Integrated Governance for Disaster Risk Reduction（DRR)

Changing Landscape of Disaster Risks

Disaster Risk

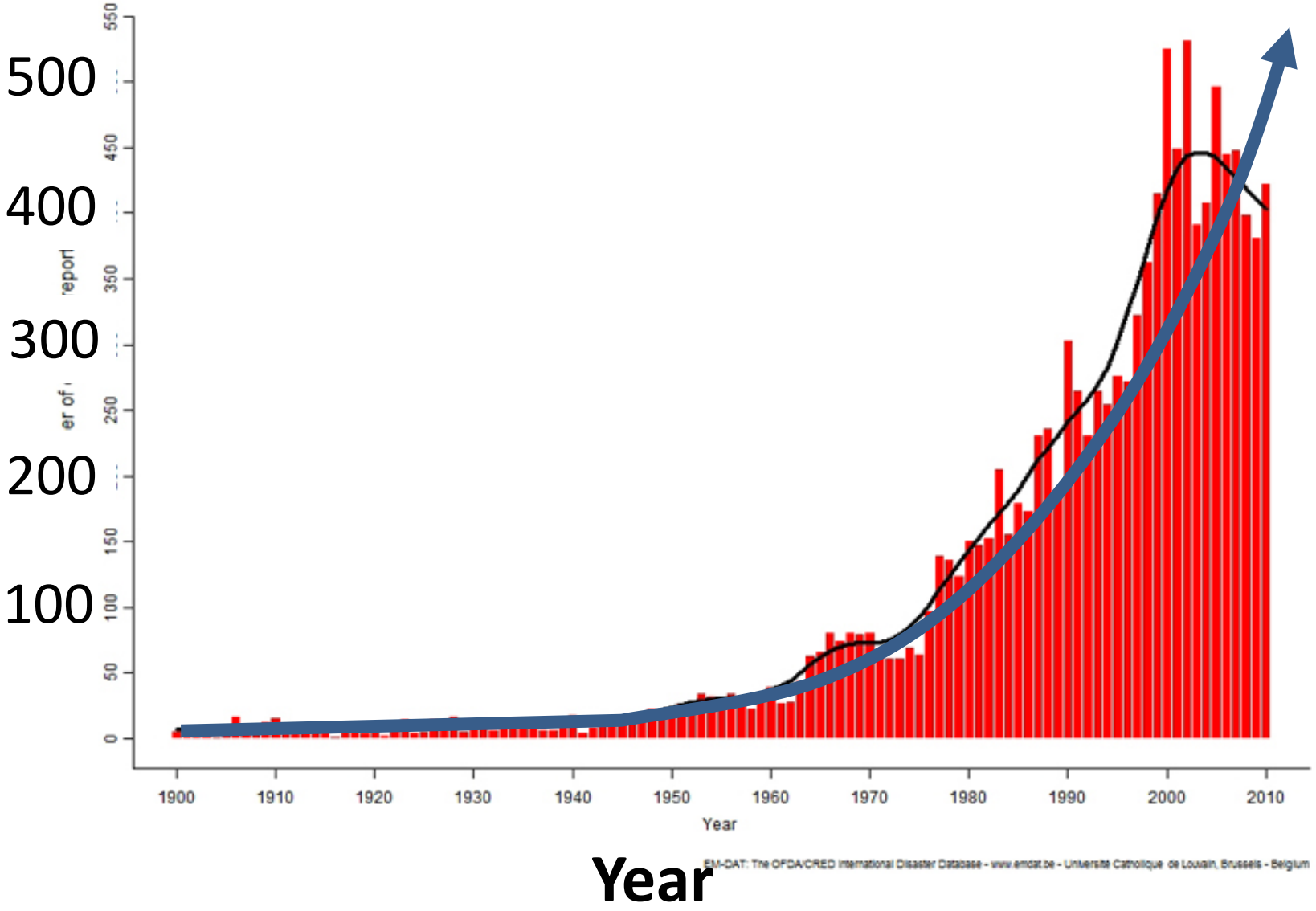
Hazard

Exposure

Vulnerability

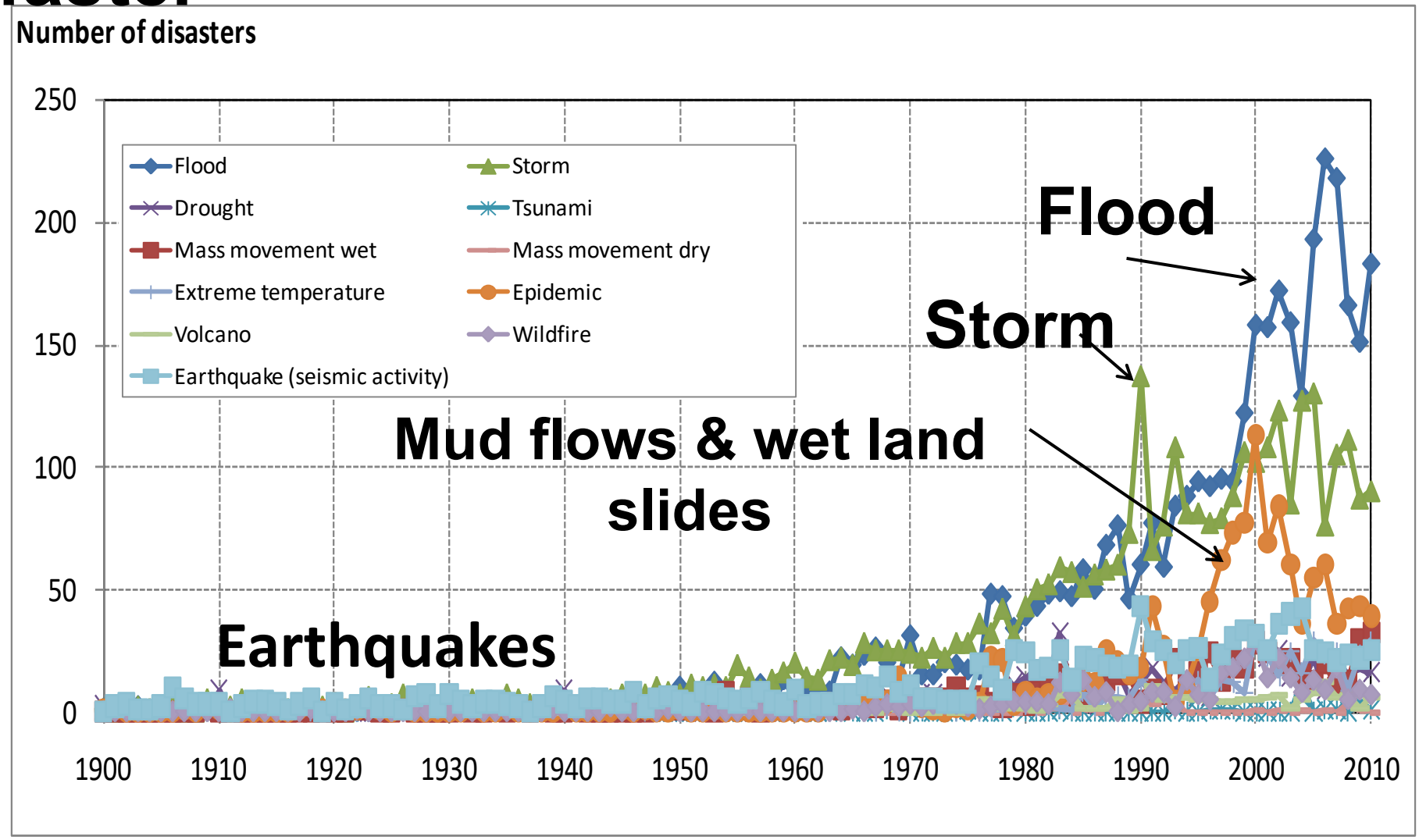
Hazards are increasing

Number of reported natural disasters(1900-2010)



Source: ISDR “EM-DAT”

Water-related disasters are increasing faster



Source: EM-DAT: The OFDA/CRED International Disaster Database
www.emdat.be - Université Catholique de Louvain - Brussels – Belgium
As of Sept 7, 2011

Exposure is increasing

Increasing Flood Exposure in Jakarta by Subsidence

Land Subsidence in Jakarta

Source: Dr. Heri Andreas, Faculty of Earth Sciences and Technology, Bandung Institute of Technology.
Note: 2025 and 2050 predictions are based on research by Dr. Heri Andreas

From: BBC

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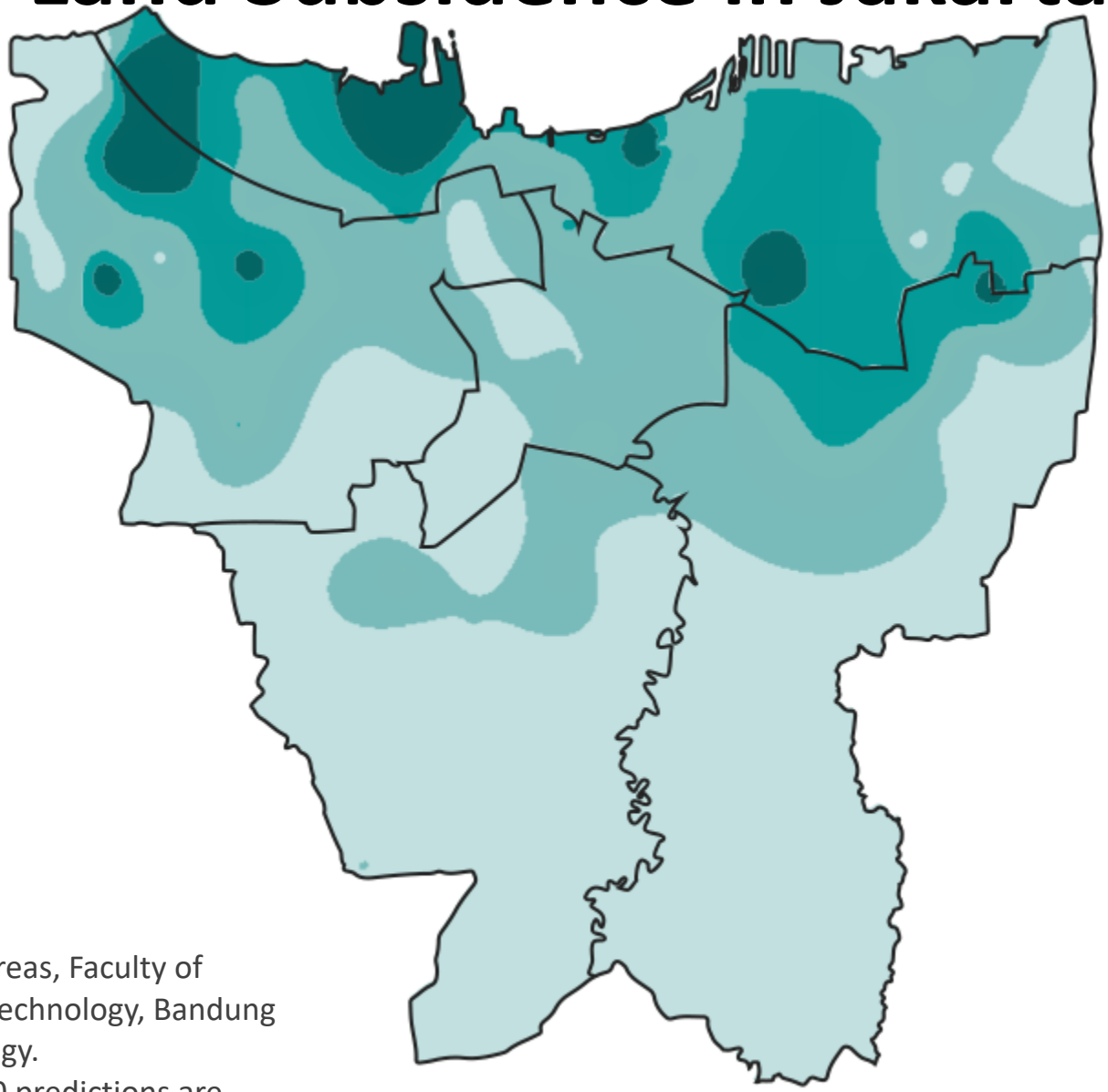

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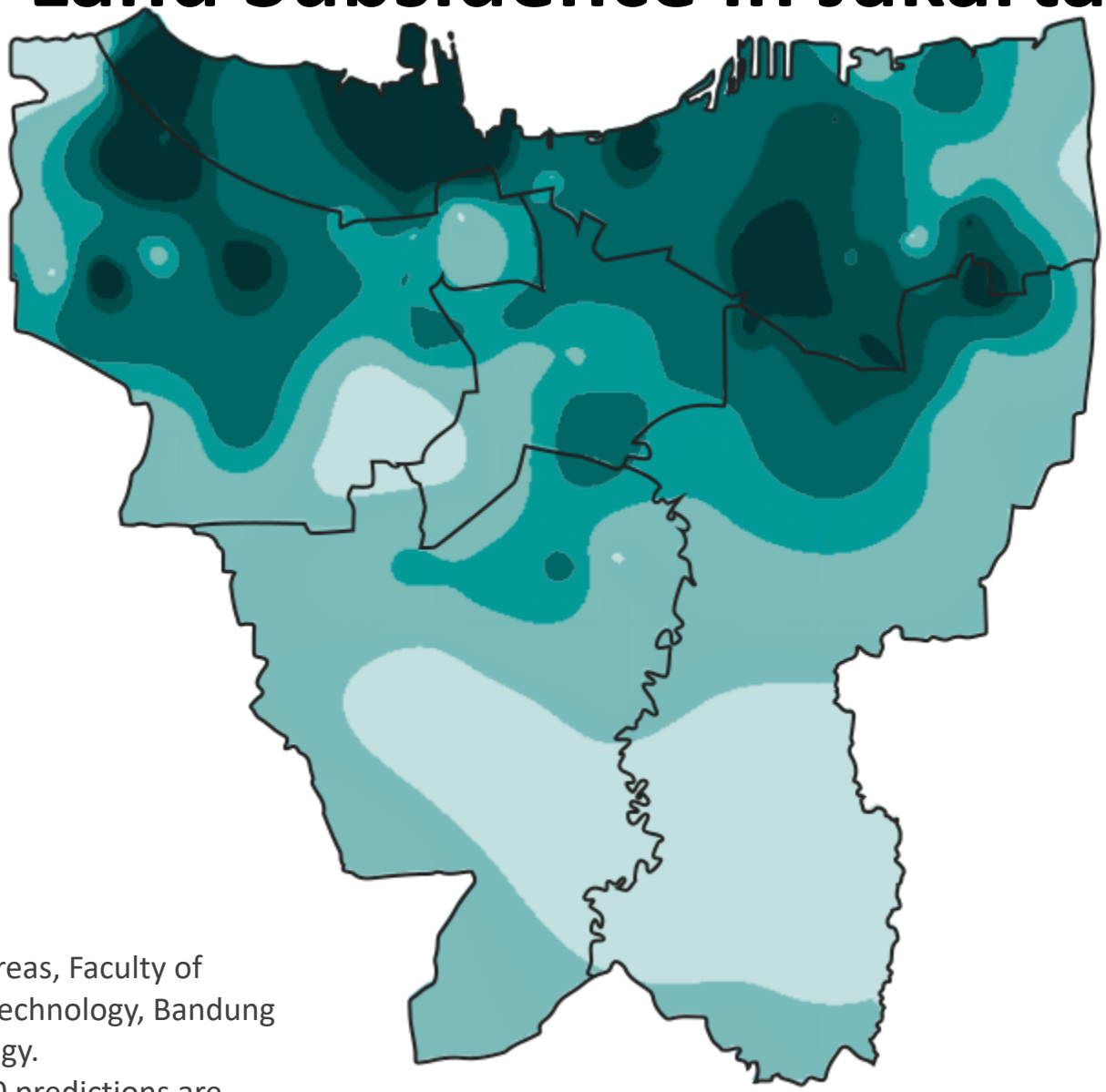

