

# **A Comparative Study on Safeguards Implementation under Bilateral Nuclear Cooperation Agreements and the IAEA Comprehensive Safeguards Agreement**

**Jihye Jeon, Ki-Hyun Kim, Young Wook Lee  
Korea Institute of Nuclear  
Nonproliferation and Control**



- **The Nuclear Cooperation Agreement (NCA)**
  - Establishes obligations (“Foreign Obligations”)
    - Assurances that material or equipment is transferred pursuant to an Agreement for Peaceful Nuclear Cooperation
      - Peaceful use
      - Retransfer consent
      - Consent prior to reprocessing or enrichment
      - Safeguards and security
  - Imposed by supplier countries
  - Requests maintaining inventory and submitting annual reports
- Under ROK-Canada NCA, **Supplementary Arrangement** concluded between NSSC and CNSC on 22 Dec 2015
- Under ROK-US NCA, **Administrative Arrangement** concluded between NSSC and DOE/NNSA on 1 Apr 2016

- **The Comprehensive Safeguards Agreement (CSA)**
  - Establishes obligations
  - Imposed by the IAEA
  - Requests maintaining inventory and submitting reports
- However, there is a **significant gap** between SG implementation under the NCA and CSA

- **Fungibility of NM**

- Uranium from any source is identical to uranium from any other
- Impossible to physically identify the origin of the uranium

- **International Obligation Exchange**

- An exchange of obligations between equivalent quantities of material located in different countries or jurisdictions

# Distinctive Concepts in the NCA

Accuracy Performance Accountability

The Nuclear Materials Management and Safeguards System (NMMSS)

