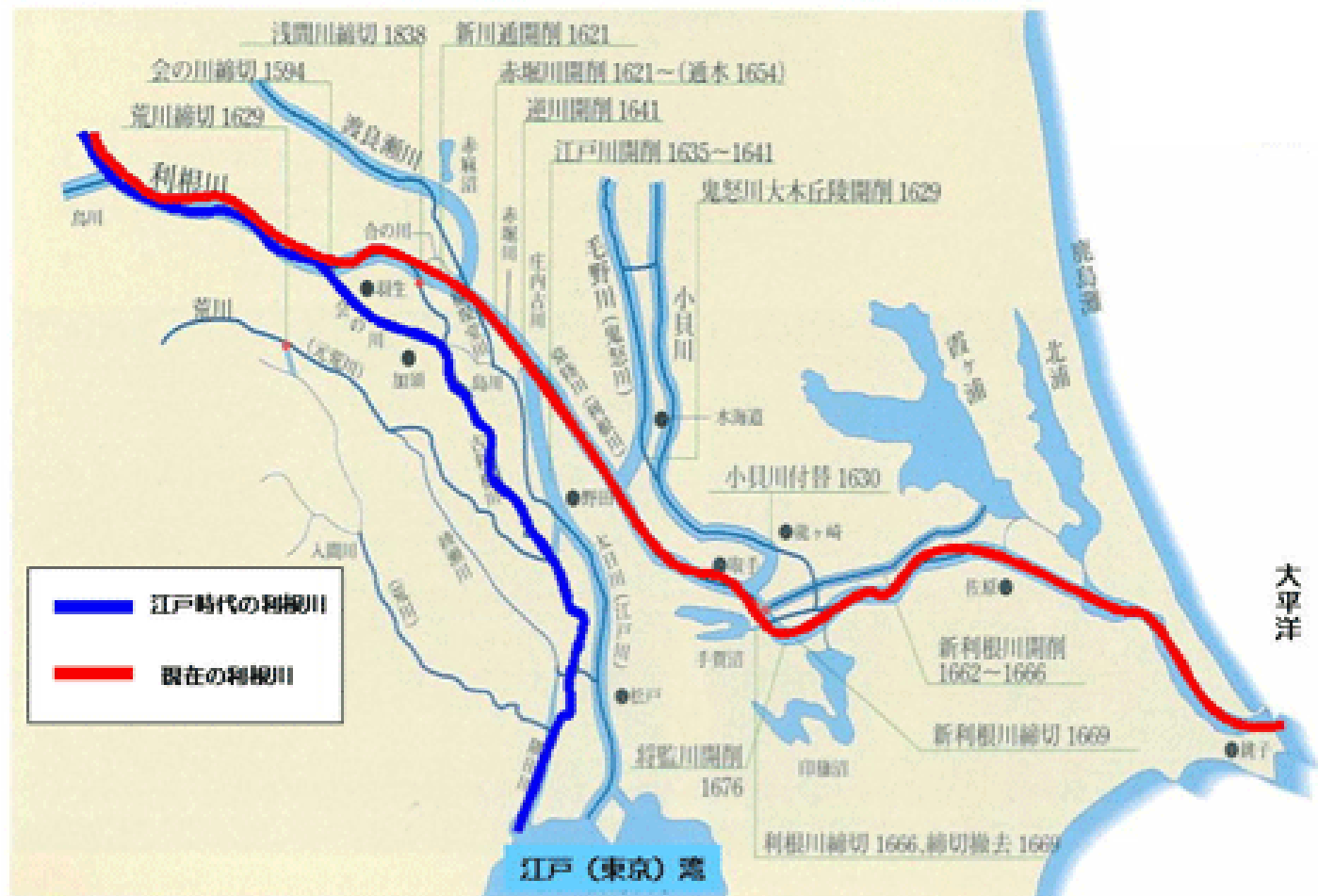


History of Disaster Risk Reduction

LOOOOOOOOOOOOOOOOOOONG

History as long as human history

Human beings live with disaster risks



Blue: Tone-river before 1654

Red: since 1654 (now)

Those that win the Yellow River
wins the world

Homework until Friday

Search on sayings/proverbs related
to disaster risk reduction in your
country

Important to manage disaster risk as government/ruler

- even now

For those leaders who failed to manage disaster risks have been taken out

- French Health Minister in 2003
(22,000-35,000 died from heat wave)
- Hurricane Katrina in 2006 changed US policy
on climate change
(1,800+ died)
- Myanmar opened the gate for international
community after the Cyclone Nargis in 2008
(138,000 died)
- Prime Minister of Japan in 2011
(near 20,000 died)

Promote International Movement on Disaster Risk Reduction

- Too late to respond to disasters
- Paradigm shift to reduce disaster risks



Bitter lessons learnt from the 1970 East Pakistan Cyclone

produced

Cyclone Preparedness Programme in Bangladesh - 1971



Cyclone Preparedness Program

Early Warning System, flags and loud speakers, International Cooperation, Shelter, Evacuation, Public Awareness and Education, Volunteers, Community-based strategy, traditional knowledge, protecting animals, etc.



The Pakistan/Bangladesh Tragedy
triggered a new global
movement to manage disasters

from

Disaster management

to

Disaster reduction

1990-99 International Decade of Natural Disaster Reduction (IDNDR) --- with a secretariat for a 10-year term

1992 Department of Humanitarian Affairs (DHA) established and the UNDRO was united

1997 Office for the Coordination of Humanitarian Affairs (OCHA) established and the DHA was united

1994 Japan hosted a first World Conference on Disaster Reduction in Yokohama --- [Yokohama Strategy and Plan of Action](#) --- culminating the IDNDR movement

Late 1990s IDNDR malfunctioned (then, WB, IFRC, UNDP – struggled for supremacy)

2000- International Strategy for Disaster Reduction (ISDR)

2000- International Strategy for Disaster Reduction (ISDR)

2005 Japan hosted a second World Conference on Disaster Reduction in Kobe, [Hyogo Framework for Action](#)

2015 Japan hosted a third World Conference on Disaster Risk Reduction in Sendai, [Sendai Framework for Disaster Risk Reduction \(refined framework and targets\)](#)

Sendai Framework for Disaster Risk Reduction

仙台防災枠組



What is
it?

Value of the SFDRR

A negotiated document through the UN process
- committed by 187 countries



Sendai Framework for Disaster Risk Reduction 2015-2030

Adopted by 187 countries at the World Conference on Disaster Risk Reduction, 18 March 2015

I. Preamble

II. Expected outcome and goal

Seven targets

III. Guiding principles

IV. Priorities for action

Priority 1: Understanding disaster risk

Priority 2: Strengthening disaster risk governance to manage disaster risk

Priority 3: Investing in disaster risk reduction for resilience

Priority 4: Enhancing disaster preparedness for effective response,
and to “Build Back Better” in recovery, rehabilitation and reconstruction

V. Role of stakeholders

VI. International cooperation and global partnership

Targets

17. To attain the expected outcome, the following goal must be pursued:

Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.

The pursuance of this goal requires the enhancement of the implementation capacity and capability of developing countries, in particular the least developed countries, small island developing States, landlocked developing countries and African countries, as well as middle-income countries facing specific challenges, including the mobilization of support through international cooperation for the provision of means of implementation in accordance with their national priorities.

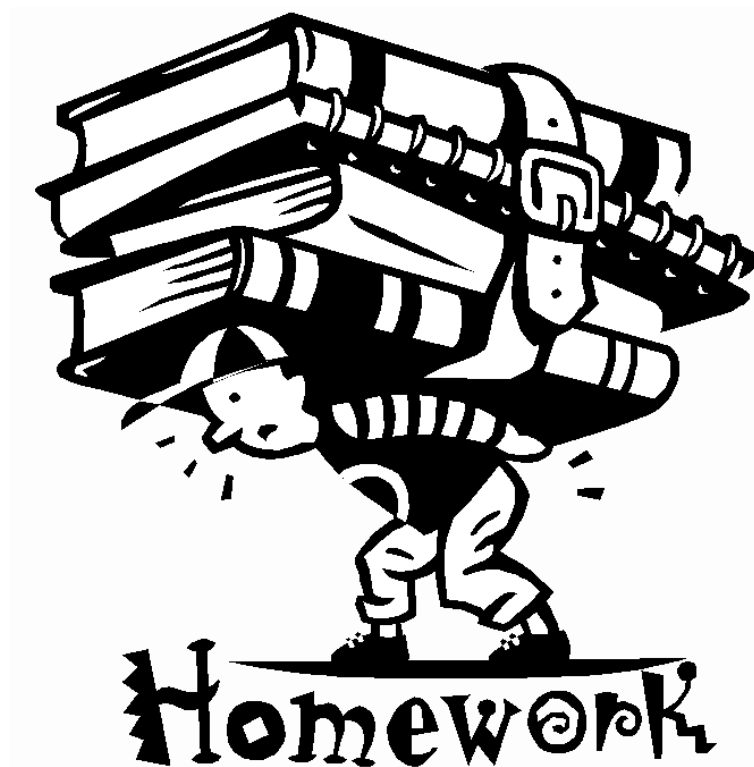
Adopted targets in the Sendai Framework for Action

18. To support the assessment of global progress in achieving the outcome and goal of this framework, seven global targets have been agreed. These targets will be measured at the global level and will be complemented by work to develop appropriate indicators.

National targets and indicators will contribute to the achievement of the outcome and goal of this framework.

The seven global targets are:

- (a) Substantially reduce [global disaster mortality](#) by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015.
- (b) Substantially reduce the number of [affected people globally](#) by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015.
- (c) Reduce [direct disaster economic loss](#) in relation to global gross domestic product (GDP) by 2030.
- (d) Substantially reduce [disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities](#), including through developing their resilience by 2030.
- (e) Substantially increase the [number of countries with national and local disaster risk reduction strategies](#) by 2020.
- (f) Substantially enhance [international cooperation to developing countries](#) through adequate and sustainable support to complement their national actions for implementation of this framework by 2030.
- (g) Substantially increase the [availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people](#) by 2030.



