

# World Association of Nuclear Operators



W A N O

**“Lessons learned,  
WANO action to improve  
Nuclear Safety”**

IAEA Ministerial Conference, Vienna 21 June 2011

# Introduction

1986



2011



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2

# March 11, Earthquake and *Tsunami*



# *Nuclear Landscape*

The Nuclear landscape will change

but

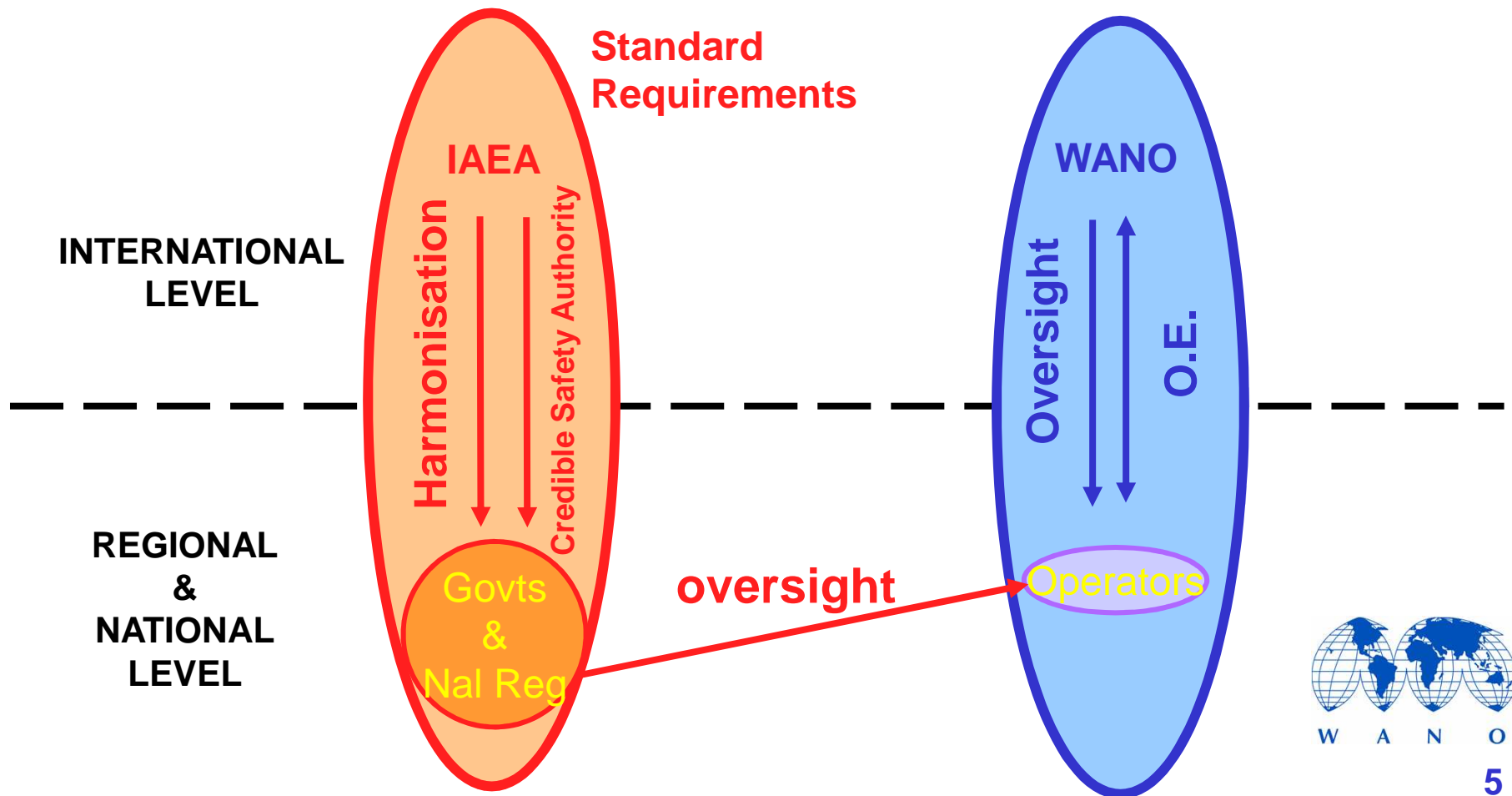
Energy demand worldwide  
remains !