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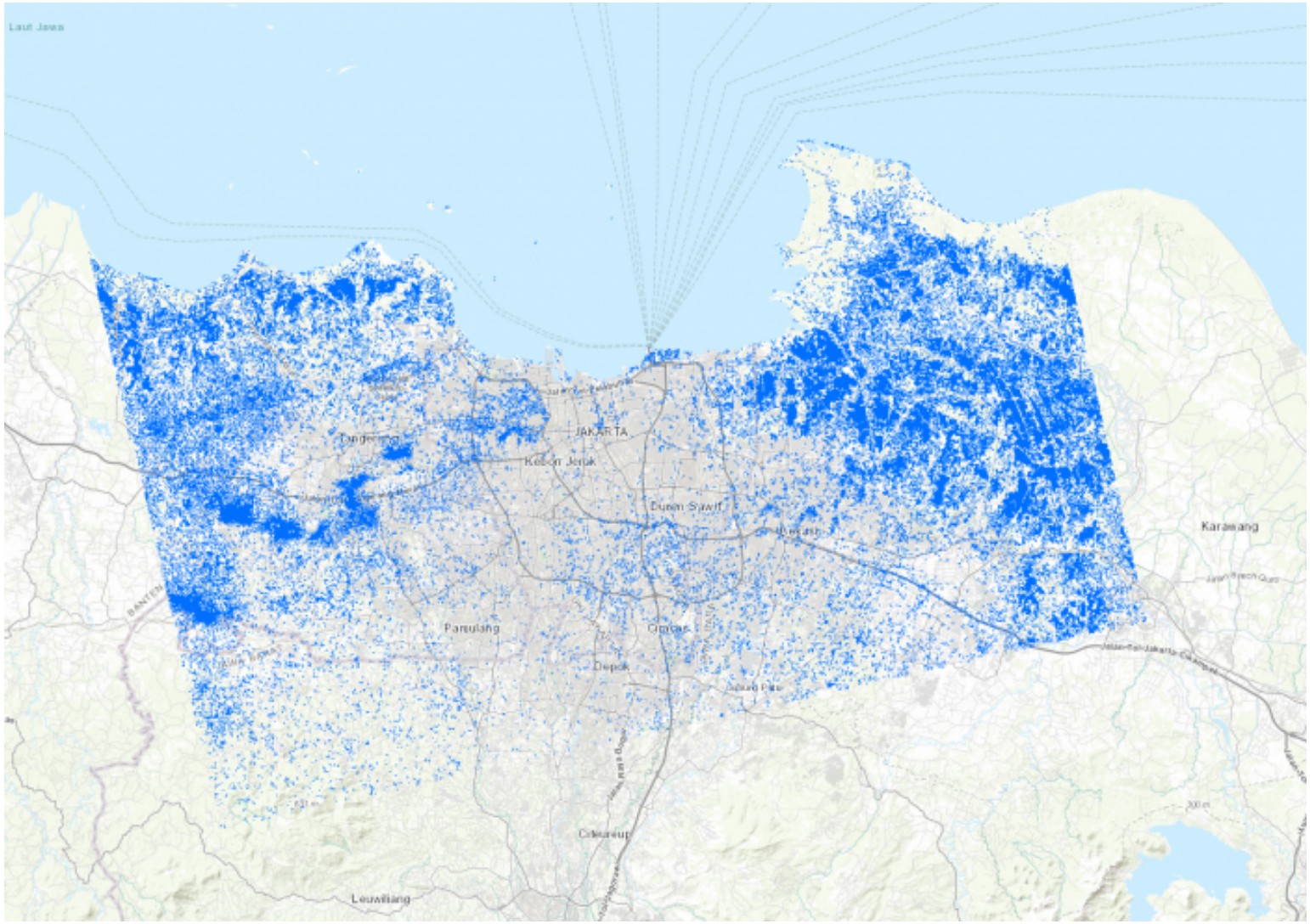
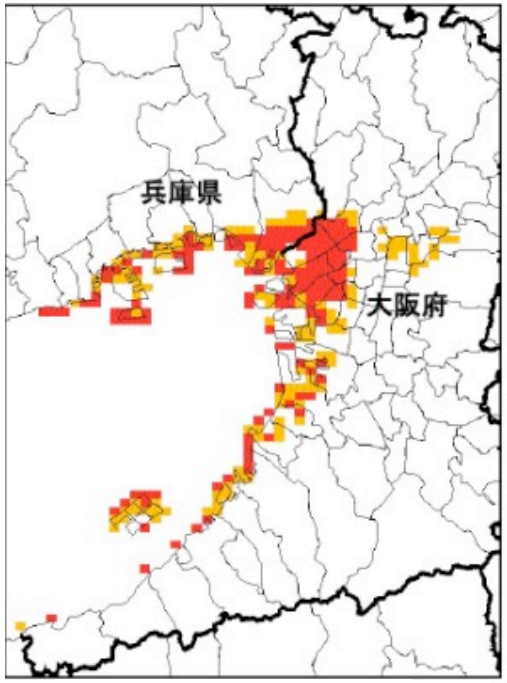
From: BBC

Flood inundation in Jakarta in 2020

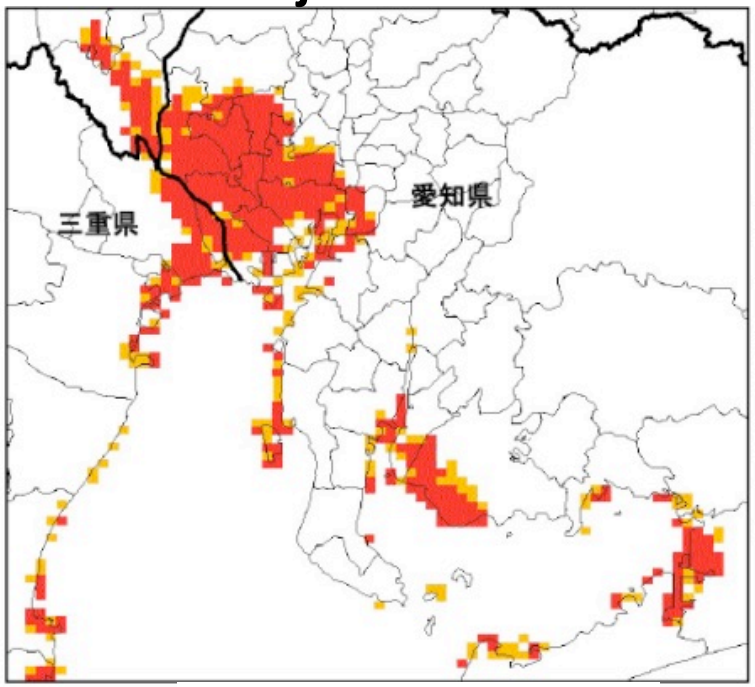


The Advanced Rapid Imaging and Analysis (ARIA) team at NASA's Jet Propulsion Laboratory and California Institute of Technology in Pasadena, California, in collaboration with the Earth Observatory of Singapore (EOS), created this Flood Proxy Map (FPM). Derived from synthetic aperture radar data acquired by the Copernicus Sentinel-1 satellites operated by the European Space Agency (ESA) before (21 Dec 2019) and during (2 Jan 2020) the event. Analysed by the ARIA-SG team at the Earth Observatory of Singapore (EOS) in collaboration with NASA-JPL and Caltech.

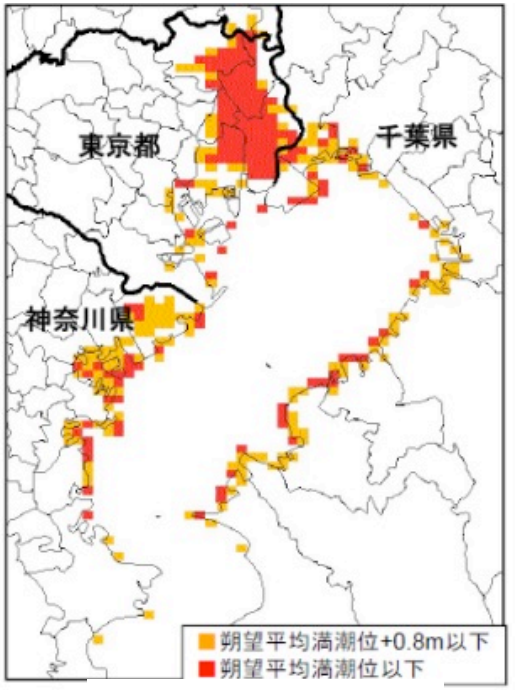
Land areas under sea level in major cities– before and after sea level rise-



Osaka Bay Area



Nagoya (Ise) Bay Area



Tokyo Bay Area

	Present	After Sea Level Rise	Rate
Area	500 ㎢	780 ㎢	160%
Population	3.1 million	4.4 million	140%

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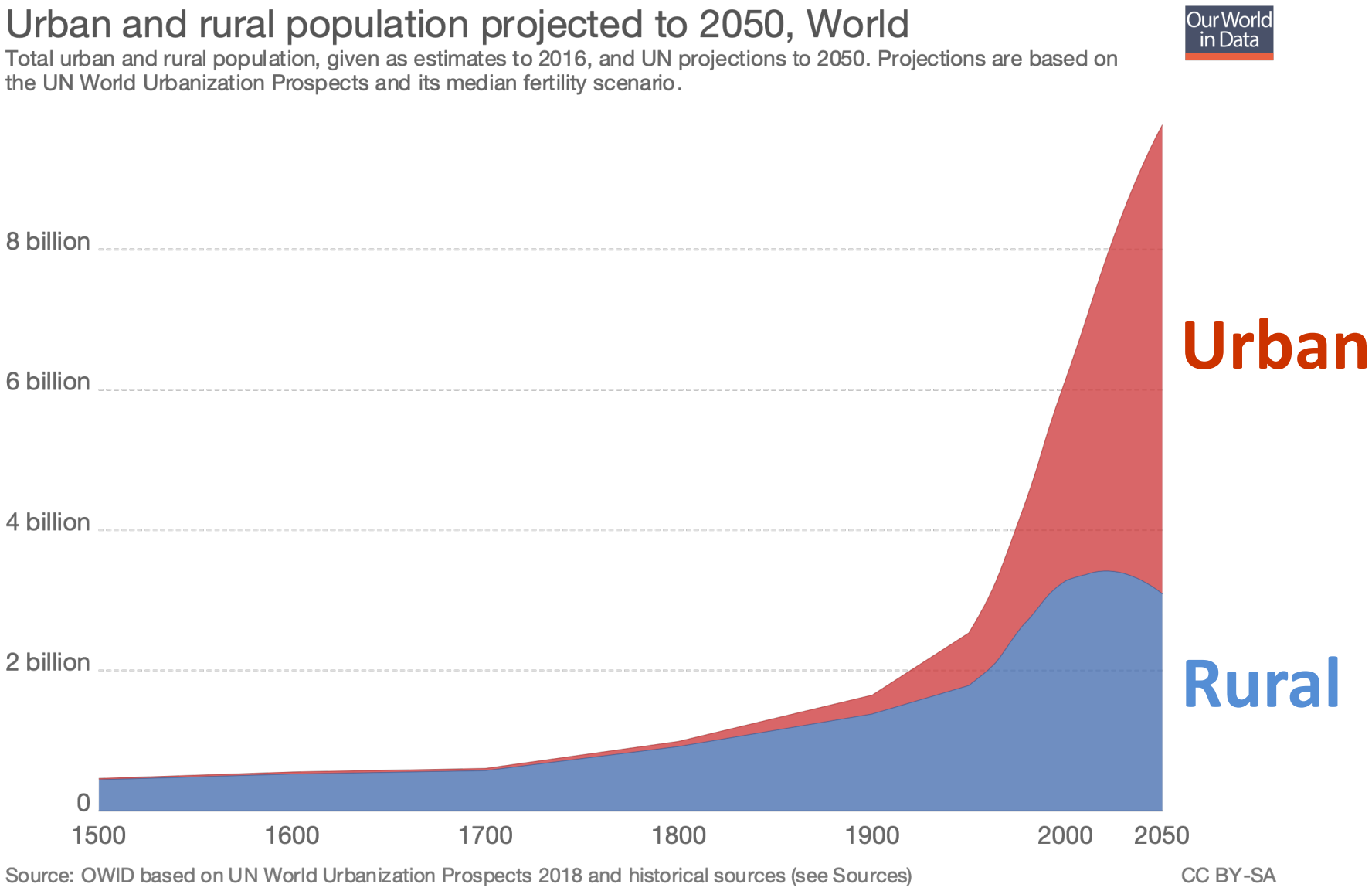
Vulnerability is increasing

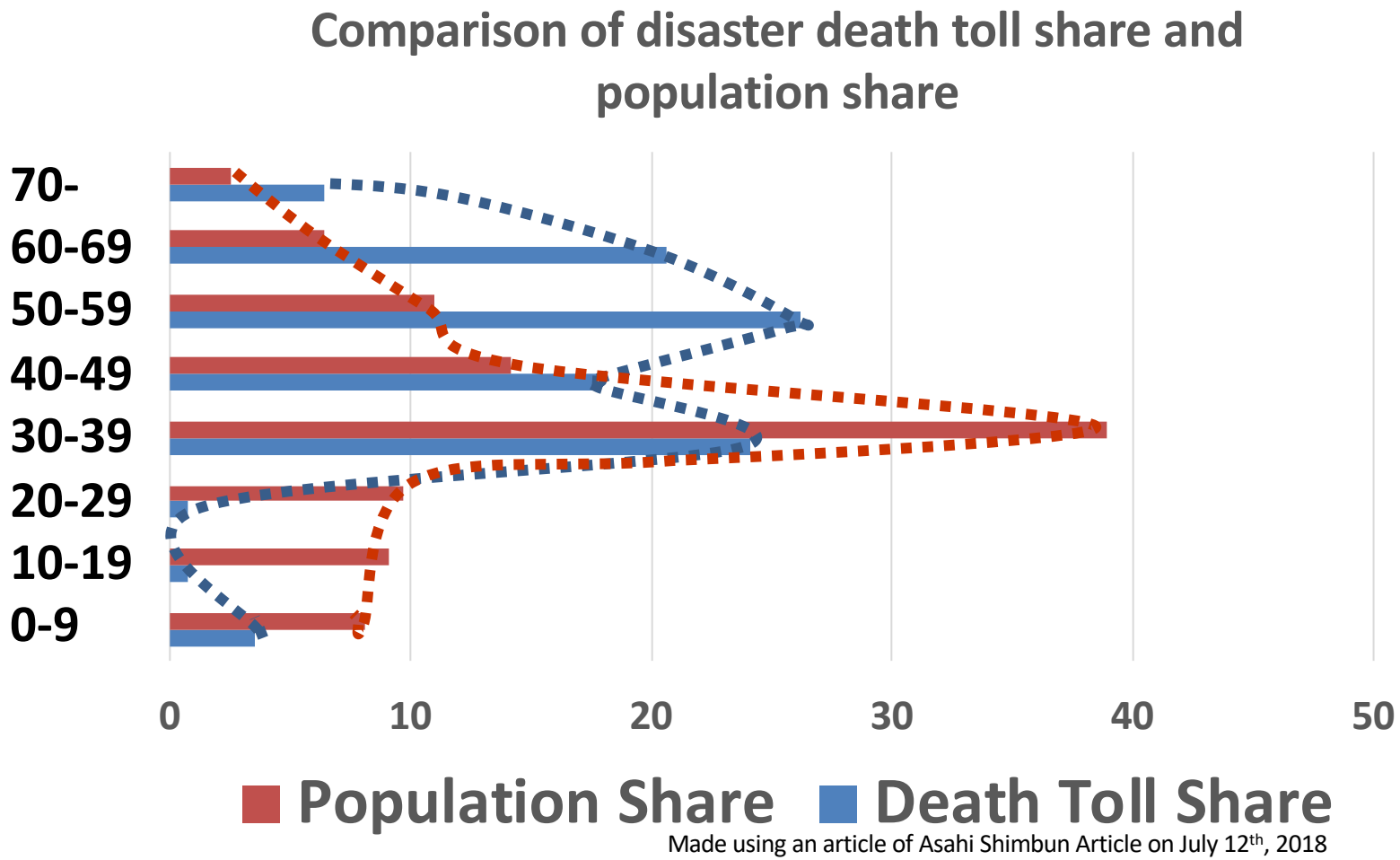
Rapid Urbanization



Vulnerability Increase by Social Changes

Death toll by age in West Japan Heavy Rain Disaster

- 70% of the death were 60 years old or older -

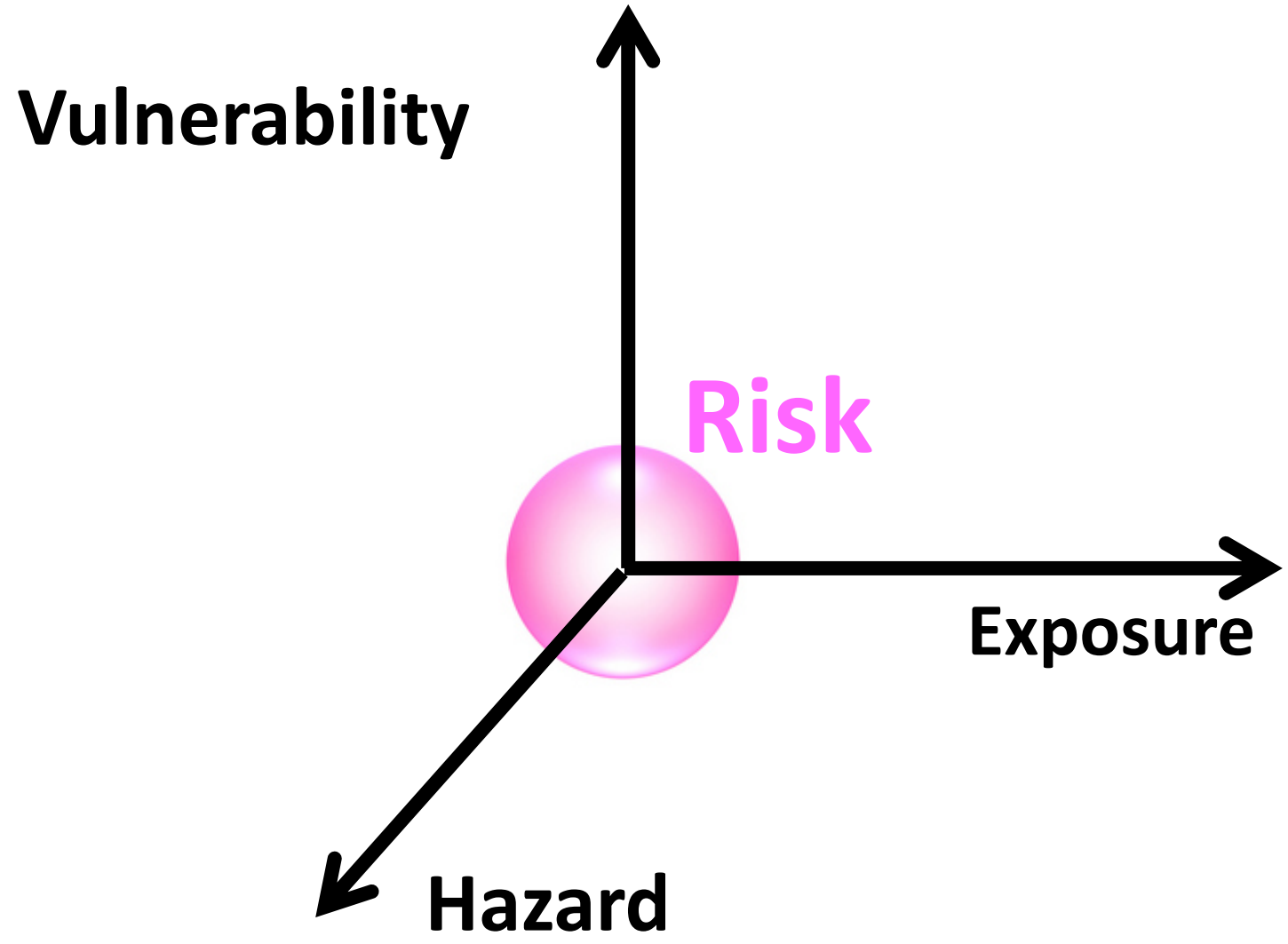


Made using an article of Asahi Shimbun Article on July 12th, 2018

- Death toll share by age group is according to an article by Asahi Shimbun as of July 12th, 2018
- Population share is that of national share and may differ from the disaster area