Item 49: What processes?

Item 50: Indicators to monitor
the SFDRR



Working Texts on Indicators

Based on negotiations during the Second Session of the Open-ended Inter-governmental Expert Working Group on Indicators and Terminology relating to Disaster Risk Reduction held in Geneva, Switzerland,
10-11 February 2016

Issued on 3 March 2016

Reissued with factual corrections on 24 March 2016

Global Target A: Substantially reduce global disaster *mortality* by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015.

[A-1 Number of [deaths / **deceased**] and [missing [**persons**] / **presumed dead**] due to hazardous events per 100,000.]

[A-1 alt. - **Number of deaths, missing, injured, displaced or [evacuated] due to hazardous events per 100,000.**]

[A-2 - Number of [deaths / **deceased**] due to hazardous events.]

[A-3 - Number of [missing [**persons**] / **presumed dead**] due to hazardous events.]

Global Target B: Substantially reduce the number of *affected people* globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015.

[B-1 - Number of affected people [**by hazardous event / due to hazardous events**] per 100,000.]

[B-2 - Number of injured or ill people due to hazardous events.]

[B-2 alt. - **Number of people suffering from physical injuries, trauma or cases of disease requiring immediate medical assistance as a direct result of a hazardous event.**]

[B-3 - Number of people who left their [places of residence / **home**][**and places where they are**] due to hazardous events.]
(SDG proposal (in that this indicator combines B-3a and B-3b): Consistency with SDG proposal needed.)

[B-3a - Number of [evacuated people / **people who are saved**] due to hazardous events [**after the event**]]
(SDG proposal: Consistency with SDG proposal needed.)

Note: Evacuated addresses the people *temporarily* moved from their place of residence. This indicator can be interpreted as proxy for success indicator of early warning system and risk information accessibility in Target G.

[B-3b - Number of relocated people due to hazardous events.]

(SDG proposal: Consistency with SDG proposal needed.)

Note: Relocated addresses the people *permanently* moved from their place of residence. This indicator excludes preventive relocation before the event.

[B-3c – Number of people protected per 100,000.]

[B-3d - **Refugees who left their place of residence on their own.**]

Replace all with:

[B-3 alt. – **Number of people displaced due to hazardous events.**] OR

[B-3 alt-bis. - Number of people evacuated, relocated and displaced due to hazardous events.]
[B-4 - Number of people whose [houses / dwelling s or homes] were damaged due to hazardous events.]
[B-5 - Number of people whose [houses / dwelling s or homes] were destroyed due to hazardous events.]
[B-6 - Number of people who [received / required] [food relief aid / aid including food [and non-food] and medical aid] [among other things] due to hazardous events.]
Note: This indicator may be restricted only for the case of droughts. The indicator is not easily comparable inter-temporarily and inter-nationally due to the influence of national and international relief policy.
[B-7 - Number of people whose livelihoods were disrupted, destroyed or lost due to hazardous events.]
Global Target C: Reduce <i>direct disaster economic loss</i> in relation to global gross domestic product (GDP) by 2030.
[C-1 - Direct economic loss due to hazardous events [in relation to global gross domestic product.] (This indicator should be computed based on indicators C-2 to C-7 and GDP figures).]
C-2 - Direct agricultural loss due to hazardous events. (The indicator measures (1) crops (estimated by agricultural land), [and] (2) livestock[, (3) fisheries and (4) forestry.])
C-3 - Direct economic loss due to industrial facilities damaged or destroyed by hazardous events. Note: Countries are required to report number of industrial facilities damaged or destroyed.
C-4 - Direct economic loss due to commercial facilities [and services] damaged or destroyed by hazardous events. Note: Countries are required to report number of commercial facilities damaged or destroyed.
[C-5 - Direct economic loss due to houses damaged by hazardous events]
[C-6 - Direct economic loss due to houses destroyed by hazardous events]
[C-7 - Direct economic loss due to damage to [critical infrastructure / public infrastructure] caused by hazardous events.] (This indicator should be computed based on indicators D-2, D-3 and D-4 (road)).
[C-8 – Direct economic loss due to cultural heritage damaged or destroyed by hazardous events.]
[C-9 – Direct economic loss due to environment degraded by hazardous events.]
[C-10 – Financial transfer and access to insurance.]
[C-11 – Direct economic losses due to disruptions to basic services.]
[C-12 – Direct economic loss due to services sectors (such as transportation, tourism, finance) caused by hazardous events.]

Global Target D: Substantially reduce *disaster damage to critical infrastructure and disruption of basic services*, among them health and educational facilities, including through developing their resilience by 2030.

D-1 - Damage to critical infrastructure due to hazardous events.

(This index should be computed based on indicators D-2, D-3 and D-4 (road).)

[D-1 bis. - Number of electricity plants and transmission towers destroyed or damaged by hazardous events.]

[D-2 – [Number / percentage] of health facilities [including mental health services.] destroyed or damaged by hazardous events.]

[D-2a. Number of health facilities removed from risk areas.]

[D-3 - [Number / percentage] of educational facilities destroyed or damaged by hazardous events.]

[D-3a. - Number of educational facilities removed from risk areas.]

D-4 - [Number / percentage] of [major] transportation [units and] infrastructures destroyed or damaged by hazardous events.

Note: the indicator measures (1) road (in kilometres of paved/unpaved), (2) railway (in kilometres), (3) port (number of facilities) and (4) airport (number of facilities).

[D-4a. – Extent of damage to ports and airports]

[D-4b. – Kilometres of road destroyed/damaged by hazardous event.]

[D-4c. – Number of bridges destroyed/damaged by hazardous event.]

[D-4d. – Kilometres of railway destroyed/damaged by hazardous event.]

[D-4e. – Number of days airport(s) have been closed due hazardous event.]

[D-4f. – Number of days port(s) have been closed due hazardous event.]

[D-4g. – Number of days telecommunications breakouts have been experienced due hazardous event.]

[D-4h. – Number of days power breakouts have been experienced due to hazardous event.]

[D-4i. – Number of days without water supply due to hazardous event.]

[D-4j. – Number of days without sanitation services due hazardous event.]

D-5 – [Number / Length / Percentage] of [time / days / person days] basic services have been disrupted due to hazardous events.

Note: Sectors monitored include healthcare services, education services, transport sector, ICT, water supply, sewage system, solid waste management, power/energy system and emergency response.

[D-6 – [Number / Percentage] of education or health facilities [removed from risk areas / retrofitted.]]

[D-7 - [Number / percentage] of security service structures destroyed or damaged by hazardous events.]

[D-8 - [Number / percentage] of tourist infrastructure facilities destroyed or damaged by hazardous events.]

[D-9- Number of states with resilience programmes or strategies for health and education facilities.]
[D-10 – Number of communication infrastructure destroyed or damaged by hazardous events.]
[D-11 – Percentage of education facilities developed under the safe school program.]
[D-12 – Percentage of health facilities developed under the safe hospital program.]
[D-13 – Number of agricultural facilities destroyed or damaged by hazardous events.]
[D-14 – Number of water and sanitation infrastructures destroyed or damaged by hazardous events.]
[D-15 – Number of days financial services have been disrupted due to hazardous events.]
Global Target E: Substantially increase the number of countries with <i>national and local disaster risk reduction strategies</i> by 2020
E-1 - Number of countries that adopt and implement national DRR strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030. Note: the DRR strategies need to be based on risk information and assessments.
[E-1 alt. - Number of countries with national DRR strategies for implementation of the Sendai Framework for DRR.]
[E-2 – Percentage of local governments that adopt and implement local DRR strategies in line with the [Sendai Framework for Disaster Risk Reduction 2015-2030 / national disaster risk reduction strategy]. Note: the DRR strategies need to be based on risk information and assessments.
[E-2 alt. - Number of countries and local governments that adopt and implement local and sector specific DRR strategies in line with the Sendai Framework for Disaster Risk Reduction.]
[E-2 alt-bis. - Percentage of local governments with DRR strategy for implementation of national strategy for the Sendai Framework for DRR.]
[E-2a – Percentage/number of local governments that have adopted or committed to the new 10 essentials defined in the UNISDR global campaign “Making Cities Resilient.”]
[E-3 – Number of countries that [integrate / integrated] [climate and disaster risk / climate change / adaptation] into [development planning / development plan].] Note: This indicator also functions as indicator contributing to the outcome of the Target C “economic loss”
[E-3 alt. - Number of countries that have integrated DRR and climate change into their national development plan.]
[E-4 – Number of countries that adopt and implement critical infrastructure protection plan.]

[E-4 bis. - Number of countries with resilience programmes or strategies for health and education facilities in the framework of the DRR plans.]

[E-4 ter. - Number of sector/hazard specific DRR strategy/plan developed in a country.]

Note: This indicator directly supports progress of Target D and indirectly contributes to reduction of affected people (Target B) and economic loss (Target C).

[E-5 - Number of countries with cross-sectoral bodies/forums, with clear roles and responsibilities identified across state institutions, civil society, private sector and international actors, in the implementation and review of DRR measures.]

[E-5 alt. - Number of countries that adopt and implement specific DRR strategies in line with the Sendai Framework for DRR, including through cross-sectoral bodies/forums with identified roles and responsibilities, as appropriate, for relevant actors.]

[E-6 - Number of countries accounting for future risk in public and private balance sheets, setting financial targets to inform investment strategies for reducing risk and enhancing future prosperity.]

[E-7 - Number of countries and local governments conducting (independent) periodic outcome reviews of the implementation of national and local DRR strategies.]