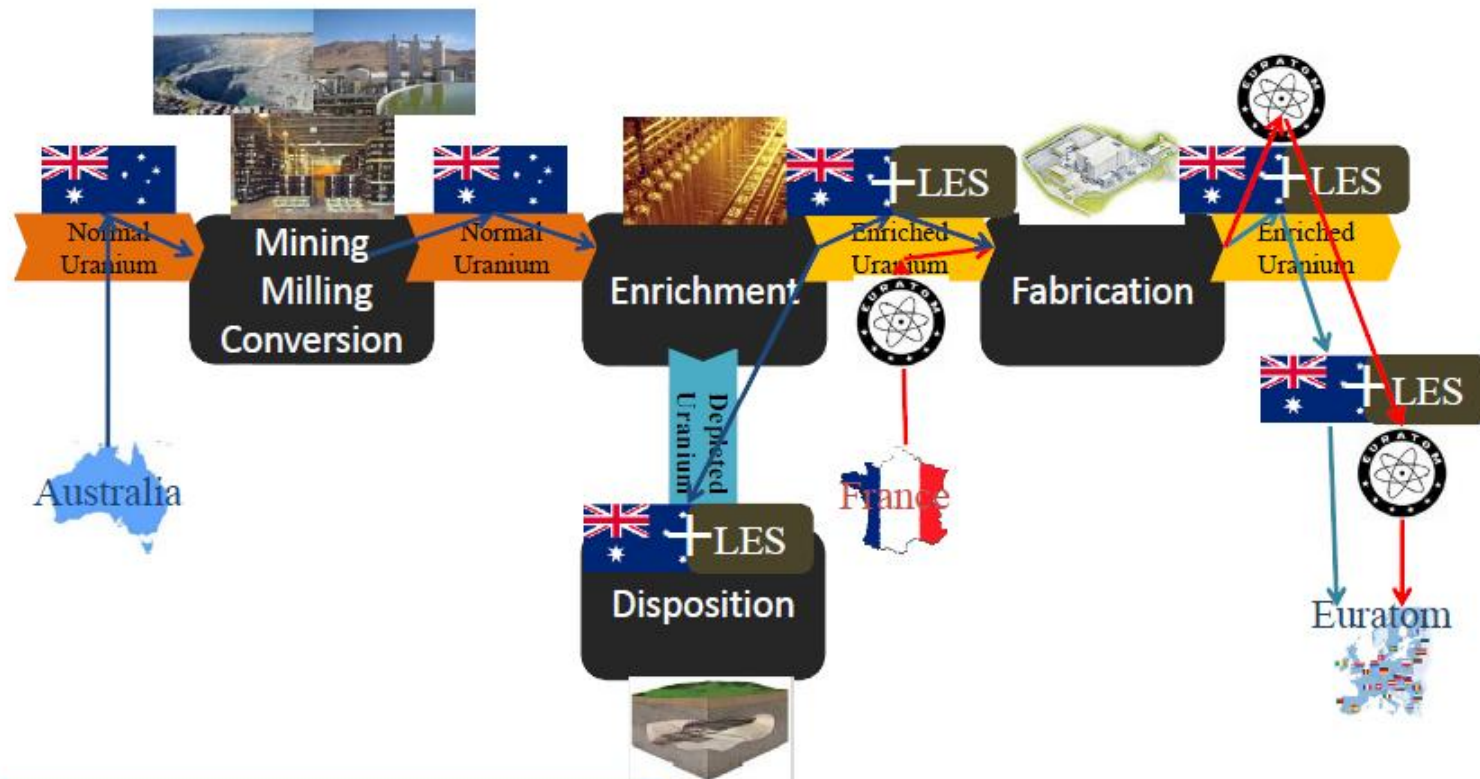
## NMMSS

# 2015

Annual Users Training Meeting

### Framework for U.S. Tracking of Foreign Obligated Nuclear Materials

**(Must Account for Material in Each Phase)**



- Principle of Fungibility, Equivalence and Proportionality
  - Principle of Fungibility [대체성의 원칙]

