



## Introduction of TC21's Activities

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## Co-chairs

**JSCE: Dr. Mikio Ishiwatari (JICA / The University of Tokyo)**

**PICE: Hon. Romeo S. Momo (Construction Workers Solidarity)**

Members: over 40 members from 11 countries  
(Japan, Philippines, Indonesia, Vietnam, Taiwan, Mongolia,  
Nepal, Pakistan, United States, Korea)

# Kick-off Meeting and Seminar in CECAR7

TC21 was approved in the 28<sup>th</sup> ACECC ECM in Gunsan, Korea in **March 2015**.

TC21 held a kick-off meeting and a seminar in CECAR7 **in August to September 2016**.



**September 2016**



Co-Chairs Prof. Takeuchi(former co-chair) and Hon. Momo at the TC21 Kick-off Meeting



TC21 Members from Indonesia, Taiwan, and U.S.A.

# What is TDA?

## 1) Inter-disciplinary

(Civil engineering, Architect, Environment, Urban Planning, Social economics, and so on)

- Complexed issues (disaster resilience, climate change, urban development, etc).  
→ “**Holistic approach**” by various knowledge across discipline is required.

## 2) Stakeholder coordination / participation

(National government - local government - private sectors - NGO - community - local residents)

- Only science is not enough, **implementation** is important to reduce disaster risk.  
→ Stakeholder coordination is essential on the implementation.

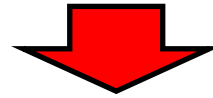
## 3) Scientific knowledge based decision-making

- **Scientific knowledge** is fundamental to make correct decision among stakeholders.
- **Knowledge sharing and risk communication** is also very important topic.

# Objective of ACECC TC21

Promote the transdisciplinary approach (**TDA**) for **Scientific Knowledge-based Decision-making (SKD)** for building societal resilience to disasters

## How to design and practice TDA



- Case studies of TDA practices in various countries
- Comparative analyses and describe factors and positive effects of TDA
- Publication and dissemination

# Site Survey in the Philippines

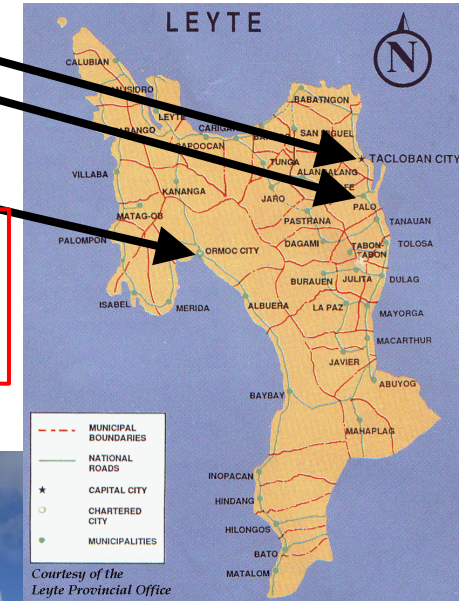
Ormoc City:  
Establishment of Flood Mitigation Committee covering central and city government, and barangay, the smallest administrative unit in the Philippines. River maintenance works are done by communities.



Slit Dam in Ormoc City, Leyte Island, the Philippines

Tacloban City  
Palo Municipality  
Ormoc City

**November 2016**  
**February 2022**



Resettlement Housings, Tacloban, Leyte Island, the Philippines

# Site Survey in Nepal, April 2017



Historical Former Prime Minister's Office building in Kathmandu damaged by 2015 Nepal Earthquake

**April 2017**

Reconstruction works of housings in Irkhu Village, Sindhupalchowk District



# Meeting with Policy Makers in the Philippines

Ormoc City: 8,000 deaths and missing by Typhoon Uring in 1993

Leyte Island

**November 2016**  
**February 2022**

Tacloban City and Palo Municipality: Severely damaged by storm surge caused by Typhoon Haiyan (Yolanda) in 2003



Meeting with Vice-Mayor of Ormoc City, Leyte Island, the Philippines



Meeting with Mayor of Palo Municipality, Leyte Island, the Philippines



# Meeting with Policy Makers in Nepal

We discussed how scientific knowledge is applied to decision-making.

**April 2017**



Meeting at regional office of Department of Urban Development and Building Construction (DUDBC)



Stakeholder meeting among academia, government, and private sector

# Meeting with Government Officials in Vietnam

April 2018



We discussed with local government officials in Nam Dinh Province about the current situation and issues about disaster management.



