INTERA-NATECH : **INTER**-**A**sian initiative on joint **NA**tural and **TECH**nological (Natech) risk reduction at industrial estates.

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NATECH 2016 Symposium, Nakanoshima Center, Osaka University
12-13 January 2016

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INTER-**A**sian initiative on joint **NA**tural and **TECH**nological (Natech) risk reduction at industrial estates

Research Proposal submitted to e-ASIA Joint Research Program (e-ASIA JRP) under the Disaster Risk Reduction and Management field

Project partner countries: Japan, Philippines, Thailand and Indonesia

- **DPRI, Kyoto University**, Kyoto, Japan
- **Osaka University**, Osaka, Japan
- **Maritime Academy of Asia and the Pacific (MAAP)**, Bataan, Philippines
- **Sirindhorn International Institute of Technology (SIIT), Thammasat University,** Pathum Thani, Thailand
- **Research Center for Disaster Mitigation (RCDM-ITB), Bandung Institute of Technology**, Bandung, Indonesia

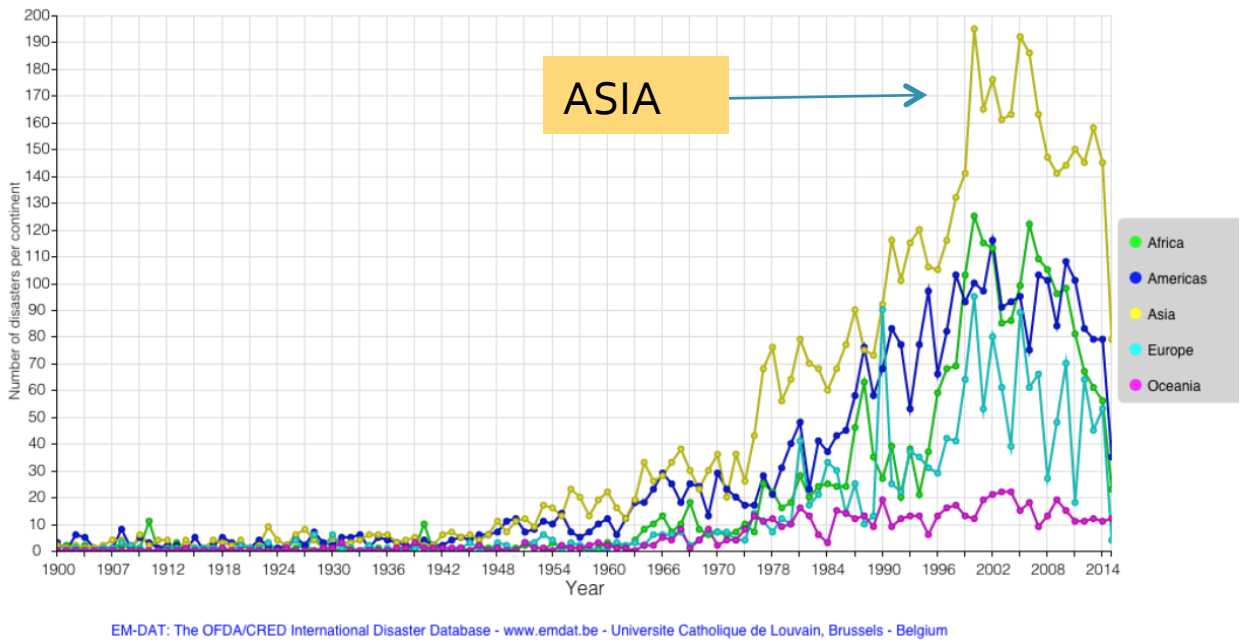
Outline

1. Introduction
2. Study goals
3. Methodology and research team
4. Expected outcomes

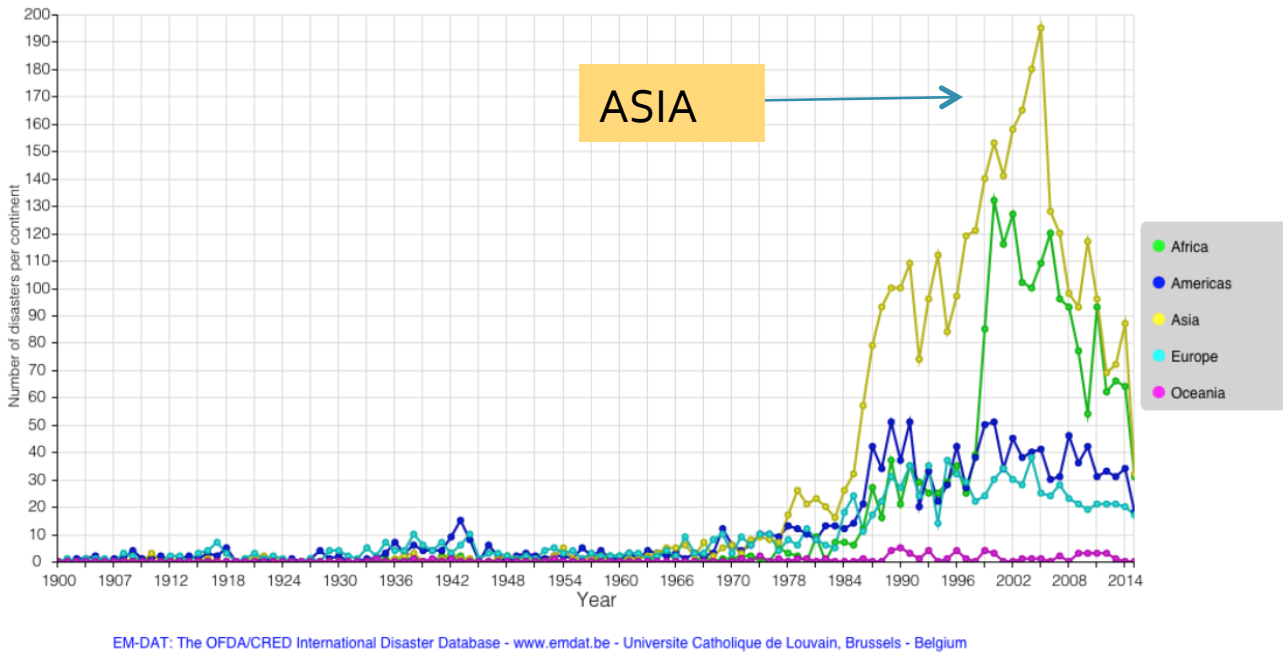
1. Introduction

- Asian countries: highest chemicals industry growth in last 25 yrs
- Highest future growth: Indonesia, Thailand, Vietnam, Philippines

Total number of reported **natural disasters** per continent between 1900-2015 (Source: EM-DAT)



Total number of reported **technological disasters** per continent between 1900-2015 (Source: EM-DAT)