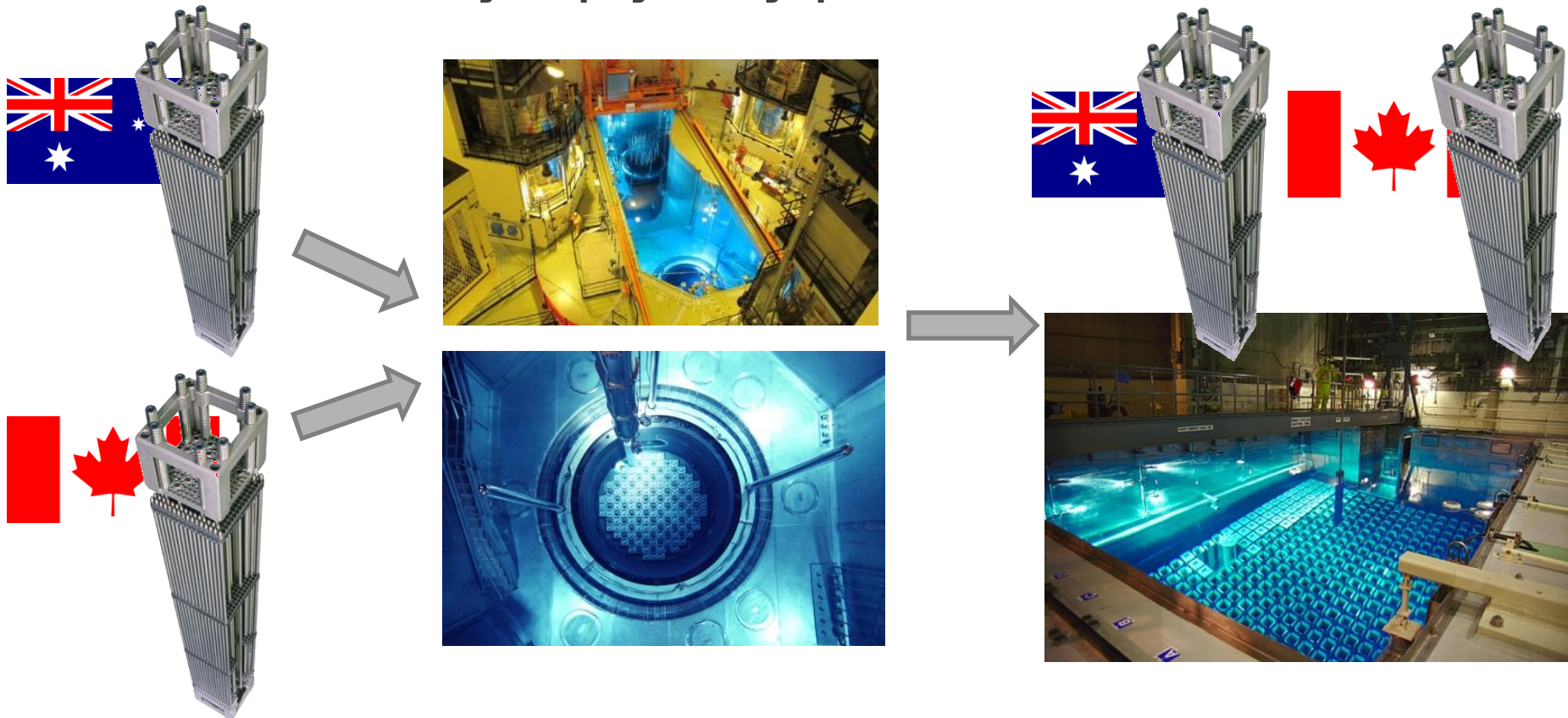




- **Principle of Fungibility, Equivalence and Proportionality**
  - Principle of Equivalence (등가성의 원칙)
    - Loses its separate physical identity



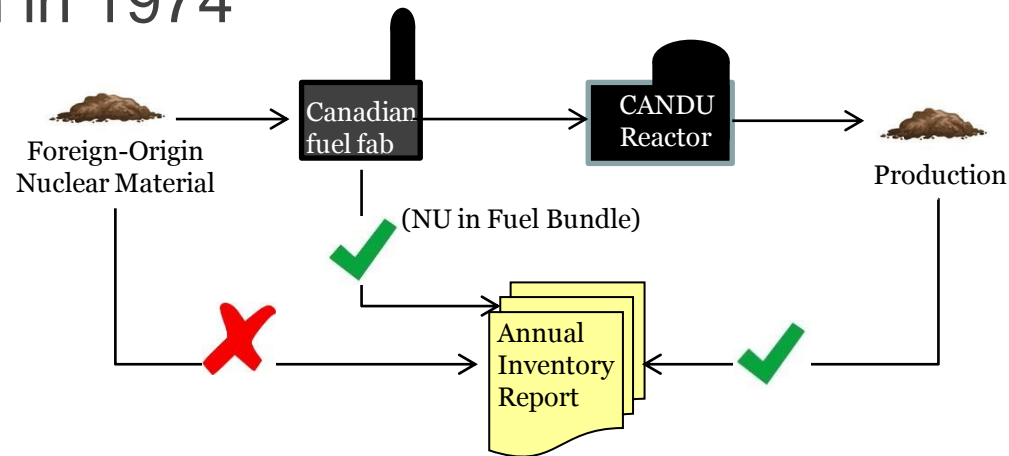
- Principle of Fungibility, Equivalence and Proportionality
  - Principle of Proportionality (비례성의 원칙)
    - (Chemically or physically) processed or irradiated