Three dimensional increase of Disaster Risk

Risk=hazard × Exposure × Vulnerability



Three dimensional increase of Disaster Risk

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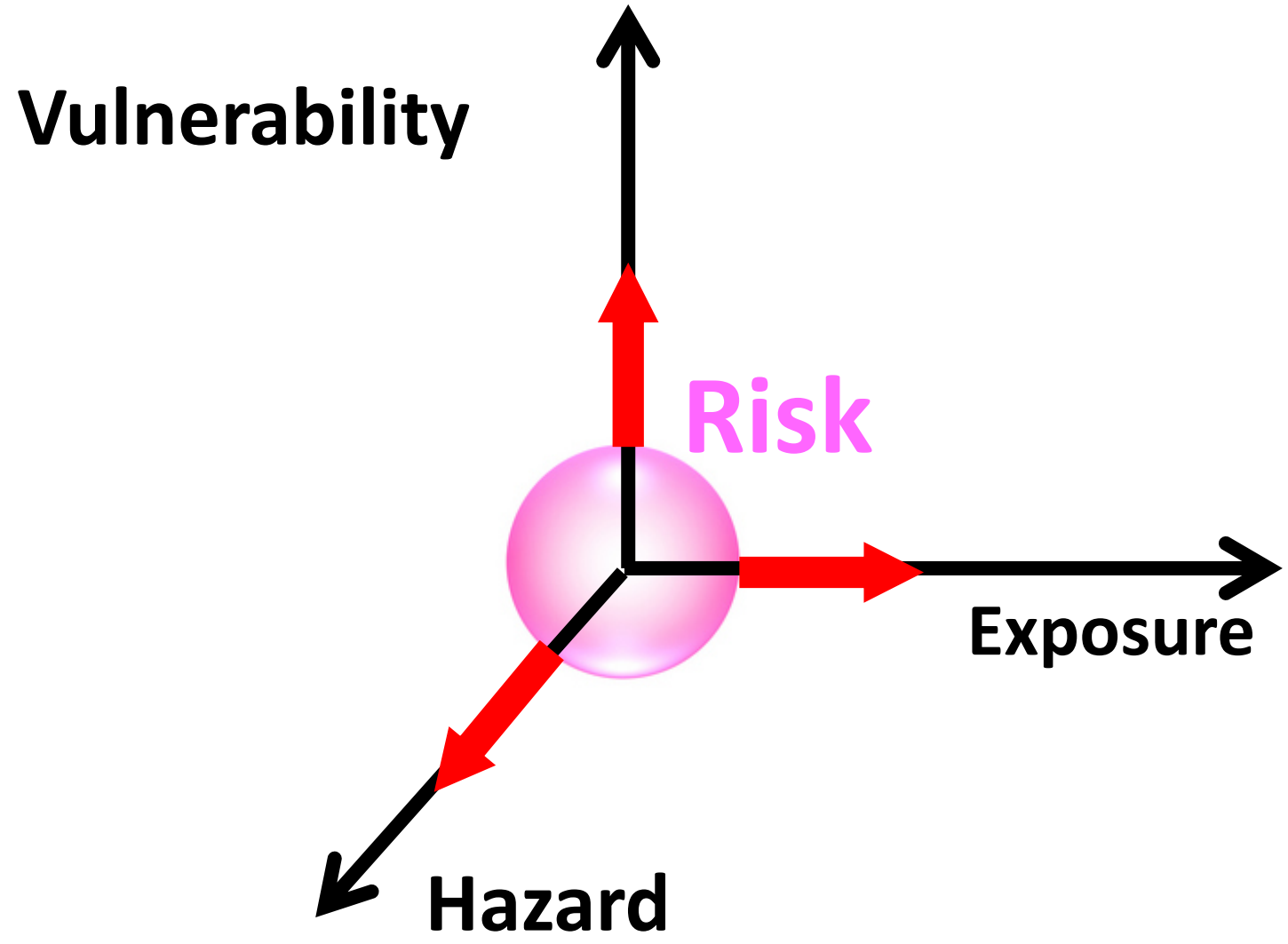

Three-dimensional increase of Disaster Risk

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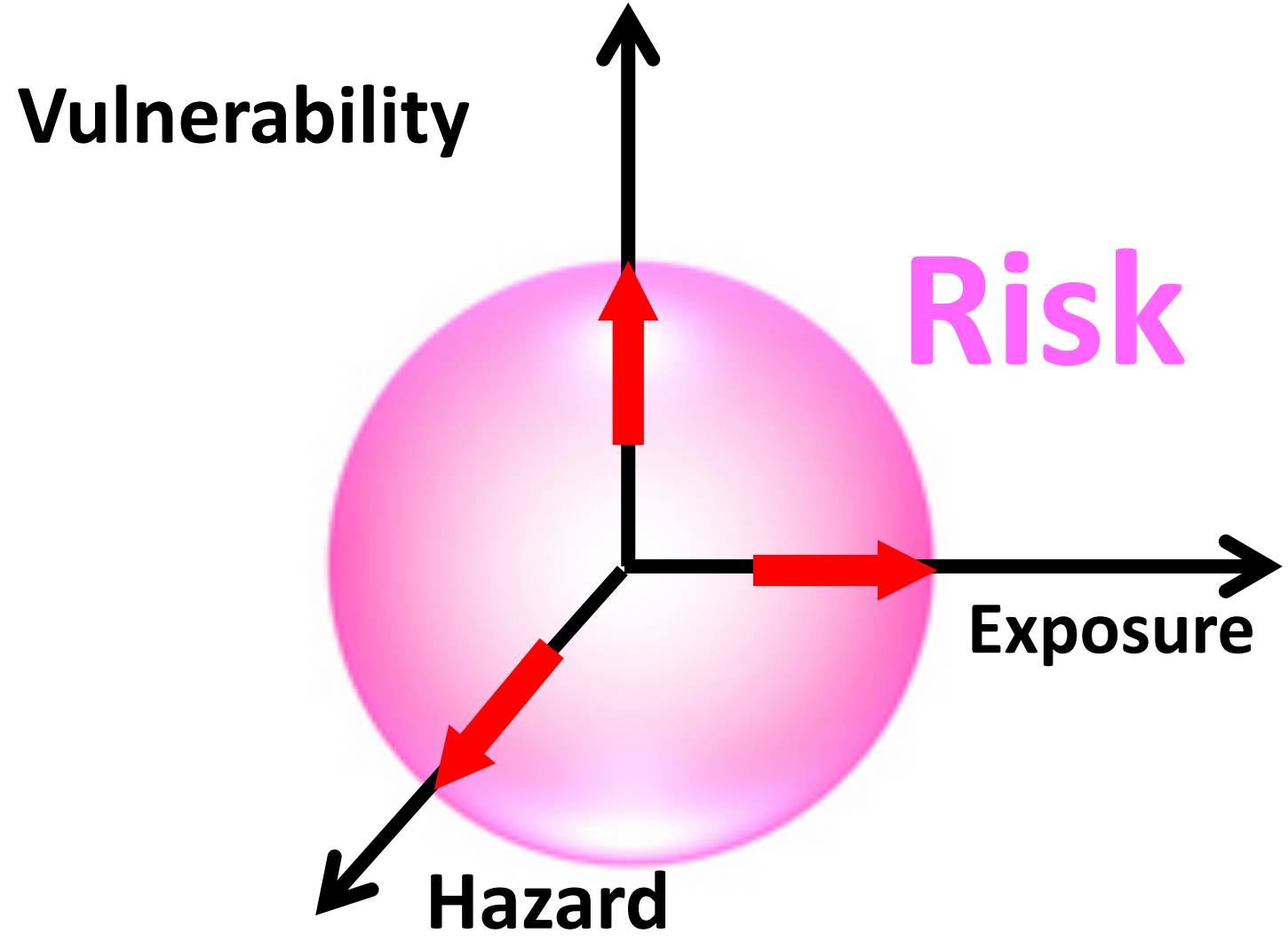


Governance for Disaster Risk Reduction (DRR) in fields

- ✓ Disaster risk is rapidly increasing
- ✓ DRR Governance should be resilient, sustainable, and inclusive to address changing landscape of DRR
- ✓ What governance system is needed for DRR?

Let's start by seeing what happens in fields in disasters

Field DRR Action

Question

What will you do if…

- **You are river disaster manager mandated to save people's lives ;**
- **There was heavy rain in your river basin**
- **A dyke is about to break;**
- **Time is limited…**

  - ✓ **Dispatch workers to prevent breakage?**
  - ✓ **Call Mayor to ask for evacuation order?**
  - ✓ **Inform Media of the imminent crisis?**
  - ✓ **Report to your senior official?**

Start of levee breach:8:29 a.m

8:30a.m.

8:35 a.m.

8:37a.m.

Levee breached at 9:03 a.m.

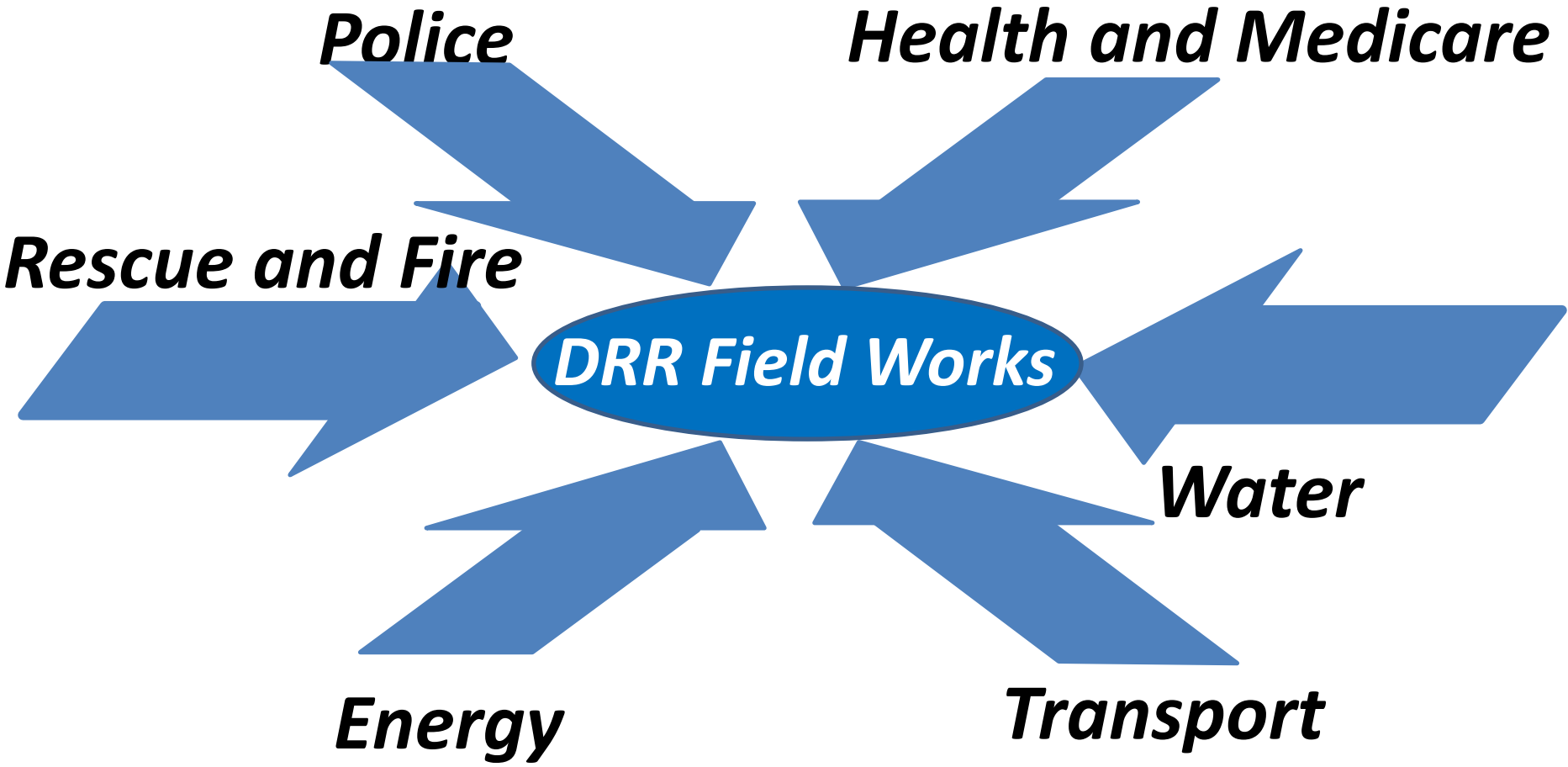
Challenges for DRR Governance in fields

All Players in disasters are required to:

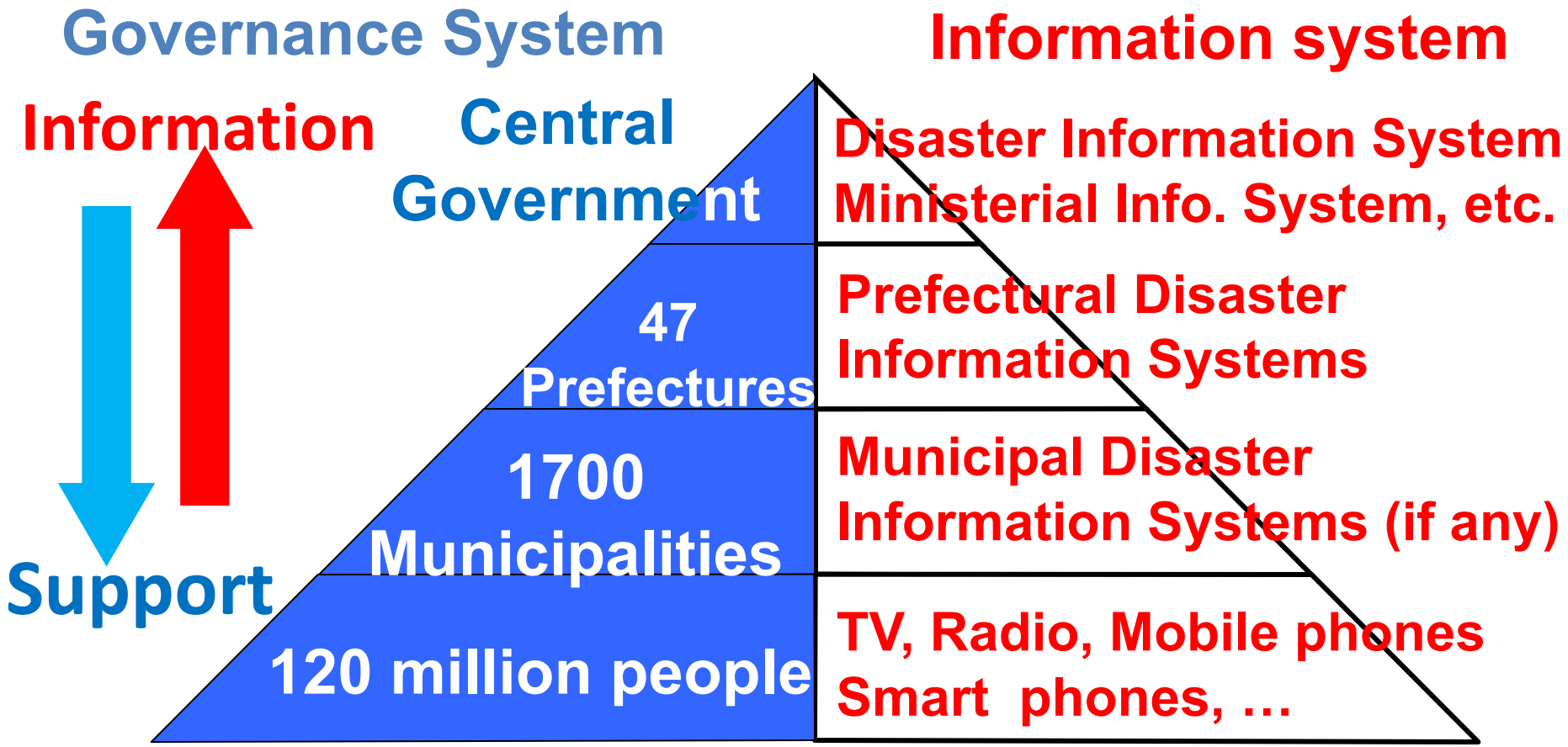
1. **Collect, analyze, identify, and share critical information on real-time basis**
2. **Make one critical decision out of numerous (and sometimes conflicting) information**
3. **Take time-bound actions within extremely difficult physical conditions**
4. **Coordinate, vertically and horizontally, actions of various players**