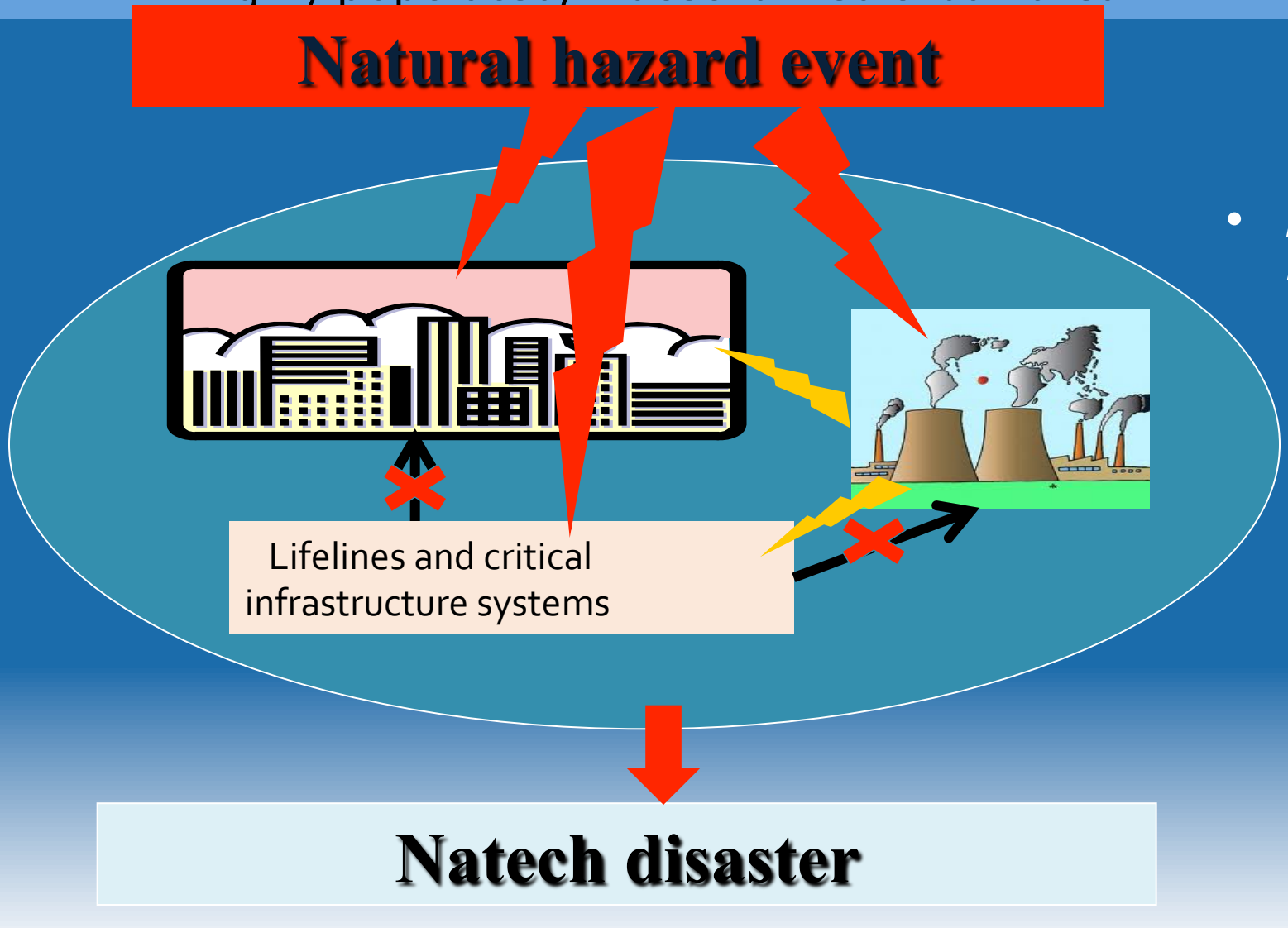


Thai floods of 2011, a wake-up call

Source: BBC News and News Origins Storage

Implications in urban areas

Highly populated, industrialized urban area



Natech

- ***Na***tural disaster-triggered ***tech***nological disaster

  Technological disaster:

  - Releases of ***haz***ardous ***mat***erials (hazmat)
  - Releases from oil and gas pipelines
  - Damage to lifeline systems

Key unresolved issues:

- Need to better address interdependencies and cascades
- Analysis of individual firm not sufficient
- Inadequate assumptions (e.g., lifelines, mitigation, ER)
- Need for area-wide comprehensive risk management framework
- Integration of risk governance and area-wide business continuity management

Flood waters disperse oil spill to thousands of homes, Hurricane Katrina, 2005 (Source: NOAA)

Flooded industrial park, Thai floods, 2011 (Source: BBC News)

Flooded aiport, Thai floods, 2011 (Source: Crawford and Co.)

2. Study goals:

1. To contribute to societal resilience to Natech hazards through the development of a new Inter-Asian comprehensive area-wide Natech risk management (CARiM) framework for industrial estates that can be shared and adapted to the context of each country; and
2. To provide training and promote exchange of researchers, experiences and know-how.

