

Importance of the public communication and role of NA

13 May 2013
NAWG Workshop

Nuclear Waste Management Organization of Japan (NUMO)



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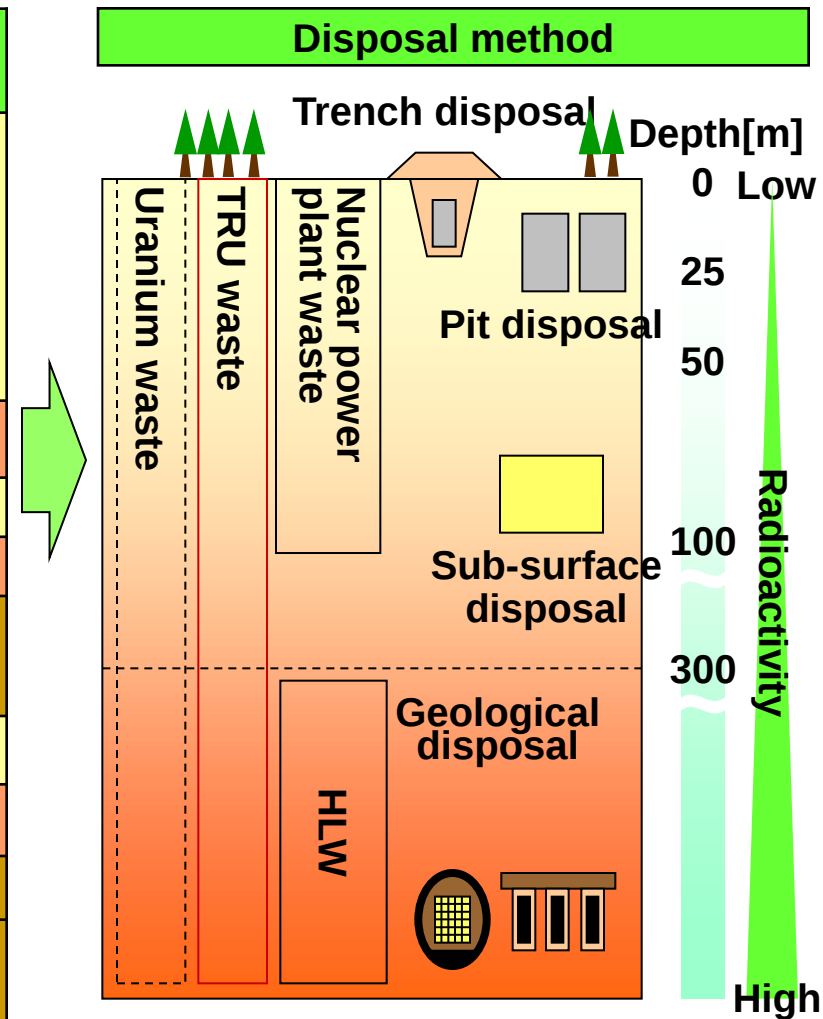


Overview of the Japanese geological program and NUMO

Classification of radioactive wastes & disposal methods

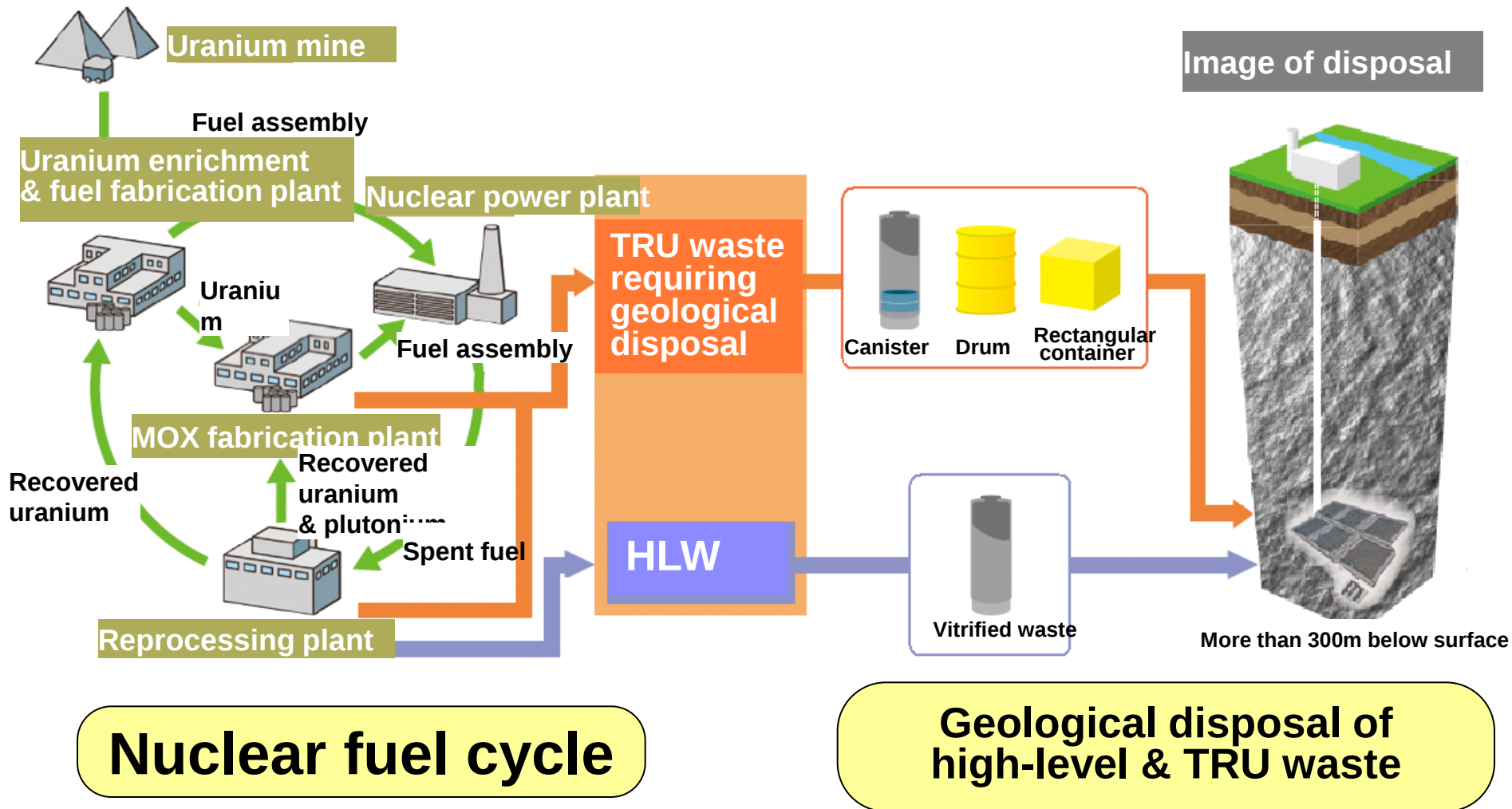
Generation point	Category			Example of disposal
Nuclear power plant	LLW	Nuclear power plant waste	VLLW	Near-surface
			LLW	
			HLLW*	Sub-surface
Uranium enrichment/ fuel fabrication plants		Uranium waste	Near-surface	
			Sub-surface	
			Geological (undecided)	
Reprocessing / MOX fabrication plants	TRU waste	Near-surface		
		Sub-surface		
		Geological		
Reprocessing plant	HLW			Geological

