

# COMMITTEE ON DISASTER RISK MANAGEMENT

## WORLD FEDERATION OF ENGINEERING ORGANIZATIONS



## Engineering Initiatives in Disaster Risk Management: WFEO's CDRM, UNESCO, IRDR & World Bank

José Macharé O. – Chairman  
Lizett López S. – Secretary

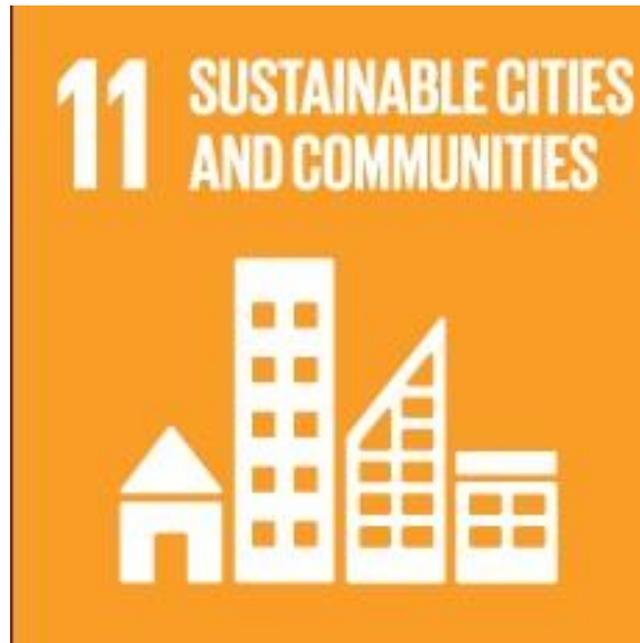
Paris, October 27 2022

# DISASTERS CONTINUE OCCURRING

- Every year, huge damage and loss.
- Economic losses in tens of billions of dollars.
- Tens of thousands of lives lost.
- Permanent disabled, homeless and displaced people.
- Built environment, infrastructure damaged and destroyed.
- Natural environment and cultural heritage strongly affected



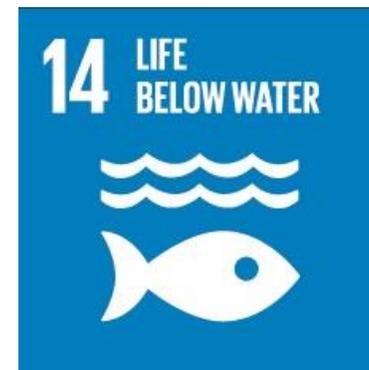
# DISASTERS THREATEN THE ACHIEVEMENT OF SDG