3. Methodology and research team

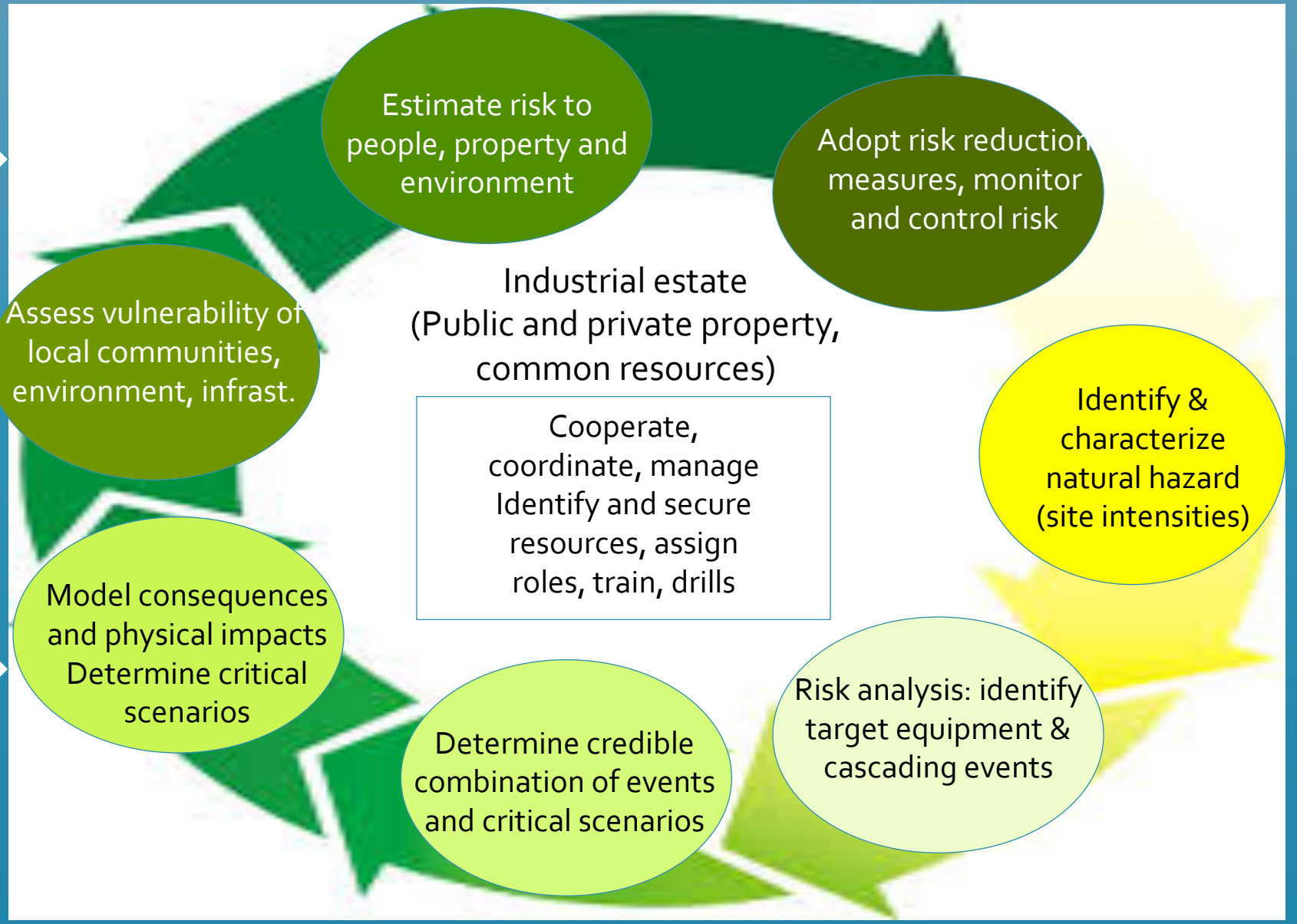
- Data collection includes investigating past Natech accidents, field visits at test sites, structured interviews, and questionnaire surveys distributed in each country and developed in common
- A scoping and pre-assessment at each test-site will be carried out to identify natural and technological hazards, estimate potential consequences and determine exposure and vulnerabilities.
- Stakeholder mapping and multi-stakeholder workshops are planned to determine needs, capacities and risk governance deficits
- We develop critical Natech scenarios integrating stakeholder needs and risk governance gaps, while building on existing initiatives.