- **Derived Materials**

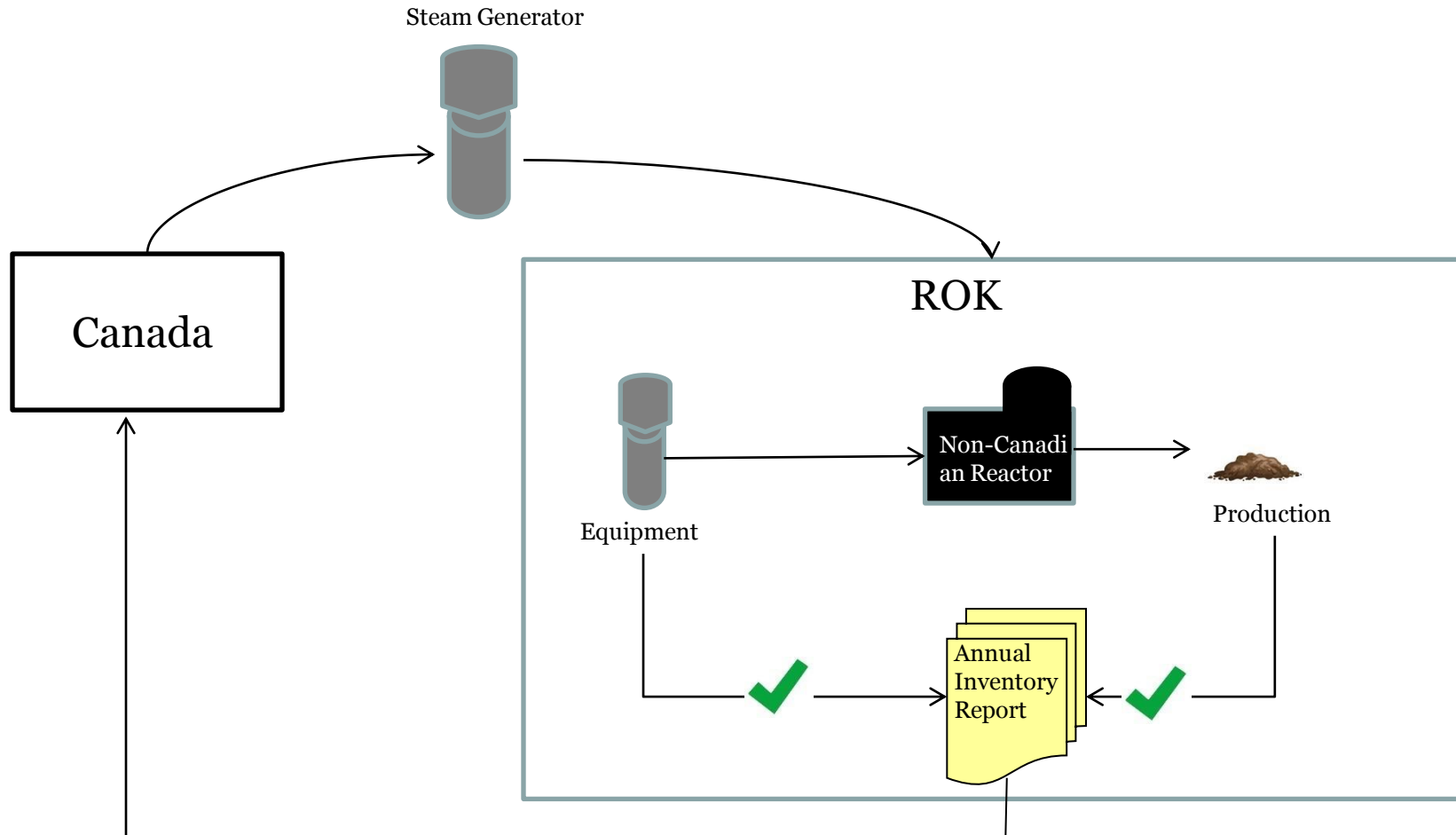
- NM or material of any origin which has acquired the NCA obligation as a result of being produced or processed with the use of obligated items under the NCA
- Indian nuclear weapon in 1974
- “contamination”



