

# Japan's Nuclear Energy and its International Cooperation

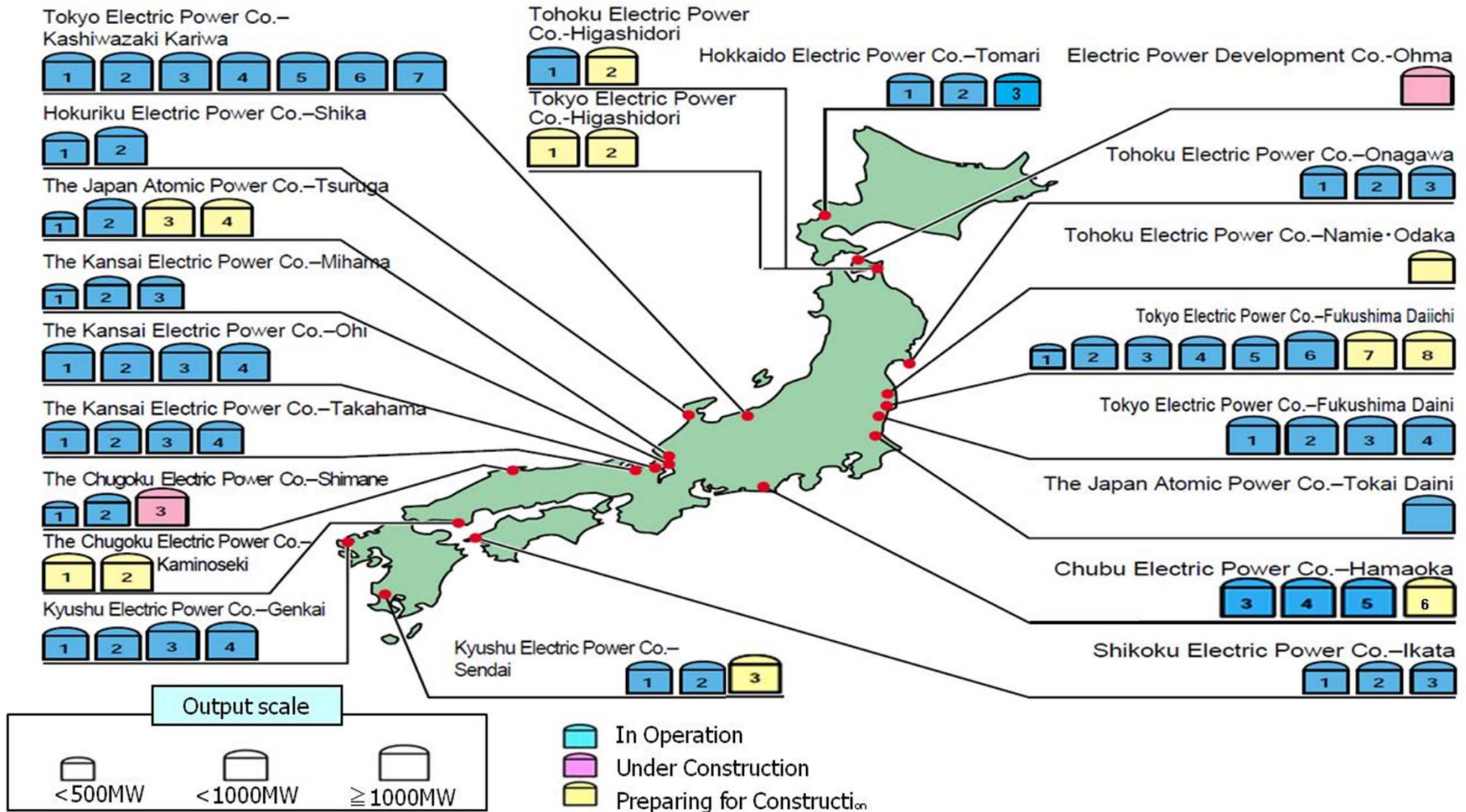
Shunsuke KONDO

Chairman

Japan Atomic Energy Commission

# Nuclear Power Plants (NPPs) in Japan

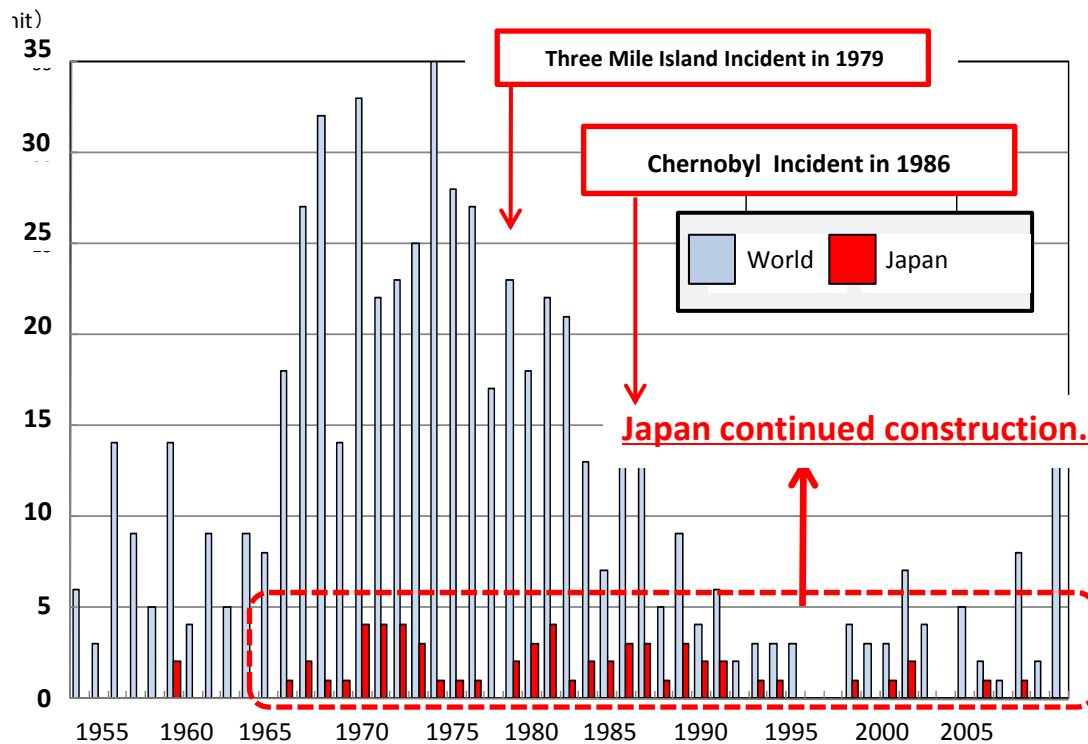
Currently 54 units (30 BWR, 24 PWR) are in operation and 2 units are under construction. 12 units are in preparation for licensing application.



# Strengths of Japan ~ Manufacturing Capability

- ➔ In 1990s when NPP construction activity was stagnated in most country, Japan has continued the construction of NPP. Its ability to construct NPP “on schedule, on budget” is now highly acclaimed.
- ➔ In Japan, there are three major nuclear power suppliers holding highly advanced light water reactor (LWR) technology: **Mitsubishi Heavy Industries (MHI)** is the major supplier of Advanced Pressurized Water Reactor (APWR): **Hitachi** and **Toshiba** are the major suppliers of Advanced Boiled Water Reactor (ABWR).
- ➔ Materials or components suppliers are also famous for their supply of high quality products.

## Newly constructed NPPs all over the world



(Source) Japan Atomic Industrial Forum

## Nuclear Industry (plant manufacturers)

1980s

4 European firms  
Brown Boveri, Asea,  
Framatome, Siemens

4 U.S. firms  
WH, GE, Combustion  
Engineering, Babcock & Wilcox

3 Japanese firms  
(MHI, Hitachi, Toshiba)

\*: Westinghouse

Going forward

WH\* ——— Toshiba  
(U.S. ——— Japan)

GE ——— Hitachi  
(U.S. ——— Japan)

AREVA - - - MHI  
(France - - - Japan)

Atomenergoprom (Russia)  
Doosan (Korea)

**JSW (Japan Steel Works, Ltd.):**  
Approx.80% (\*) share of large forging  
for pressure vessels and steam generators  
in international market. (\*JSW data)