*Waste of core structures etc.



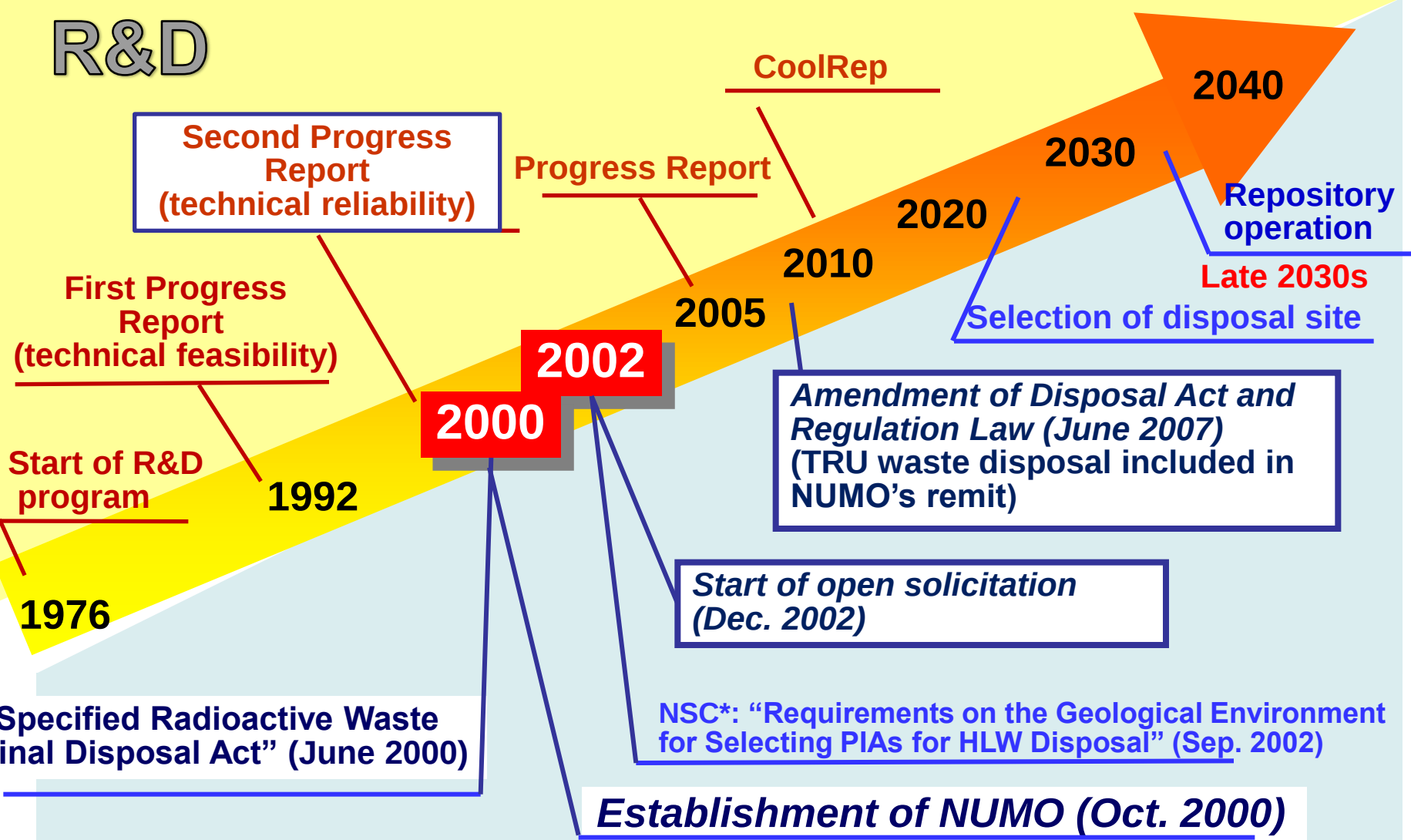
Nuclear Fuel Cycle & Geological Disposal of Nuclear Waste