[E-8 - Number of countries that adopt and implement sector specific DRR strategies in line with the Sendai Framework for Disaster Risk Reduction.]

[E-9 – Number of countries that have national financing mechanisms for DRR.]

[E-10 – Number of countries that have spatial and land use planning mechanisms for DRR.]

[E-11 - Number of countries that mainstream DRR into national development planning.]

[E-12 – Number of people protected by evacuation, improved infrastructure and other relevant measures that reduce the possible impact of disasters on people.]

[Footnote: Disaster mitigation and protection measures could include, as appropriate, a wide range of activities before, during and after disasters by relevant actors.]

[E-13 – Number of people who received/require relief aid or assistance due to a hazardous event.]

[Footnote: Relief aid or assistance could include, inter alia, food, medicine, medical care and shelter.]

Global Target F: Substantially enhance *international cooperation* to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030

[Chapeau: This indicator directly supports the developing countries' implementation of the Sendai Framework and the fulfilment of the global goals.]

Category (a) Financial resources

[F-1 – [Level of / Percentage of gross national product that represents the] non-earmarked [adequate] support provided by developed countries and reported by developing countries.]

[F1 alt. - Percentage of earmarked ODA provided by developed countries and reported by developing countries.]

Category (a) Financial resources

[F-2 - Number of developed countries having a policy marker as part of the legislation on provisions for support to developing countries to enhance the implementation of the Sendai Framework and the fulfilment of the global goals.]

Category (b) Technology development and transfer

[F-3 - Progress on the implementation of paragraph 47 of the Sendai Framework, in particular subparagraphs 47(a) and 47 (b).]

Category (b) Technology development and transfer

[F-4 - Progress in using the regional platforms for [exchanging experiences and / exchange of best practices, technology and capacity building in] enhancing South-South cooperation for the implementation of the Sendai Framework.]

Category (c) Capacity building

[F-5 – [Level of support provided / Number of projects and programmes funded] by international organizations in line with paragraph 48 of the Sendai Framework.]

Category (a) Financial resources

[F-6 - Net ODA for disaster risk reduction, [total and to LDCs] as a percentage of total ODA.]

Category (a) Financial resources

[F-7 - Number of countries supported in implementing national DRR strategies by aligned programmes of entities of the UN System.]

[F-7 alt. - Amount of resources given to support developing countries' implementation of national DRR strategies by programmes of entities of the UN system and other relevant stakeholders.]

Category (a) Financial resources

[F-8 - Number of international (multilateral/bilateral) financial institutions that systematically integrate climate [change adaptation] and disaster risk [reduction] into [the design, implementation and evaluation of Official Development Finance / urban planning etc.]]

Category (b) Technology development and transfer

[F-9 - Number of countries with international and regional initiatives for the exchange of science, technology and innovation in disaster risk reduction.]

[F-9 alt. - Number of developed countries supporting developing countries' regional initiatives for the exchange of science, knowledge, technology and innovation in DRR.]

Category (b) Technology development and transfer

[F-10 - Total amount of funding within ODA to promote the development, transfer, dissemination and diffusion of DRR-related science, technology and innovation (STI).]

Category (c) Capacity building

[F-11 - Number of international and regional multi-stakeholder partnerships established to build [individual, institutional and societal capacity for disaster risk reduction. / DRR capacity in developing countries and the economic value of such partnerships.]]

[F-11 alt. Number of countries that have regional cooperation to support DRR.]
<i>Category (c) Capacity building</i> [F-12 - Number of countries having participated in a voluntary and mutual review of progress in implementing respective national DRR strategies.]
<i>Category (c) Capacity building</i> [F-13 - Financial and other resources made available to strengthen the statistical capacity of developing countries in collection, analysis, management and use of disaster risk information.]
<i>Category (c) Capacity building</i> [F-14 - Number of voluntary commitments by international and regional organizations / initiatives related to DRR capacity building of developing countries.]
[F-15 - Annual percentage of cooperation financing for DRR provided by developed countries and received by developing countries compared with the economic losses registered in developing countries.]
[F-16 - Total amount of funds provided by developed countries to developing countries to promote development and transfer of ecologically adequate, appropriate and modern technology for DRR.]
[F-17 - Proportion of cooperation funds for DRR provided by developing countries and registered in the annual budgets of developing countries.]
[F-18 - Estimated proportion of cooperation for DRR covered by indicative expenditure and/or implementation plans from developed countries for 1, 2, 3 years in advance.]
[F-19 - Financial or other resources provided for capacity building to developing countries to strengthen the implementation of their national strategies for DRR.]
[F-20 - Number of [developing / developed] countries fostering an enabling environment domestically, [to reduce the barriers for technology transfer to developing countries], including through the implementation of national disaster risk reduction strategies and enhanced mobilization of domestic resources.]
Global Target G: Substantially increase the availability of and access to <i>multi-hazard early warning systems</i> and <i>disaster risk information and assessments</i> to the people by 2030.
G-1 - Number of countries that have [coordinated] multi-hazard early warning system. (This index should be computed based on indicators G-2 through G-4 and G-6)
[G-2 – Number of countries that have [coordinated] multi-hazard monitoring and forecasting system.]
G-3 – [Number / percentage] of people who are covered by [and have access to] multi-hazard early warning system [per 100,000].
[G-4 – [Percentage / Number] of [local] [and national] governments having preparedness plan (including EWS response and evacuation components) or evacuation plan [tested on regular basis] [and standard operating procedures].]

[G-5 - [Number / percentage] of countries that have [multi-hazard national risk assessment / risk information] with results in an accessible, [understandable and usable] format for stakeholders and people.]
[G-5 alt. - Multi-hazard risk information system capable of providing information in a simple and usable format to common people]
[G-5a – Number of countries with national risk assessment for G5 and mapping reports at national and local level.]
[G-6 – [Percentage / Number] of local governments that have [multi-hazard risk assessment / risk information], with results in an accessible, [understandable and usable] format for stakeholders and people.]
[G-7 - Percentage of population with understanding of the risk they are exposed to.]
[G-7 alt. Number of countries with programmes for the disaster risk perception and understanding of the population.]
[G-8 - Number of countries that have national plans with budget and timeline for development of multi-hazard EWS.]
[G-9 - Number of countries that have disaster loss databases publicly accessible.]
[G-10 - Number of countries that have open data policies and mechanisms to make hazard and risk data accessible and available to all users.]
[G-11 – How many countries provide basic weather, environmental and climate services, as defined by the World Meteorological Organization.]
[G-12 – Percentage of people in local communities able to use indigenous knowledge of the risk they are exposed to.]
[G-13 – Percentage of local communities trained in community based multi hazard early warning management system and response.]
[G-14 – Number of programmes to enhance awareness, disaster risk information and risk assessment.]

Annex

Proposals received from Member States via email during the second session that were not introduced from the floor

[B-3a1 - Number of evacuated people due to hazardous events before the event.]

[B-3a2 - Number of evacuated people due to hazardous events during or after the event.]

[B-3c – Number of people [protected / assisted] per 100,000.]

[B-3d – Number of displaced persons who have not joined shelters.]

[B-4 - Number of people whose [houses / dwellings or homes] were [damaged / partially destroyed] due to hazardous events.]

[B-5 - Number of people whose [houses / dwellings or homes] were [totally] destroyed due to hazardous events.]

[B-8 - Number of people / percentage of population “protected” by evacuation, by improved infrastructure or by other measures that reduce the possible impact of disasters on people.]

[Footnote: Mitigation measures could include, as appropriate, a wide range of activities by relevant actors. See definition of “Mitigation” in UNISDR terminology document.]

[C-2a - Damage and loss on education.]

[C-2b - Damage and loss on health.]

[C-2c - Damage and loss on nutrition.]

[C-2d - Damage and loss on the habitat.]

[C-3a - Damage and loss on agriculture.]

[C-3b - Damage and loss on livestock and livestock production.]

[C-3c - Damage and loss on fishing and fishery resources.]

[C-3d - Damage and loss on industry.]

[C-3e - Damage and loss on trade.]

[C-3f - Damage and loss on tourism.]

[C-4a - Damage and loss on energy.]

[C-4b - Damage and loss on transport.]

[C-4c - Damage and loss on telecommunications.]

[C-4d - Damage and loss on water, sanitation and hygiene.]

[C-5a - Damage and loss on environment and forests.]

[C-5b - Damage and loss on administrative buildings.]

[C-5c - Damage and loss on patrimony.]

[C-13 – Total of risk informed investments relative to Gross Domestic Product.]

[C-14 – Number of micro enterprises affected.]

[C-15 – Number of small and medium enterprises affected (registered enterprises) – sales drop, production drop, profit drop, direct damage to facilities etc.]

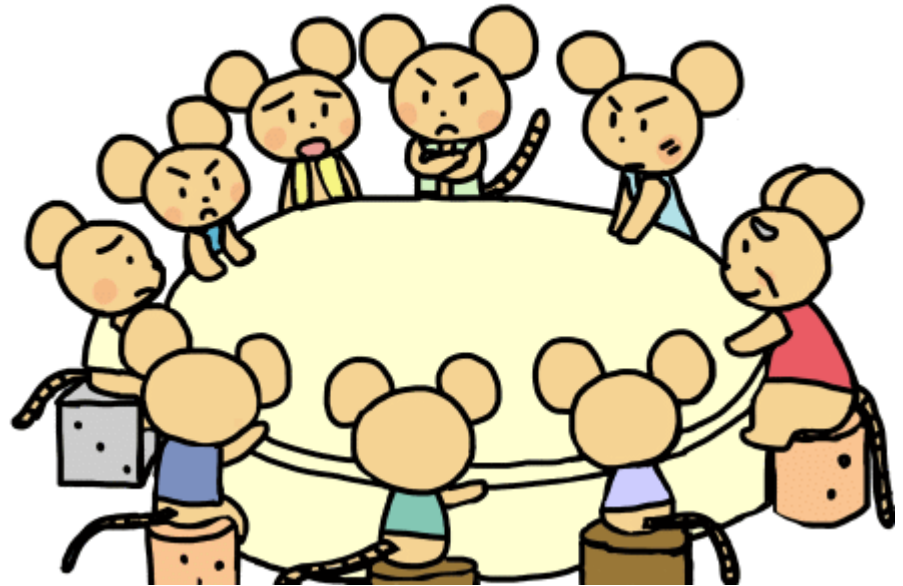
[D-6 alt. - Critical Infrastructure replaced from risk areas or retro-fitted, and/or protective infrastructure installed.]