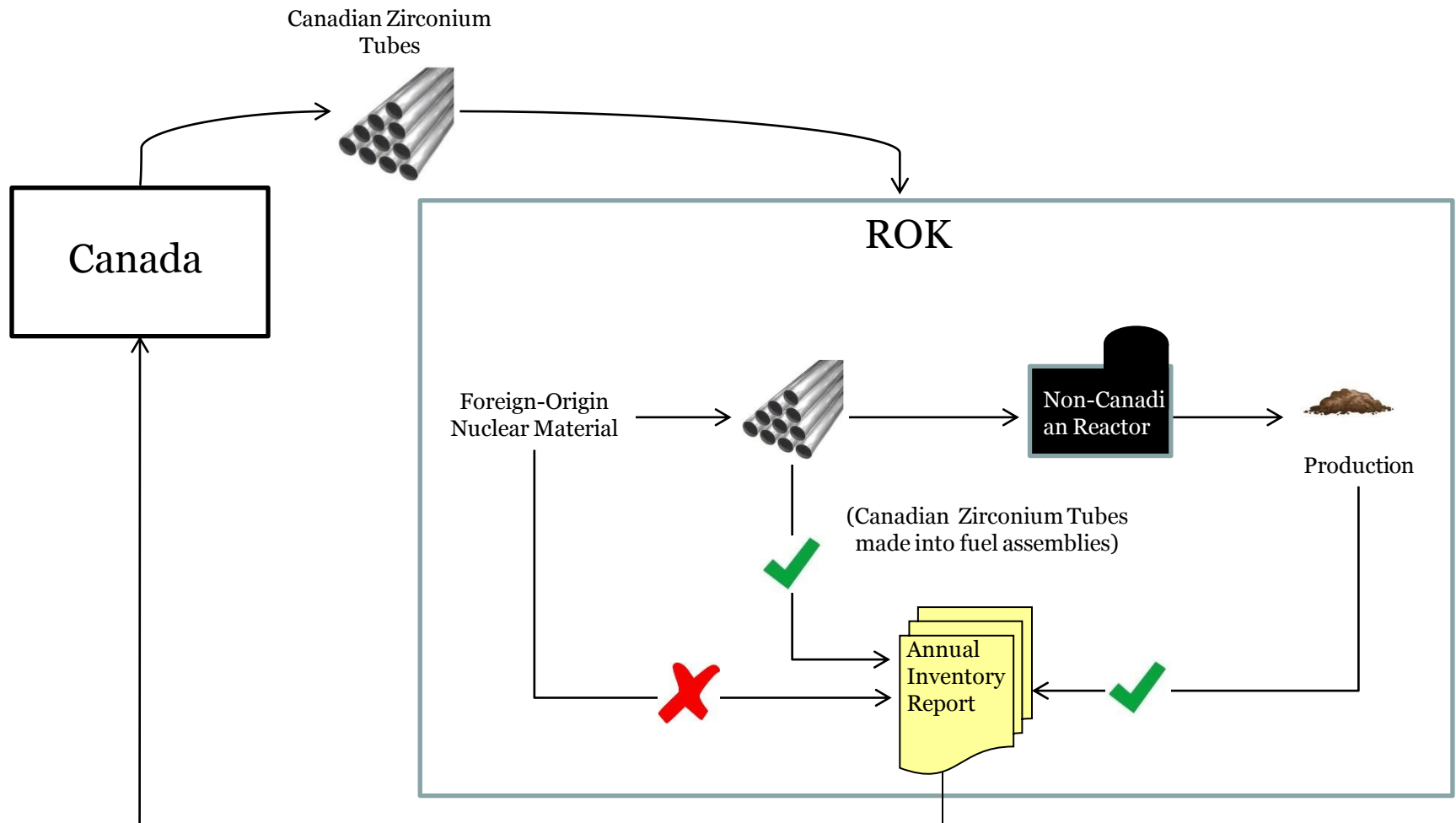
- **Expanded Scope**

- CSA : all NM within the jurisdiction of the country
- NCA : NM, non-NM, equipment, components technology

- **Derived Materials**



- **Derived Materials**



- **Reconciliations between the NCA and CSA SG**
  - ROK-US NCA in 1973
    - “[...] the safeguards rights accorded to the Government of the United States of America [...] will be suspended during the time and to the extent that the Government of the United States of America agreed that the need to exercise such rights is satisfied by a safeguard agreement as contemplated in this paragraph [the IAEA safeguards].”
    - US SG rights were entrusted to the IAEA
  - ROK-US-IAEA trilateral agreement of 1968 was suspended by the CSA in 1975
    - Attempt to conclude additional suspension protocol due to the Article 14 of the CSA
    - Instead of signing the suspension protocol, revised ROK-US NCA in 2015 requires annual report

- ROK NCAs with 29 Countries
  - Two Administrative Arrangements (US and Australia) and one Supplementary Arrangement (Canada)
- Bilateral cooperation in nuclear energy could be further enhanced through reliable implementation of the NCA obligations.
  - Cooperation between competent authority and nuclear industry is prerequisite
- ROK should establish its policy toward recipient countries
  - Whether to request to maintain the inventories of obligated items and report the changes in the inventory on a regular basis



Thank you!

Any Questions?