Nuclear fuel cycle policy is promoted to ensure effective recycling of materials such as uranium and plutonium recovered by reprocessing of spent fuel. Reprocessing generates HLW and TRU waste.



Development of the Japanese Geological Disposal Program

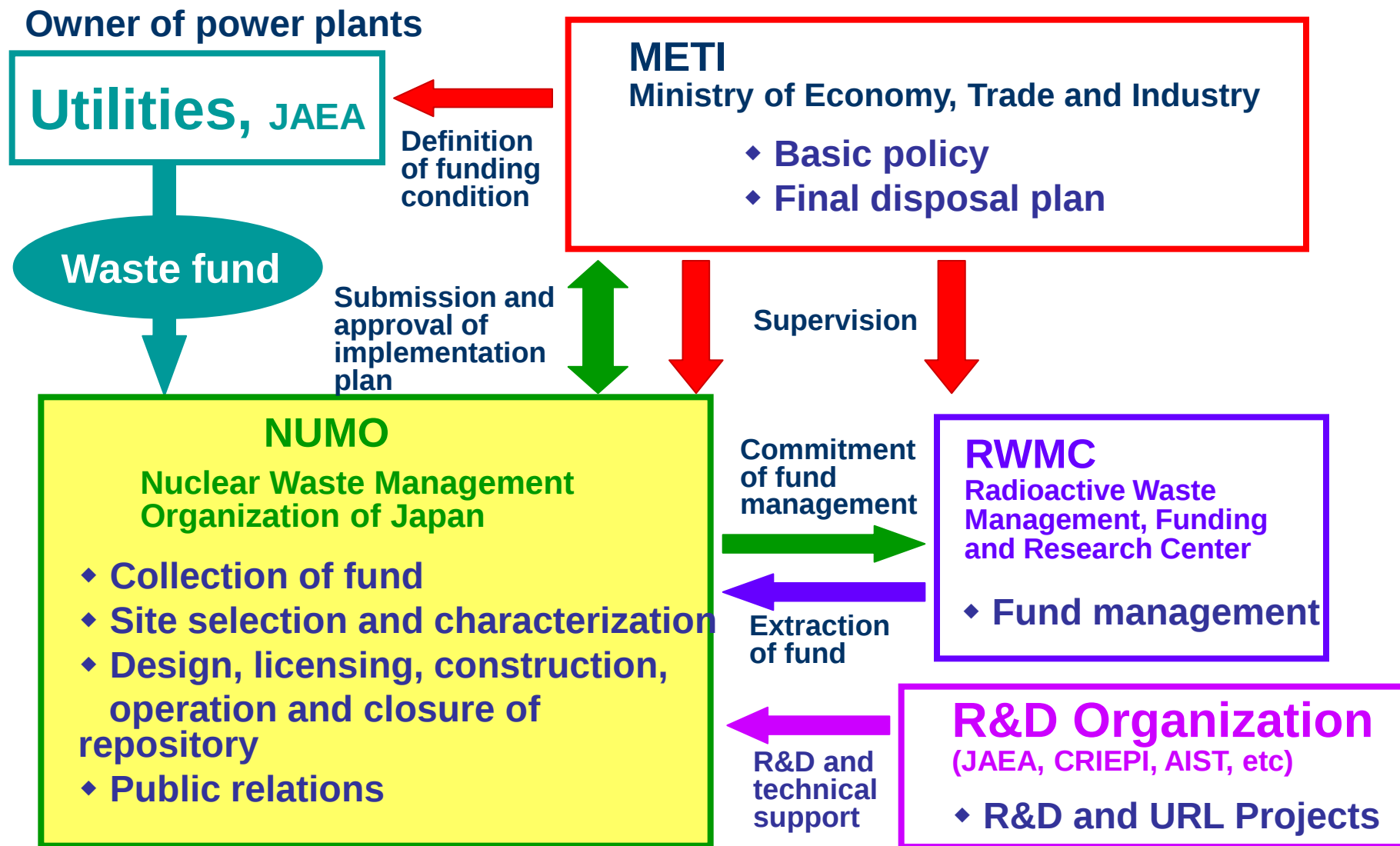
R&D



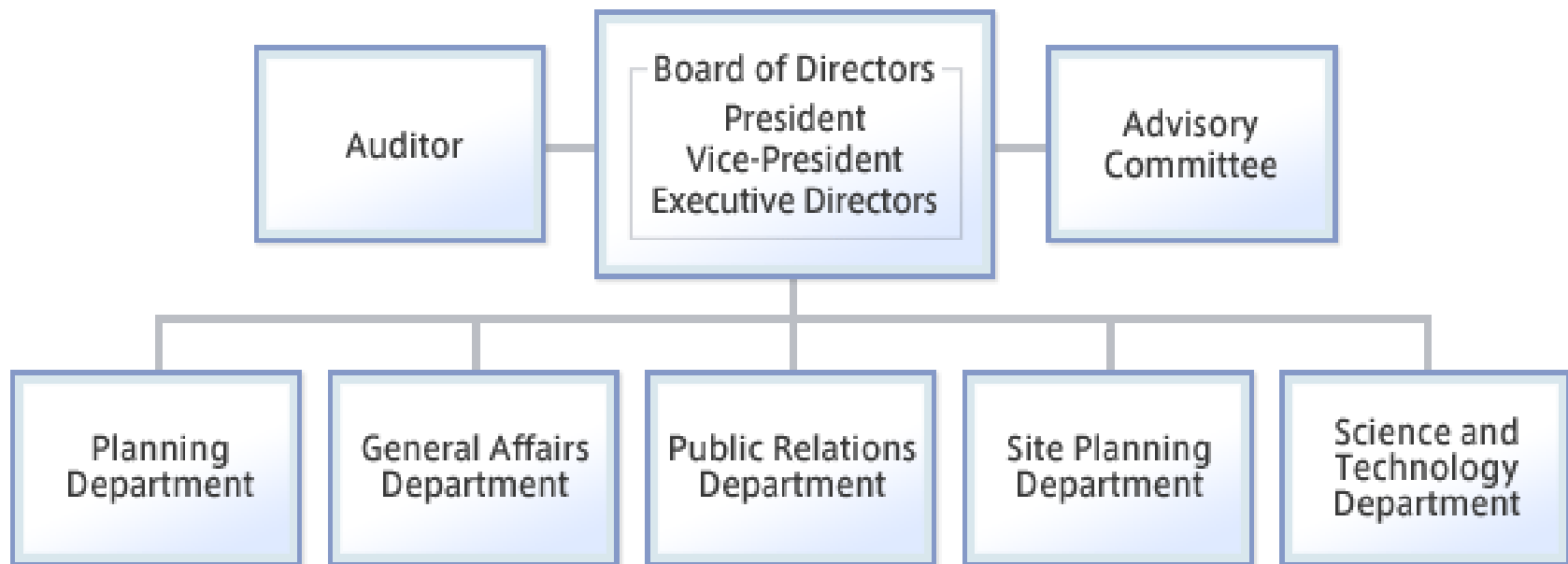
*NSC: Nuclear Safety Commission of Japan

