Shabu-shabu — a Japanese hot pot

Best ingredients in the resulting soup is usually eaten last

Panel 3

Confidence Building, Transparency, and Human Resource Development

Australia	**Dr. Geoffrey Shaw**, Assistant Secretary, Australian Safeguards and Non-Proliferation Office (ASNO)
Japan	**Professor Kuno**, the University of Tokyo, Global-COE Program
Malaysia	**Dr. Daud**, Director General, Malaysian Nuclear Agency
Rep. of Korea	**Dr. Wan Ki Yoon**, The Korea Institute of Nuclear Nonproliferation and Control (KINAC)
Thailand	**Professor Pricha Karasuddhi**, Technical Advisor, Nuclear Power Program Development Office, Ministry of Energy
United States	**Mr. Sid Gutierrez**, Director of the Nuclear Energy and Global Security Technologies Center, Sandia National Laboratories

Generations of Nuclear Energy

Generation I

Early Prototypes

- Shippingport
- Dresden
- Magnox

Generation II

Commercial Power

- PWRs
- BWRs
- CANDU

Generation III

Advanced LWRs

- CANDU 6
- System 80+
- AP600

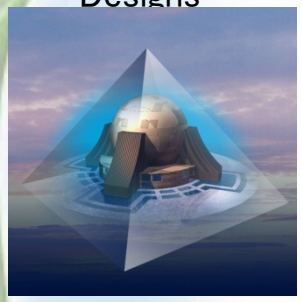
Generation III+

Evolutionary

- ABWR
- ACR1000
- AP1000
- APWR
- EPR
- ESBWR

Generation IV

Revolutionary Designs



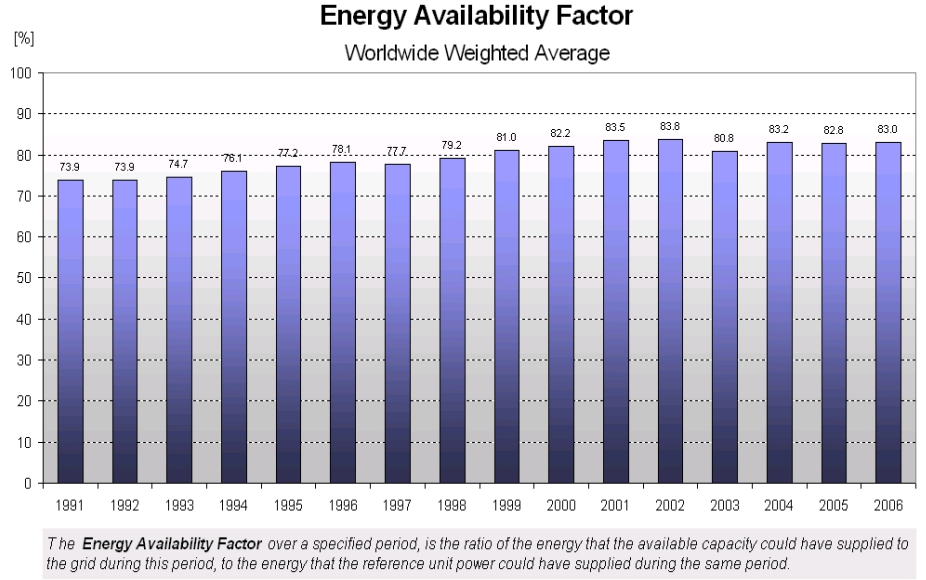
- Safe
- Sustainable
- Economical
- Proliferation Resistant and Physically Secure

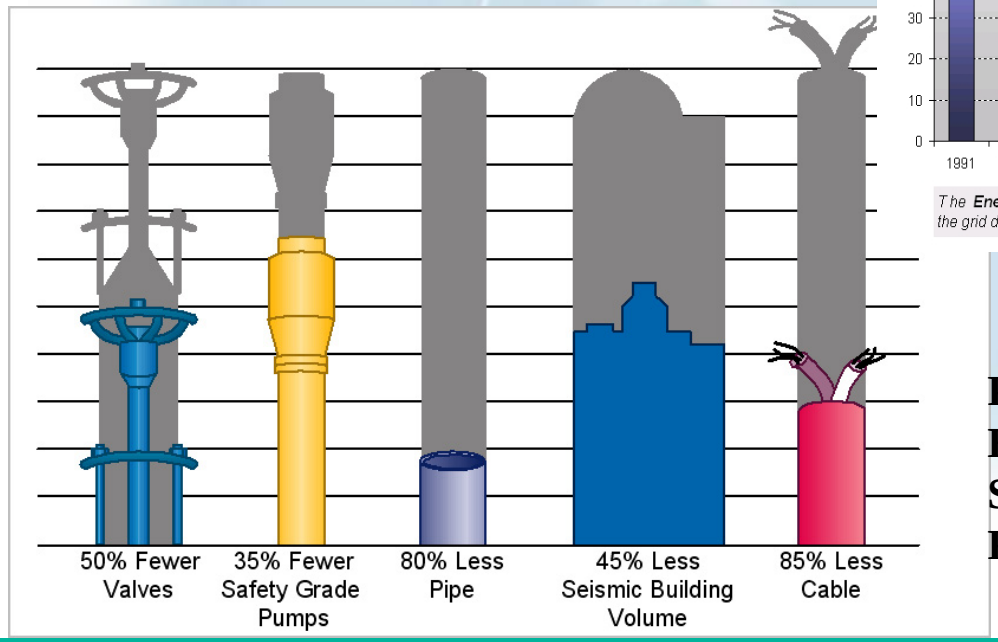
1950 1960 1970 1980 1990 2000 2010 2020 2030