# TC21 Symposium in the Philippines

## 1<sup>st</sup> TC21 Symposium:

International Comparison  
of Scientific Knowledge-  
Based Decision-Making  
Schemes for Disaster  
Reduction



Panel Discussion in  
the Symposium



**November 2016**

Participants of the  
Symposium

# TC21 Symposium in Nepal, April 2017

TC21 committee meeting

April 2017



**2<sup>nd</sup> TC21 Symposium** on  
Scientific Knowledge-  
Based Decision-Making  
Schemes for Disaster  
Reduction



# Third TC21 Symposium in Vietnam



Session 1: Disaster management practices in Vietnam

Session 2: TDA case studies from TC21 member states

**April 2018**



# TC21 Sessions at CECAR8 and JSCE Annual Meeting

## ACECC TC21 Sessions at CECAR8: Transdisciplinary Approach (TDA) for Building Societal Resilience to Disasters



This session presents the concepts, activities, and future issues of Disaster Risk Reduction (DRR), where the main focus is on promoting transdisciplinary approach (TDA) for implementing scientific knowledge-based decision-making.

**Date & Time** Tuesday, April 16, 2019  
First Session: 14:00-15:30 Second Session: 16:00-17:30

**Venue** Hotel Metropolitan Ikebukuro (Room: Fuji-2)

### Program

#### First Session Results of Case Studies by TC21 Member States

##### Opening Address and Outline of the Session:

Dr. Kuniyoshi Takeuchi (TC21 Co-Chair, Emeritus Professor, Yamanashi University)

##### Preparedness: State, type of DRR, Presenter

###### Taiwan: Preparedness against landslides,

Mr. Ting-Chi Tsao (Principal Engineer and Group Chief, Sinotech Engineering Consultants, Inc., Taiwan)

###### Indonesia: Preparedness against tsunami, Dr. Harkunti Rahayu (Prof. Institute of Technology Bandung, Indonesia)

##### Recovery and mitigation: State, type of DRR, Presenter

###### Philippines: Recovery of city from storm surge, Dr. Senro Kuraoka (Chief Engineer, R&D Center, Nippon Koei Co., Ltd., Japan)

###### Vietnam: Mitigation of coastal erosion,

Dr. Pham Hoang Kien (Professor, University of Transport and Communications, Vietnam)

###### Bangladesh: Mitigation of vulnerable buildings,

Md. Abdul Malek Sikder (Freelance Consultant, Fellow, Institution of Engineers Bangladesh (IEB), Bangladesh)

###### Nepal: Recovery of buildings from earthquake,

Mr. Masashi Inoue (Researcher, EJ-Research Center for Disaster Risk Reduction, Eight-Japan Engineering Consultants, Inc. Japan)

###### Pakistan: Mitigation of vulnerable structures,

Dr. Sarosh H. Lodi (Faculty of Civil & Architecture, NED University of Engineering & Technology, Pakistan)

###### Japan: Recovery of cities from tsunami,

Dr. Mikio Ishiwatari (Visiting Prof. Graduate School of Frontier Sciences, The University of Tokyo)

###### Japan: Recovery of historical structure from earthquake,

Mr. Masaru Arakida (Senior Researcher, Asian Disaster Reduction Center, Japan)

#### Second Session Summary, Q&A, and Way Forward

**Activities of TC21 from 2016 to 2019:** Dr. Yoshihiro Katsuhama (Manager, R&D Planning Office, Nippon Koei Co., Ltd., Japan)

**Summary of Case Studies:** Dr. Senro Kuraoka (Chief Engineer, R&D Center, Nippon Koei Co., Ltd., Japan)

##### Forthcoming TC21 Activities / Announcement of TC21 Publication:

Dr. Kenichi Tsukahara (Professor, Faculty of Engineering, Kyushu University, Japan)

**Overview Lecture:** Dr. Kuniyoshi Takeuchi (TC-21 Co-Chair, Emeritus Professor, Yamanashi University)

**Q&A Session:** Dr. Kuniyoshi Takeuchi

##### Closing Remarks:

Mr. Romeo S. Momo (TC-21 Co-Chair, Grand Master of Freemasonry, Former Undersecretary of DPWH Republic of the Philippines)



Transdisciplinary Approach (TDA)  
for Building Societal Resilience to Disasters



## TC21 session at JSCE Annual Meeting



September 2019

April 2019



# Special TC21 Session at World Bosai Forum(2017,2019,2022)

The aim of the session was to present the needs of the TDA for disaster risk reduction (DRR) and discuss the current progress and issues. Experts of DRR from Indonesia, Japan, Malaysia, Nepal, and the Philippines presented specific examples to clarify the needs and the merit of TDA.