Implementation

Organizations and Roles in the HLW Disposal Program



Organization of NUMO

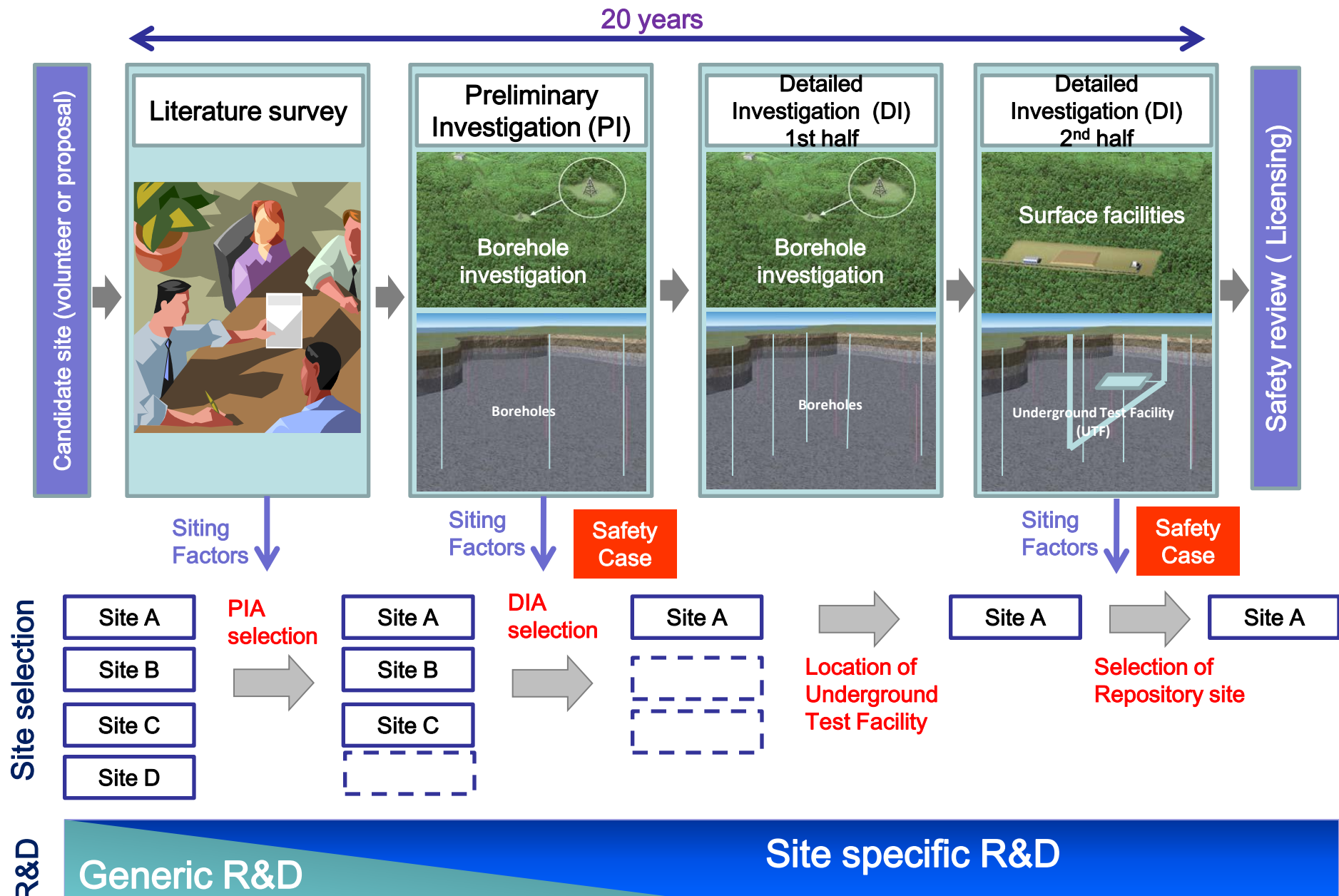


■ Total number of Staff (as of May 2013) : 99

■ Expenditures in FY2011 : ca. 3.5 billion JPY (35 million Euro)



Three Stages of Site Selection Process



Evaluation Factors for Qualification (areas excluded as PIAs)

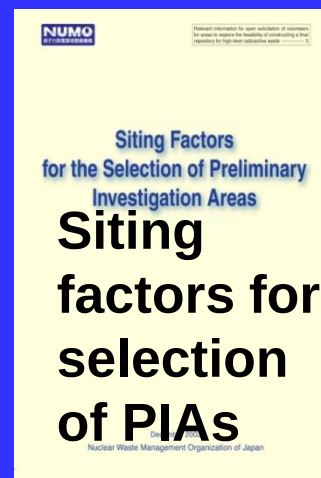
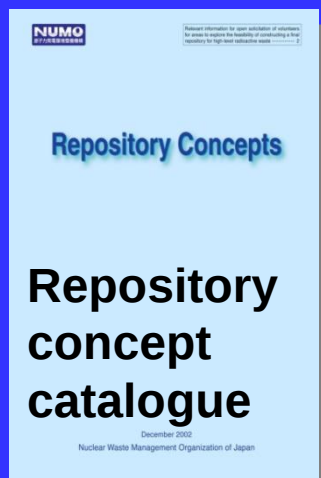
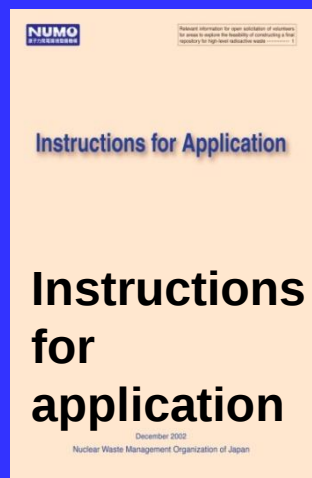
- Clearly identified active faults
 - Within a 15km radius of center of Quaternary volcanoes
 - Uplift of more than 300m during the last 100,000 years
 - Unconsolidated Quaternary deposits
 - Economically valuable mineral resources
-

Favorable Factors (categories)

- | | |
|--------------------------|-----------------------------|
| ■ Geological formations | ■ Risk of natural disasters |
| ■ Hydraulic properties | ■ Procurement of land |
| ■ Geological environment | ■ Transportations |
-

Start of Open Solicitation

- On 19 December 2002, NUMO officially announced the start of open solicitation to invite volunteer municipalities for Literature Survey
- Information Package distributed to all municipalities in Japan
- TRU waste disposal was included within the NUMO's program in 2007

