

IEEJ Global Energy Seminar #5

# A case study in Japan - The most important issue for preventing cost-overrun -

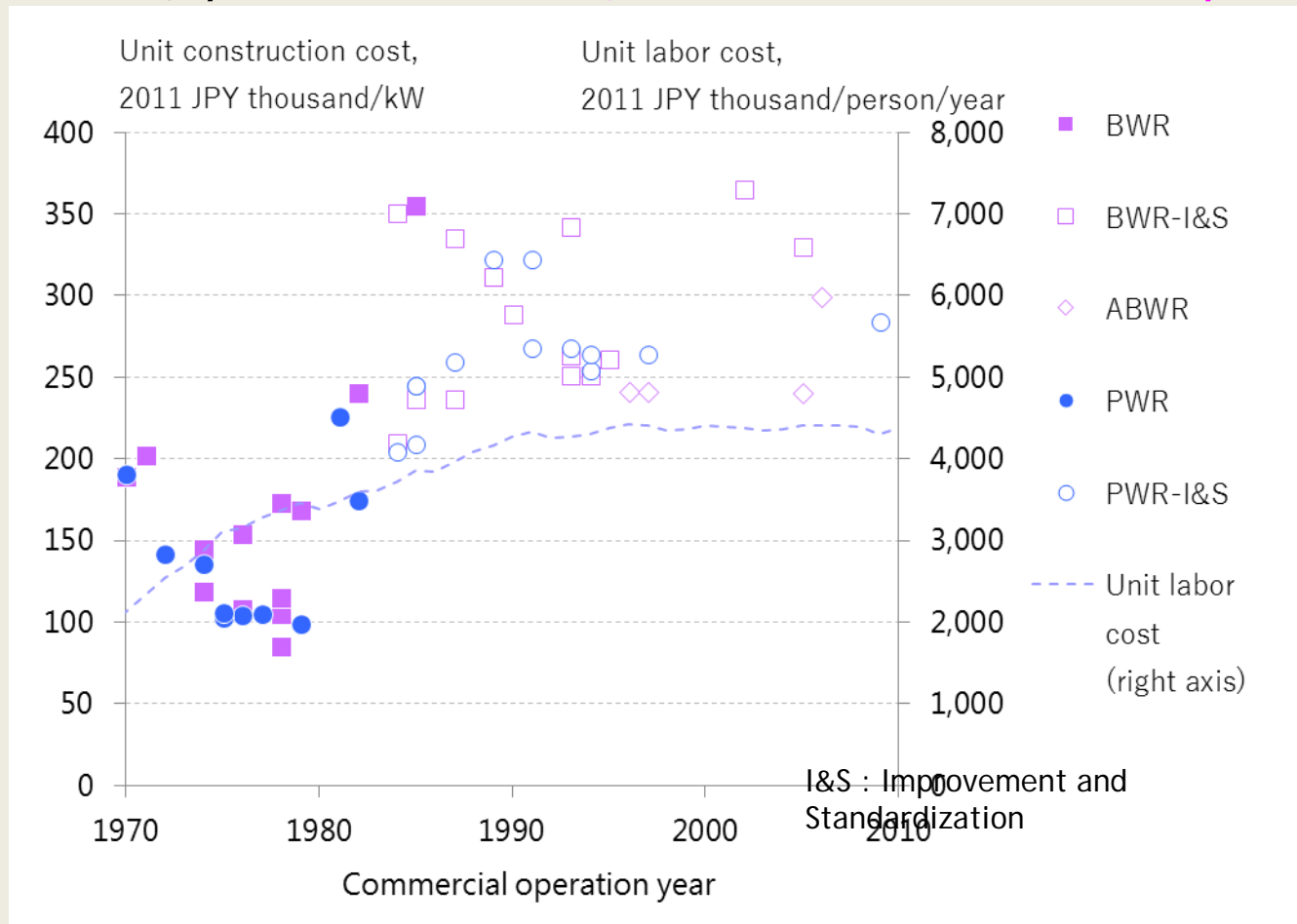
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# Historical Records of Construction Costs in Japan

- The average unit cost increased in 1980s with substantial variation, yet **under USD4,000/kW**. -> remarkably low!



## Overnight unit construction cost in Japan

Source: Y. Matsuo and H. Nei, 2018, "Assessing the historical trend of nuclear power plant construction costs in Japan", IEEJ website <https://eneken.iej.or.jp/data/7922.pdf>

# What has happened since 1980s?

## Technology process & Innovation

- Over 40 reactors were constructed in 1970s-80s.  
-> Accumulated experience
- The Improvement and Standardization (I&S) completed in 1990s. -> The 1<sup>st</sup> ABWR started operation in 1996 with the unit cost of < USD2,400/kW.

**Must be further investigated**

“Eight priorities” to unlock nuclear construction costs reduction

## Hypothesis

The unit construction cost remained substantially low thanks to;

- Short construction duration (4-5 years)
- Effective project management
- **Stable and predictable licensing process**

- ? Design maturity
- Project management
- **Regulation stability & predictability**
- ? Multi unit effects
- ? Design optimization
- ? Technology process & innovation
- ? Regulatory interactions
- ? Harmonization

# What is crucially important now and on?

- Additional safety investment cost accumulated up to JPY 4.5 Trillion for 31 units (31GW) since 2011.

-> ~ JPY145,000/kW (~ USD1,400/kW)

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Utility	Sites	Output (GW)	Safety investment cost (Billion JPY)
Hokkaido	Tomari	2.07	200
Tohoku	Onagawa2	0.83	340
JAPC	Tokai Daini	1.10	300
Tokyo	KK	8.21	680
Chubu	Hamaoka	3.62	400
Hokuriku	Shika	1.75	200
Kansai	Ohi/Mihama/Takahama	6.58	830
Chugoku	Shimane	2.20	500
Shikoku	Ikata	0.89	190
Kyushu	Genkai/Sendai	4.14	900
<b>Total</b>		<b>31.38</b>	<b>4540</b>

Note:

No one knows how much is the total and final cost, since most of these units are still under safety review.

Source)

Media reports, company releases etc.

Predictable licensing process is indispensable not only for new construction but also for long-term operation up to 60 years.