Resilient societies

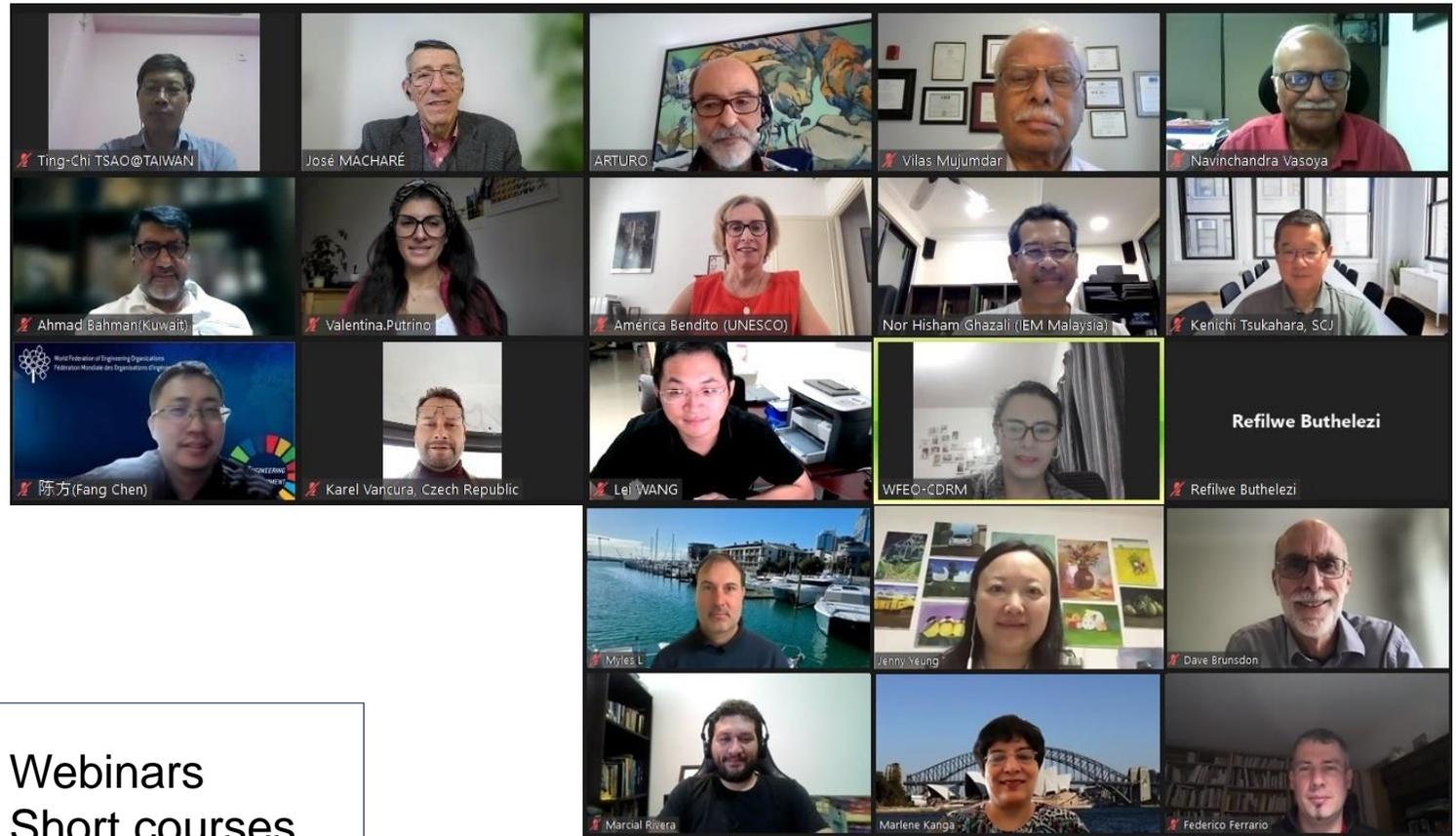
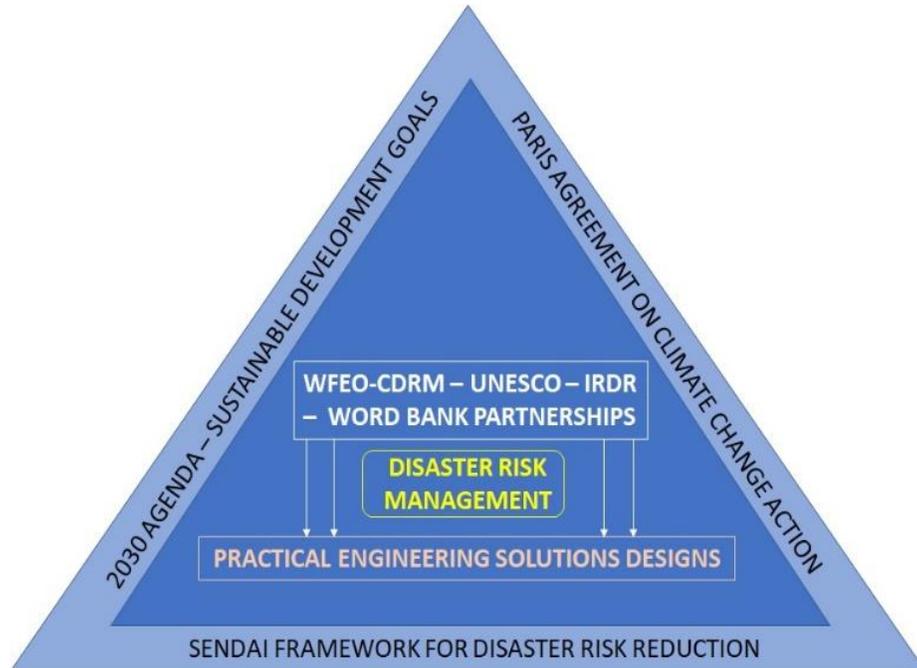


Built environment



Natural environment

# THE WFEO-CDRM



- 30 members
- 5 continents
- 5 working groups
- Webinars
- Short courses
- Publications

# THE WFEO-CDRM GLOBAL PARTNERSHIPS



Peruvian  
Engineers  
Association

UNESCO Disaster Risk  
Reduction Unit



Global Program for  
Disaster Risk Analytics at  
GFDRR / World Bank.