**Importance of WANO's role**

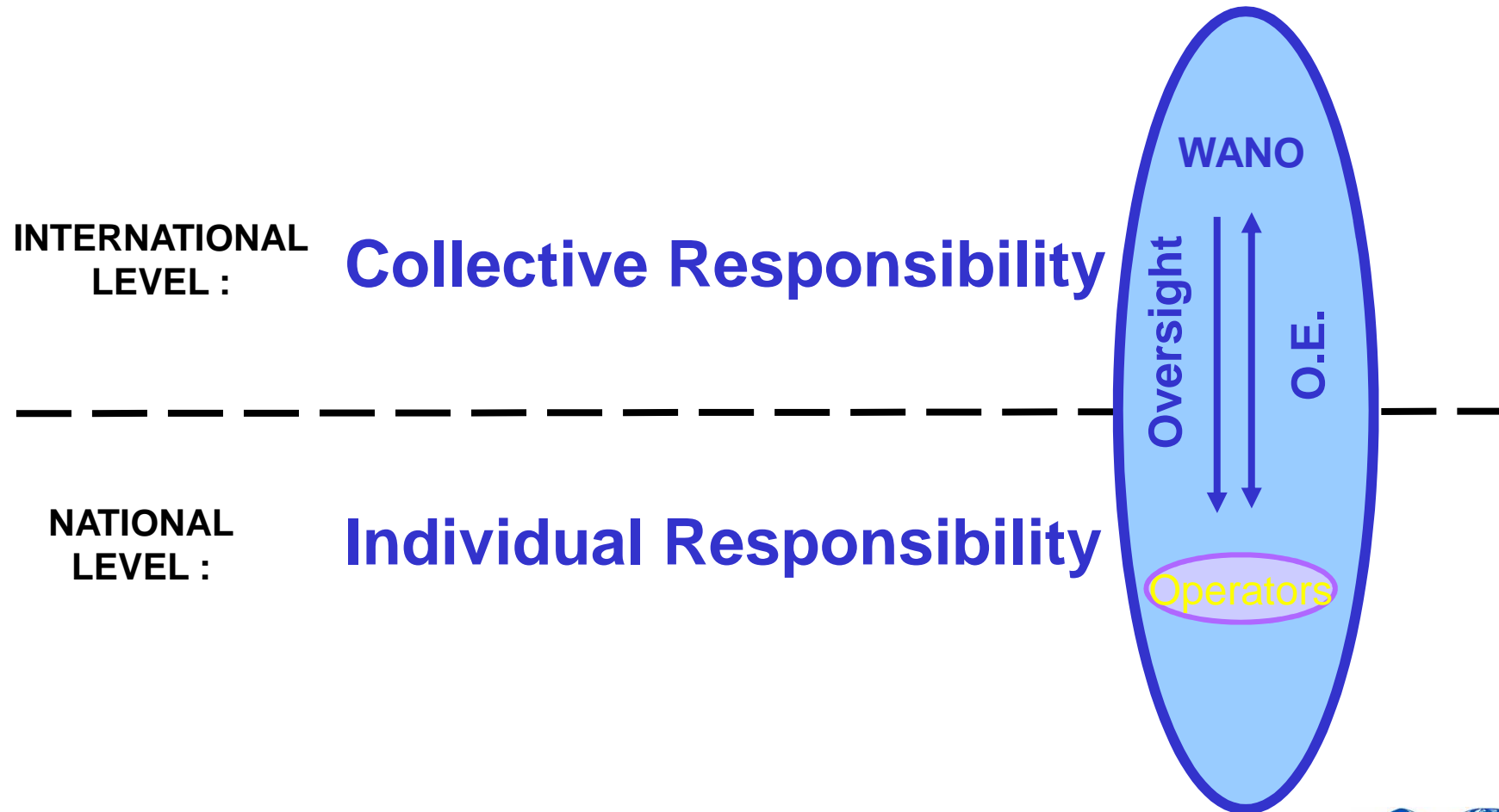