Informal Informal Meeting

Open-ended Inter-governmental Expert Working
Group on Indicators and Terminology relating to
Disaster Risk Reduction

20-21 June 2015

Geneva







Feasibility assessment of proposed indicators, using existing disaster damage statistics in Japan

20-21 June 2016

By the Government of Japan

The most important criteria in selecting indicators are :

- **Feasibility** of practical data collection; and
- **Relevancy** to show actual impacts of disasters.

Question :

Are the proposed outcome indicators A-D feasible in every country?



Feasibility assessment using presently available data in Japan.

The statistics and data used in the study :

1. “Statistics of water-related disaster damage”

Water and Disaster Management Bureau of the Ministry of Land, Infrastructure, Transport and Tourism

2. “Statistics of disaster damage to public infrastructure”

Water and Disaster Management Bureau of the Ministry of Land, Infrastructure, Transport and Tourism

3. “Annual report of disaster damage”

Fire and Disaster Management Agency of the Ministry of Internal Affairs and Communications

4. “Survey on agricultural damage, farm product statistics”

Statistics Department, Minister's Secretariat, Ministry of Agriculture, Forestry and Fisheries

5. “Statistics of disaster damage to farmland and agricultural facilities”

Rural Development Bureau, Ministry of Agriculture, Forestry and Fisheries

Statistics of water-related disaster damage (since 1961)

- Actual damage caused by water-related hazards such as floods, landslides, storm surges, tsunamis, etc.

Damage to General Properties

buildings, household commodities, machineries for businesses, agricultural products

Damage to Assets for Public Services

Transportation, communication, etc

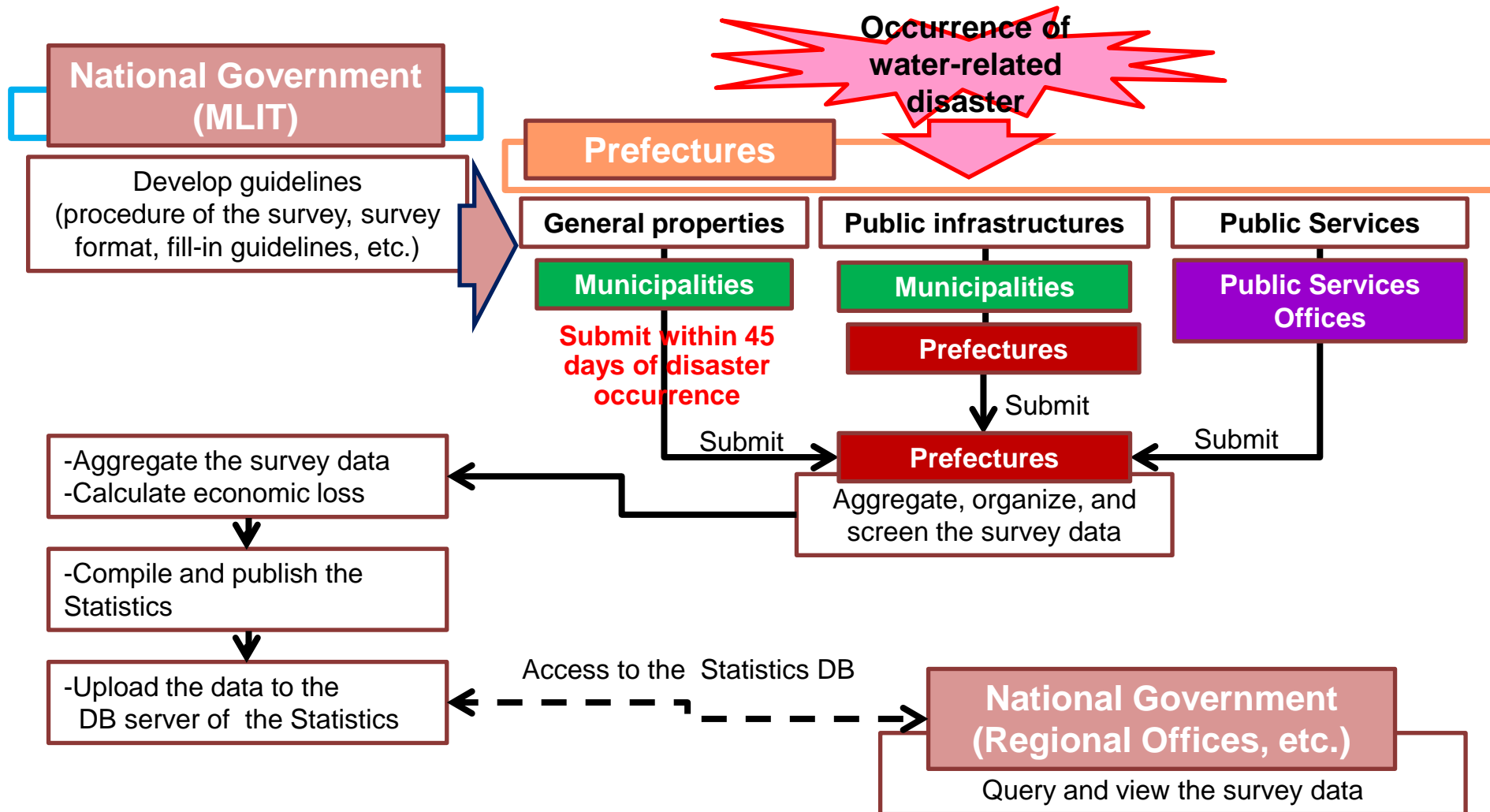


Damage to public Infrastructures

• Costs for recovery works, etc



Statistics of water-related disaster damage (since 1961)



Utilization of the statistics :

- Estimation of Total Economic Loss

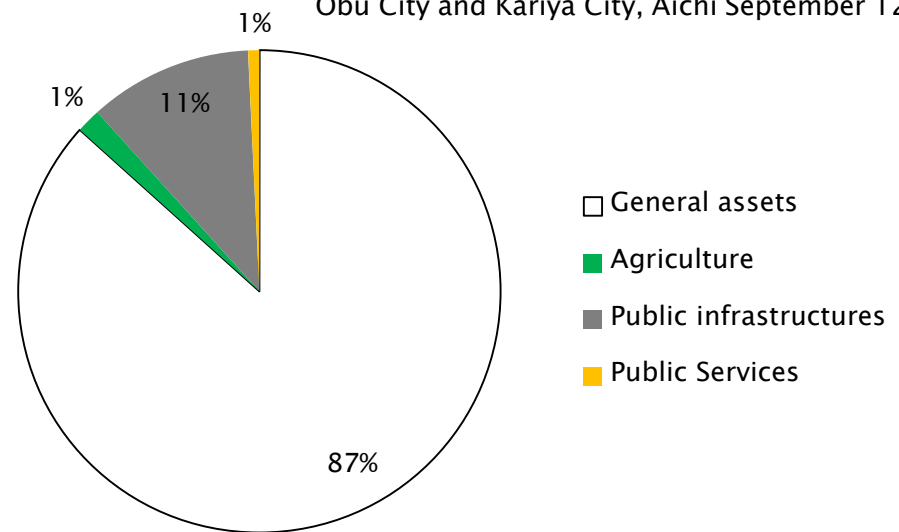
Tokai Storm of 2000, September 11-13



Nishi-Biwajima, Aichi in Shinkawa river



Obu City and Kariya City, Aichi September 12, 2000

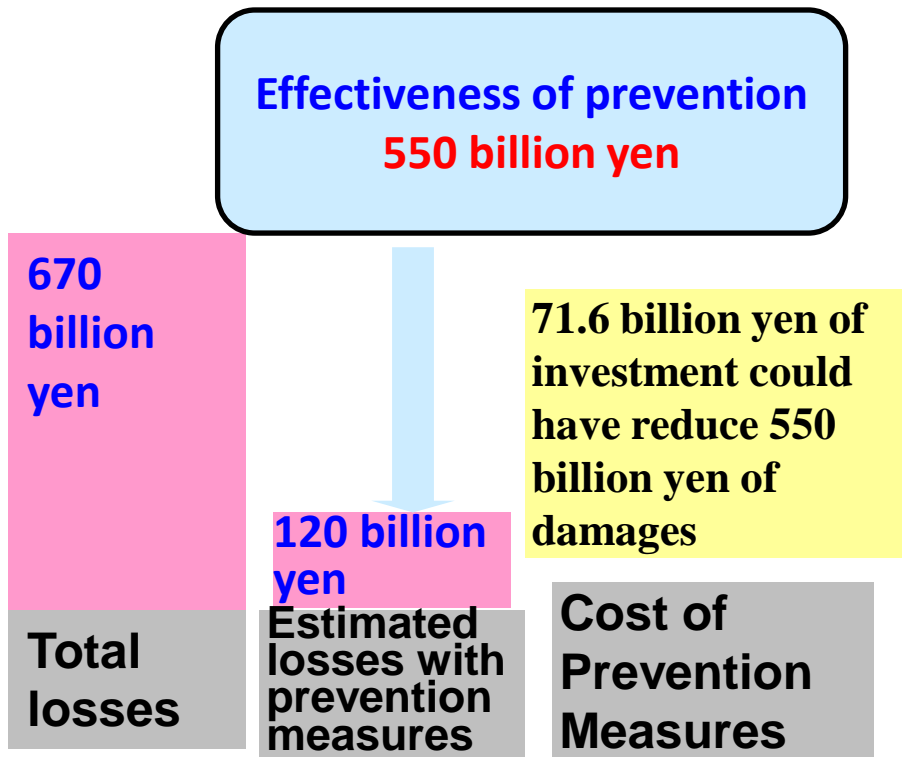


Total economic loss
771,492 million JPY

Utilization of the statistics :

