Potential and Hurdles of Collaboration on NES R&D in Thailand

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Status of NES Program of Thailand

• The government declared that it will prepare for the introduction of NPPs in 2010
  • They postponed the NPP development program in 2011 after the Fukushima Dai-ichi NPS accident

• Based on Power Development Plan (PDP) 2010 Rev. 3
  • The energy demand would grow more than twice in 20 years
  • Potential energy sources are:
    • Natural gas
    • (Clean) coal
    • Nuclear
    • Renewables
  • We plan to have two 1000 MWe NPPs by 2026 and 2027

• There is no political decision regarding NPP development by any Governments since 2011
  • However, the Ministry of Energy will most probably keep nuclear power in the new PDP 2015
Stakeholders of R&D of NES in Thailand

**Government**
Ministry of Energy (MoE)

**Utility**
Electricity Generating Authority of Thailand (EGAT)

**Research Institute**
Thailand Institute of Nuclear Technology (TINT)

**Regulatory Body**
Office of Atoms for Peace (OAP)

**Universities**
- Chulalongkorn University
- KMUTT
- SIIT
Why do we need R&D on innovative NES in Thailand?

We are not developing NESs be ourselves, BUT...

• Technical information is necessary to:
  • Realize pros and cons of nuclear power (and other energy sources)
  • Understand all information provided by the technical developers in the bidding stage
  • Keep the NESs safe, if we are going to deploy them

• All stakeholders need to have adequate human resources by the time we start the construction and operation of NESs
  • We need R&D activities to at least maintain the human resources we have at the moment

• We need to be prepared for emergent situations which may happen in NESs being planned/built in the region
Why do we need collaboration?

- We have very limited NES human resources at the moment
  - We have experts in various fields (e.g., reactor core design, thermal hydraulics, aging management, reactor chemistry, probabilistic risk assessment, waste management) unfortunately in different organization
  - These experts are often asked to do R&D in different fields in their own organizations
- We need internal collaboration to keep these experts together working on NES issues
- We need external collaboration(s) to get opinions, recommendations, and helps from foreign experts to get accurate technical information and to obtain the whole picture of current NES development
- These collaborations may also influence the decision making
Why can’t we easily obtain internal collaboration?

• We do not have clear political statement related to the NES program
  • Many stakeholders, especially the utility, cannot invest their people and money without clear direction for NES deployment

• It is difficult to discover a mutual interest in NES R&D among the experts in different field
  • Most researchers (especially those gained the Ph.D. from abroad) want to continue researches in their own fields
  • We do not have enough researchers in a particular field to propose a collaboration

• It is difficult to determine the leader of the project
  • Most organizations want to lead the project, to be able to claim the right of the outcomes
Why can’t we make use of external collaborations?

We have a number of bilateral agreements with several technology developing countries, HOWEVER...

• We do not have clear political statement related to the NES program
  • Foreign countries are not willing to invest their money if the country has no potential to become a customer

• We have limited human resources
  • This makes it difficult to fully gain benefits from the bilateral agreements

• We have limited knowledge, which exist in different organizations
  • This makes it difficult to determine the scope of collaborations
How participation in INPRO can help us enhance collaboration?

• **External Collaboration**
  - We can observe how other member countries, especially technology developing countries are doing on NES R&D
  - We can also get to know the stakeholders in those countries

• **Internal Collaboration**
  - We can use the collaborative projects of INPRO to gather experts in the country
    - The topics are not very specific, and are beneficial to the country
    - It is not so difficult to find internal experts who are interested in this

• **Our near term plan**
  - We will first use the INPRO collaborative projects as a platform for collaboration within the country
Any comments or recommendations?