**【Example: Reactor Vessels】**



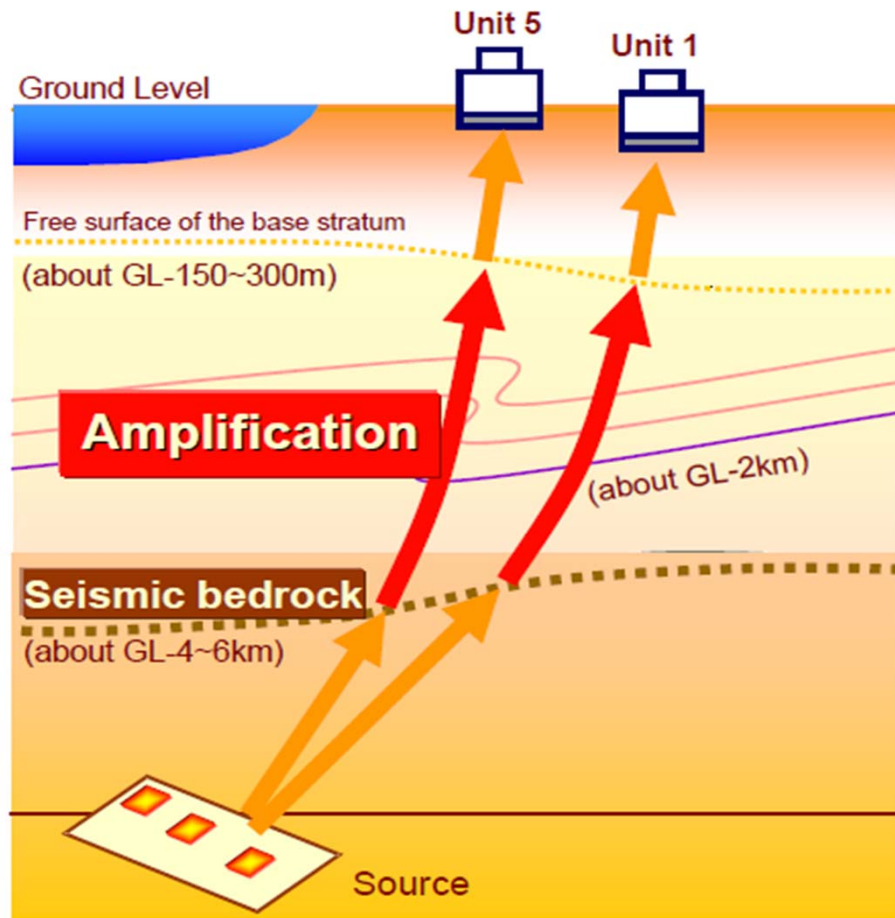
# AECJ: Japan Should Support Deployment of Nuclear Power Plants in the world

- **Why:**

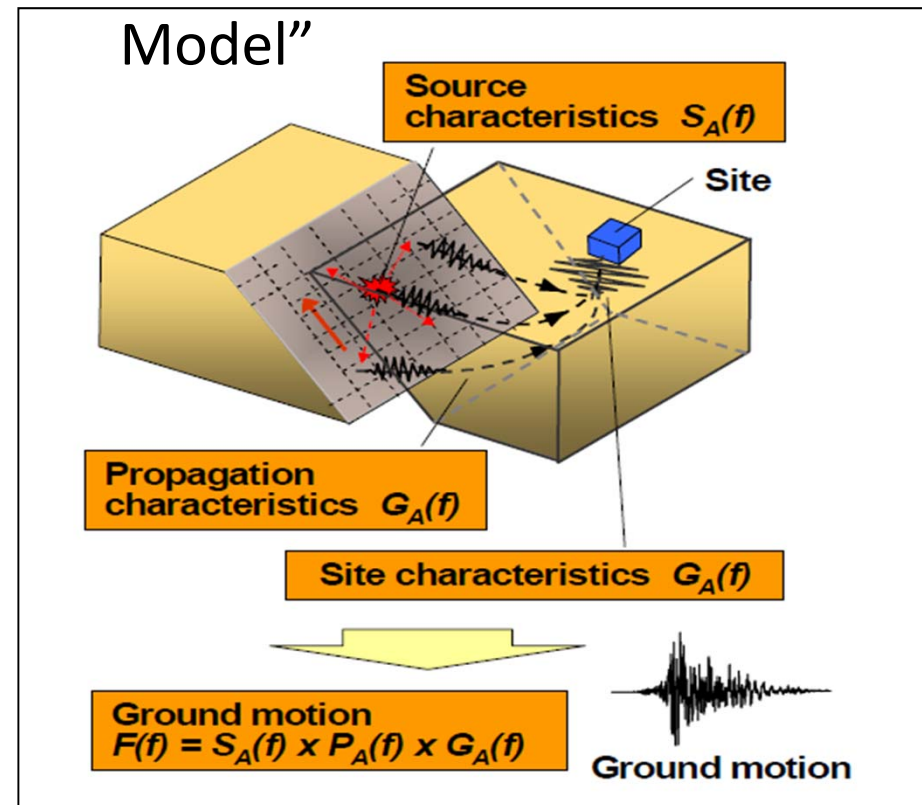
- Japanese manufacturers and electric utilities have nurtured capability to complete NPP construction on time and within budget, satisfying stringent quality requirement and safety requirement that reflects severe natural environment such as frequent visits of typhoon, tsunami and earthquakes.
- They have cultivated an excellent organizational culture to value quality, safety culture, cleanliness of workplaces and visualization.