Gen I | Gen II | Gen III | Gen III+ | Gen IV

Technical challenges resulted in design improvements and higher operation availability

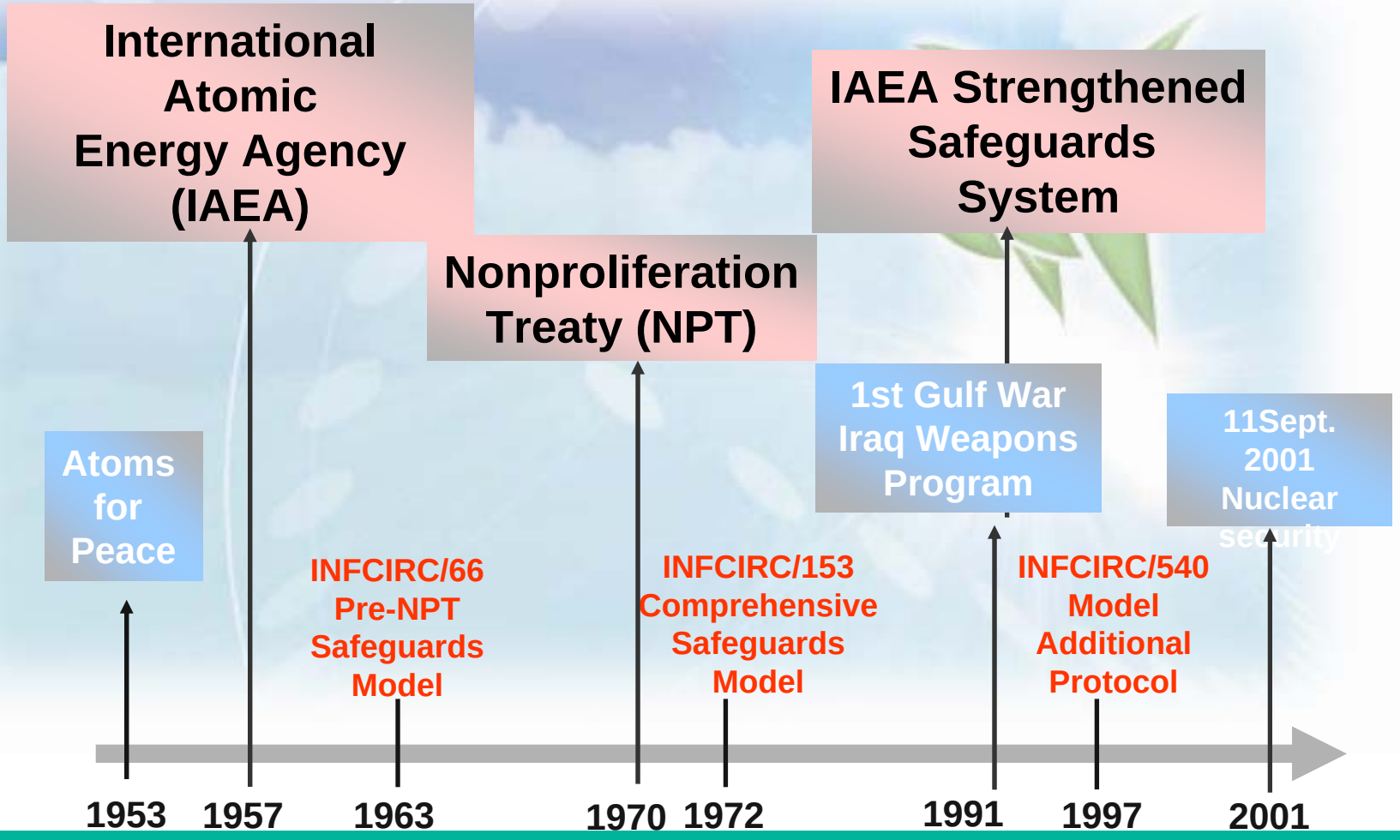
Standardized design and Cumulative operation experience → **Higher Availability Factor**





Passive Safety Systems
Eliminate Components → **Reduce Costs**
Simplify Safety Systems
Reduce Building Volumes

Progression of IAEA Safeguards and the Additional Protocol



Institutional challenges tended to result in meeting and more meetings

BAU

Business as Usual

- In yesterday keynote speech, Prof. Akihiko Tanaka said, “Asia is becoming ONE – at least economically.”
- But, according to New York Times, 20 June 2008, “…Each of the countries in Asia seems to relate to the outside world as a sole actor, and almost never in terms of regional interests or priority…”
- What does Asia has to do to change this mind-set, especially, in the area of nuclear non-proliferation?