Area-wide Natech risk management process

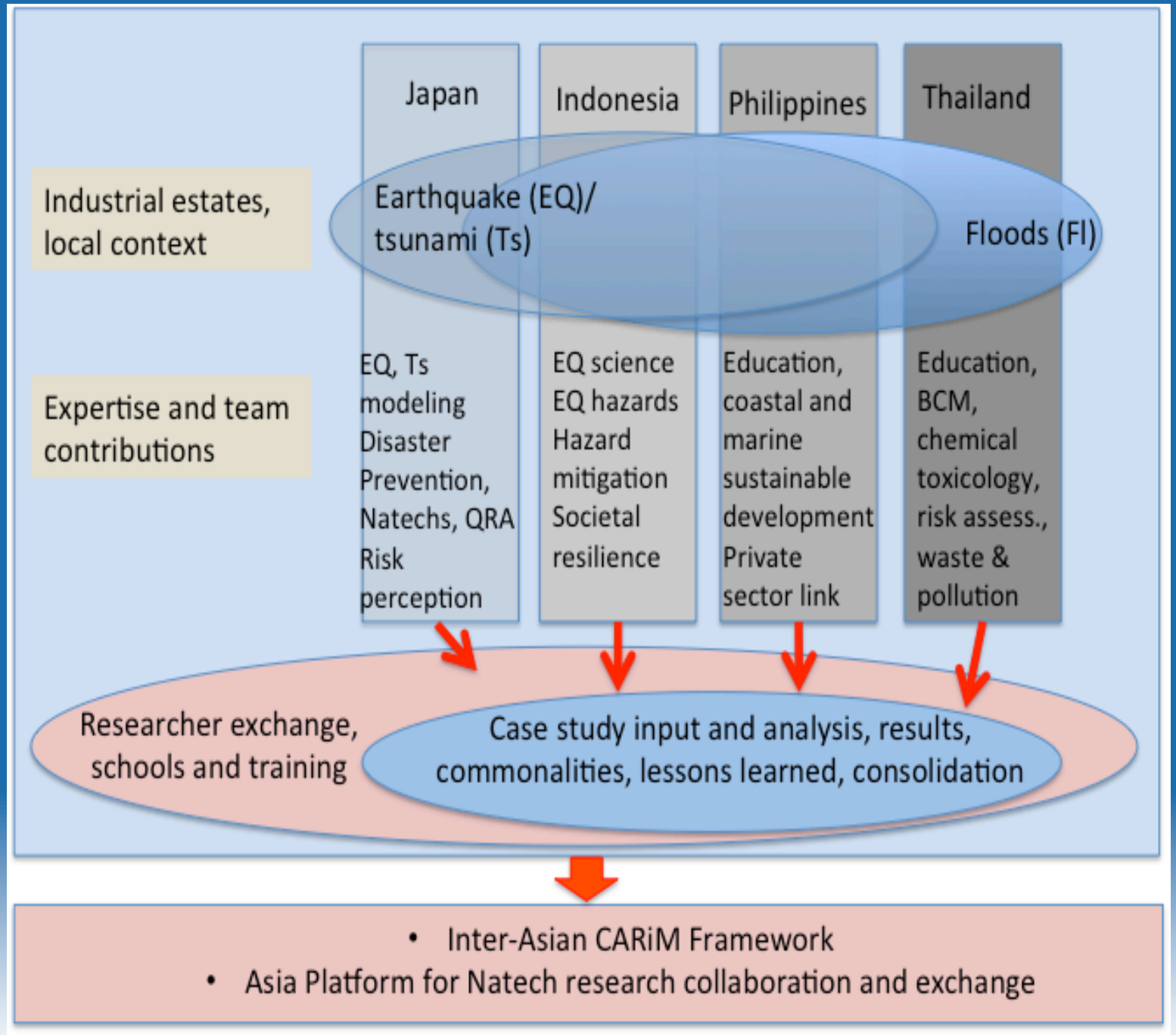
Community/ city

Stakeholder mapping:

Other companies (Supply chain)
Public & private utilities
Local/ national government
Residents
Emergency responders
Local environ. office
City planning
Civil protection
Health,
Police, Fire
National agencies/ academics
(Meteorological, geohazards, tsunami, flood hazard mapping, etc.)
???