# Strengthening WANO

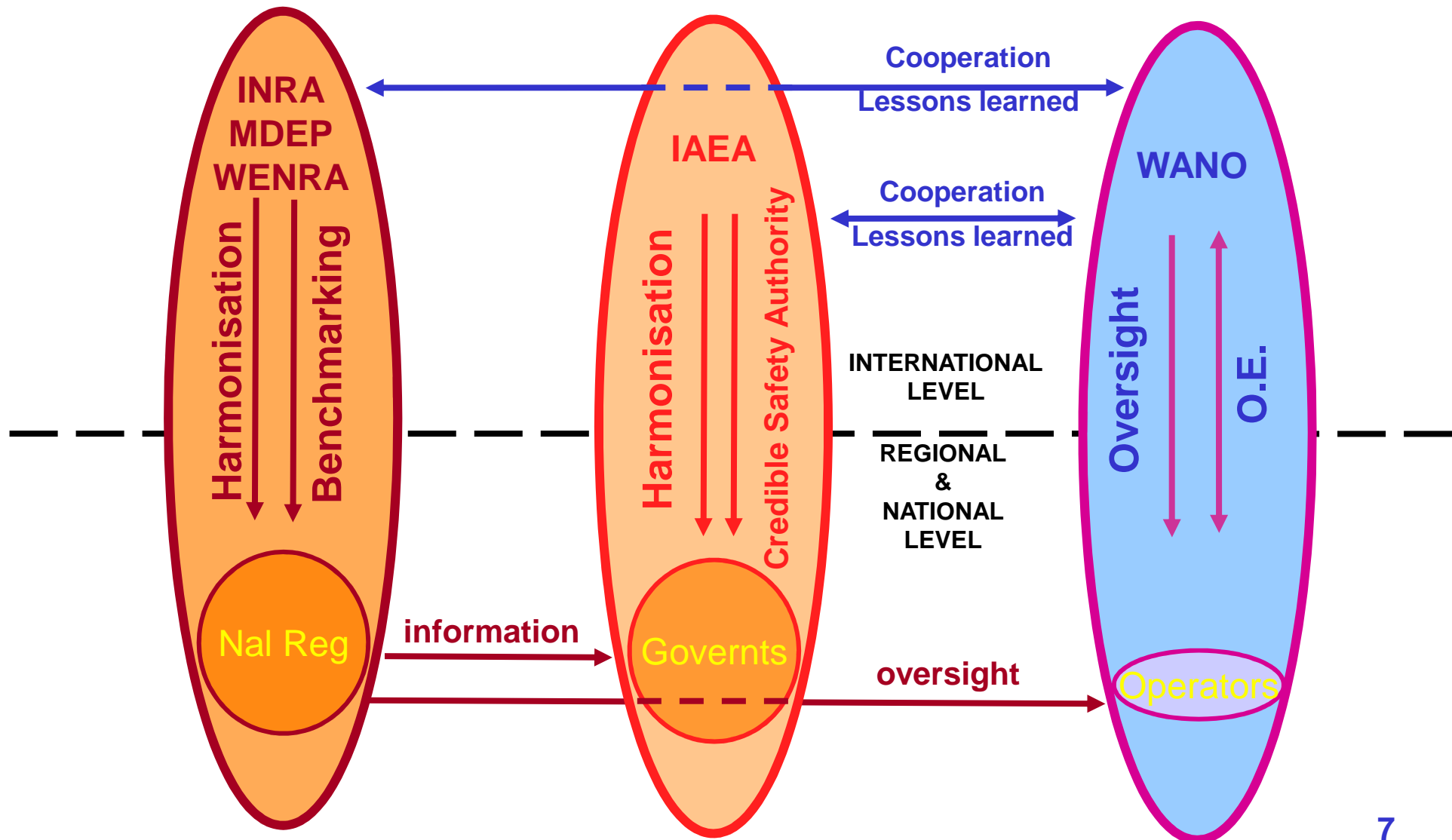
## WANO will emerge stronger !