Integrated Research on  
Disaster Risk. International  
Science Council (ISC) &  
United Nations Disaster Risk  
Reduction office (UNDRR),



# RESULTS & PRODUCTS

- WEBINARS & TECHNICAL SESSIONS
- SHORT COURSES
- PUBLICATIONS

# WEBINARS & TECHNICAL SESSIONS

INTERNATIONAL WEBINAR

**Engineering Contributions for Managing the Next Pandemics**  
**18 December 2:00p.m. Lima time**





**Dr. Carina Fearnley**  
 University College of London, UK  
 Early warning systems for pandemics: Lessons learned from natural hazards

**Dr. Simiao Chen**  
 Chinese Academy of Medical Sciences, CN  
 Fangcang shelter hospitals: a novel concept for responding to public health emergencies

**Dr. Michael O'Sullivan**  
 University of Auckland, NZ  
 Healthcare Modelling for Pandemic Planning and Recovery

ORGANIZED BY  
 

[www.cip.org.pe](http://www.cip.org.pe)

**58<sup>th</sup> Anniversary**

WEBINAR  
**GLOBAL ENGINEERING IN THE CONTEXT OF COVID-19**

Peruvian Engineers Association






**Dr. Gong ke**  
 President World Federation of Engineering Organizations

**Dr. Marlene Kanga**  
 Former president World Federation of Engineering Organizations

**Dr. Vilas Mujumdar**  
 Member American Society of Civil Engineers

**Eng Carlos Herrera**  
 President Peruvian Engineers Association

18:00 (Lima time)  
 8 June, 2020

Registration: [www.cip.org.pe](http://www.cip.org.pe)  
 CIPCN/ 

ORGANIZAN:  
  

WEBINAR INTERNACIONAL:  
**LA LOGÍSTICA HUMANITARIA EN CASOS DE DESASTRES: NUEVAS TECNOLOGÍAS PARA LA TOMA DE DECISIONES**  
 26 de agosto - 19.00pm (Perú)





**Dr. Pavel Albores**  
 Nuevas Tecnologías y Ciudades Inteligentes en la Gestión de Desastres y Emergencias  
 Austin University, UK

**Dr. William Guerrero**  
 Principios de la Industria 4.0 aplicados a los desastres y la Gestión de la Respuesta a Desastres  
 Universidad de la Sabana, Colombia

**MSc Renzo Benavente**  
 Aplicación de herramientas de análisis y nuevas tecnologías en la logística humanitaria  
 Grupo para Manejo de Crisis y Desastres, de la PUCCP Perú

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 CIPCN/ 

Organizado por:  
    

WEBINAR INTERNACIONAL:  
**FORTALECIENDO ESFUERZOS PARA PROTEGER Y SALVAGUARDAR EL PATRIMONIO CULTURAL Y NATURAL DEL MUNDO**

**JUEVES 07 OCTUBRE 2021**

**11:00 am Lima**  
**5:00 pm Londres**  
**6:00 pm España**





**Dr. Dina D'Ayala**  
 Universidad de Londres, Reino Unido  
 Riesgos múltiples y priorización del patrimonio arquitectónico. Aplicaciones en Filipinas

**Dr. Pere Roca**  
 Universidad Politécnica de Cataluña, España  
 Directrices del Icomos / IcarusSh sobre el análisis, la conservación y la restauración estructural del patrimonio arquitectónico

**Dr. Victor Carlotto**  
 Academia Nacional de Ciencias, Perú  
 Investigaciones geológicas en sitios de patrimonio cultural y natural

Informes: [eventoscip1@cip.org.pe](mailto:eventoscip1@cip.org.pe)

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ACCESO ZOOM  
 Traducción simultánea



**TOWARD RESILIENT SOCIETIES: THE ENGINEERING CONTRIBUTION**

**9 March 2021**  
**19:00 Lima time**  
 08:00 Hong Kong time (10 March)  
 13:00 New Zealand time (10 March)  
 18:00 Costa Rica time (9 March)