Governance system for DRR should address these challenges simultaneously within extreme constraints of time and resources

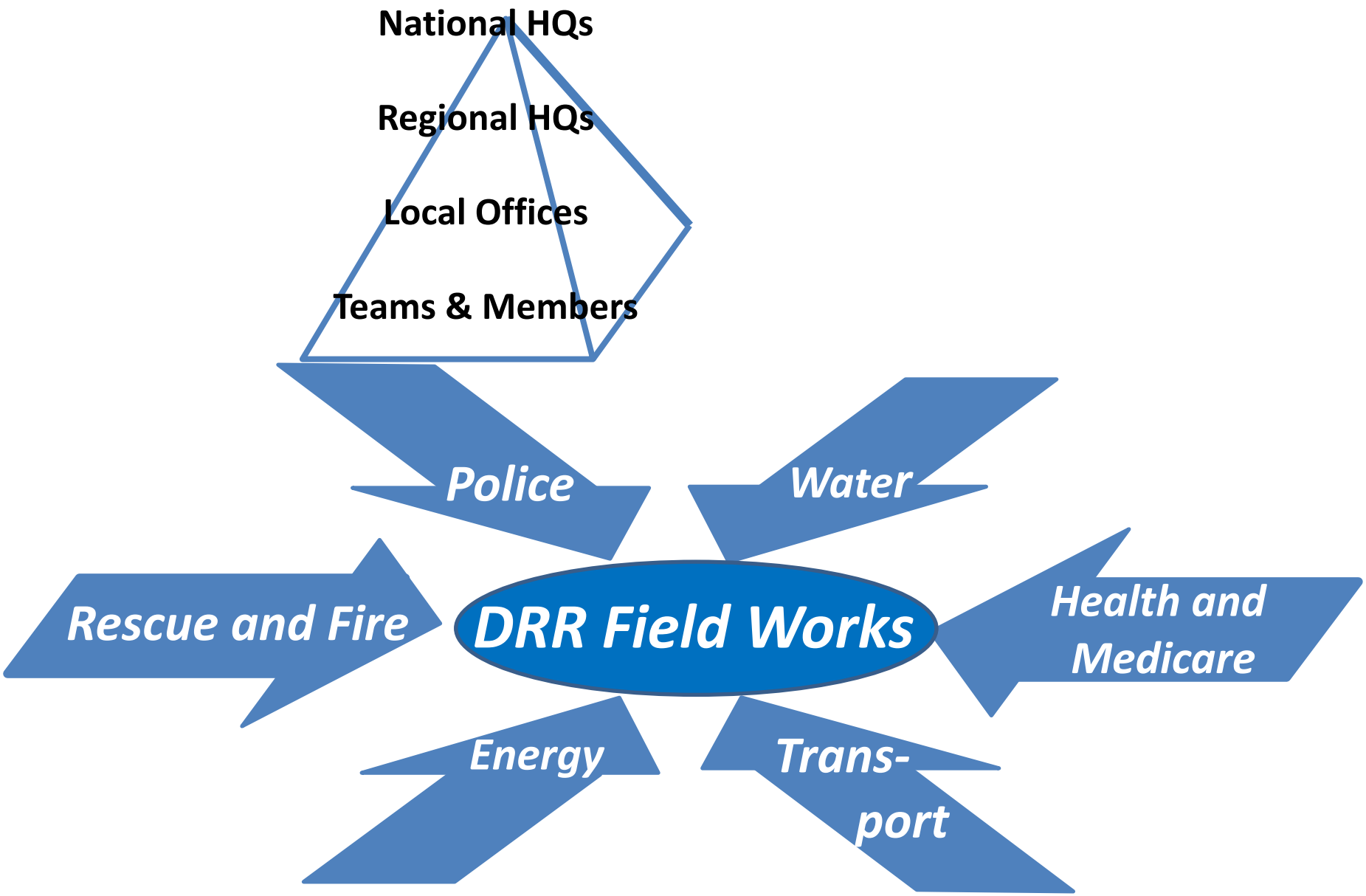
“Governance as usual” does not work for DRR


Police
Health and Medicare
Rescue and Fire
DRR Field Works
Water
Energy
Transport

Hierarchy of DRR-related organizations and its information system



Disaster Management System Hierarchy in Japan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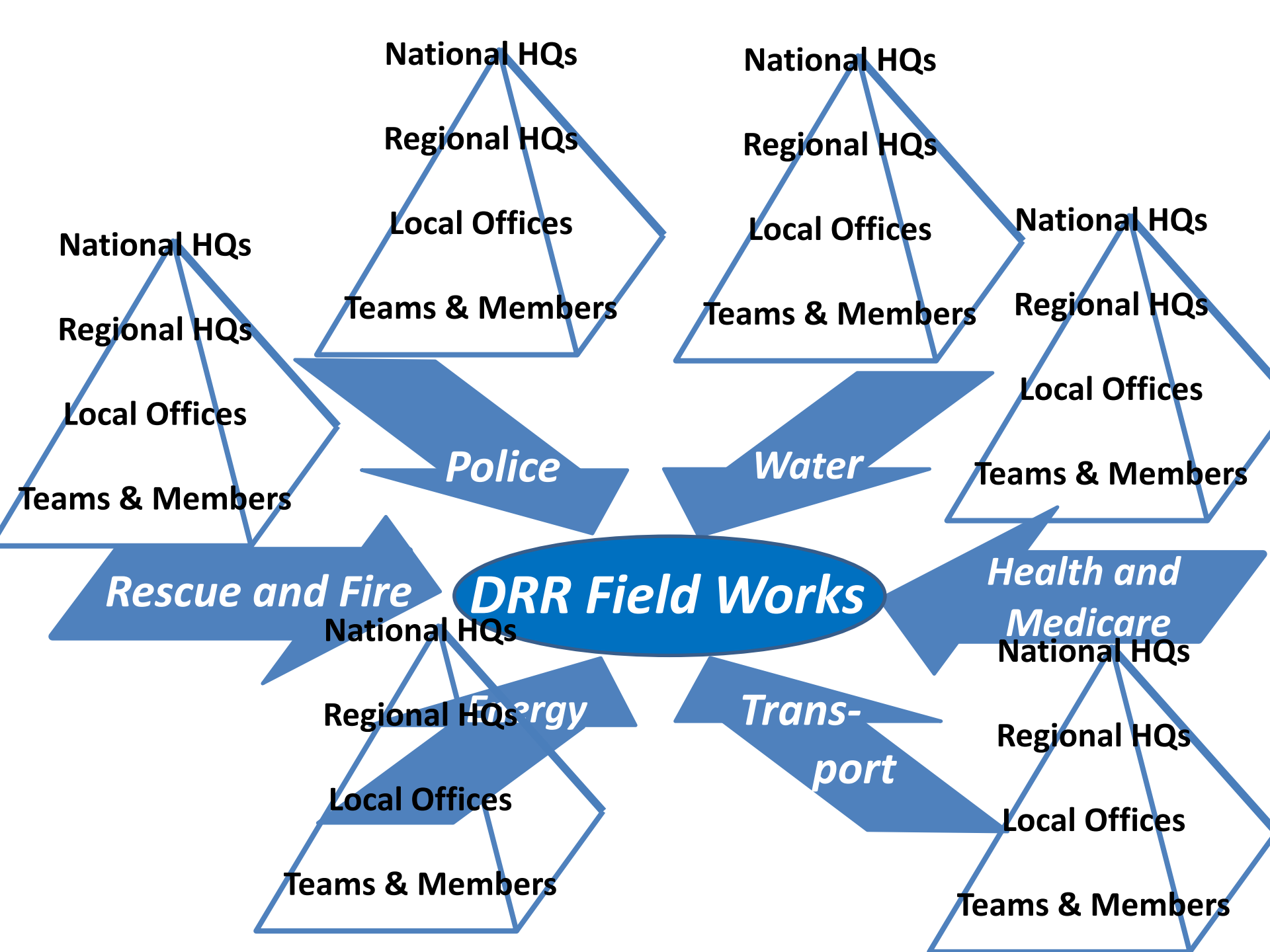
Local Offices
Teams & Members
Police
Water
Rescue and Fire
DRR Field Works
Health and Medicare
Energy
Trans-port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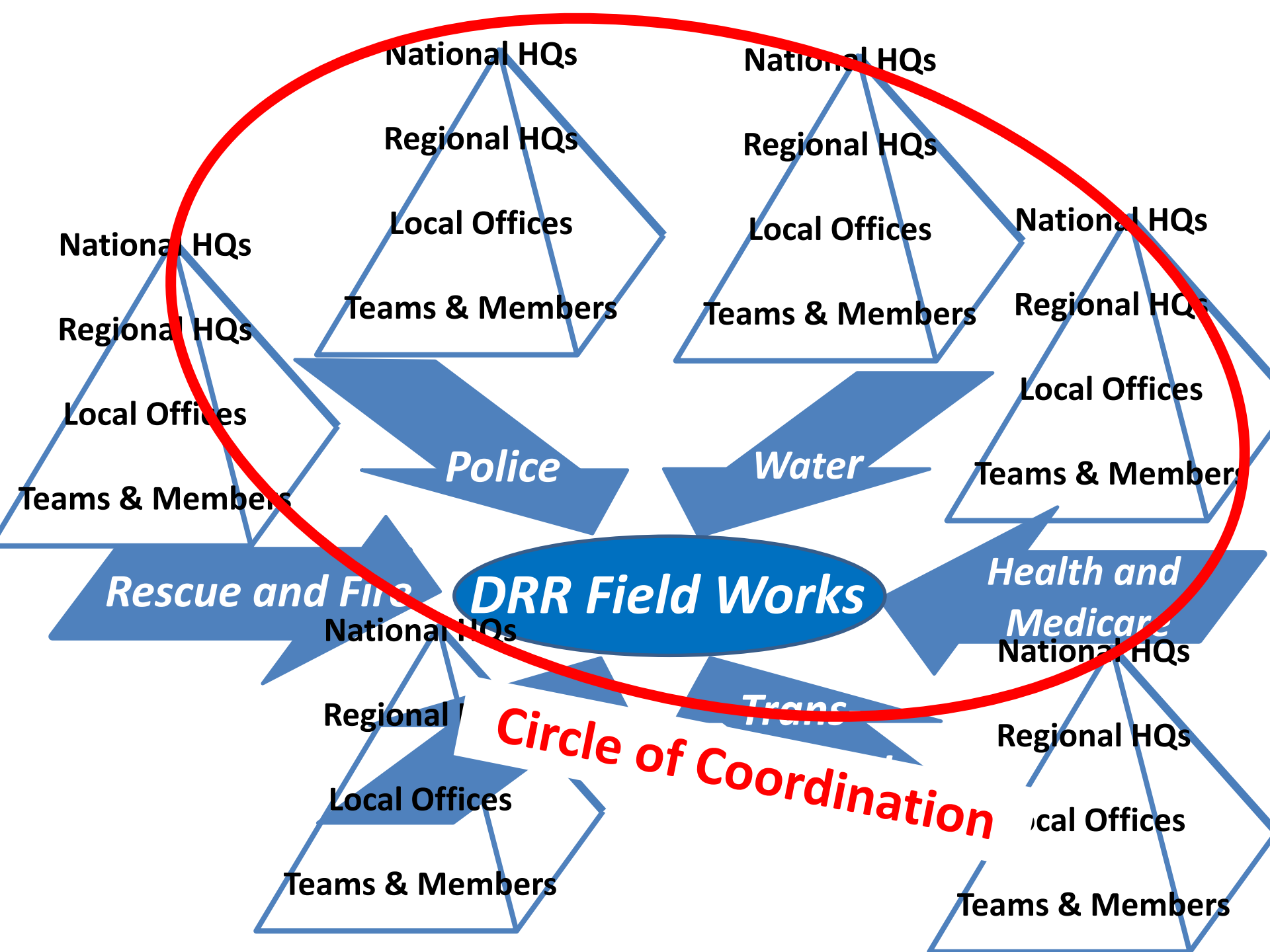
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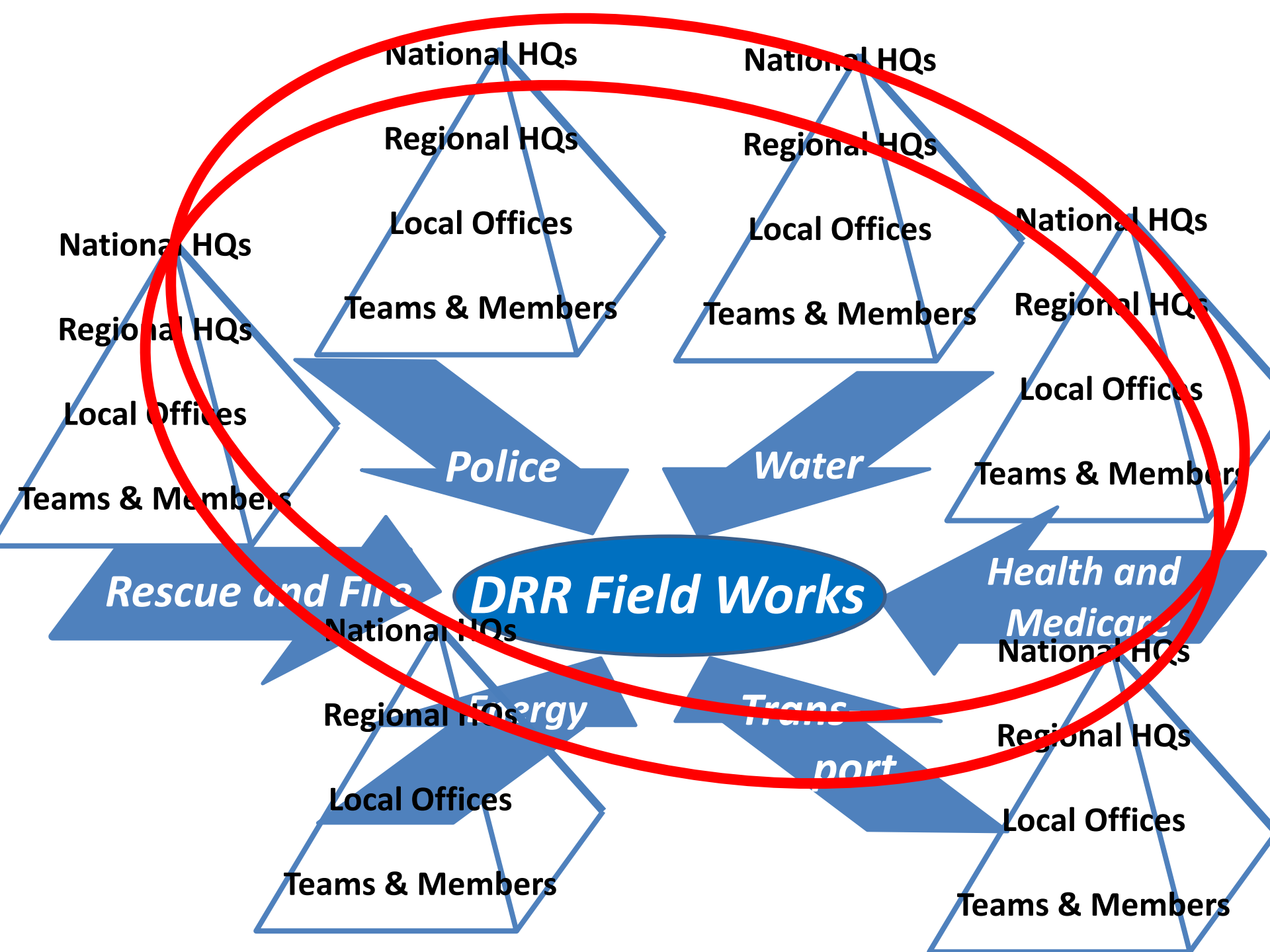
Teams & Members
Circle of Coordination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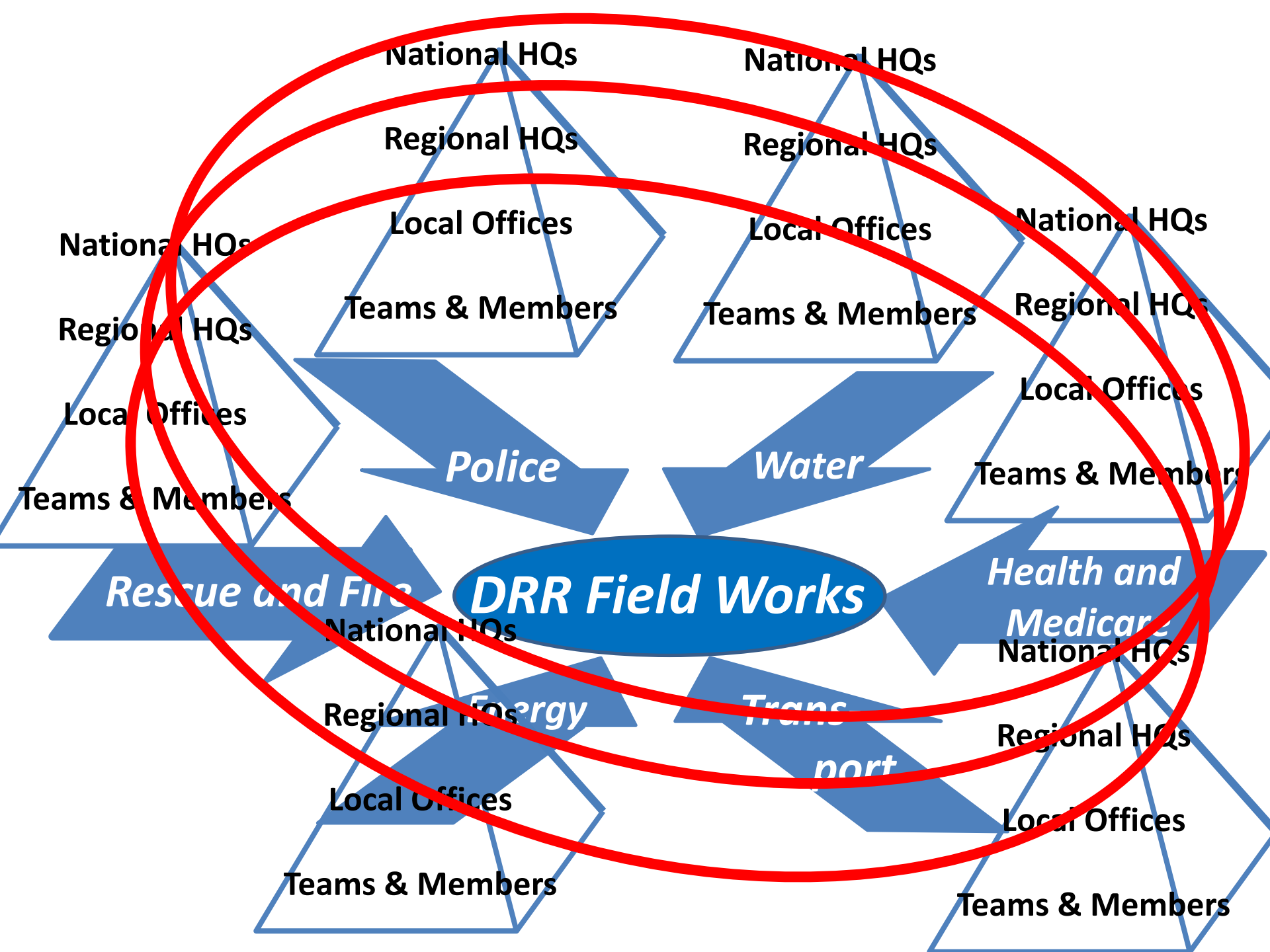
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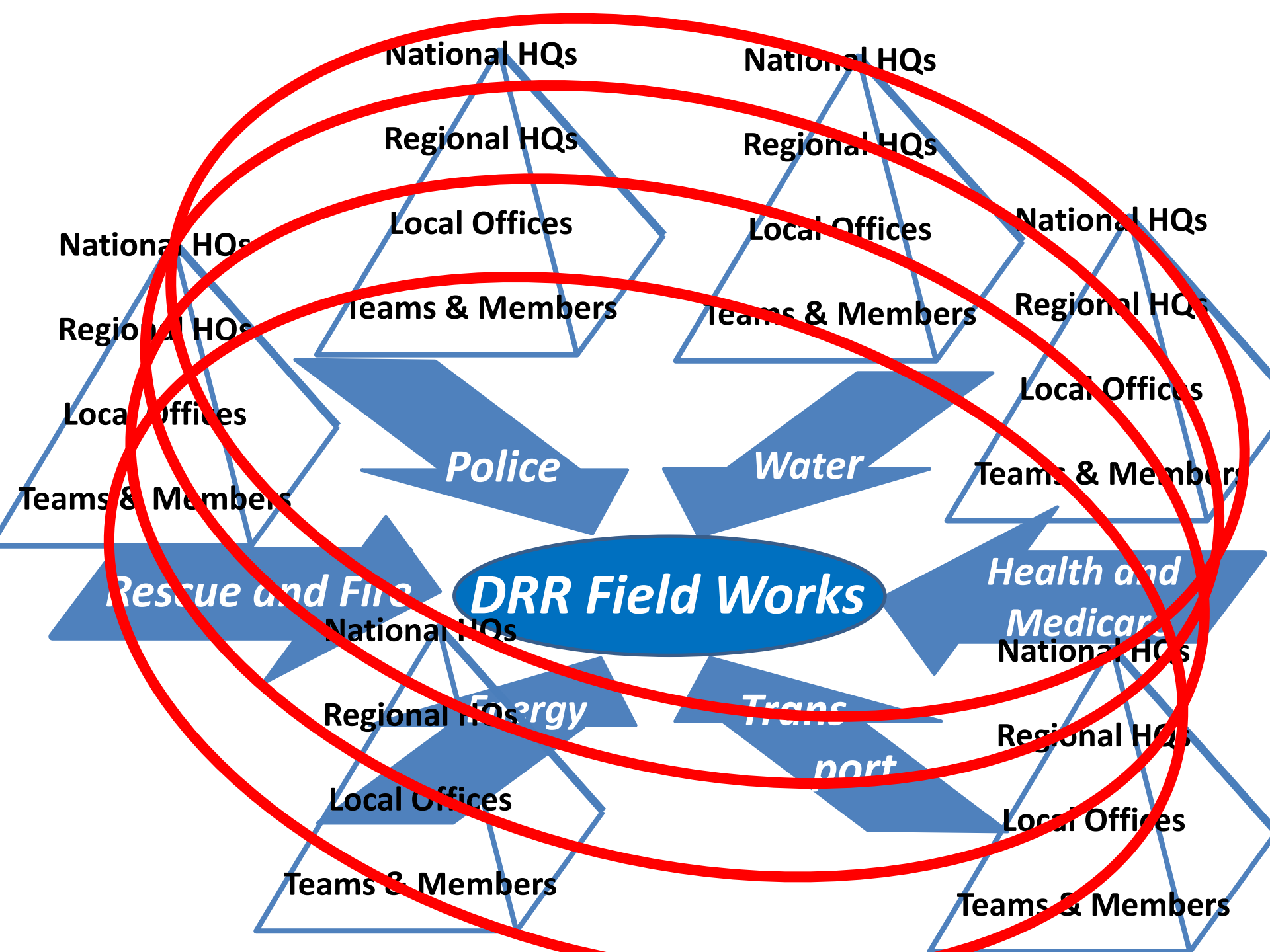
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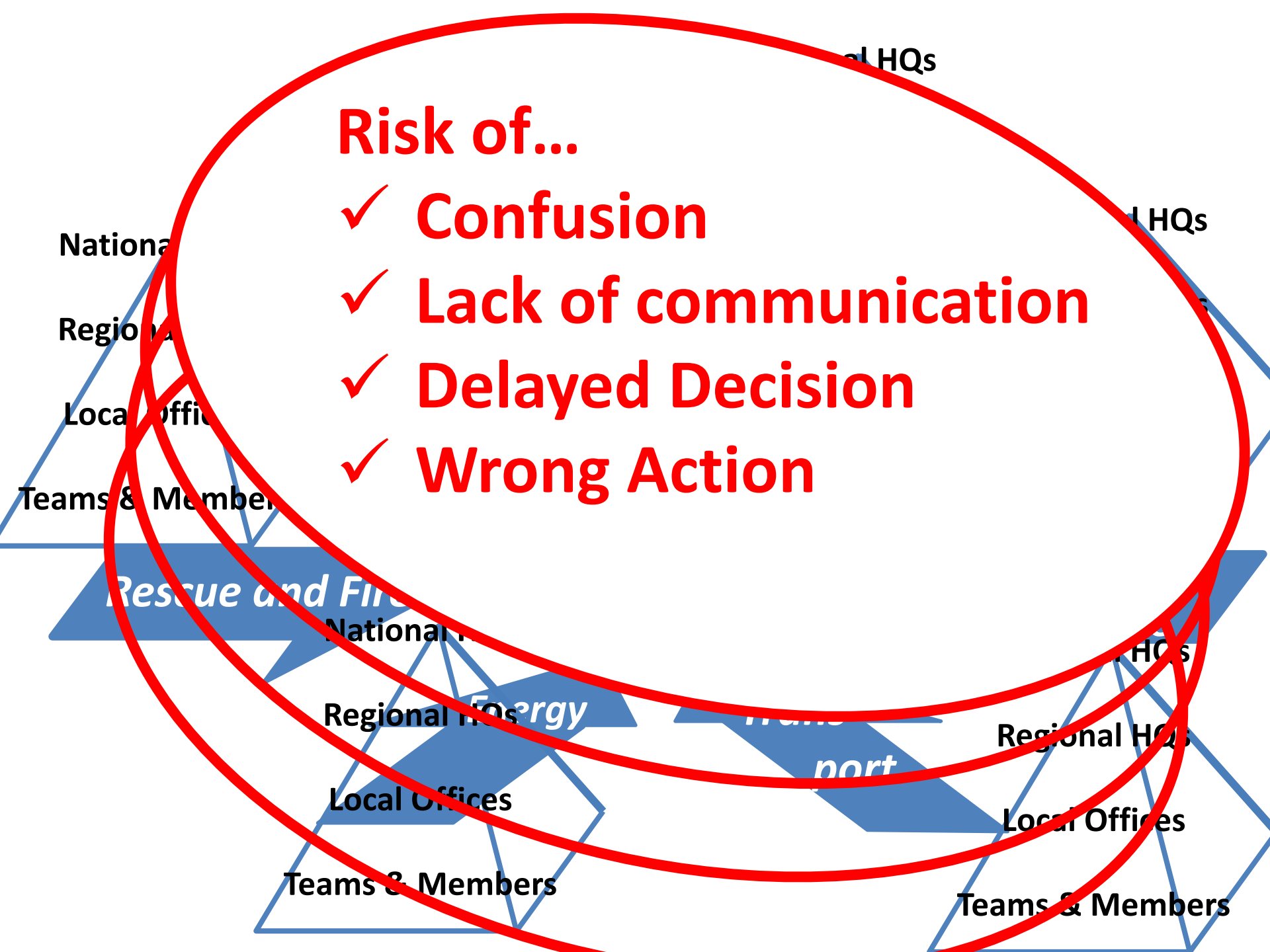
Risk of…
✓ Confusion
✓ Lack of communication
✓ Delayed Decision
✓ Wrong Action
Rescue and Fire
Energy
port
Regional HQs
Local Offices
Teams & Members