# Nuclear Safety Responsibility



# International Safety Organisation



# *What does Nuclear Safety mean ?*

## **The 3 Safety Functions**

**Control of reactivity / stored energy**

**Core Cooling / decay heat removal**

**Containment / radiation & radioactive waste**



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# Safety functions in Nuclear accidents

Reactivity

~~Cooling~~

Containment



T.M.I.  
Fukushima



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# *Areas to reinforce Nuclear Safety*

**T.M.I.**

**Fukushima**



**Decay heat  
removal**

**Excellent operation  
&  
management of transients**

**Robust design**

**Emergency Planning**



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# *First lessons from the Fukushima accident*

**Within 6 days, WANO issued a SOER  
(March, 17 2011)**



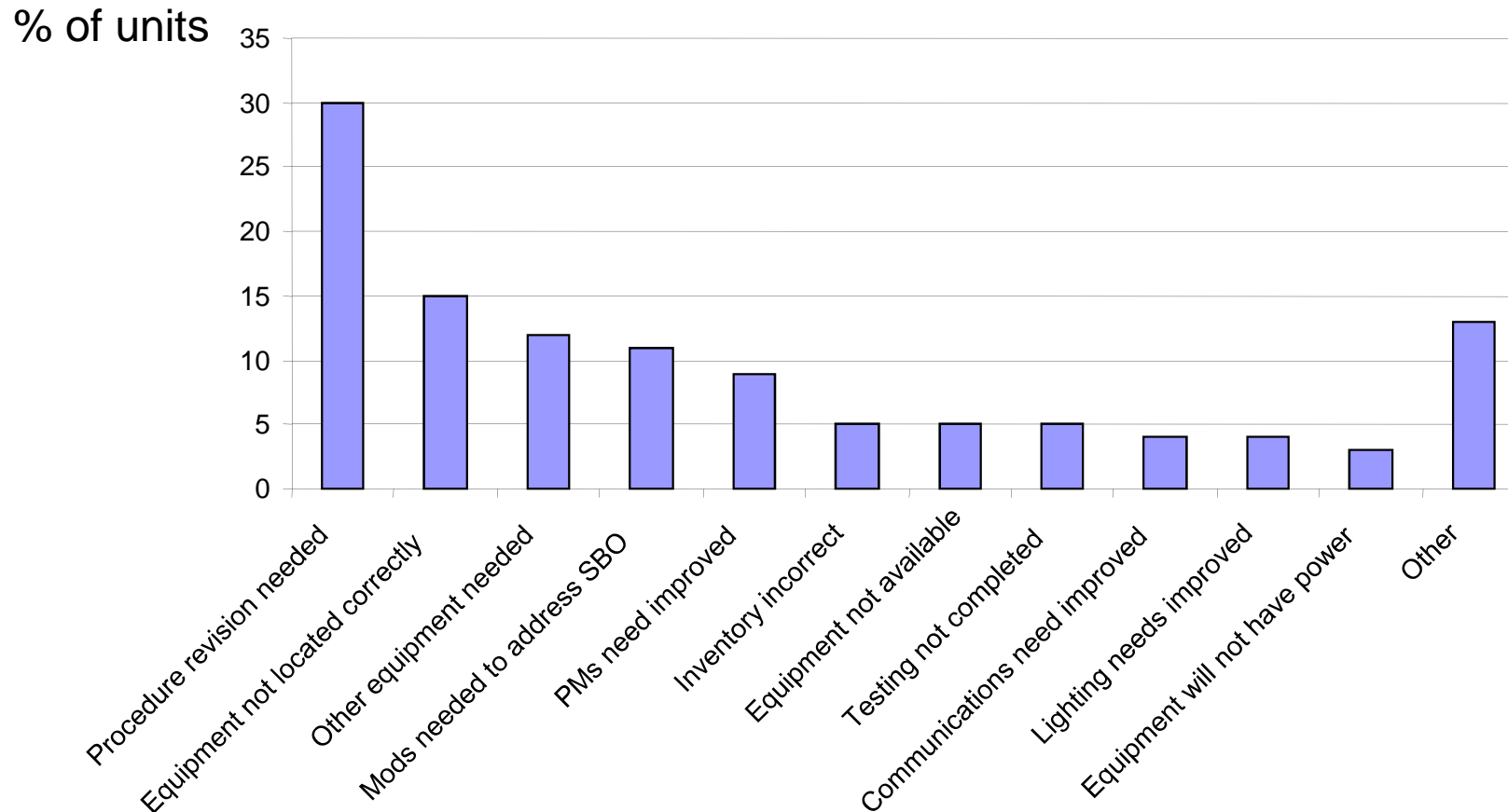
Significant Operating Experience Report  
WANO SOER 2011-2