- Identification of Effects of Preventive Measures

The case of Heavy Rain in Tokai (2000.9)



Inundation in Nishibiwajima Town

Global Target (a)

- Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015.**

		Data in Japan	
		Item / Data Source	Feasibility
A-1	Number of deaths and missing / presumed dead due to hazardous events per 100,000	(A-2 + A-3)	OK
A-1 alt.	Number of deaths, missing, injured, displaced or evacuated due to hazardous events per 100,000.	Number of deaths	No data available on number of people who were actually displaced or evacuated.
		Number of missing	
		Number of persons seriously injured *treatment of 1 month and up	
		Number of persons slightly injured *treatment of less than 1 month	
A-2	Number of deaths due to hazardous events	Number of deaths /	OK
A-3	Number of missing persons / presumed dead due to hazardous events.	Number of missing /	OK

Global Target (a)

Our Proposal on the Global Indicators :

- The sum of **number of deaths** and **number of missing persons**. (relevant and feasible)

Global Target (b)

- Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015.**

		Data in Japan	
		Item / Data Source	Feasibility
B-1	Number of affected people by hazardous event per 100,000.		
B-2	Number of injured or ill people due to hazardous events.	Number of persons seriously injured *treatment of 1 month and up	Injure is OK. (Ill people cannot be counted.)
		Number of persons slightly injured *treatment of less than 1 month	
B-3	Number of people who left their places of residence due to hazardous events.		No data available on number of people who left their places of residence
B-4	Number of people whose houses were damaged due to hazardous events.	Number of persons with house(s) half damaged	OK
		Number of persons with house(s) partly damaged	
		Number of persons with house(s) flooded above floor	
		Number of persons with house(s) flooded below floor	

		Data in Japan	
		Item / Data Source	Feasibility
B-5	Number of people whose houses were destroyed due to hazardous events.	Number of persons with house(s) totally damaged	OK
B-6	Number of people who received aid including food and nonfood aid due to hazardous events.		
B-7	Number of people whose livelihoods were disrupted, destroyed or lost due to hazardous events.	Number of households of farmers and fishermen whose houses used as the workplace were damaged due to water-related disasters	
		Number of workers in offices damaged due to water-related disasters	

Global Target (b)

Our Proposal on the Global Indicators :

- As **proxies for the number of people whose livelihoods were disrupted, destroyed or lost, number of people whose houses were damaged or destroyed.**
(relevant and feasible)

Global Target (c)

- Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.**

		Data in Japan	
		Item / Data Source	Feasibility
C-1	Direct economic loss due to hazardous events in relation to global gross domestic product.		
C-2	Direct agricultural loss due to hazardous events.	Area (ha) of damaged farmlands	OK
		Weight (ton) of damaged agricultural products	
		Loss (yen) of damaged agricultural products	
		Recovery cost (yen) of damaged farmlands	
		Recovery cost (yen) of damaged agricultural facilities	
		Direct economic loss (yen) to livestock industry	
		Direct economic loss (yen) to forestry	
		Direct economic loss (yen) to fishery	

		Data in Japan	
		Item / Data Source	Feasibility
C-3	Direct economic loss due to industrial facilities damaged or destroyed by hazardous events.	Direct economic loss (yen) to commerce and industry (other than buildings)	OK (However, only a limited portion is covered.)
		Number of offices (on the ground) damaged due to water-related disasters	
		Number of offices (underground) damaged due to water-related disasters	
		Economic loss of assets in offices (yen) due to water-related disasters	
		Economic loss of assets of transport (yen) due to water-related disasters	
		Economic loss of assets of telecommunication (yen) due to water-related disasters	
		Economic loss of assets of power companies (yen) due to water-related disasters	
		Economic loss of assets of gas companies (yen) due to water-related disasters	
		Economic loss of assets of water suppliers (yen) due to water-related disasters	
C-4	Direct economic loss due to commercial facilities damaged or destroyed by hazardous events.	Direct economic loss other than buildings (yen) to commerce and industry	OK (However, only a limited portion is covered.)
		Number of offices (on the ground) damaged due to water-related disasters	
		Number of offices (underground) damaged due to water-related disasters	
		Economic loss of assets in offices (yen) due to water-related disasters	

		Data in Japan	
		Item / Data Source	Feasibility
C-5	Direct economic loss due to houses damaged by hazardous events.	Number of houses half damaged	OK
		Number of houses partly damaged	
		Number of houses flooded above floor	
		Number of houses flooded below floor	
		Direct economic loss to houses (buildings) due to water-related disasters *economic loss to houses totally damaged is included.	
		Direct economic loss to assets in houses due to water-related disasters *economic loss to houses totally damaged is included.	
C-6	Direct economic loss due to houses destroyed by hazardous events	Number of houses totally damaged	OK
C-7	Direct economic loss due to damage to critical infrastructure caused by hazardous events.	Number of damaged hospitals	OK (Also available for other infra-structures)
		Damage amount (yen) to educational facilities	
		Number of damaged schools	
		Recovery cost (yen) of damaged roads	

		Data in Japan	
		Item / Data Source	Feasibility
C-8	Direct economic loss due to cultural heritage damaged or destroyed by hazardous events.		
C-9	Direct economic loss due to environment degraded by hazardous events.		
C-10	Financial transfer and access to insurance. (Total insured direct losses due to hazardous events)		
C-11	Direct economic losses due to disruptions to basic services		
C-12	Direct economic loss due to service sectors (such as transportation, tourism, finance) caused by hazardous events.	Recovery cost (yen) of damaged roads	Available for some sectors.
		Recovery cost (yen) of damaged bridges	
		Recovery cost (yen) of damaged ports	
		Economic loss of assets of transport (yen) due to water-related disasters	

Global Target (c)

Our Proposal on the Global Indicators :

- **Direct agricultural loss and direct economic loss due to houses damaged and destroyed.**
(relevant and feasible)
- **Direct economic loss to industry and commercial.** Various approaches to estimate loss should be allowed.
(relevant, but difficulty in data collection)
- **Direct economic loss due to damage to critical infrastructure.**
(relevant and feasible)

Global Target (d)

- Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.**

		Data in Japan	
		Item / Data Source	Feasibility
D-1	Damage to critical infrastructure due to hazardous events.		
D-1 bis.	Number of electricity plants and transmission towers destroyed or damaged by hazardous events.		
D-2	Number of health facilities destroyed or damaged by hazardous events.	Number of damaged hospitals	OK
D-3	Number of educational facilities destroyed or damaged by hazardous events.	Number of damaged schools	OK

		Data in Japan	
		Item / Data Source	Feasibility
D-4	Number of transportation units and infrastructures destroyed or damaged by hazardous events.	Number of damages to ports	OK
		Number of damages to roads	
		Number of damages to bridges	
		Number of places where railways were interrupted	
D-5	Number of basic services have been disrupted due to hazardous events.	Number of damaged hospitals	OK
		Number of damaged schools	
		Number of damages to ports	
		Number of damages to roads	
		Number of damages to bridges	
		Number of places where railways were interrupted	
		Number of ships destroyed	
		Number of houses with interruption of tap water service	
		Number of damages to sewage systems	
		Number of damages to solid waste management and excrement treatment	
		Number of houses with interruption of electricity service	
		Number of houses with interruption of telephone	
		Number of houses with interruption of gas service	

		Data in Japan	
		Item / Data Source	Feasibility
D-7	Number of security service structures destroyed or damaged by hazardous events.		
D-8	Number of tourist infrastructure facilities destroyed or damaged by hazardous events.		
D-10	Number of communication infrastructure destroyed or damaged by hazardous events.		
D-13	Number of agricultural facilities destroyed or damaged by hazardous events.	Number of damaged agricultural facilities	OK
D-14	Number of water and sanitation infrastructures destroyed or damaged by hazardous events.	Number of damages to sewage systems	OK
		Number of damages to solid waste management and excrement treatment	
D-15	Number of days financial services have been disrupted due to hazardous events.		

Global Target (d)

Our Proposal on the Global Indicators :

- **Economic loss to public infrastructures.**

Extra burden of processing existing data can be avoided.

(relevant and feasible)

Some points to be considered in the indicator discussion :

1. Clarify the priority of indicators to be monitored, to encourage establishing sustainable systems in each country;
2. Devise systems which incentivize the process of surveying, collecting and accumulating basic data;
Link between recovery cost of infrastructures and allocation of funding
3. Collect data for all disasters including small-scale disasters;
and
4. Disaggregate by disaster types, to provide basis for policy prioritization and decision of investment strategy.

A proposal :

1. Assess feasibility in some volunteer countries, in view of practical data availability and submit results to the secretariat.
2. Reflect the results in the decision process, to select realistically operational indicators.

Tohoku University's commitments

1. Global Centre for Disaster Statistics
2. World Bosai Forum

Global Centre for Disaster Statistics

Launch of the Global Centre for Disaster Statistics
during the WCDRR in Sendai (15 March 2015)





Why disaster damage statistics based on official sources?

No data
No science

Scientists telling things without data are fortunetellers



Disasters have previous records!
Investigation of previous disasters helps understand risk in the area.