Concept of Integrated DRR Governance

- A solution for DRR Challenges -

DRR actions we want to see in Fields

Actions:

- ✓ **Timely critical decisions are made out of numerous information**
- ✓ **Each Stakeholder takes effective time-bound actions despite extreme difficult physical and other conditions.**

Communication:

- ✓ **Necessary information are freely shared by all players in timely manners.**

Coordination:

- ✓ **Actions by various players are easily and quickly coordinated, avoiding duplication, confusion, and “air-pockets”.**

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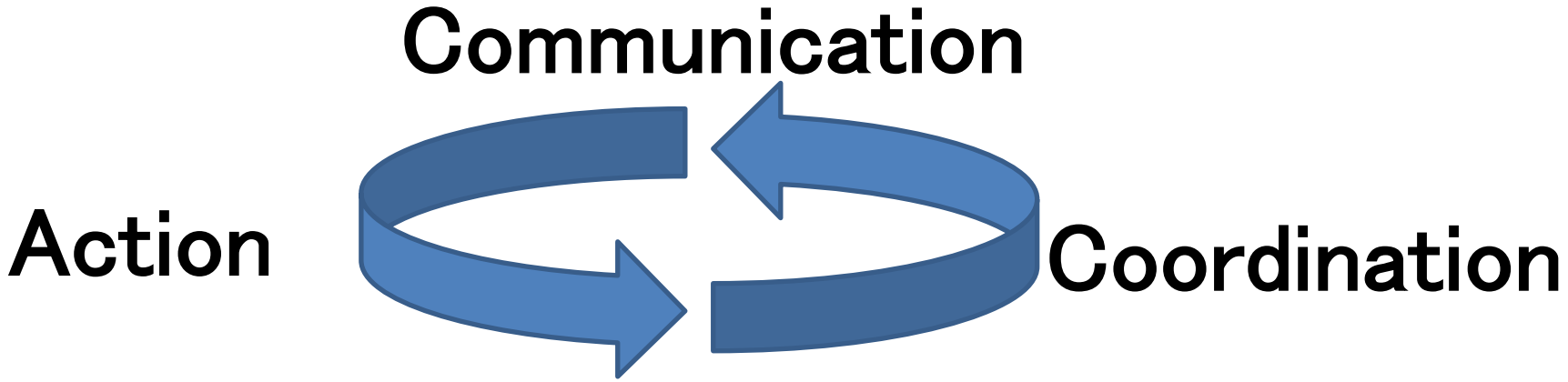
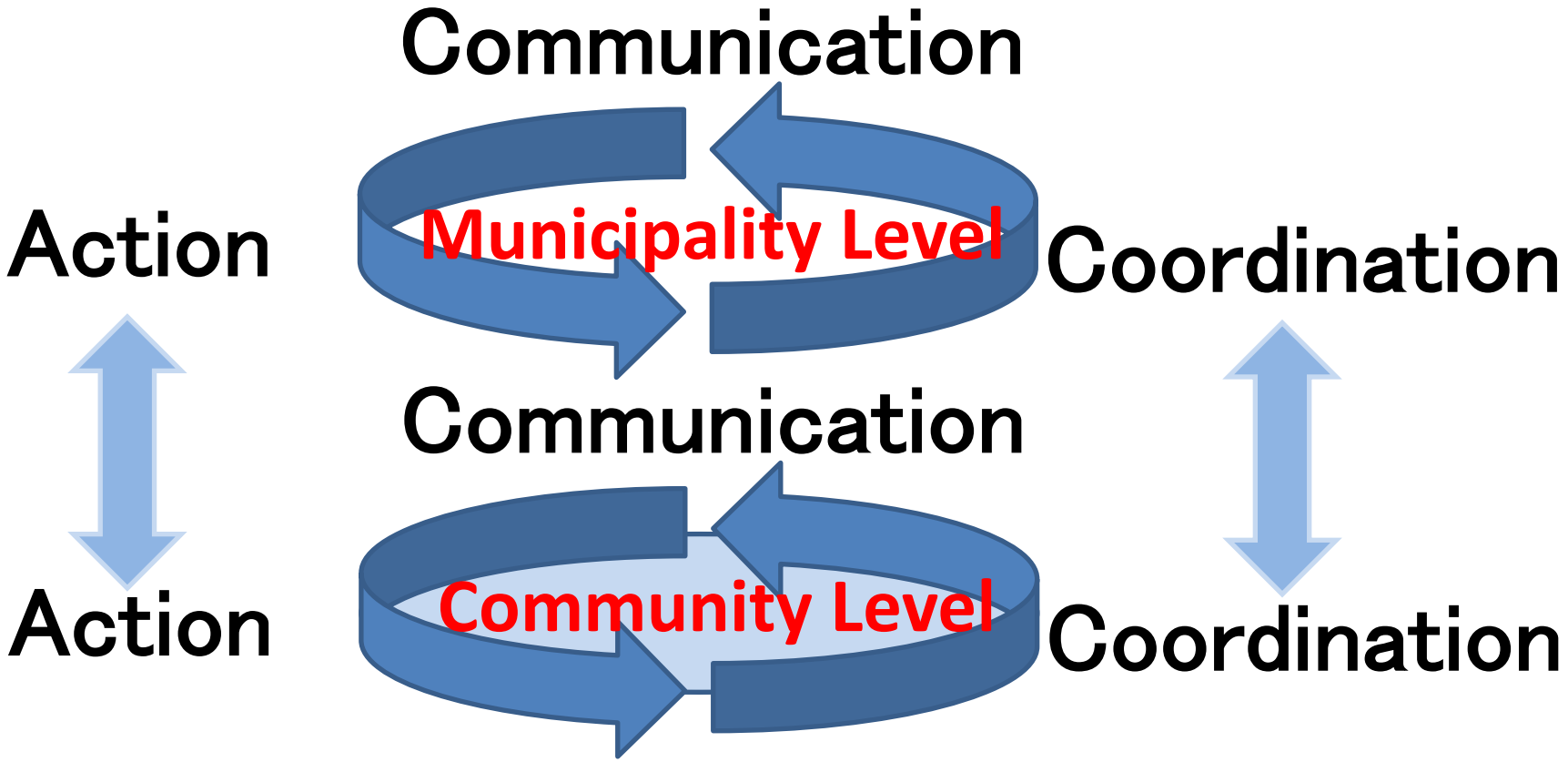