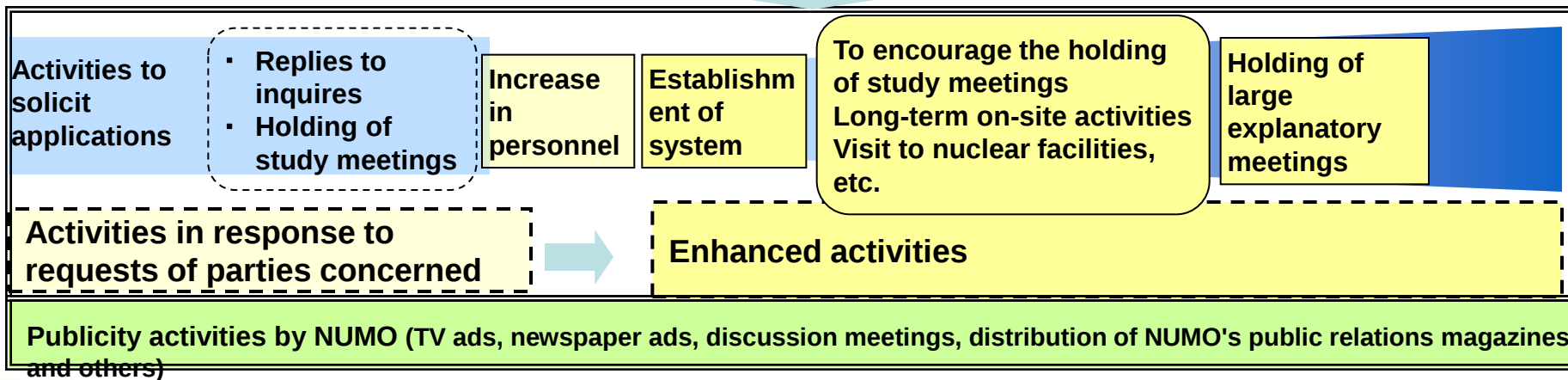
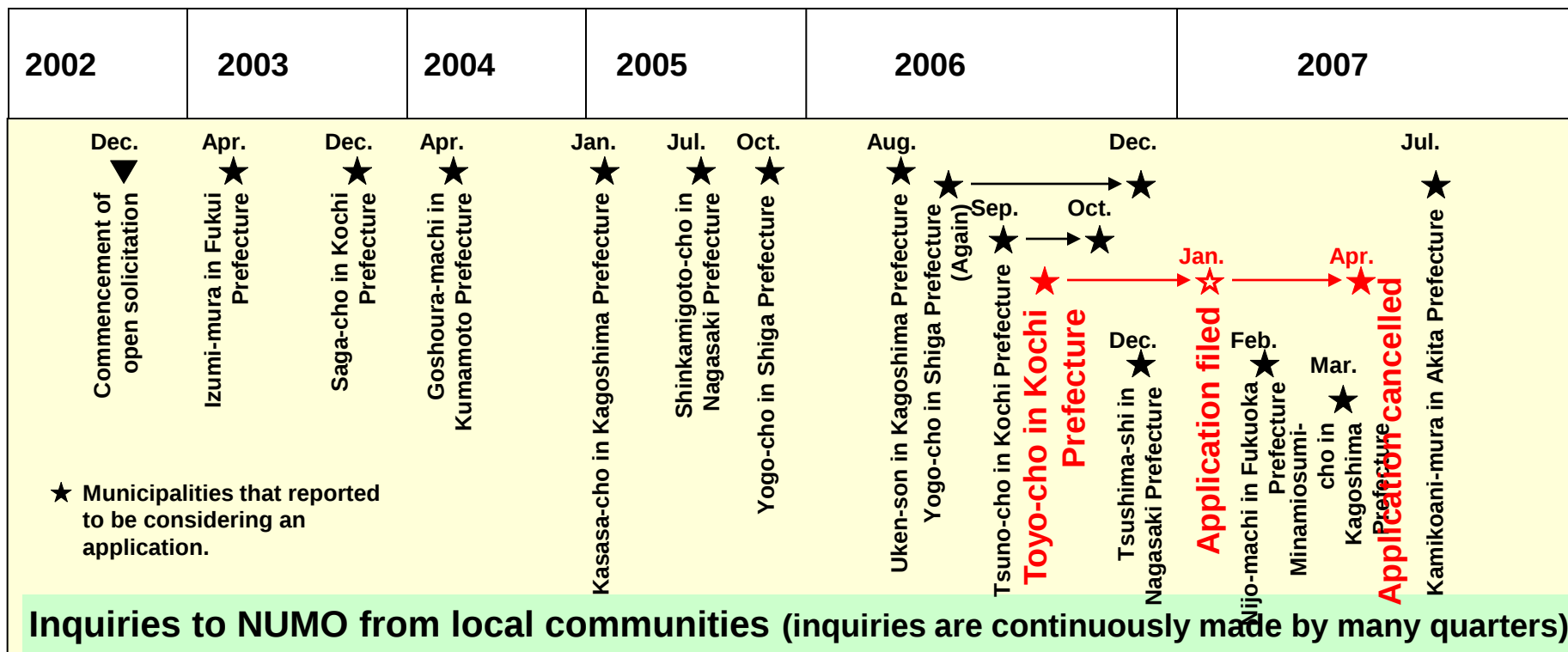


NUMO Information Package



Some highlights

Municipalities that attempted to apply for Literature Survey





Story of Toyo town – First application for LS

- In 2007, Toyo town became the first municipality to submit an application for LS
- Escalation in opposition activities led to the resignation of the mayor and his loss in the following election
- A newly elected mayor withdrew the application and the literature survey for the town was abandoned in May 2007
- Reflecting the lessons learnt, METI radioactive waste sub-committee recommended enhancement measures for HLW disposal program in November 2007

■ Public opinion

- According to latest opinion polls, more than half of Japanese people want to phase out nuclear power by around 2030.

■ Debate in the Government on Nuclear policy

- The government released the new energy and environment strategy for reducing Japan's dependence on nuclear to zero in 2030s, but measures to achieve the goal are still unclear. (Sept. 14, 2012)
- The Atomic Energy Commission of Japan (AECJ) proposed that both reprocessing and direct disposal of spent nuclear fuel are considered appropriate if the Government decides to reduce nuclear power reliance to 15 % or lower. (June 21, 2012)
- The Ministry of Economy, Trade and Industry (METI) issued the fiscal 2013 draft budget to develop technologies for direct disposal of spent nuclear fuel for the first time in the history of Japan's nuclear development program. (Sept. 7, 2012)

- **Reactions from communities that host nuclear facilities**
 - **Aomori Governor and Rokkasho Mayor are saying that if the Government decides to abandon spent fuel reprocessing, all spent fuel currently stored at Rokkasho Reprocessing Plant must be returned to their owners.**

■ Background and process

- Atomic Energy Commission (AECJ) requested to provide suggestion to the HLW disposal program in Sep 2010
- SCJ set up a specific committee in Sep 2010
- Tohoku earthquake and Fukushima accident occurred in Mar 2011
- SCJ submitted its report to AECJ on 11 Sep 2012

■ Key messages

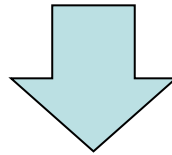
- Temporal safe storage for 10s to 100s of years
- Control of total amount of HLW
- Organize nationwide discussion on nuclear issues and decide how to proceed with the HLW disposal project
- Expect technical development during the temporal safe storage period – partitioning and transmutation, earthquake, volcano etc.