REGISTRATION  
<https://forms.gle/jsDe4z6mphaOUr8o6>

**SESSION OPENING**  
 **Gong Ke**  
 WFEU President

**INTRODUCTORY SPEECH**  
 **Marlene Kanga**  
 WFEU Past President

**1 Land Use Planning to Build Disaster Resilience**  
 Ir Eric MA Siu-cheung, GBS, JP, CEO, NWS Holdings Limited, Hong Kong  


**2 Infrastructure as a Key Contributor to Resilient Nations**  
 Roger Fairclough, Chair, New Zealand Lifelines Council, New Zealand  


**3 Business continuity in the construction sector based on COVID-19 preventive measures in Costa Rica.**  
 Andrea Chacón, Marcial Rivera, Members, CRIA Costa Rica  
 



# WFEO-CDRM ONLINE COURSES



The online courses are available on a platform based on the Moodle system, are free of charge, however the issuance of the certificate of participation will cost 50 dollars.

This is a joint project between WFEO-CDRM and the [Peruvian Engineers Association \(CIP\)](http://www.cip.org.pe).

**Platform:** <http://ordcursos.cip.org.pe/>

**Information:** [wfeo-cdrm\(at\)cip.org.pe](mailto:wfeo-cdrm(at)cip.org.pe)



## Managing the risk of debris and mud flow-related disasters

*Gestión del riesgo de desastres ante la ocurrencia con flujos de lodo y detritos*

Course offered in English with translation to Spanish.  
It comprises six modules and will be taught by specialists from the United States, Italy, Colombia, Norway, Greece and Switzerland.

\*Course starts 13 April 2021



## Risk Management for Tsunami-Related Disasters

*Gestión del riesgo de desastres relacionados con tsunamis*

Course offered in English and Spanish  
It comprised 5 modules and was taught by specialists from Japan, Peru and Canada.

\*Completed course



## Management of Volcanic Risk

*Gestión de Riesgos Volcánicos*

Course offered in Spanish  
It comprises eight modules and will be taught by specialists from Ecuador, Colombia, Costa, Chile, Mexico, Guatemala and Peru.

\*Available course



# LAUNCHING OF THE BOOK ON RESILIENCE

United Nations | Department of Economic and Social Affairs  
Sustainable Development

STI FORUM | Science, Technology & Innovation for the Sustainable Development Goals

TECHNOLOGY

7th Multi-stakeholder Forum on Science, Technology and Innovation for the Sustainable Development Goals

Conference

## ENGINEERING RESILIENCE IN DISASTER RISK MANAGEMENT FOR SUSTAINABLE DEVELOPMENT

Thu 05 May 2022, 7.30 am, NY time

<p><b>José Vieira</b> WFEO President</p>	<p><b>Shamila Nair-Bedouelle</b> UNESCO ADG</p>	<p><b>José Macharé</b> CDRM chair</p>	<p><b>Karel Vancura</b> Land use planning</p>
<p><b>Dave Brunson</b> Infrastructure systems</p>	<p><b>Fang Chen</b> Data management</p>	<p><b>Ashok Basa</b> Capacity building</p>	<p><b>Myles Lind</b> Institutional frameworks</p>
<p><b>Qunli Han</b> Executive Director ISC-IRDR</p>	<p><b>Gong Ke</b> Past President of WFEO</p>	<p><b>Marlene Kanga</b> Past President of WFEO</p>	<p><b>K.N. Gunalan</b> Chair WFEO UN Relations Committee</p>

Organized by:

World Federation of Engineering Organizations  
Fédération Mondiale des Organisations d'Ingénieurs

WFEO-CDRM

unesco

International Science Council  
The global voice for science

ASCE  
AMERICAN SOCIETY OF CIVIL ENGINEERS

**FREE AND VIRTUAL EVENT**  
<https://resilienceconference.cip.org.pe/>

## Engineering Resilience in Disaster Risk Management for Sustainable Development

World Federation of Engineering Organizations  
Peruvian Engineers Association

<https://www.youtube.com/watch?v=0R7t5ibS06g&t=25s>

On May 5, at a side event to the Seventh Annual Multi-Stakeholder Forum on Science, Technology and Innovation for the SDGs.