Action, Communication, and Coordination for DRR

Action, Communication, and Coordination for DRR



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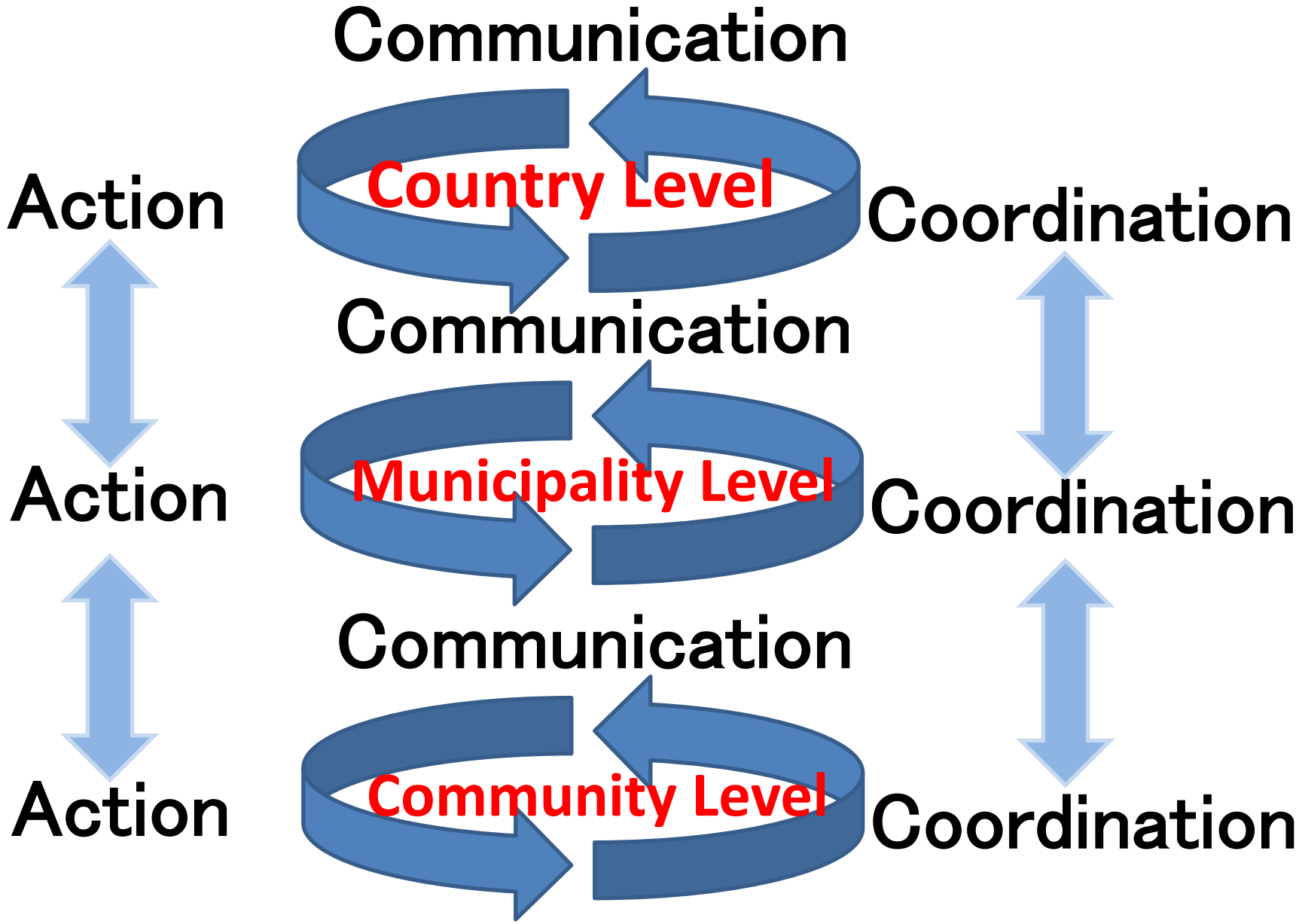

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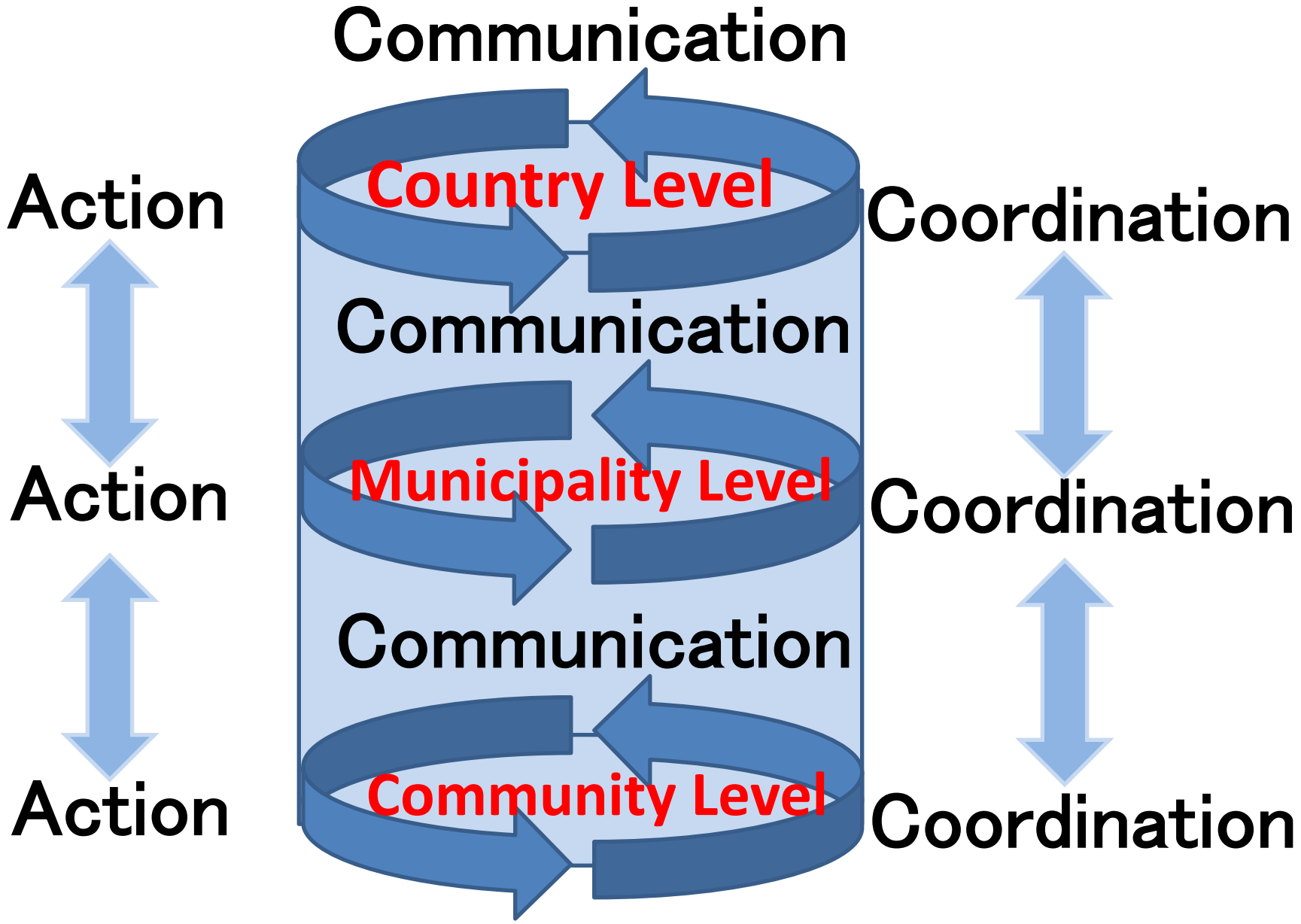
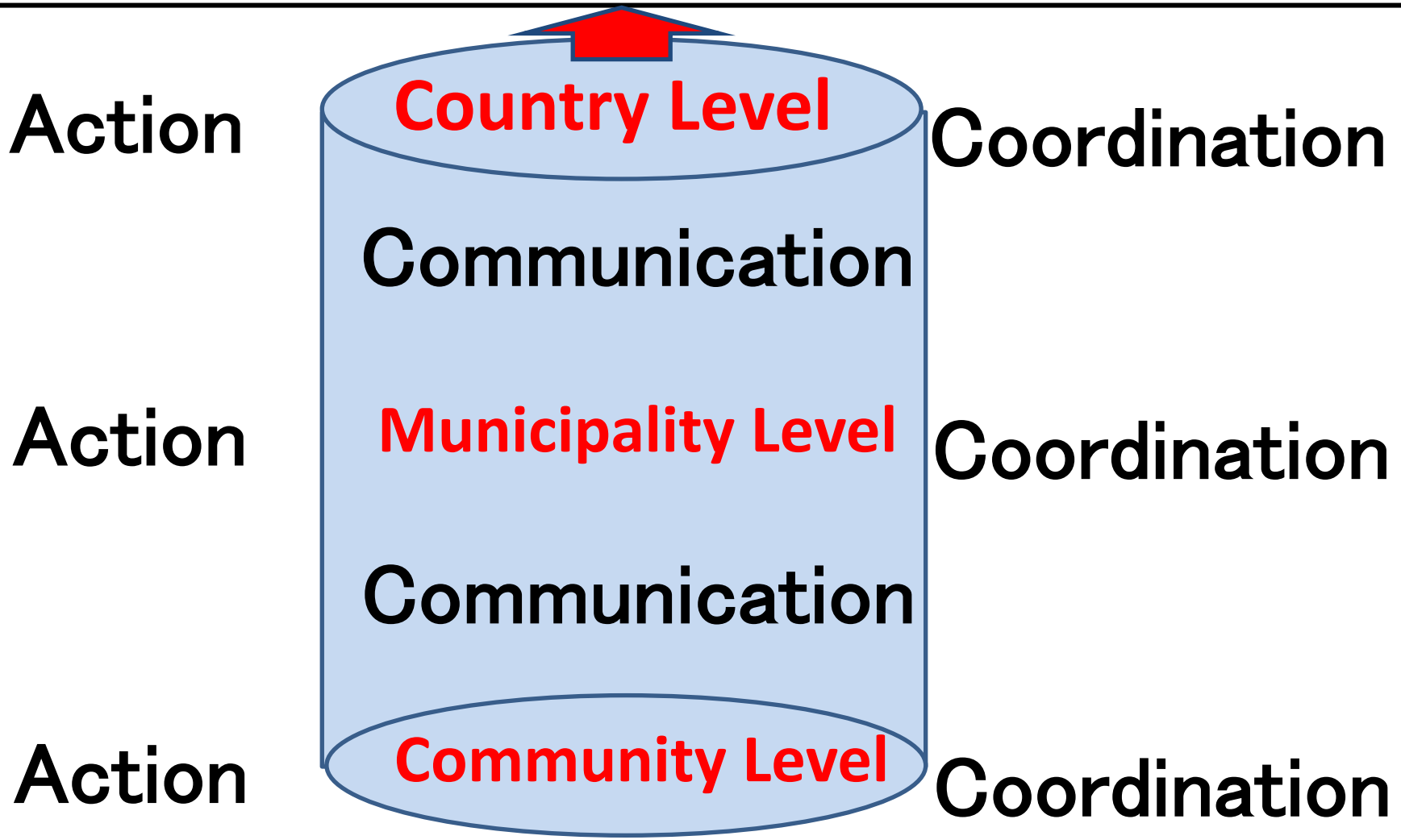


Integrated DRR Governance System is a Cylinder that Enables Integration of Action, Coordination, and Communication at All Levels



Integrated DRR Governance Cylinder

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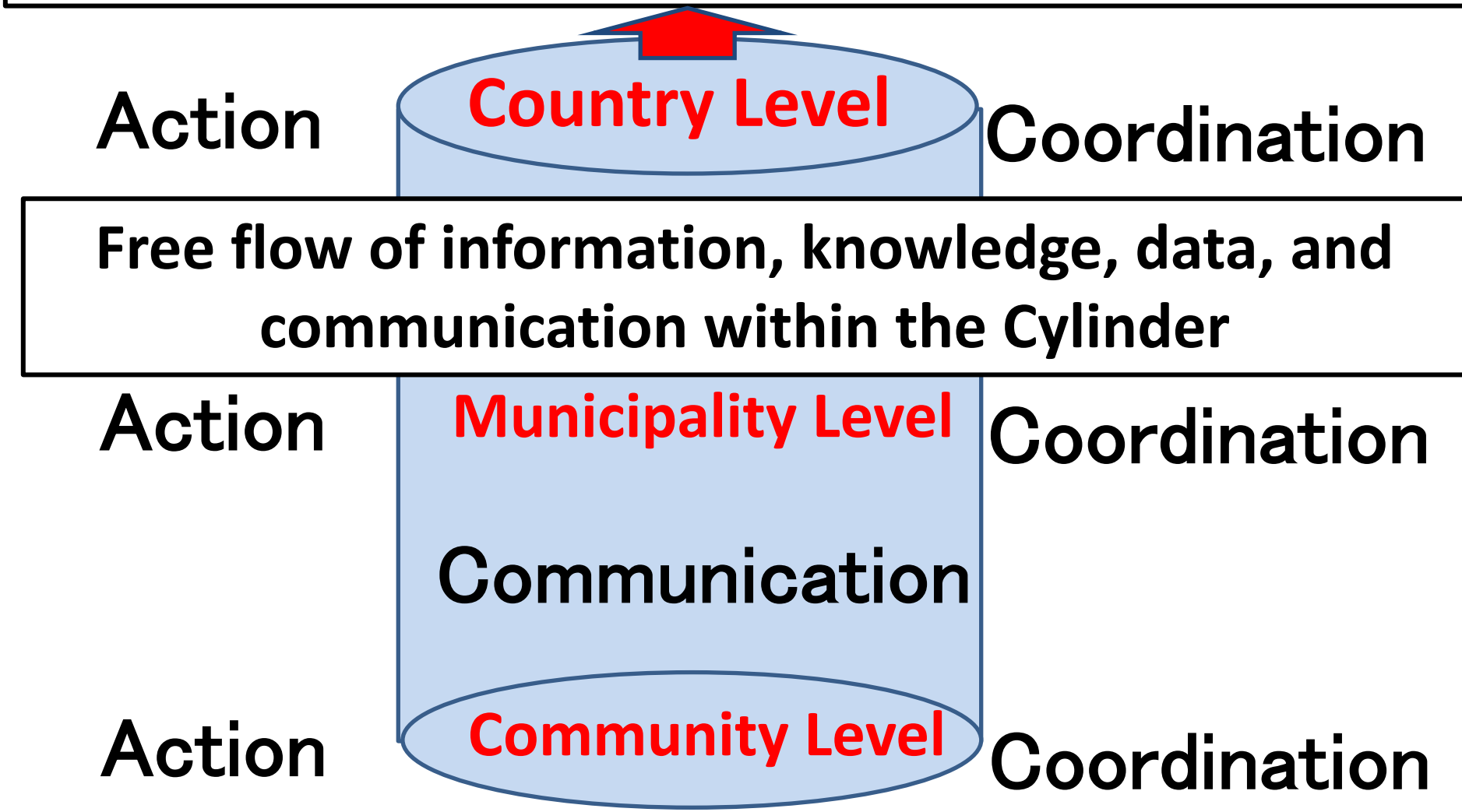
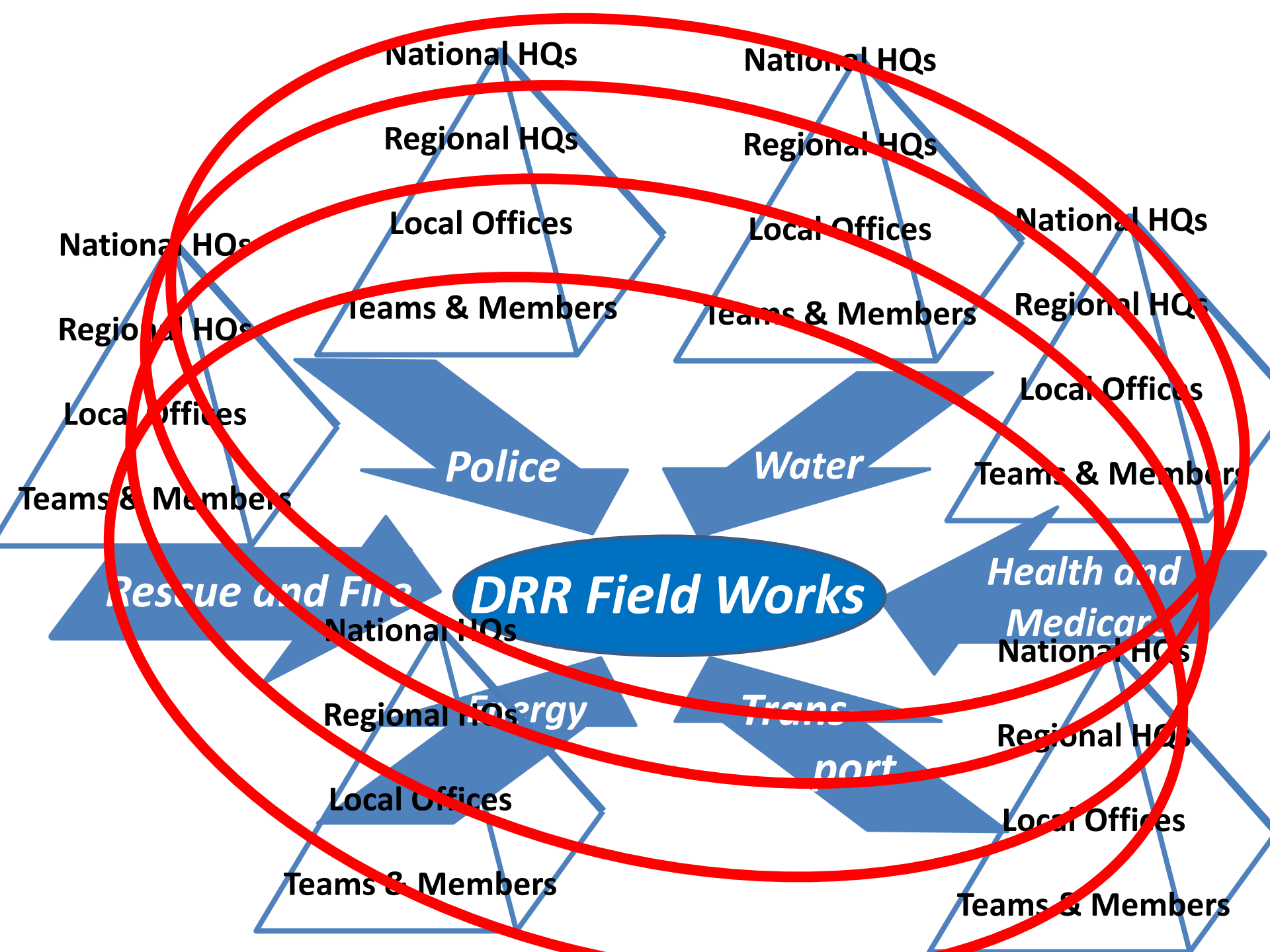