The screenshot shows a web browser window titled "Criminal-Records". The main heading is "Crimnnal Records" (with a typo) in a large blue font, featuring a magnifying glass icon over the letter 'o'. Below this is a sub-heading "Crimnnal Records" (also with a typo). The interface includes a navigation bar with tabs for "Public Records", "Birth Records", "Death Records", "Marriage Records", and "Divorce Records". A search form is present with fields for "First Name: *", "Last Name: *", "City:", "State:" (with a dropdown menu set to "Nationwide"), and "Birth Year:". A "Search" button with a magnifying glass icon is located below the form. A note indicates "* Required fields". Below the search form, there are two columns of text. The left column is titled "INSTANT PUBLIC RECORDS SEARCH" and describes the benefits of using the website for vital records. The right column is titled "SEARCH OVER 400 MILLION RECORDS" and describes the extensive database and search tools available. At the bottom of the right column, it mentions "Membership at our website gets you UNLIMITED search access to our public records databases. Through cross linking and".

Crimnnal Records

Crimnnal Records

Public Records Birth Records Death Records Marriage Records Divorce Records

First Name: * Last Name: *

City: State:

Birth Year:

* Required fields

Search

INSTANT PUBLIC RECORDS SEARCH

When you run an instant vital records search with PublicRecordsPro.com you'll get access to full birth, death, and other vital record information, which includes (when available):

- Search Public Records
- Birth records
- Death records
- Marriage and divorce filings
- County public records

SEARCH OVER 400 MILLION RECORDS

In addition to vital records, you'll get access to search tools and useful information such as cemetery records, local newspaper archives, county court records, and much more! Never before has all of this information been organized, collected, and made accessible in one easy-to-use interface.

Membership at our website gets you UNLIMITED search access to our public records databases. Through cross linking and

Global Centre for Disaster Statistics

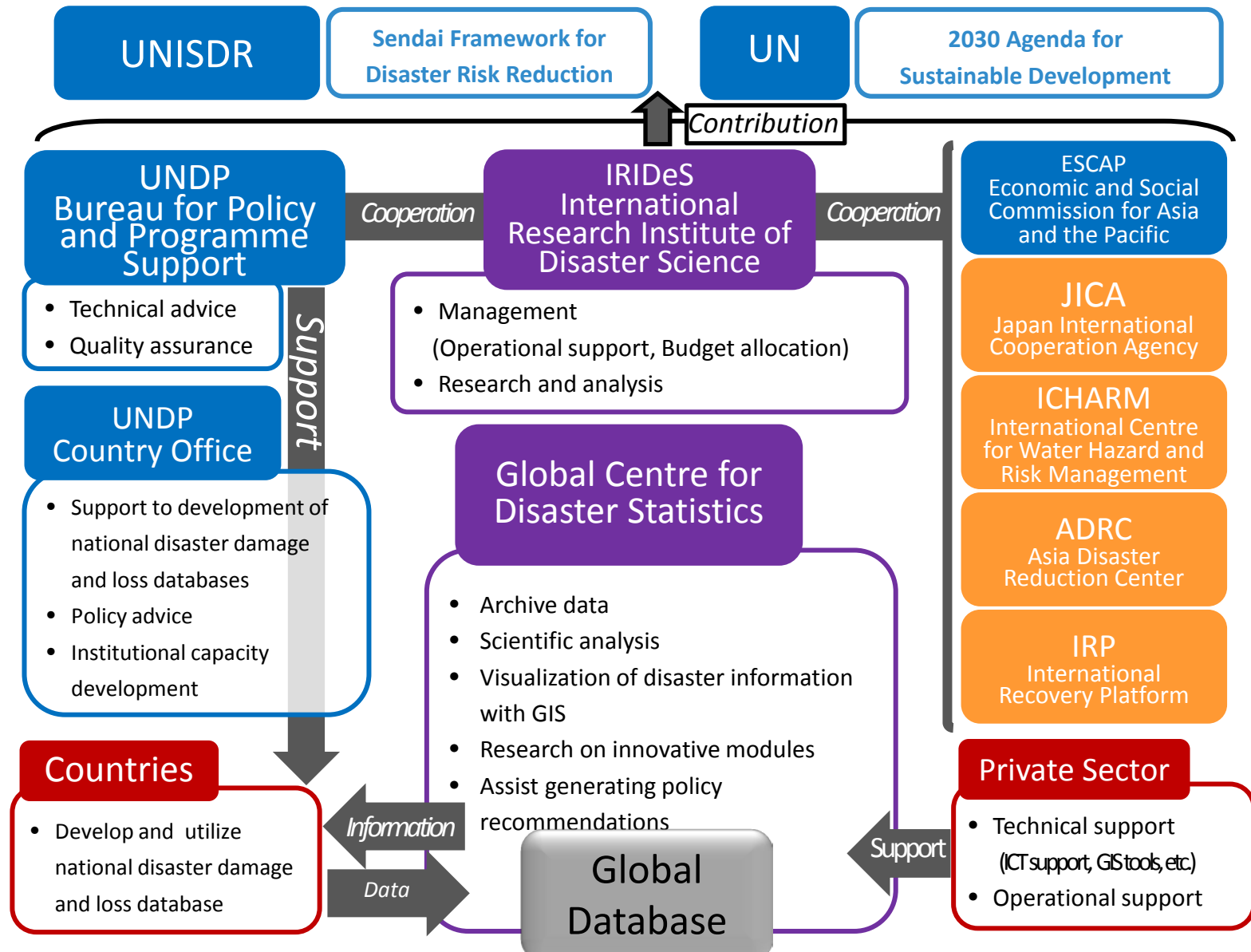
Contribution to the UNISDR for monitoring the progress on the Sendai Framework for Disaster Risk Reduction

Support Governments to develop DRR policy

Stimulate DRR research

Potential contribution to the GADRI

How does it work?

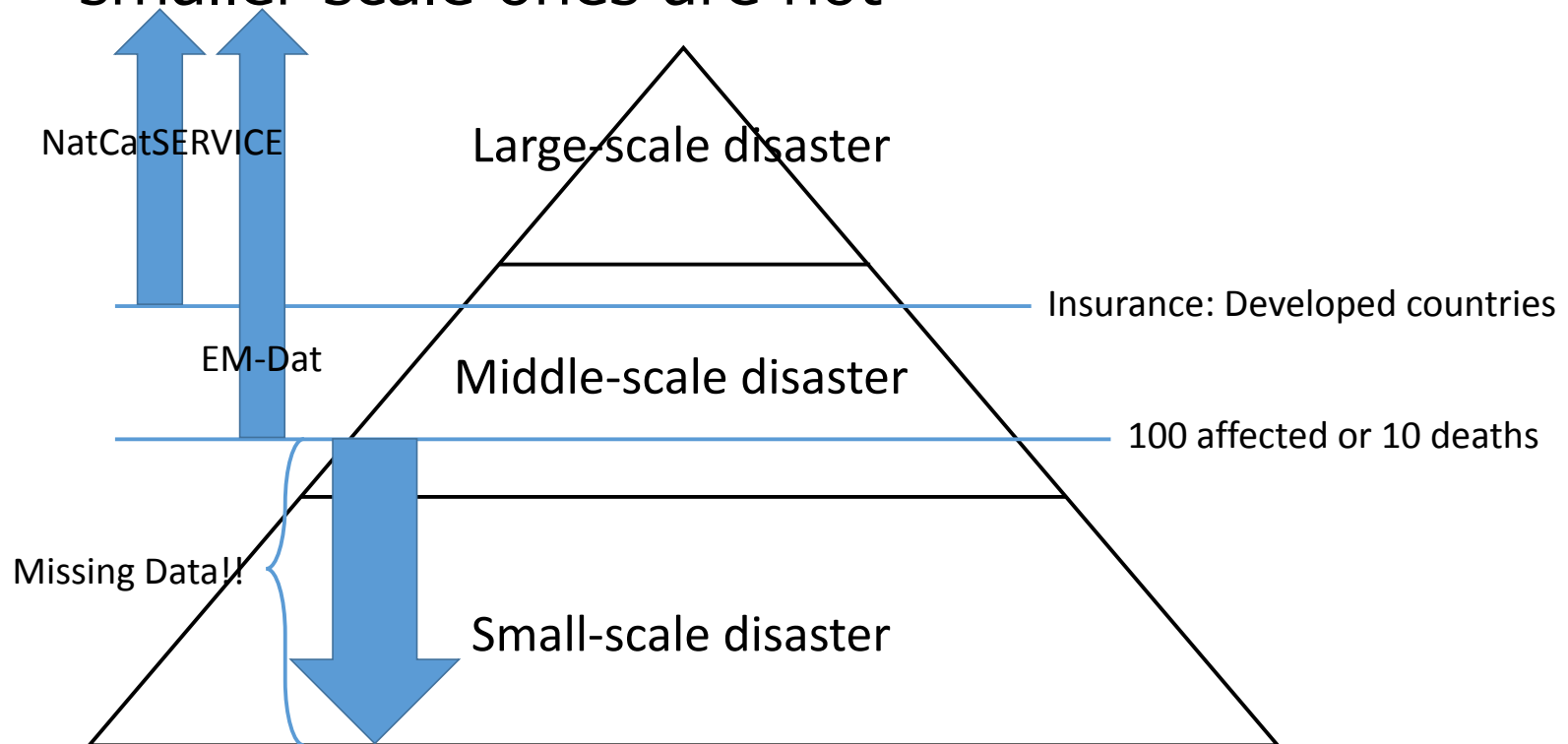


Existing international databases on disaster losses

	EM-DAT database	NatCatSERVICE	DesInventar format
Ownership	CRED: Centre for Research on the Epidemiology of Disasters	Munich Reinsurance	Mostly Governments Some by NGO, Research Institute etc.
Scope of the database	126 countries	Not Identified ※mainly developed countries	Over 82 countries
	21,468 events	21,700 events	Over 490,000 events
	1990-Present	1980-Present	Depends on the country (Oldest record)
Disaster Collected	Disasters which meet a certain criteria	Disasters with Human or Economic loss	<u>All Disasters</u>
Data Source	Multiple Source (UN agencies, Countries, Red Cross, Red Crescent, World Bank, Reinsurance, Media)	Insurance Company based (Munich Reinsurance offices and clients, International Insurance association)	Authorized by the Government

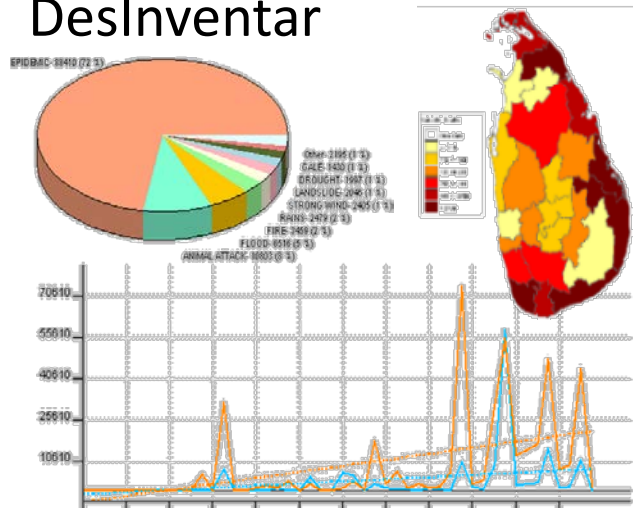
What is missing in the existing databases?