On June 9, within the framework of its 60th anniversary, the CIP presented a translated-to-Spanish version.

# ORGANIZATION INTERNATIONAL WEBINARS

Organized by:



INTERNATIONAL WEBINAR:

## INFRASTRUCTURE SYSTEMS FOR RESILIENT SOCIETIES

SPEAKERS:



**DAVE BRUNSDON**  
New Zealand Lifelines Council  
New Zealand



**CARLIEN BOU-CHEIDID**  
Ghana Institution of Engineers  
Ghana



**STEFAN SCHAUER**  
Austrian Institute of Technology  
Austria



**YOSHIHISA MARUYAMA**  
Chiba University  
Japan



**YOLANDA ALBERTO**  
University of Chile  
Chile

MODERATOR:



**JOSÉ MACHARÉ**  
WFEO-CDRM chairman  
Peru



**JULY 12**  
4:00pm (Lima time)

**FREE EVENT**  
Simultaneous interpretation

Organized by:



INTERNATIONAL WEBINAR:

## LAND USE PLANNING FOR RESILIENT SOCIETIES

SPEAKERS:



**IR JENNY YEUNG**  
Hong Kong Institution of Engineers



**KENICHI TSUKAHARA**  
Science Council of Japan



**LAURIE A. JOHNSON**  
Laurie Johnson Consulting

MODERATOR:



**JOSÉ MACHARÉ**  
WFEO-CDRM Chairman



**AUGUST 09**  
7:00pm (Lima Time)

**FREE EVENT**  
Simultaneous Interpretation  
<https://bit.ly/3NpRIHF>

[MORE INFORMATION](#)

Organized by:



INTERNATIONAL WEBINAR:

## INSTITUTIONAL FRAMEWORKS AND PUBLIC POLICIES FOR RESILIENT SOCIETIES

SPEAKERS:



**MYLES LIND**  
Institute of Public Works  
Engineering Australasia  
New Zealand



**MASAMITSU ONISHI**  
Disaster Prevention  
Research Institute of Kyoto  
University Japan



**NORLANG GARCÍA**  
Secretariat for Integrated Risk  
Management and Civil  
Protection  
Mexico



**MARIA PECCE**  
University of Naples  
Federico II  
Italy

MODERATOR:



**JOSÉ MACHARÉ**  
WFEO-CDRM chairman  
Peru



**JULY 19**  
6:00pm (Lima time)

**FREE EVENT**  
Simultaneous interpretation

Organized by:



Supported by:



INTERNATIONAL WEBINAR

## ENGINEERING: DRIVER FOR THE RISK INFORMED DEVELOPMENT

SPEAKERS:



**SATURO NISHIKAWA**  
Professor, Disaster Mitigation  
Research Center, Nagoya University



**TATSUO NARAFU**  
Technical Advisor, JICA Japan  
International Cooperation Agency



**SOICHIRO YASUKAWA**  
Chief of the Disaster Risk Reduction  
Unit Natural Sciences Sector / UNESCO

MODERATOR:



**VALENTINA PUTRINO**  
WFEO-CDRM leader of working group  
Catasphre Risk Analyst, ARIEL RE



**15 SEPTEMBER**  
8:00am (Lima Time)

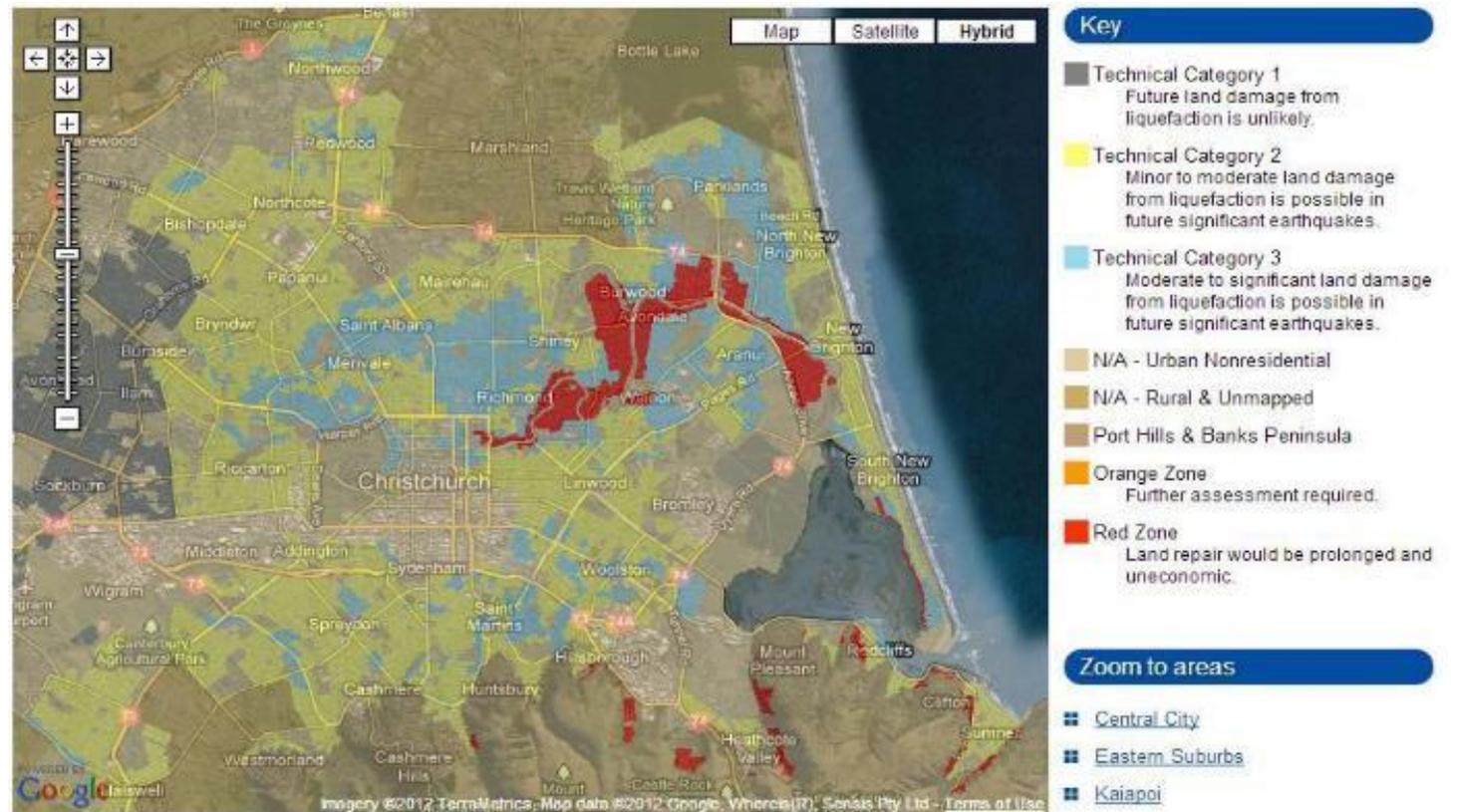
**FREE EVENT**  
Simultaneous Interpretation  
<https://bit.ly/3TE2mVg>

## ON LAND USE PLANNING:

Engineering inputs should be incorporated into the land use planning at an early stage, making the identification of risks and mitigation measures integral components of the whole process.

The new land use plans require:

- the assurance of terrain arrangement and landscaping,
- building of protective infrastructure, and
- agreement of the population as a function of their future life expectancy, traditional or innovative activities.



The example above depicts the new land use and forbidden zones enforced by laws after the 2010 Canterbury earthquakes in New Zealand.

(Contribution by Laurie Johnson)