Integrated DRR Governance Cylinder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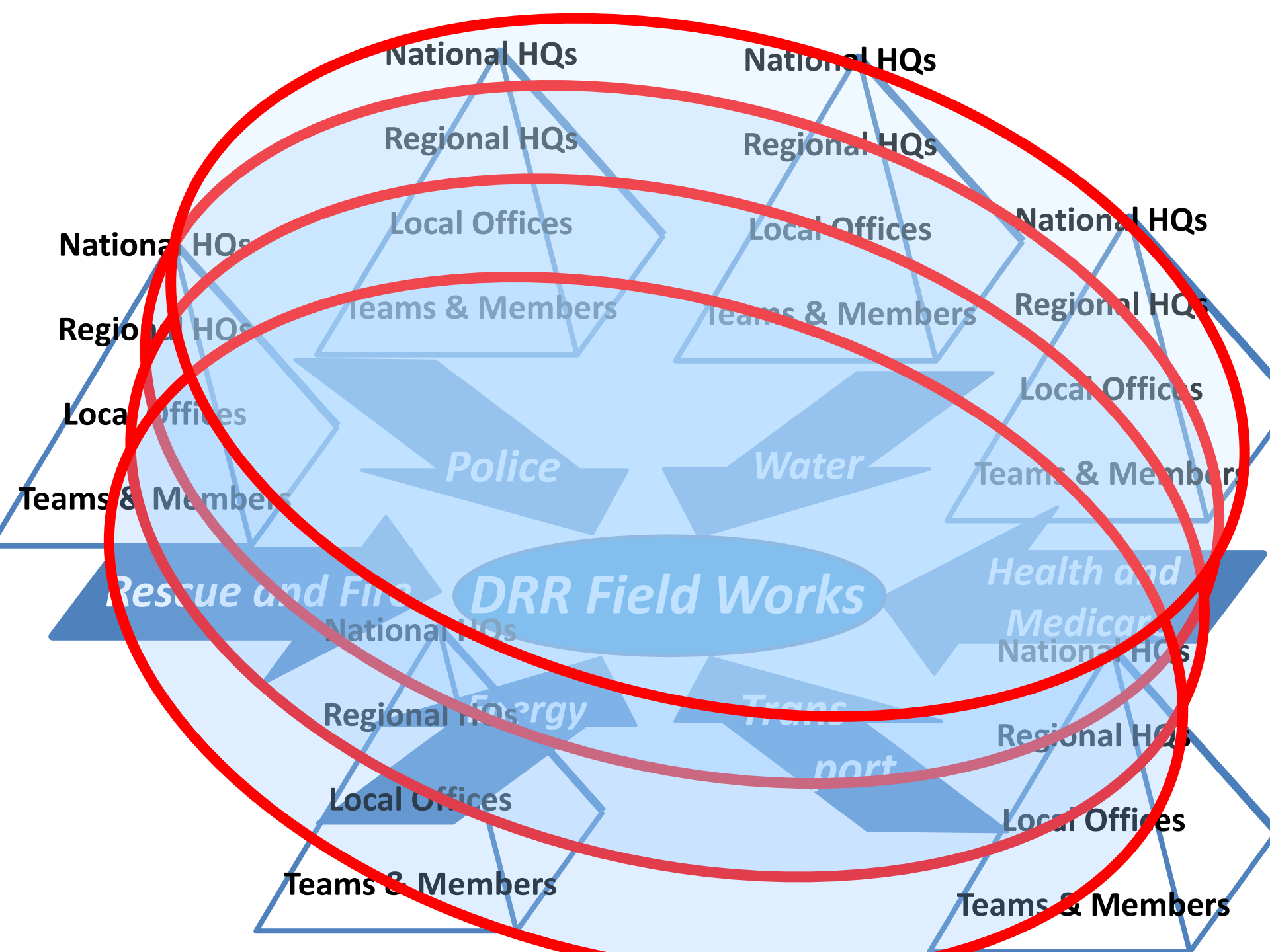
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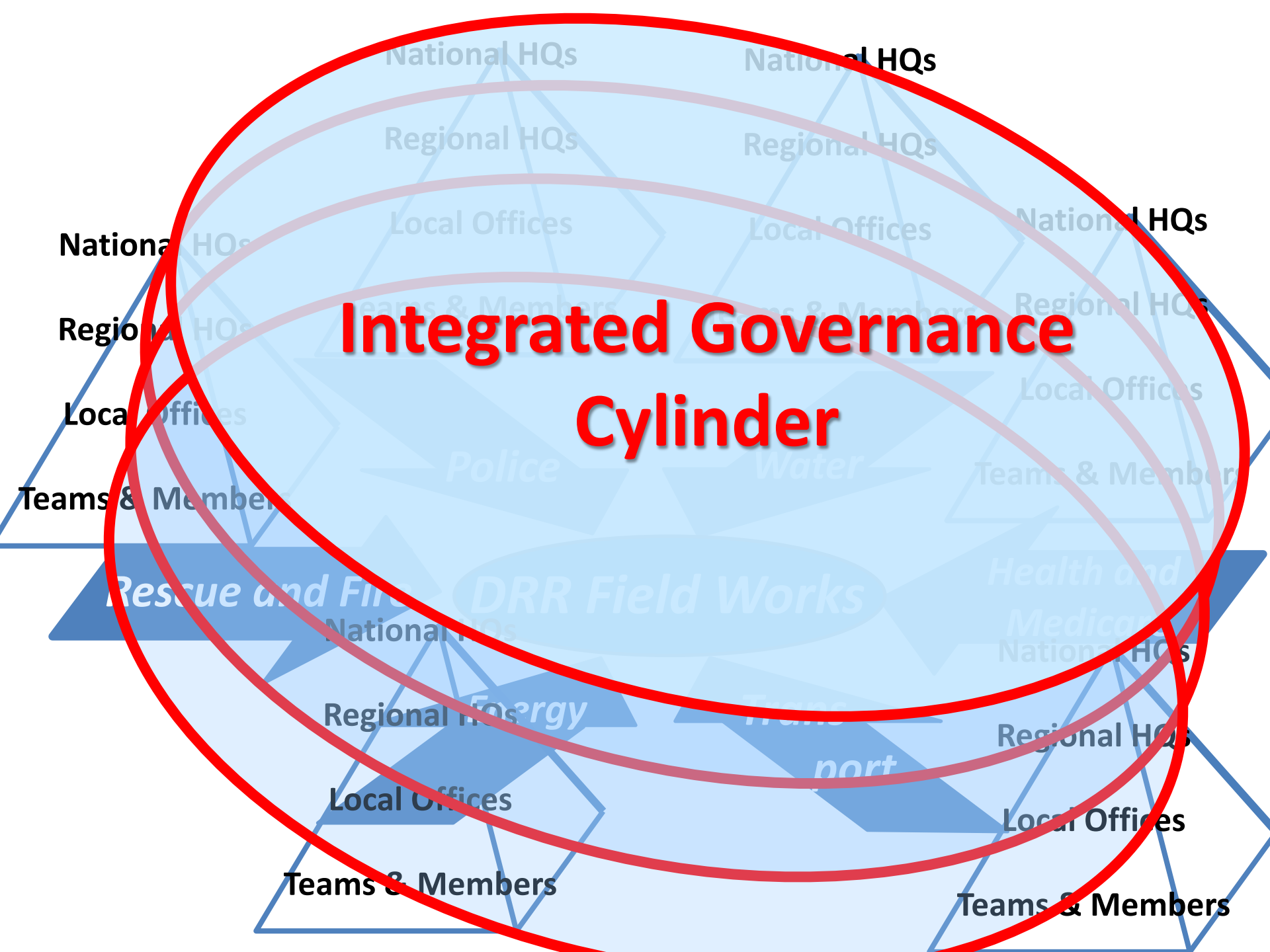
Integrated Governance Cylinder
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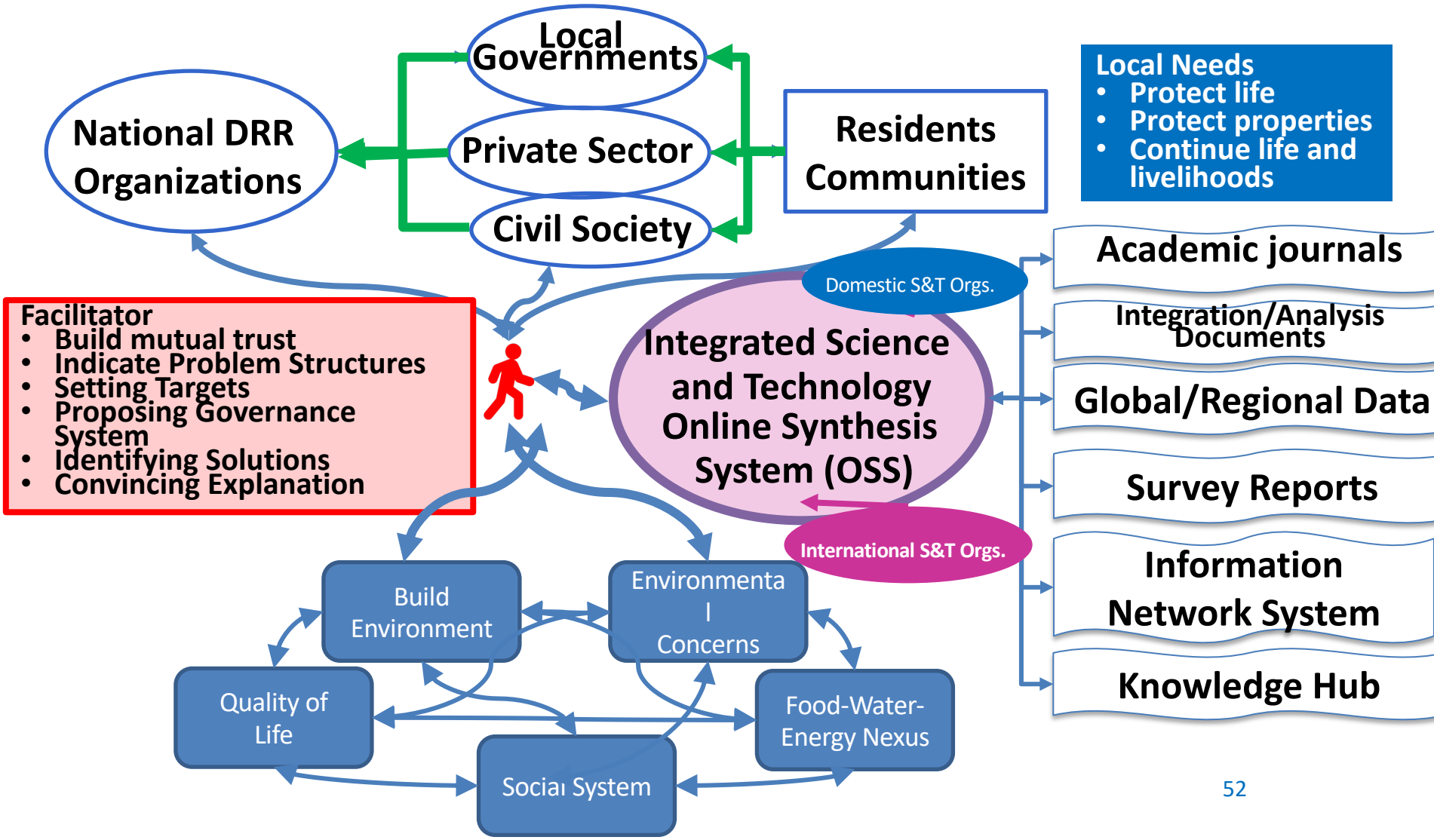
Transport

What do we need for Integrated DRR Governance?

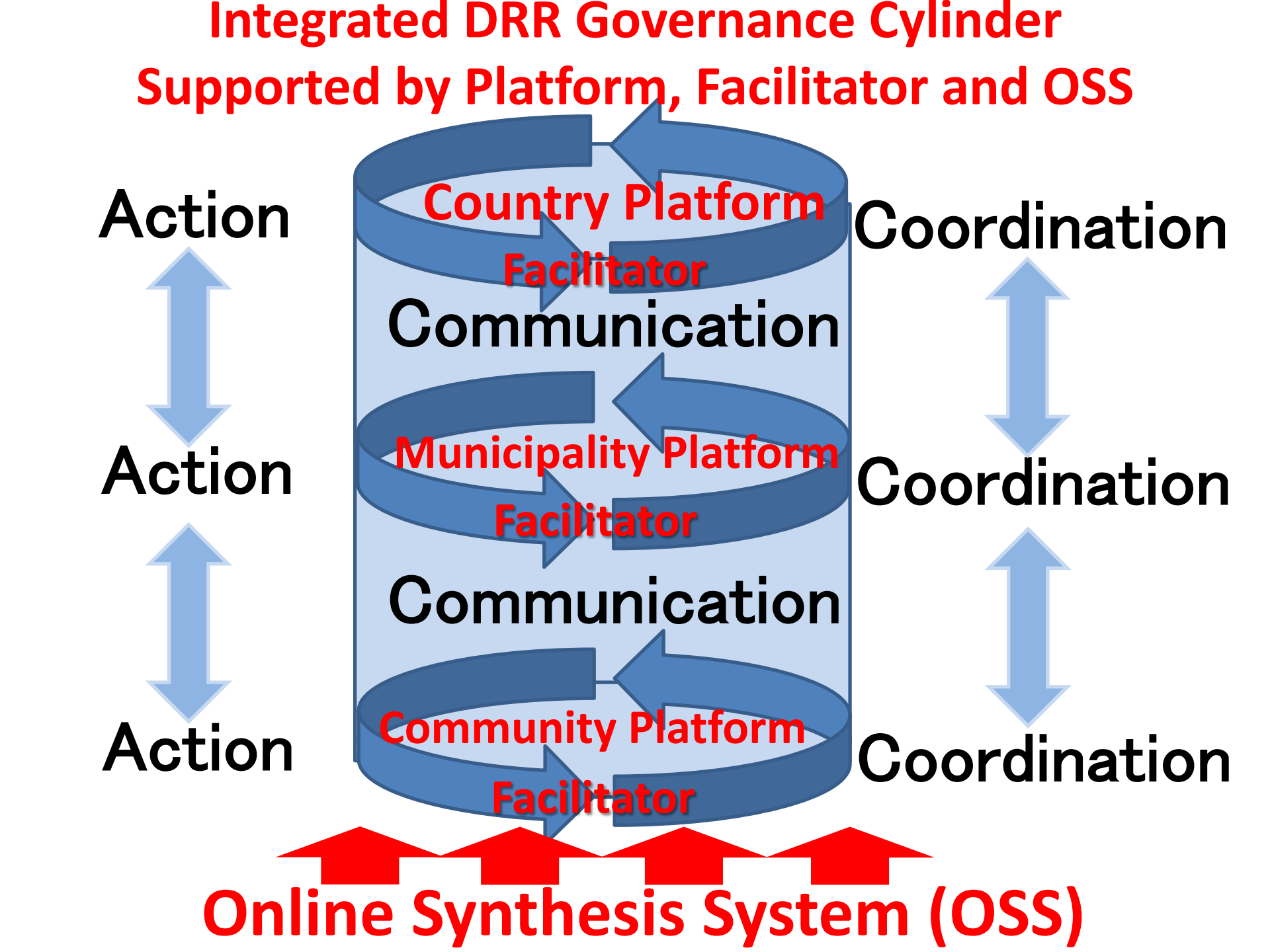
- ✓ We need integrated information synthesis system to collect, identify, analyze, and freely share critical information for science-based decisions
- ✓ We need a platform to create resilient and sustainable DRR coordination process
- ✓ We need a facilitator to help our science-based decisions and concerted actions by all stakeholders in communities and countries

Online Synthesis System and DRR Facilitator for Integrated DRR Governance



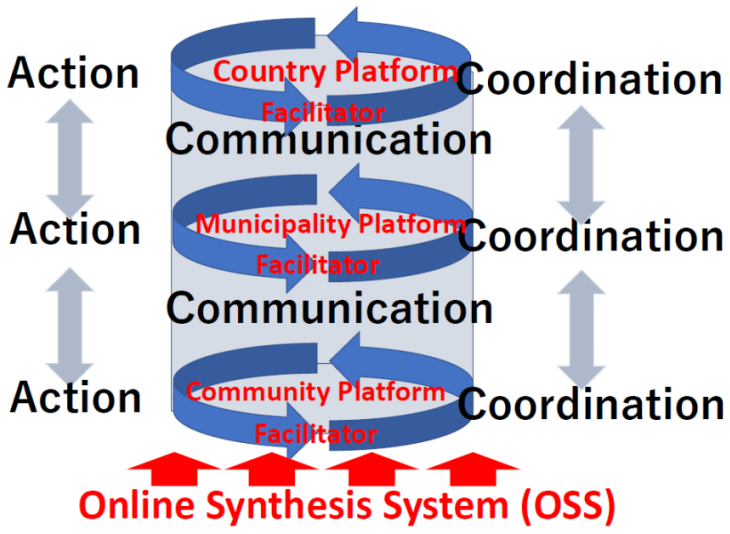
Stakeholder Platform for DRR

- ✓ Platform of Decision Makers, Managers and Stakeholders for DRR (Physical/virtual DRR Operation Room)
- ✓ Facilitator gives science-based advice and coordination
- ✓ Critical information are identified and informed by OSS
- ✓ Decision maker makes decision based on Facilitator's advice based on OSS
- ✓ The Platform should work ex-ante, during, and ex-post of disasters