Challenges for confidence building

Importance of confidence building

- Confidence building is critically important for the Japanese program because of the following points:
 - Open solicitation process (process to be initiated by municipality)
 - Lack of public confidence due to Mega-tsunami and accident of Fukushima Daiichi NPP
 - Report of science council of Japan
- Large gap between scientific confidence and public confidence



NUMO has been working on social science study



NUMO's study on social science

- Study period: FY2009 - FY2013
- Form of study:
 - Committee meeting (2-3 times/a)
 - Opinion exchange meeting with individual experts
 - Survey of overseas information
- Specialty of experts
 - Social science
 - Environmental ethics
 - Radiation protection
 - Science communication
 - Geology
 - Geological disposal
 - Others

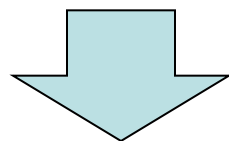


Main outcomes from the discussion (1/2)

- Public tends to be more sensitive to the risk in the near future (e.g. hundreds of years) more than risk in the distant future (e.g. tens of thousands of years).
- Safety is defined that “there is no unacceptable risk and it is a type of agreement in the society”. For example, 3,000 casualties per year is a safety target for the Ministry of Land, Infrastructure, Transport and Tourism (MLIT).
- In the area of social psychological study, the reason of decision must be clearly recorded in order to allow the future generation to review the decision for potential modification for the issues contains high level of uncertainties.
- Public worries what is the worst scenario and the possibility.

Main outcomes from the discussion (2/2)

- For general public, the contents of safety case is far more complex to be understood. Thus more “digestible” evidence to enhance public confidence to the geological disposal is required.
- One of the critical issue for public confidence on geological disposal is the time frame involved (e.g. 100s of thousands of years). A simple example to show the performance of barrier system is required.