# Lessons learned from the 2007 earthquake at Kashiwazaki-Kariwa NPP



## The Concept of "Fault Model"



- ◆ To evaluate possible seismic motion at the site from nearby faults, it is necessary to use "fault model" in which not only the source characteristics (number of asperities, their sizes and locations on the fault) but also the propagation characteristics of crust geological structure (such as folding structure) and the site characteristics (such as low velocity sediment layers in the free base stratum under the plant) are considered.

# AECJ: Japan Should Support Deployment of Nuclear Power Plants in the World



- **Why:**

- Japanese manufacturers and electric utilities have nurtured capability to complete NPP construction on time and within budget, satisfying stringent quality requirement and safety requirement that reflects severe natural environment such as frequent visits of typhoon, tsunami and earthquakes.
- They have cultivated an excellent organizational culture to value quality, safety culture, cleanliness of workplaces and visualization.



AEC has recommended that based on these experiences, Japan should contribute as a group to the deployment of NPP in newcomer countries.

## ○ Purpose

Play the core role in providing effective and efficient cooperation to NPP deploying countries, acting as a contact window.

## ○ Roles

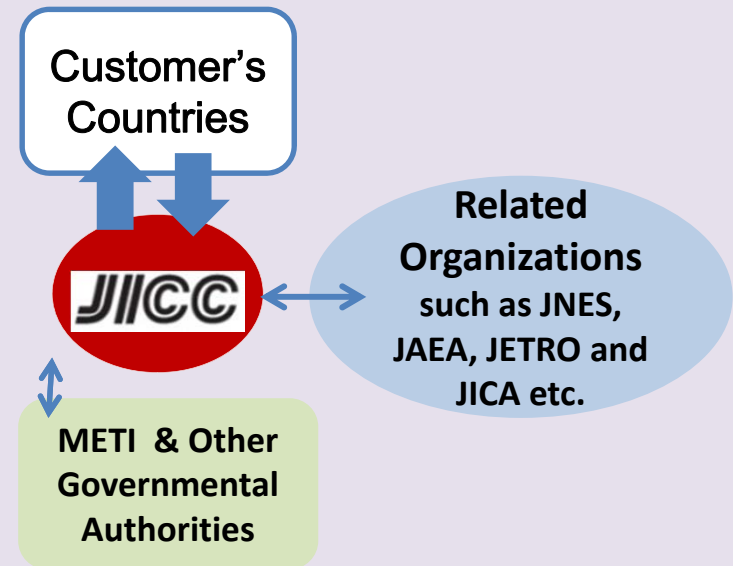
Promote nuclear energy cooperation.

Coordinate various organizations' cooperative activities with a view to providing **“one-stop”** and **“tailor-made”** service to each country.

## ○ Major Activities in 2009 and 2010

Dispatching experts to Vietnam, Indonesia and Jordan

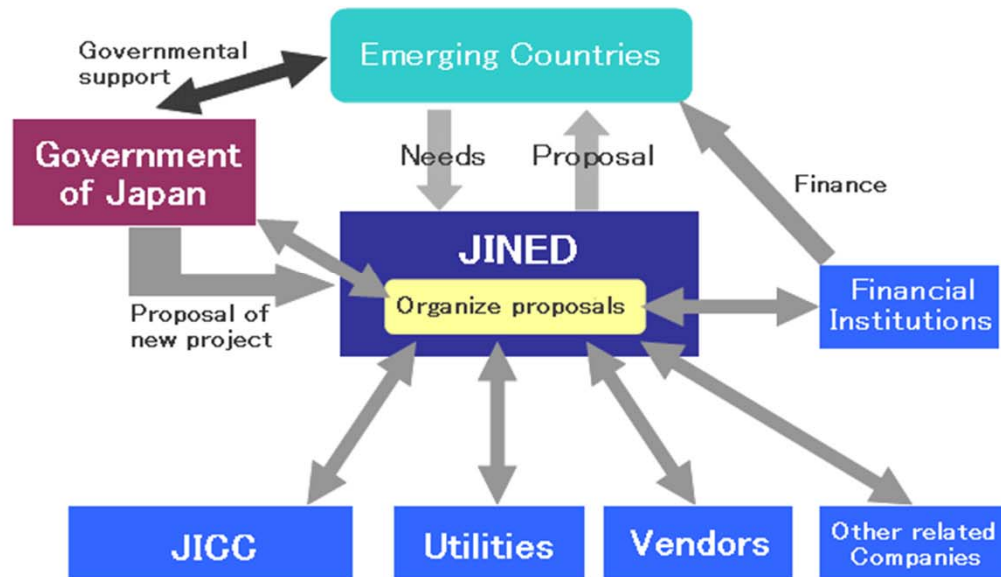
Hosting Workshop and seminars in Japan and in Vietnam, Indonesia, Kazakhstan and Mongolia