**Fukushima Daiichi  
Nuclear Station Fuel  
Damage Caused by  
Earthquake and Tsunami**

March 2011  
Limited Distribution

# First lessons from the Fukushima accident

All WANO members responded to SOER  
Example of analysis : Station Black-out



# ***WANO improvements***

- **WANO will, with its members fully committed, continue to prevent TMI & Chernobyl types Accidents by focusing PRs on Nuclear Safety Fundamentals, including :**
  - **Compulsory high quality “AFIs”**
  - **Check SOER recommendations’ implementation**
- **Improve Operating Experience, sharing between operators :**
  - **Better define when a station must report**
  - **Timely report event**
  - **Implement SOER recommendations**
- **Define what is expected of WANO members & the follow-up on members that are not fully participating**

## ***WANO's Commission to propose improvements***

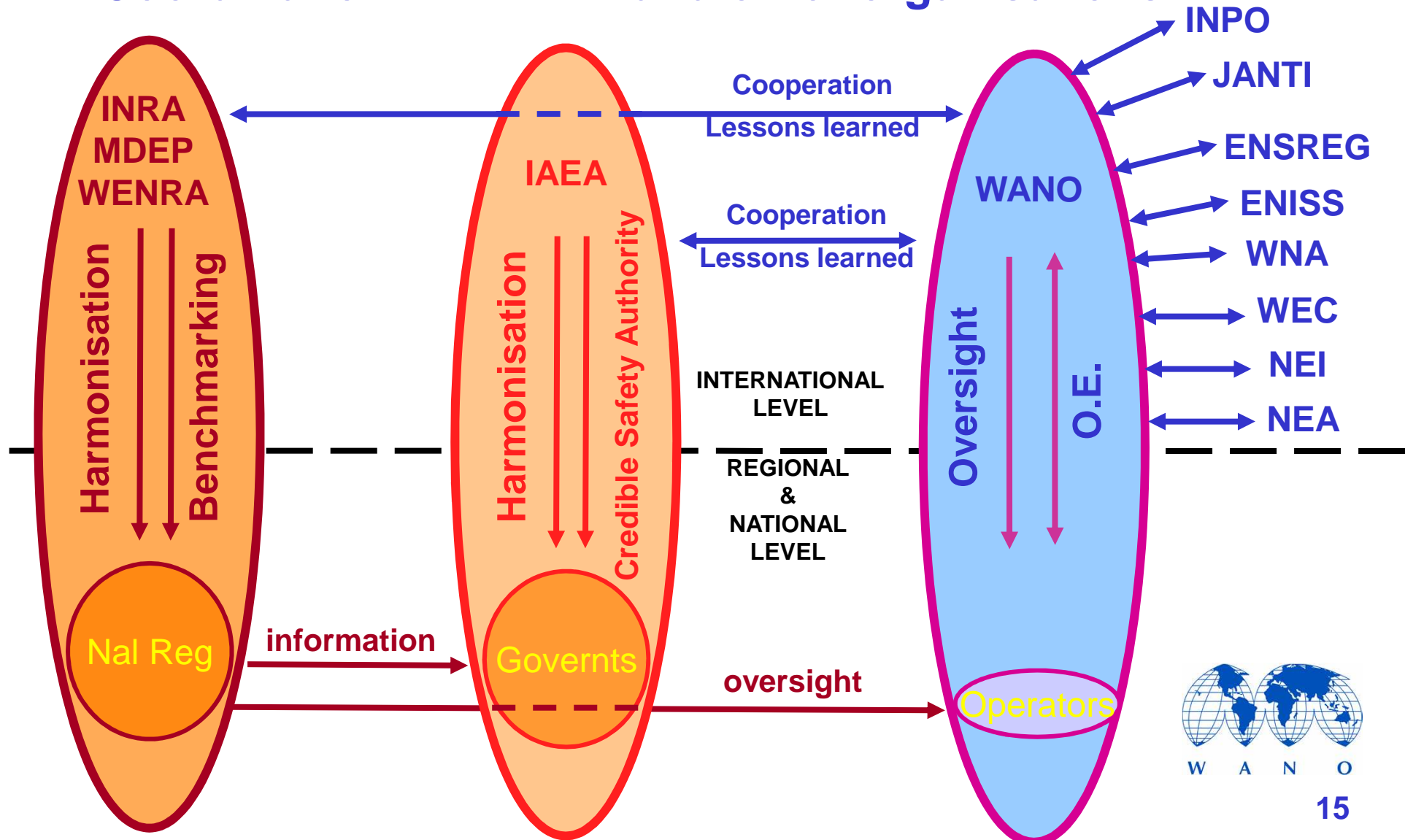
**As a result of Fukushima :**

- **Close the SOER gaps in emergency preparedness of each utility :**
  - **Procedures**
  - **Equipment availability**
  - **Drills & training**
- **Better define WANO's roles & responsibilities of WANO & WANO members in an emergency :**
  - **Reinforce the Emergency Team**
  - **Inventory of available equipment from other members**
  - **Coordination with IAEA and other organisations**



# WANO's Commission to propose improvements

## ■ Coordination with IAEA and other organisations :



# *WANO's Commission to propose improvements*

- **Improve Peer Reviews to include :**
  - **Emergency preparedness**
  - **Fuel pools / storage controls**
  - **Robustness of design / mitigation plans to extreme natural events including modifications that can reduce off-site releases following severe accident conditions**



# *Additional thoughts*

Risk of loss of trust by the public

Risk of loss of trust by nuclear workers

Risk of complacency of some operators



## *WANO's conclusion*

- Nuclear landscape will be different  
→ WANO must change
- Individual & collective responsibility
- Credible Regulator /  
WANO strong & complementary
- Guard against complacency &  
build back trust in Nuclear



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## *WANO's conclusion*

- Improve Peer Review & Operating Experience processes to continue to prevent TMI & Chernobyl types accidents
- Close gaps in Emergency Preparedness & better manage heat removal
- WANO must have the trust of its Members : efficiency, confidentiality, transparency



# *WANO's conclusion*

WANO  
stronger  
and  
more effective



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<http://www.wano.info>