Integrated DRR Governance Cylinder
Supported by Platform, Facilitator and OSS
Action
Action
Action
Country Platform
Facilitator
Communication
Municipality Platform
Facilitator
Communication
Community Platform
Facilitator
Coordination
Coordination
Coordination
Online Synthesis System (OSS)

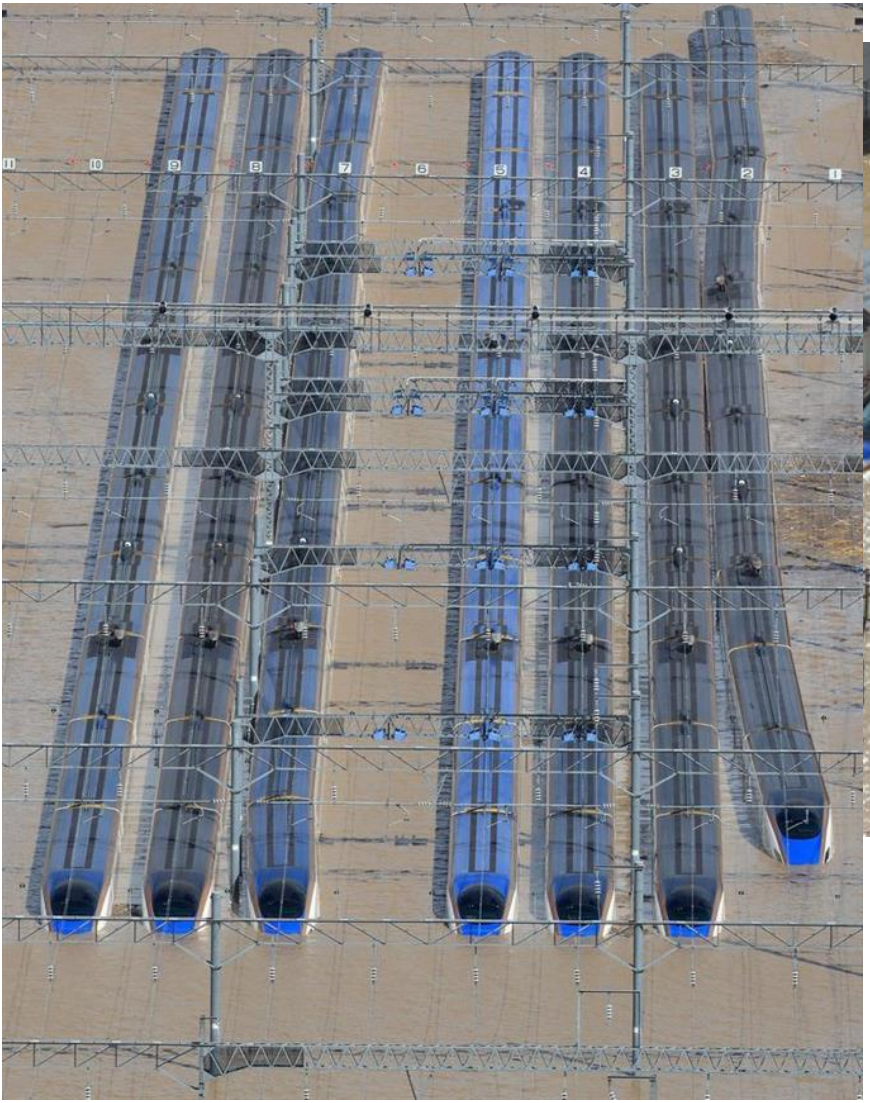
Actions under Integrated Governance for DRR

- ✓ Science-based Decisions/Actions
- ✓ Educational Actions
- ✓ Awareness-raising Actions
- ✓ Investment Actions
- ✓ Planning Actions
- ✓ …..



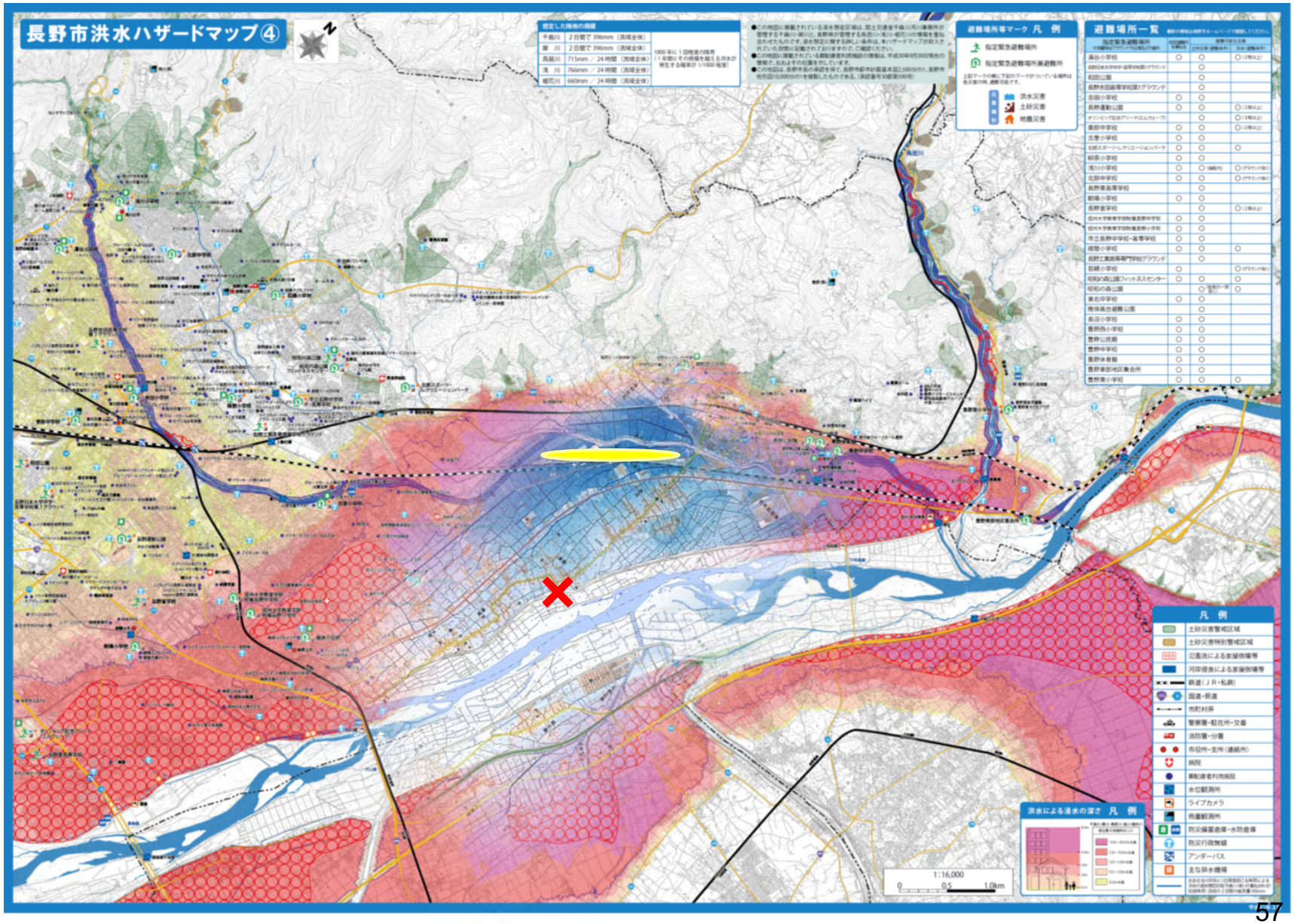
Science-based decisions and actions

Inundated Shinkansen Train Yards by Typhoon Hagibis



Science-based decisions and actions

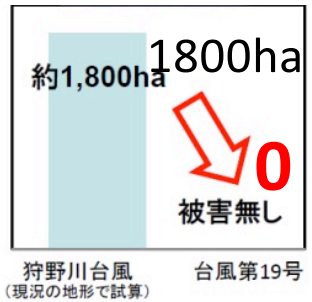
Comparison of simulation output and actual floods along Chikuma River

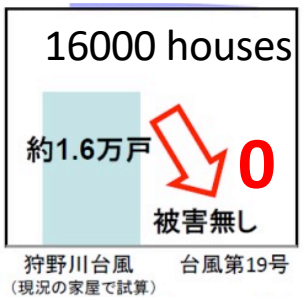


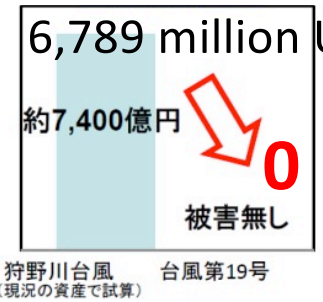
DRR Investment that Pays Off

A case of Kano River Diversion Channel at Typhoon Hagibis

Innundation Area Damaged houses damage amount

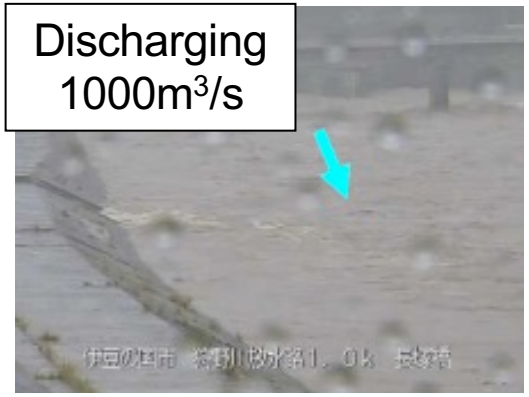






Normal

Discharging 1000m^3/s



Reduced Damage: $ 6,789mil.

B/C= 25:1

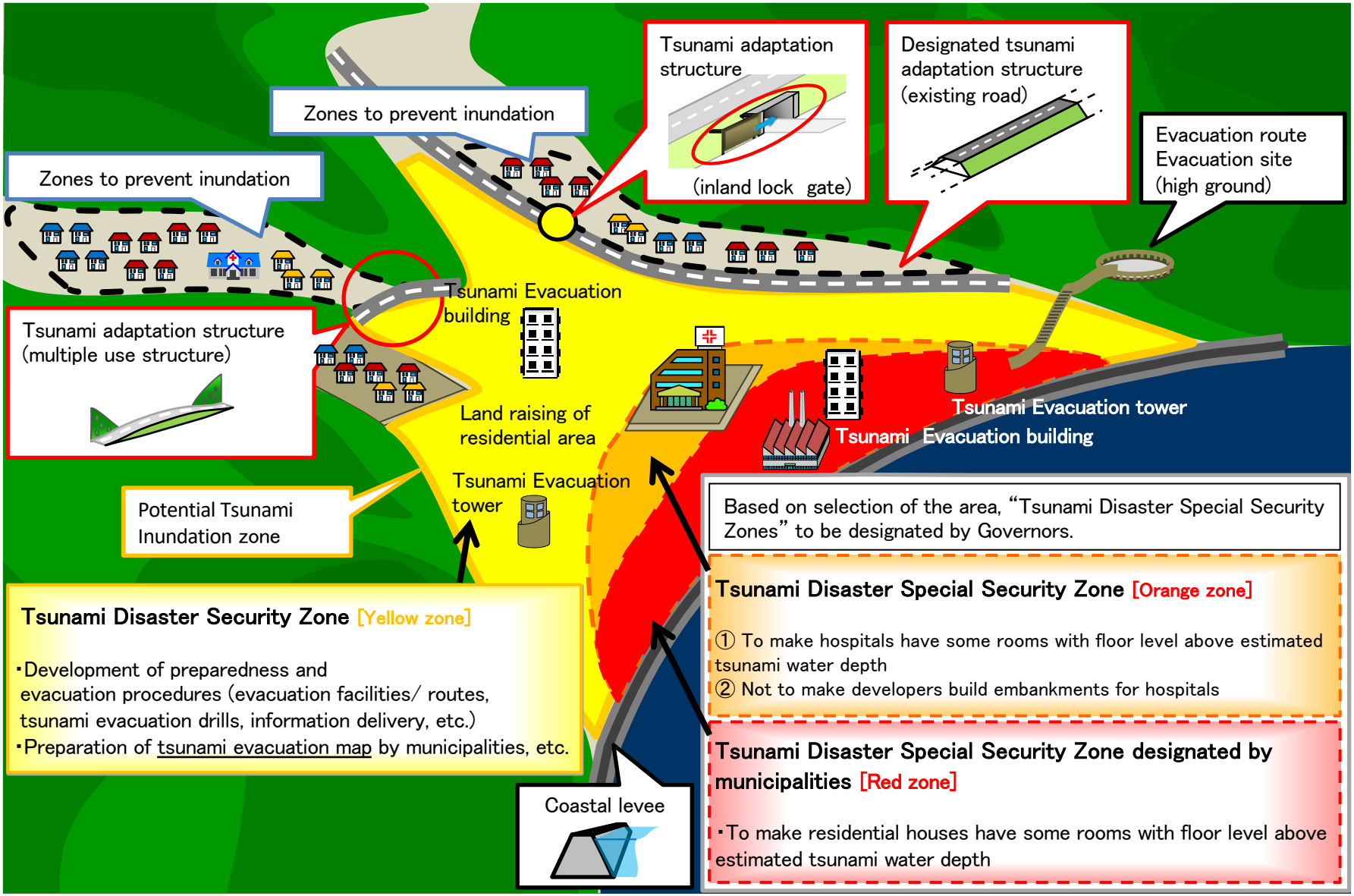
Project Cost: $ 275mil.

Discharge Channel lowered the water level in river 1.85m and there was no flooding

Evacuation drills using Hazard Maps on Streets

Source: MLIT

Urban planning to create a disaster-resilient city



Source: MLIT

Integrating National and Global Governance for DRR

Global Governance

- ✓ Global governance does not exist per se because states have sovereignty.
- ✓ You have to create it ad hoc to serve specific purposes.

What are specific purposes for global DRR?

Global Governance for DRR is to:

- ✓ **Prevent**
  - **spread of disaster impact across border not only physically but also economically, politically and socially**
- ✓ **Help**
  - **affected country and people to recover faster and better**
- ✓ **Learn**
  - **from cases to prepare for disasters in our on countries and communities**

Do we have global governance on DRR?

		Agreement/ protocol;	Financial Resources	People/ Organization	Information
Prevent spread of disaster impact across border	Physically	△Regional Water Agreement contains protocol. Protocol like GEO and Sentinel Asia	△ Partial funding	△ Only if trans-boundary protocol exists.	△ Satellite-based data base made progress; regional data sharing
	Financially, politically, & socially	× NO	× NO	× NO	× NO
Help affected country and people to recover faster and better		△ Countries mostly help on ad hoc basis. No format or protocol to share information and facilitate actions	△ Ad hoc donation No regular global fund	○ UN,IFIs, Donors, Red Cross, and NGOs	△ Affected countries share info. On ad hoc basis（No format/ protocol)
Learn from cases to prepare for future disasters in our own countries and communities		○ Sendai Framework, EU Directives, .etc.	△Ad hoc contributio n by donors	△ Piecemeal initiatives by institutions	△ Statically EM-Dat and a few data base

UN-World Bank High Level Panel on Water (HLPW)

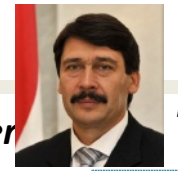
Special Advisor

Dr. Han Seung-soo

Former Prime Minister, Republic of Korea

Kevin Rutte

Prime Minister Netherlands



János Áder

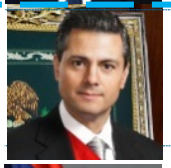
President Hungary

Emomalii Rahmonov

President Tajikistan

Macky Sall

President, Senegal



Enrique Peña Nieto

President, Mexico

Ameenah Gurib-Fakim

President, Mauritius

Co-chairs

Abdullah Ensour

Prime Minister Jordan

Sheikh Hasina

Prime Minister Bangladesh

Pedro Kuzynski

President Peru

Jacob Zuma

President South Africa

Malcolm Turnbull, *PM Australia*

Co-convened by:

UNITED NATIONS

Antonio Guterres

UN Secretary-General

WORLD BANK

Jim Yong Kim

President World Bank Group

Panel Members

High-level Experts and Leaders Panel on Water and Disasters (HELP)

Who we are:

High-level Independent Body established in 2007 upon recommendation by UN Secretary-General's Advisory Board on Water and Sanitation (UNSGAB)

Mission:

Raising global awareness and promote actions to addres
on water and disasters

Dr. Han Seung-soo
Chair

Composition:

20 Members comprising 1 Chair, 7 Incumbent Ministers (The Netherlands, Indonesia, EU, France, Gabon (AMCOW), Japan (VM), and USA (VM)) 7 Heads of International/Donor Organizations (WMO, UNESCO, ISDR, JICA, ESCAP, WB (VP), ADB (VP)) and 5 Heads of Civil Societies (WWC, GWP, NARBO, BIT, PSI) and 10 Advisors

Modus Operandi:

Flagship Initiatives led by Chair/Vice-Chair/Members
Based on HELP Strategy

Recommendations in HLPW Outcome Document on Disaster Risk Reduction

- **Platforms on Water Resilience and DRR among all stakeholders should be formulated in countries to facilitate dialogue and scale up community-based practices.**
- **Global research networks, global disaster database, integrated scientific tools for assessing risks, and a global platform integrating science and policy including higher education should be developed and put into support of countries.**
- **"Principles on Investment and Financing" should be used to make effective use of this increased investment and could help increasing investments in countries**

Steps to take towards Integrated Governance for DRR

- ✓ Raising awareness of the UN and international community on the need of Integrated Governance for DRR
- ✓ Building and Networking national Online Synthesis System nationally and globally
- ✓ Building and Connecting National Facilitators nationally and internationally

Thank you