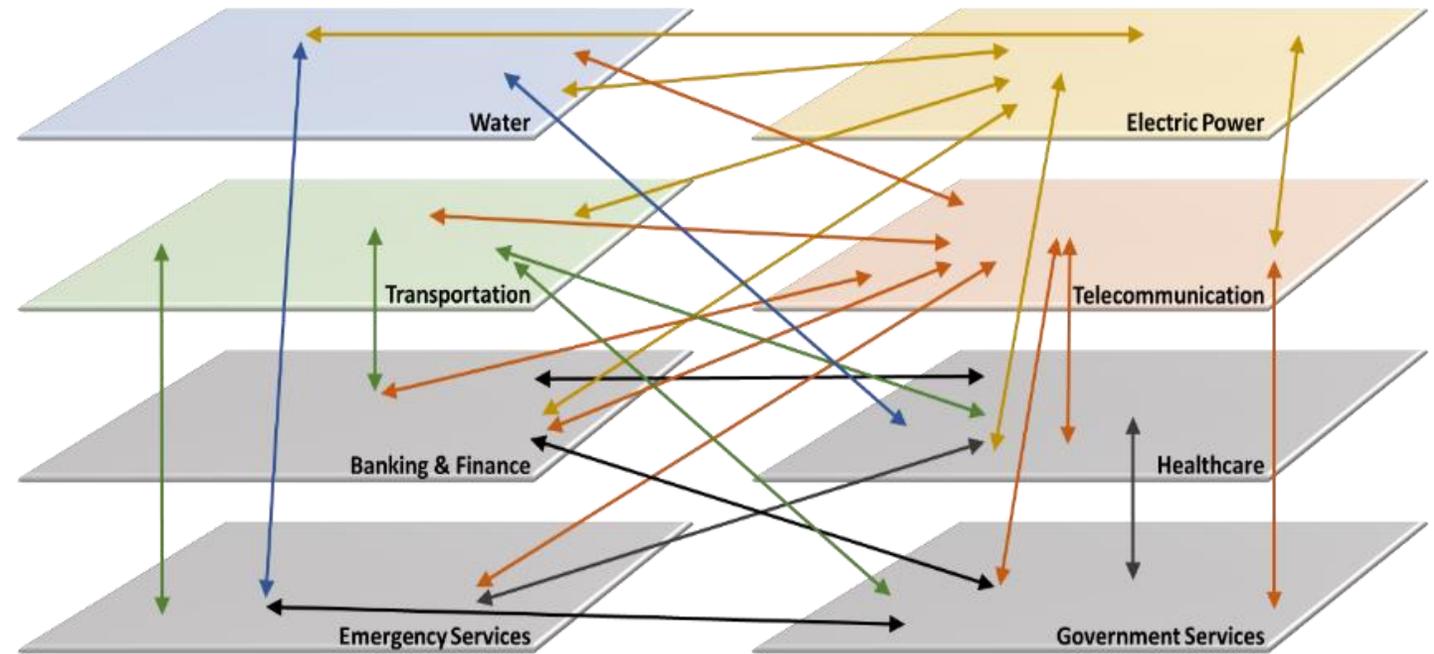
## ON INFRASTRUCTURE SYSTEMS:

Resilience of critical infrastructure should be ensured since its design.

To warrant its performance, the different components of infrastructure resilience need to be understood.

The ownership and regulatory systems influence the investment and responsibilities, so they have to be clear in contractual conditions.

Finally, the multiple interdependencies among infrastructure components should be taken in account



Contribution Stephan Schauer)

## ON DATA AND INFORMATION MANAGEMENT:

New sources of data and information facilitate more comprehensive analysis of the disaster risk and therefore, enables new management techniques and innovation solutions to reduce or mitigate disaster risks.

To ensure that human society as a whole benefit from these developments, accessibility to existing resources and capacities to efficiently utilize these diverse sources needs to be improved.

Standardization of data and methods has a good potential to enable wider dissemination of common and reliable solutions and enable wider adoption for collective sustainable development and reduced disaster risk



Satellites equipped with new devices allow observation and real-time monitoring of earth processes as well as a huge amount of data whose processing support directly the SDGs.

(Image contribution: Fang Chen)