- Large-scale disasters are well reported while smaller scale ones are not

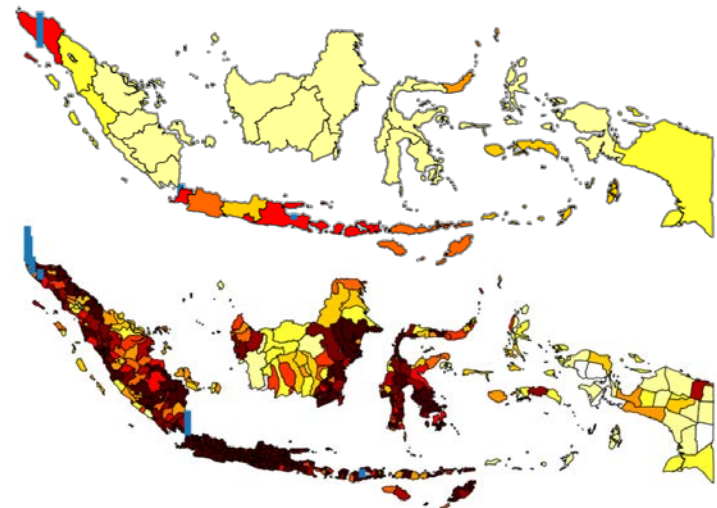


DesInventar – as a good tool

- Disaggregated disaster damage and loss data regardless of the size of the events in spreadsheet compiled by government officials
- Web-based platform to provide simple visual images, including graphs and maps
- Some countries created their own system after adapting the DesInventar



Sample of Database in Sri Lanka
(DesInventar platform)



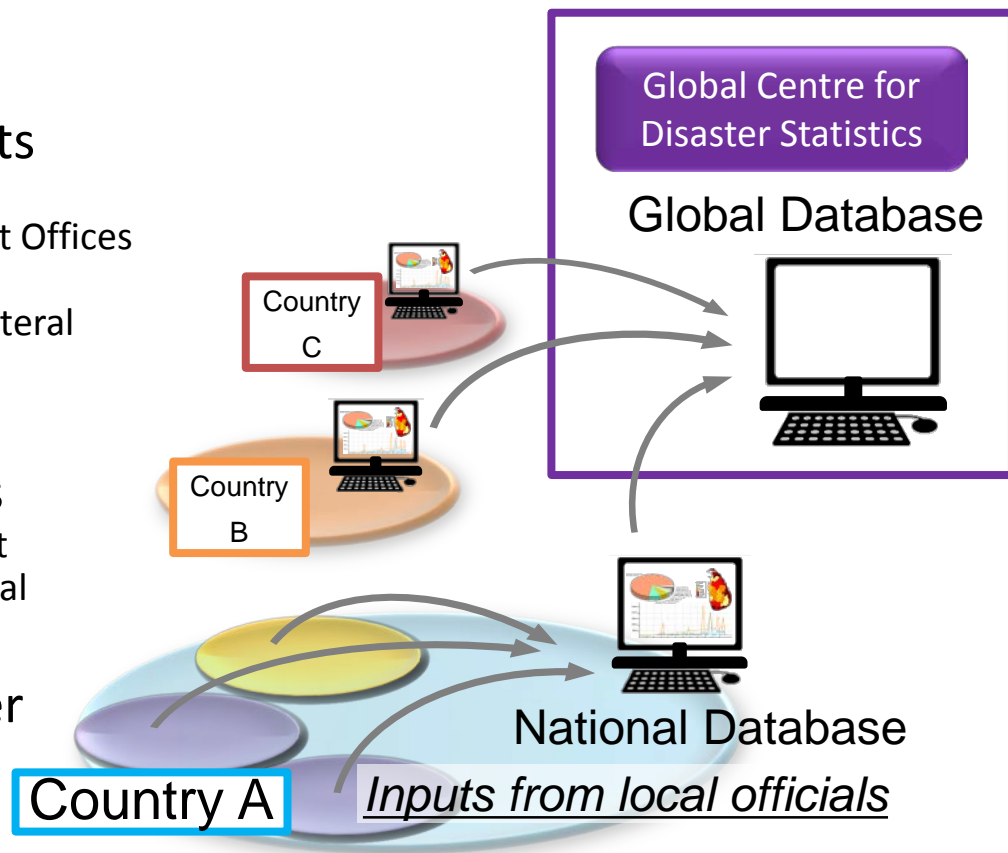
Sample of Database in Indonesia
(modified DesInventar platform)

1. Scope and coverage

- Including extensive disaster data
 - *Capture small-scale disaster data
 - *Data disaggregated by demographic, social, and economic characteristics
- Meta data (nature and source of data is known)

2. Data from official sources

- **Disaster data from governments**
(utilizing DesInventar methodology)
 - * Provided by National Disaster Management Offices
 - * Based on data from local governments
 - * UNDP, JICA, and others would provide bi-lateral support to countries
- **Incentives to data entry efforts**
 - * Tangible and visual outcomes would attract continuation of data entering efforts by local government officials
- while being enforced by disaster acts and laws



3. Support monitoring the progress in the implementation of the Sendai Framework for Disaster Risk Reduction

- A new database can serve as a platform for international data sharing to stimulate research in disaster risk reduction, for education, etc.
- The data will be archived in a standardized format

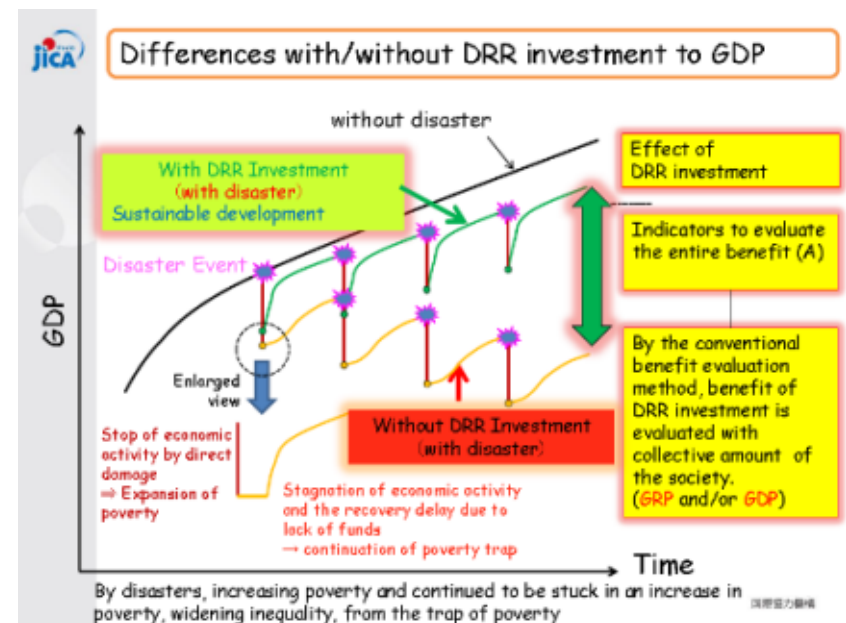
Waiting for the intergovernmental process on the indicators to monitor targets of the Sendai Framework for Disaster Risk Reduction by UNISDR

- (a) Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020–2030 compared to the period 2005–2015;
- (b) Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020–2030 compared to the period 2005–2015
- (c) Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030
- (d) Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030

※Partly possible to monitor

4. Analysis

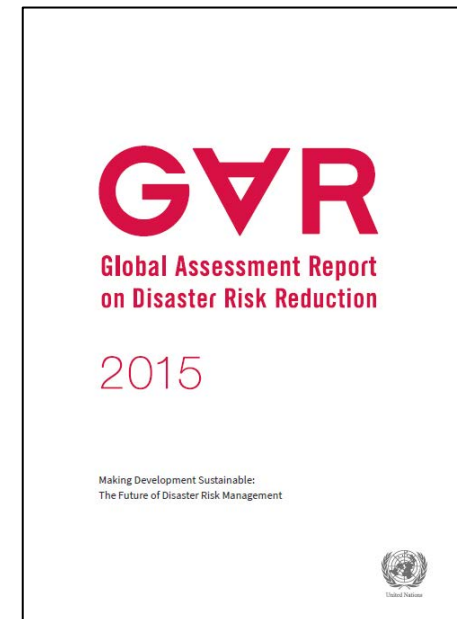
- Macro-economic analysis
 - *One example of the analysis to evaluate the effect of pre-disaster investment
- Analysis based on disaggregated data
 - *Data disaggregated by social, demographic, and economic characteristics



DR²AD model, developed by JICA, to quantitatively estimate the effect of pre-disaster investment to economic development

- Provide inputs to advocacy material on disaster risk reduction
 - *Supporting UNISDR by providing materials to the Global Assessment Report (GAR)

ESCAP's Asia-Pacific Disaster Report, etc.