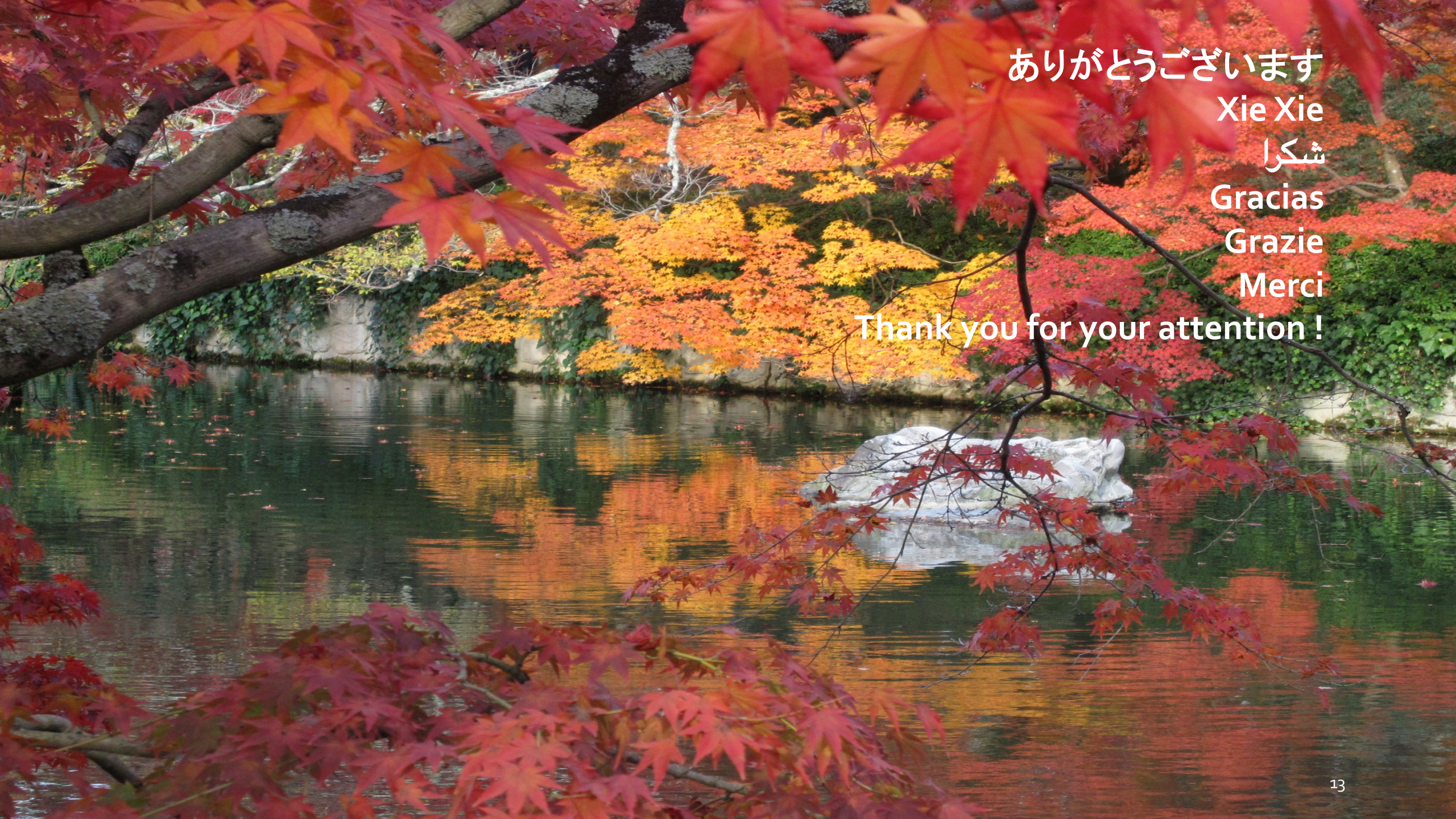


Research team contributions and methodological approach



Expected outcomes

- A tested and validated comprehensive, area-wide, risk management framework for Natechs at industrial parks that can be adopted by all countries, and may be transferable to other regions
- Guidelines to set up the system including vulnerability, consequence and risk assessment methodologies, technical measures, warning systems, risk communication, evacuation, and risk governance recommendations.
- A list of innovative counter measure technologies (soft and hard, by natural hazard type), and their expected contribution to risk reduction
- Platform for research exchange and sharing of lessons learned from past experiences including input of cases into the Joint Research Centre's e-Natech database
- Contribution to education and training of young researchers


ありがとうございます
Xie Xie
شكرا
Gracias
Grazie
Merci
Thank you for your attention !