## ON INSTITUTIONAL FRAMEWORKS:

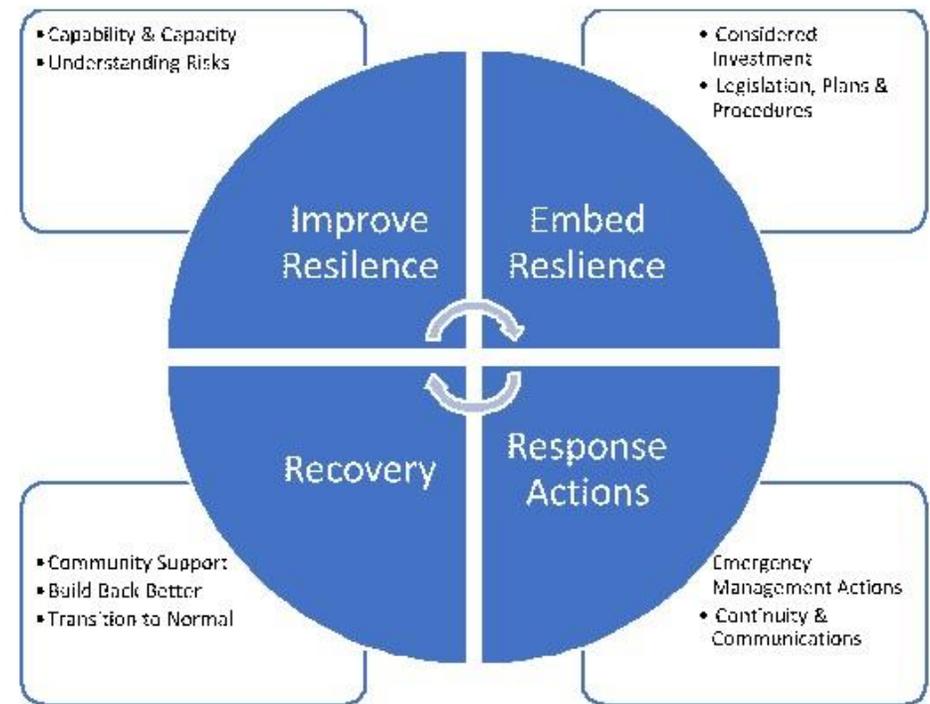
A robust and healthy institutional framework allows the optimal operation of DRM systems.

The process to institutionalize DRM throughout a country requires consistent investment over many years.

During times of response to natural and other disaster events, ensuring and retaining public trust is essential.

Although the general components of the DRM system need to be centralized, there are benefits to DRM activities being decentralized and emphasizing that local authorities are primarily responsible for building resilience through enabling public and private sector participation, including volunteer organizations throughout the community, through planned actions with focus on risk management.

A great effort is needed to avoid corruption



## ON CAPACITY BUILDING:

To strengthen capacity building, it is recommended to make country-scale vulnerability atlases identifying areas susceptible to be affected by different natural hazards.

All stakeholders should be aware and use updated engineering codes of practice.

For an adequate response, people should be trained about “*Dos and Don’ts*” during the disaster.

The risk-awareness and involvement in its management should start from childhood; afterwards, the active participation in DRM activities is perceived to be normal to everyone.



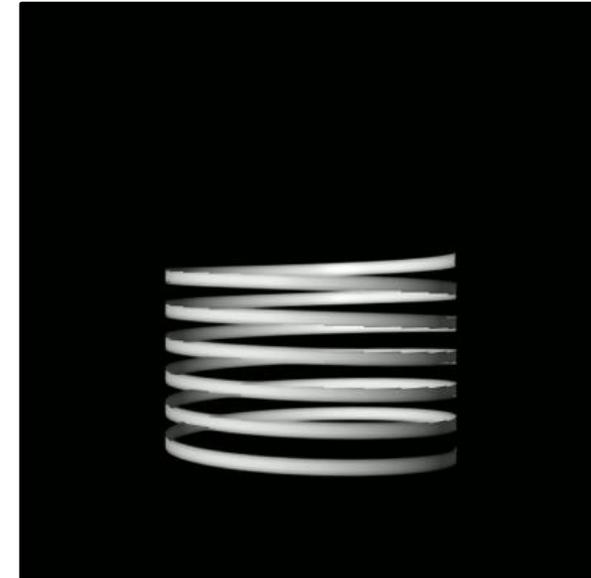
# TWO KEY CONCEPTS

## Culture of risk



- At all times, to be aware that a hazardous event can happen.
- That there is a risk of losing assets, property, health or even the life.
- That this can be avoided.
- Start learning how.

## Resilience



- Withstand the impact without breaking.
- Adapt temporarily.
- Recover quickly.
- Turn out to be better

# 2022 INTERNATIONAL DAY FOR DISASTER RISK REDUCTION

October 13th  
**International Day for  
Disaster Risk Reduction**  
#EarlyWarningForAll

*Disasters are not natural  
Earth is a powerful dynamic planet  
Do not expose to its hazards  
Reduce your vulnerability  
Be prepared to withstand impacts  
Ensure a quick recovery  
Build back better and wiser  
This is to be resilient*



**WFEO Committee on  
Disaster Risk Management**

*Fires in California – Photo Noah Berger AP*