**November 2019**

Photos of TC21 Special Session at the Sendai International Center

# TC21 Publication in 2019



## Transdisciplinary Approach (TDA) for Building Societal Resilience to Disasters -Concepts and case study for practicing TDA-



November 2014: Survey of flood prevention works in Ormoc, Philippines

November 2014: Survey of new settlements in Tacloban, Philippines



April 2017: Survey of reconstruction after earthquake in Chaurara, Nepal

April 2014: Survey of coastal hazards in Nam Dinh Province, Vietnam

TC21: Transdisciplinary Approach (TDA) for Building Societal Resilience to Disasters:  
Committee of ACECC (The Asian Civil Engineering Coordinating Council)

## Transdisciplinary Approach (TDA) for building Societal Resilience to Disasters

- *Concepts and case study for practicing TDA* -

<https://tc.acecc-world.org/21/>

ISBN: 978-4-8106-1014-7

Discusses the key components and structure of TDA models that were assessed through the case studies.

The contents are intended to clarify the necessity of TDA and catalyze innovative approaches



**How to design, practice, and evaluate TDA**



# TC21 Publication

- Katsuhama Yoshihiro (2021). *Committee Report ACECC TC21's Commitment Webinar "Transdisciplinary Approach for Building Societal Resilience to Disasters under and after COVID-19"* JSCE Magazine Vol.106 No.2, pp.102-103[in Japanese].
- Tukada Yukihiro (2020). *"Accumulation and Sharing of Knowledge to counter global wild disasters"* Engineers Without Borders Japan, News Letter Vol.15 June, pp.2-3 [in Japanese].
- Kuraoka Senro, Paudyal Youb Raj, and Razak Khamarrul Azahari (2020). *"Transdisciplinary Approach for Building Societal Resilience to Disasters -Interpreting the Processes of Creating New Knowledge in the Context of Knowledge Management -"* J. Disaster Res., Vol.15 No.7, pp. 868-877.
- Kuraoka Senro (2020). *Committee Report "Transdisciplinary Approach for Building Societal Resilience to Disasters -Event Report of TC21 Session at World BOSAI Forum"* JSCE Magazine Vol.105 No.2, pp.86-87 [in Japanese].
- Takeuchi Kuniyoshi(2019). *"Transdisciplinary Approach for Scientific-Knowledge Based Decision Making for Building Societal Resilience to Disasters"* A full paper presented at the 8th CECAR, Tokyo.
- Tsao Ting-Chi, Hsu Chih-Hao, Yin Hsiao-Yuan (2019). *"Transdisciplinary Approach in the Preparedness Phase of a Debris Flow Prone Village in Taiwan"* A full paper presented at the 8th CECAR, Tokyo.
- Rahayu Harkunti Pertiwi (2019). *"Trans-Disciplinary Approach for Enhancing Resilience of Business Communities: Learning from Padang City"* A full paper presented at the 8th CECAR, Tokyo.
- Kuraoka Senro, Jopson Tedence A., Bernadas Brando (2019). *"Institutional Structure for Incorporating Science into Decision-making -Building the new-settlement of Tacloban city of the Philippines-"* A full paper presented at the 8th CECAR, Tokyo.
- Kien Pham Hoang, Cong Le Van (2019). *"Status of Vietnam Coastal Erosion and Preposed Policies for Protection"* A full paper presented at the 8th CECAR, Tokyo.
- Inoue Masashi, Kuraok Senro, Paudyal Youb Raj, Bhandary Netra Prakash (2019). *"Restoration of Housings in Nepal after the Gorkha Earthquake, April 25<sup>th</sup>, 2015 in the Light of Trans Disciplinary Approach"* A full paper presented at the 8th CECAR, Tokyo.
- Lodi Sarosh H., Khan Pashid A. (2019). *"Good Reconstruction Practices in Pakistan after the Kashmir Earthquake"* A full paper presented at the 8th CECAR, Tokyo.
- Ishiwatari Mikio (2019). *"Relocation and Land-use Regulation following the Great East Japan Earthquake: How can Scientific Knowledge be Incorporated into Recovery?"* A full paper presented at the 8th CECAR, Tokyo.
- Arakida Masaru (2019). *"Trans Disciplinary Approach for Restoration of Kumamoto Castle after the Earthquakes in 2016"* A full paper presented at the 8th CECAR, Tokyo.
- Tsukahara Kenichi (2019). *"DRR Transdisciplinary approach in Civil Engineering Society"* Activities of TC21 in ACECC-2019 Annual Conference, Japan Society for Natural Disaster Science.
- Tsukahara Kenichi (2018). *"Disaster Risk Governance and Transdisciplinary Approach for Building Societal Resilience to Disasters"* ACECC TC21 Activity-The 18th Science Council of Asia (SCA) Conference.
- Ishiwatari Mikio, Takeuchi Kuniyoshi, Kaku Shuji, Muronaga Takeshi, Kikuiri Kai (2017). *"Scientific Knowledge Based Decision Making for Disaster Reduction: How was the problem of informal settlers resolved?"* The 7th International Conference on Flood Management (ICFM7), Sep.15-17, Leeds.
- Katsuhama Yoshihiro (2017). *Committee Report "Transdisciplinary Approach for Building Societal Resilience to Disasters"* JSCE Magazine Vol.102 No.11, pp.68-69 [in Japanese].