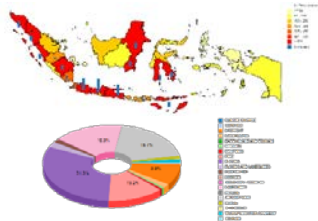
5. Supporting National/Local Governments

- Enhanced Governance and providing technical and institutional capacity
 - *Trainings for disaster damage data collection
 - *Technical advisory on disaster statistics analysis
- For policy making in disaster risk reduction
 - *Develop a system to generate National/Local White Book on Disaster Risk Reduction semi-automatically
 - *Such Reports would generate effective policy on DRR

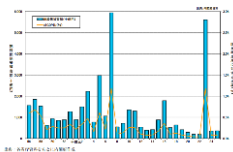
[Image of the White Book on DRR]

Annual Report

Disaster in 2015



Poverty and Disaster



Comments

According to the database, is needed to be developed.

Disaster Worst 5

1. Earthquake xx, Feb Death: x, x00
2. Drought xx, Aug Death: xx0
3. Flood xx, Oct Death: x
Economic loss: xxmillion

US\$

4.

5.

Photo

Photo

Progress on SDGs & SFDRR

SDGs

Goal X

Target A

00% achieved

Goal Y

Target B

Achieved

Target C

Bellow Target

SFDRR

Goal 1

X, XX00 person

Bellow target

Goal 2

XX, X00 person

Achieved

Goal 3

X, XXX, X00 US\$

Bellow Target

Contents of the White Book

•Trend of the disasters

- Maps, Charts, Graphs etc.

•Details of disasters

- Information on disasters

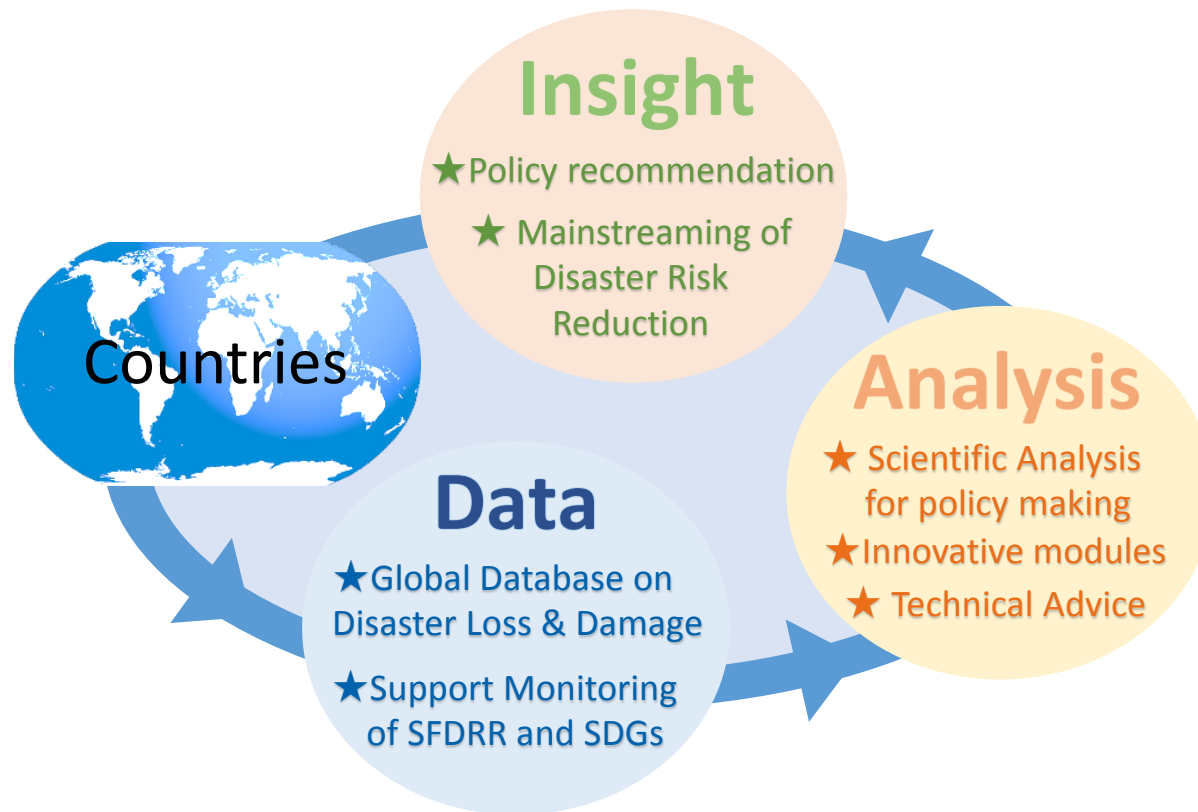
- Photos

•Analysis

- Correlational analysis on disaster damage and loss data with other variables acquired by Census

Ex. Relationship between poverty and disaster risks at local level

Data – Analysis – Insight



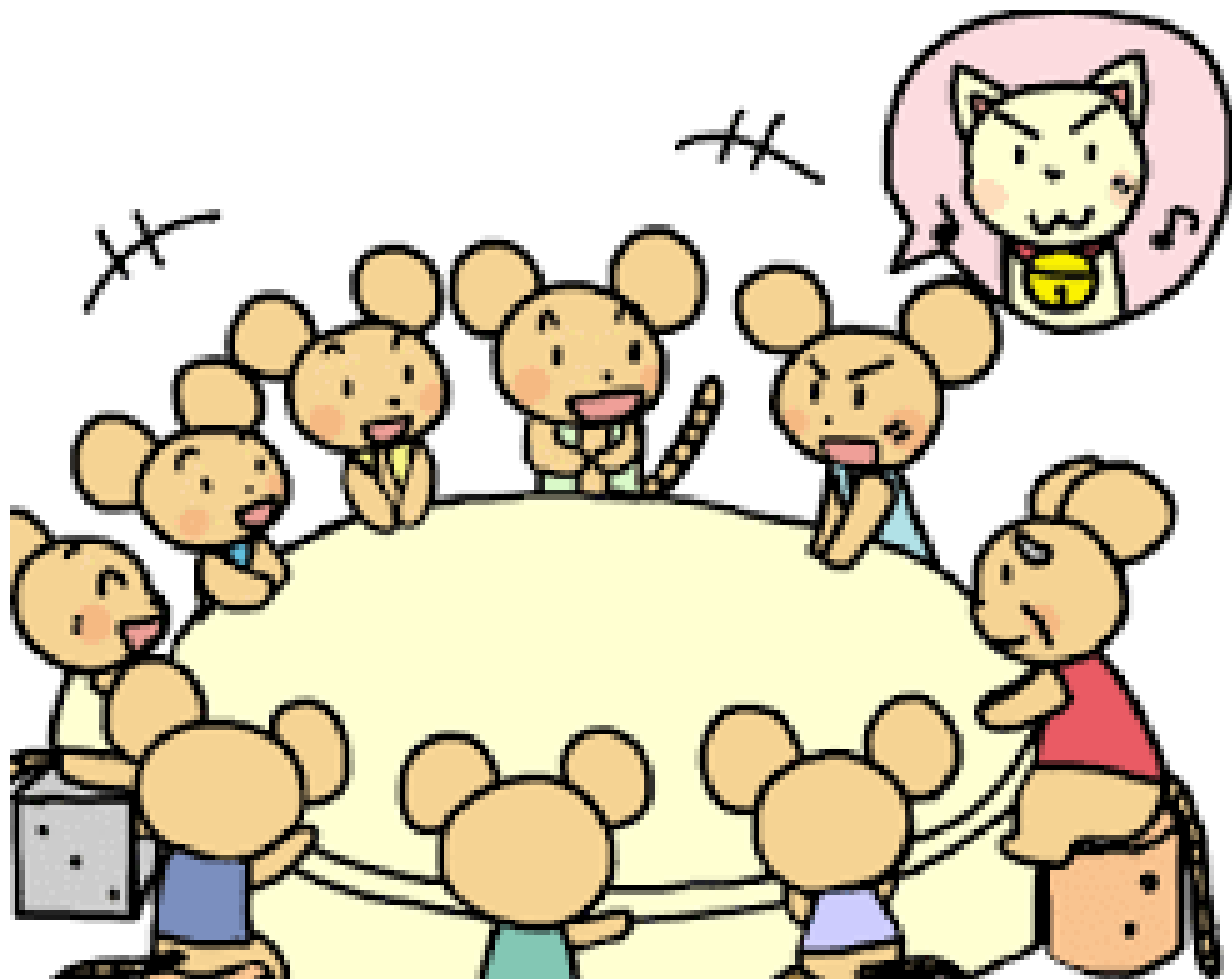
We have a dream

World Bosai Forum

Bosai: DRR

世界防災フォーラム

世界防災论坛



Future Actions after the UN WCDRR(2)

• World Bosai Forum (tentative)

- Continue discussions generated during the 3rd United Nations World Conference on Disaster Risk Reduction.
- Theme: The broad setting of disaster risk reduction and recovery
- Periodic meetings (once every two years) in Tohoku and Sendai to contribute to the efforts for disaster risk reduction in Japan and overseas while continuing the support for the recovery of Tohoku.
- Planning creative events such as plenary meetings, symposiums and exhibition and think together with the government, international agencies including the United Nations, companies, academia, NGOs and citizens
- Collaboration with ISDR and Global Risk Forum (Davos)

Disaster Management Cycle in Four Phases