Contact: Mr. Toshiaki SAKAI, Director e-mail: [info@jaif-icc.com](mailto:info@jaif-icc.com)

TEL: +81-3-3591-2210 FAX: +81-3-3591-2215

# International Nuclear Energy Development Corporation of Japan (JINED)



## Role of JINED:

Takes care of emerging countries' needs regarding construction, operation and maintenance of nuclear power plants including human resources development and financing, in collaboration with programs of the government to support them comprehensively, before making proposals to construct NPP.

Contact: JINED preparatory office\*

TEL: +81-3-3504-0892 FAX: +81-3-3504-0896

\*: The company will officially be established in October 2010. The preparatory office is available before the company is established.

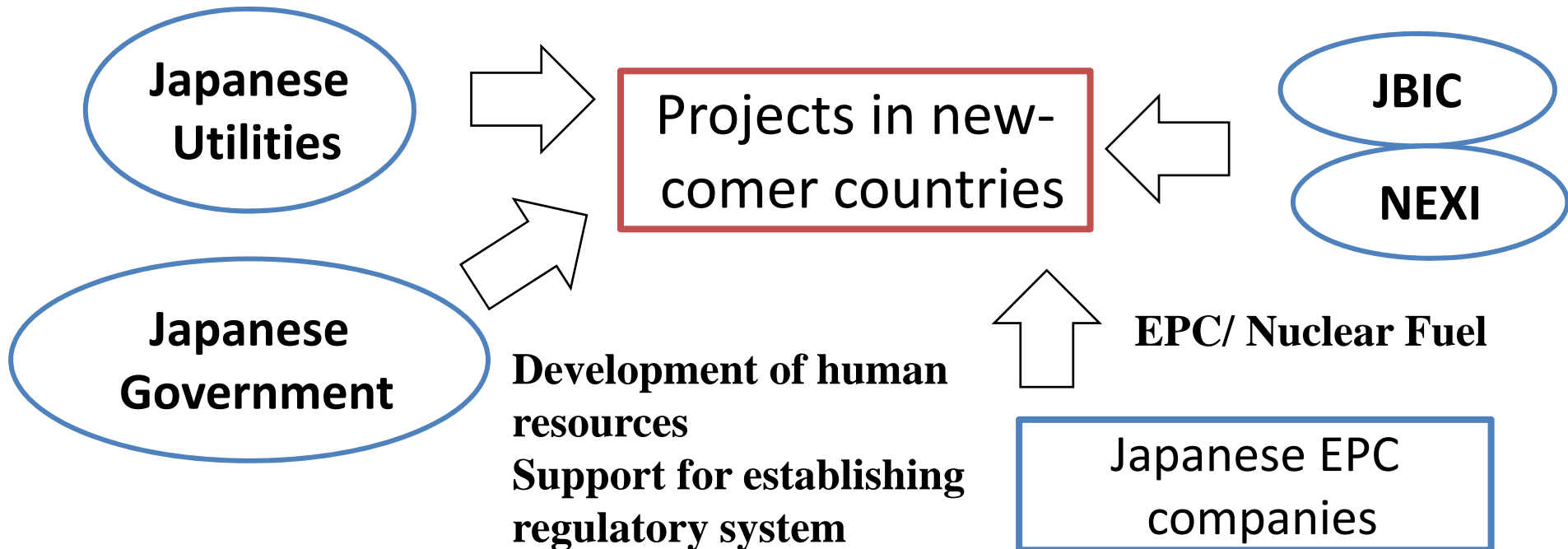


# Japan's Integrated Cooperation for New-comer Countries

☞ Japan as a group provides services requested by emerging countries such as financing, human resources development, design, construction, operation, etc.

**Operation & Maintenance  
Support / Investment**

**Public Finance / Insurance**



Contact:

Nuclear Energy Policy Planning Division, Ministry of Economy, Trade and Industry  
TEL: +81-3-3501-1991 FAX: +81-3-3580-8447