# TC21 Website

<http://www.acecc-world.org/TC21>

The TOR, member list, all symposium documents are available in the site.

**ACECC TC21: Transdisciplinary Approach (TDA) to Build Resilient Societies**

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TOR & CONCEPT NOTE  
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CONTACT

*The 21st technical committee of ACECC (Asian Civil Engineering Coordinating Council) to Disasters, was established in October 2015 at the Executive Committee Meeting in Gusan, Korea, to enhance scientific knowledge-based decision-making on disaster risk reduction (DRR) through TDA.*

[Symposium: International Comparison of Scientific Knowledge-based Decision-making on Disaster Risk Reduction](#)  
Friday, November 18, 2016, 13:00 - 17:00, Davao City, the Philippines

[Download symposium documents in PDF \(About 90MB\)](#)

The [Kick-off Meeting](#) of and the [Technical Session](#) were held on August 31 and September 1, 2016, in Hawaii.



Kick-off meeting of TC21 in Honolulu, Hawaii



**ACECC TC21: Transdisciplinary Approach (TDA) for Building Societal Resilience to Disasters**

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(Last updated on June 11, 2018)



**Transdisciplinary Approach (TDA)**  
for Building Societal Resilience to Disasters

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[Third International Symposium on Natural Disaster Risk Reduction](#)



Site Survey in Nam Dinh Province, Vietnam (April 10, 2018)



Remarks: The URL was changed and the site cannot be updated since 2021 due to technical reasons.

# ACECC TC Award at CECAR9



[Session Title]

“Exploring the Synergy:

Innovation and Transdisciplinary Approaches in DRR“

[Session aim]

- To explore the potential of innovation in DRR, including technological advancements, novel methodologies, and creative solutions for disaster resilience.
- To emphasize the importance of transdisciplinary collaboration, bringing together diverse expertise and perspectives from various disciplines, sectors, and stakeholders.

# Today's session

1	The Transdisciplinary Approach to Developing an Integrated Water-Related Disaster Information System for Municipalities	Ms. Noriko Hosonuma-Kishimoto, Foundation of River & Basin Integrated Communications, Japan, JSCE
2	Collaboration between Government and Private Sectors toward Digital Transformation of Disaster Risk Reduction in Japan	Dr. Yoshihiro Katsuhama, Nippon Koei Co., Ltd, Japan, JSCE
3	The application of Transdisciplinary Techniques on Slope Disaster Monitoring in Taiwan	Dr. Chung-Ray Chu, National Science and Technology Center for Disaster Reduction, Taiwan, CICHE
4	How Does the Central Government Make a Remark in the International Arena of Disaster Risk Reduction? Focusing on the Frequency of Statement Publication at the UN Global Platform for Disaster Risk Reduction	Dr. Daisuke Sasaki, Tohoku University, Japan, JSCE
5	The Evolution of Financial Support Strategies for Housing Reconstruction in Japan	Dr. Mikio Ishiwatari, TC21 Co-chair; the University of Tokyo / JICA, JSCE