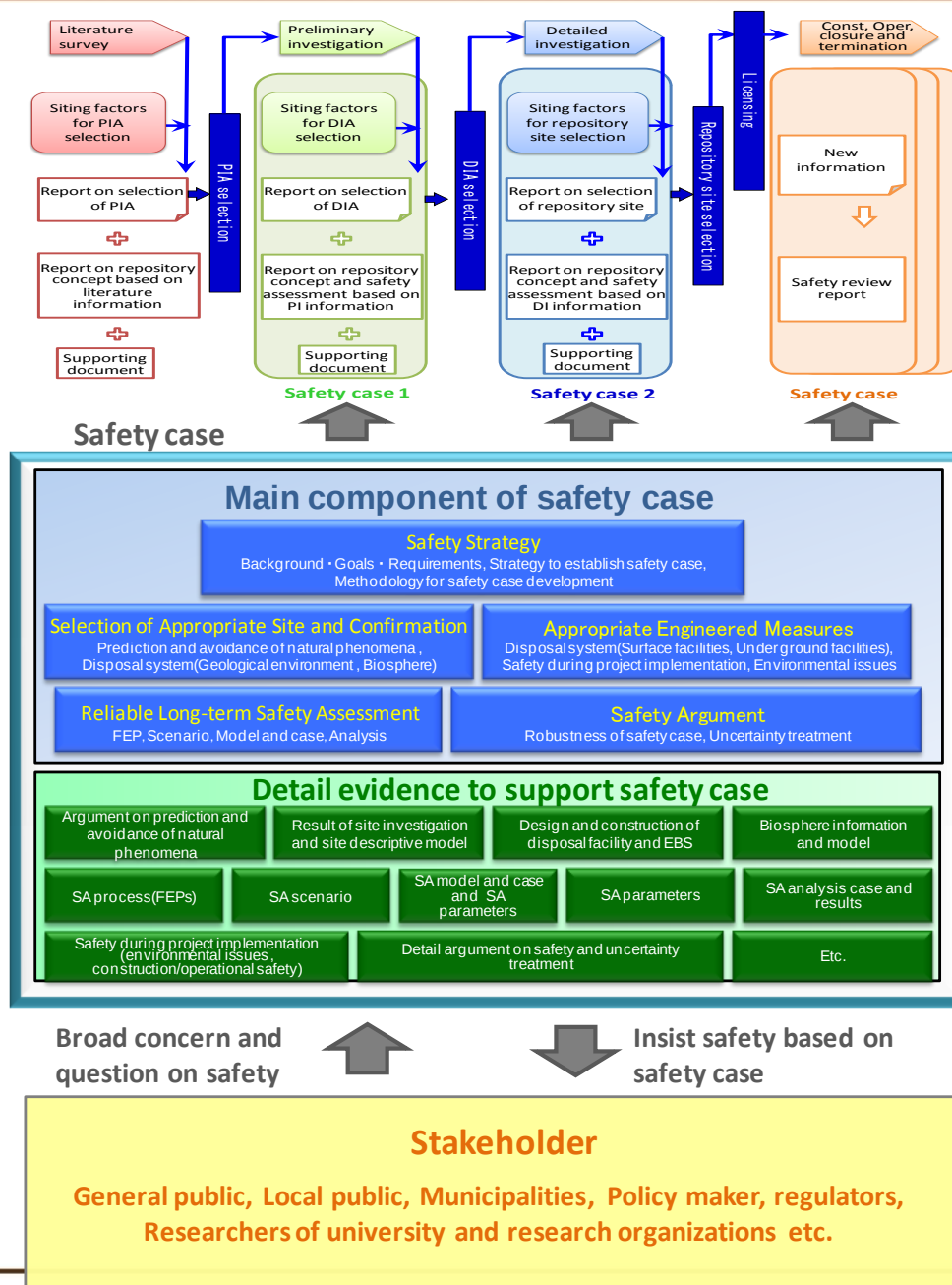


How Natural Analogue can contribute to resolve such issues?

Component of safety case and its roles

Interaction for project implementation →

Interaction with broad stakeholders →

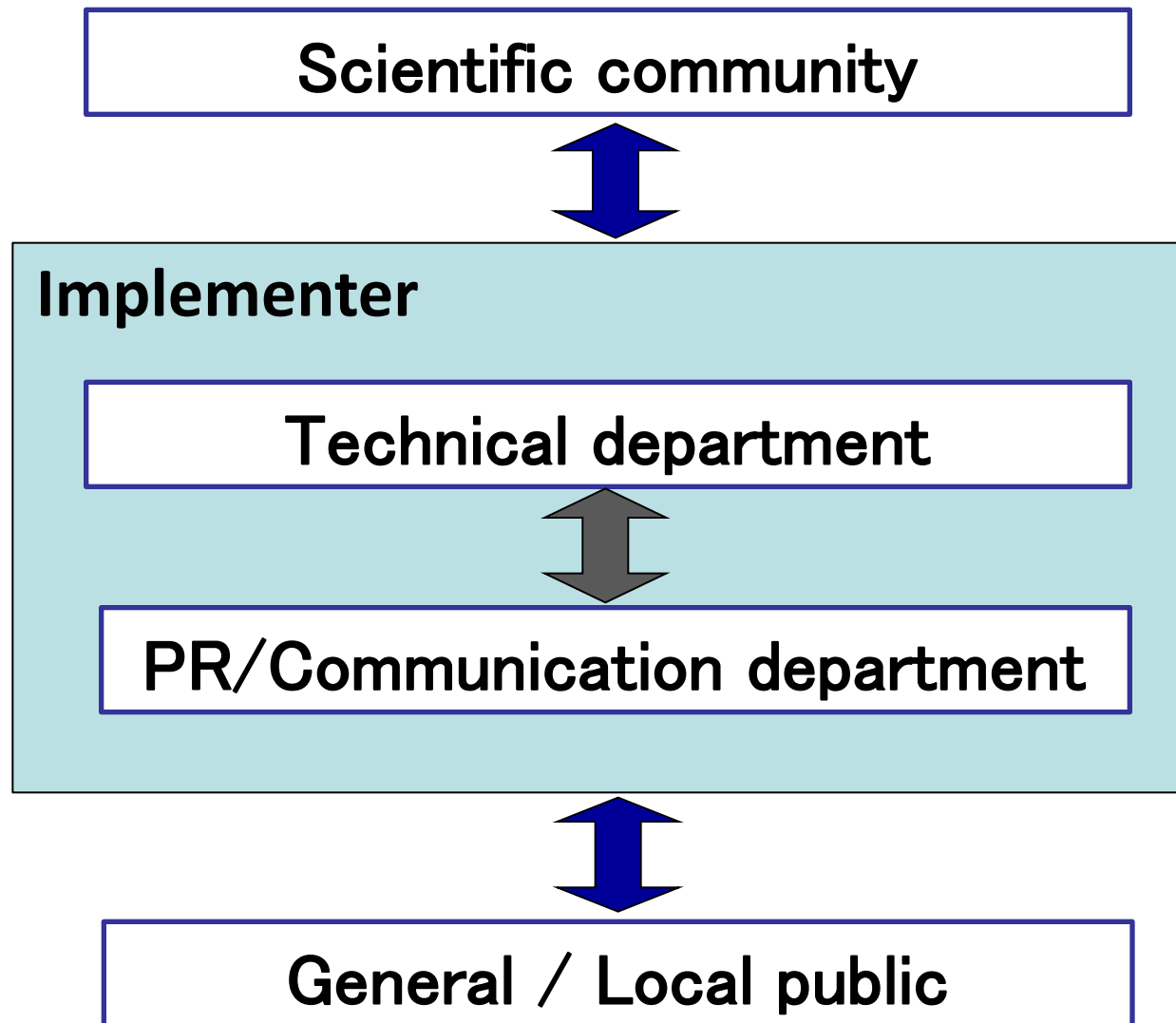




- Enhance scientific confidence
 - Increase confidence to the computer based safety case
 - Partial/in-direct validation of process models
- Enhance public confidence
 - Feel the feasibility of geological disposal project



Interaction among key players to be enhanced !



Thank you for your attention !

Any questions?