Topic 1: Confidence-building and transparency measures to ensure that the expanded use of nuclear energy in Asia/Pacific will not contribute to the increase of proliferation risks

- What level of information sharing and in what mechanism can confidence building and transparency measures be effective?
- How can these efforts on confidence building and transparency be more effective to allay neighboring countries' concern?
- Is now the time that a nuclear cooperative framework can be developed for the Asian Pacific region?

Topic 2: Human resource development needed for the expanded use of nuclear energy in Asia/Pacific

- The world nuclear industry faces a challenge of potential shortage of skilled workers – due to retirement of current workers and competition for young talents from other industries.
- In the nuclear non-proliferation area, the concern is also "How to make the jobs more exciting and rewarding to retain current practitioners and to attract young generations?
- What kind of educational program is relevant and adequate?
- Would on-the-job training (e.g., IAEA assignment, etc.) be more effective?

- **Regional nuclear cooperation in the Asia-Pacific region will contribute to confidence building.**
- **Potential areas of cooperation:**
  - **Nuclear Safety,**
    including accident notification and emergency response
  - **Promotion of Nuclear Power,**
    including public acceptance activities
  - **Reliable nuclear fuel supply**
  - **Managing the Back End of the Nuclear Fuel Cycle,**
  - **Regional inspection scheme,**
    supplementing the IAEA safeguards regime
  - **Research and Development**
- **Step by step approach is desirable**

EURATOM Treaty - signed on 25 March 1957 by 6 founding members, now has 15 member states. Its main objective was to promote nuclear energy for raising the member states' standard of living.

Scope:

- **Promote research and disseminate technical information**
- **Establish uniform safety standards to protect workers and public**
- **Facilitate nuclear investment**
- **Ensure regular and equitable supply of nuclear fuel**
- **Safeguard the use of nuclear materials**
- **Establish cooperation agreements with other countries and international organizations**

Various Proposals for Asia/Pacific Regional Framework:

- ASIATOM (H.Murata 1997)
- ASIATOM (K.Kaneko 1996)
- PACIFICATOM (T. Kano 1995)
- R. Imai (1995)
- T. Sakairi (1997)
- A. Suzuki (1996)
- K. Uematsu (1996)
- Atlantic Council (1997)
- PACATOM (R. Manning 1996)
- W. Dircks (1995)
- Regional Compact (J. S. Choi 1996)
- J. Carlson (1996)
- ANSCO (KAIST 1997)

Tokyo University: Global COE Program

Nuclear Education and Research Initiative

Systematic Education and Research including Nuclear Energy Sociology

First in the World

Nuclear Energy Sociology

What is Technology for Society ?

In collaboration with people outside Univ.

Nuclear Energy

Technology Innovation

Through comprehensive and interdisciplinary approach

Radiation Application

Therapy, diagnosis, biology, etc.

Spread in interdisciplinary fields: medicine, agriculture and so on

"We prepare next generation researchers to grasp the perspectives of complicated and divergent fields of nuclear energy." - Dr. Yoshiaki OKA, Prof. UT, Program Leader -

Nuclear Non-Proliferation

- To coexist with the peaceful use of nuclear energy
- To identify the technological and systematic problems

Nuclear Nonproliferation
Nuclear Energy Sociology

Tokyo University – JAEA Cooperation

Training the next generation staff for national & international organizations (JAEA, IAEA, OECD/NEA, CTBTO, etc.)

Tokyo University: Global COE Program

- Co-sponsored the 2nd UC Asia-Pacific Forum on Integration of sustainability, safety and security of Nuclear Technology on 12-13 June 2008.
- Will co-sponsor the 3rd UC Asia-Pacific Forum on Nuclear Non-Proliferation in Global Nuclear Renaissance on 15-17 Jan. 2009 at UC Berkeley.
- Collaborate with JAEA for on-the-job training of advanced safeguards technologies for our students.
- Collaborate with Areva University on developing an educational program for nuclear non-proliferation.
- Collaborate with universities and institutes in regional countries on nuclear sociology, including nuclear non-proliferation, international safeguards, and cooperation.