

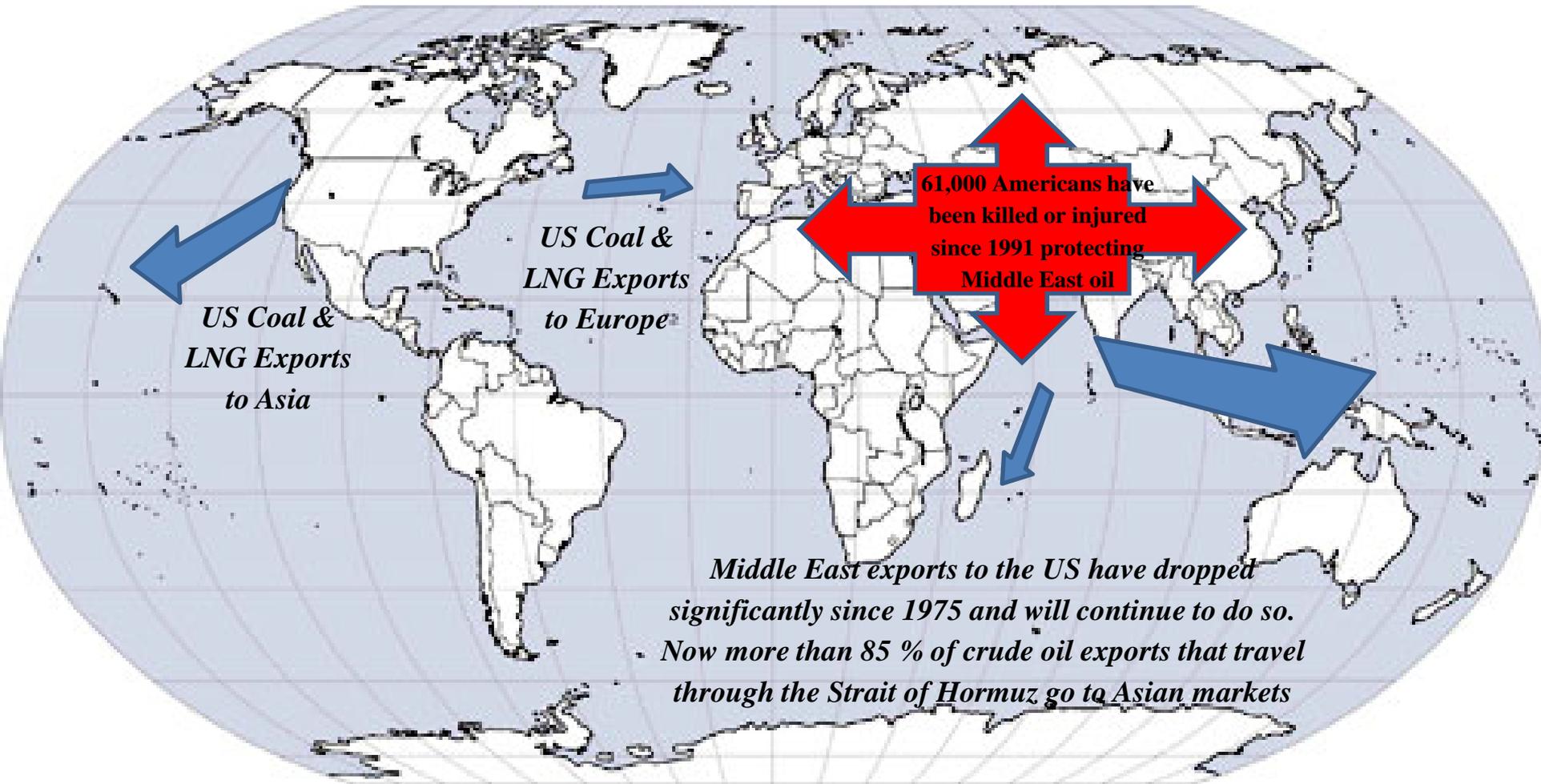
Nuclear Energy from the Global perspectives

The significance of nuclear energy in light of energy security and the Japanese role in the globe where deployment of nuclear power is expanding.

William F. Martin
Former Deputy Secretary
of Energy of the United States
July 11, 2014

Change in Global Energy Flow:

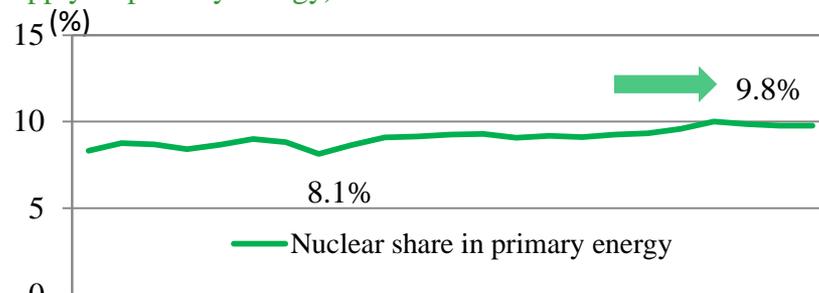
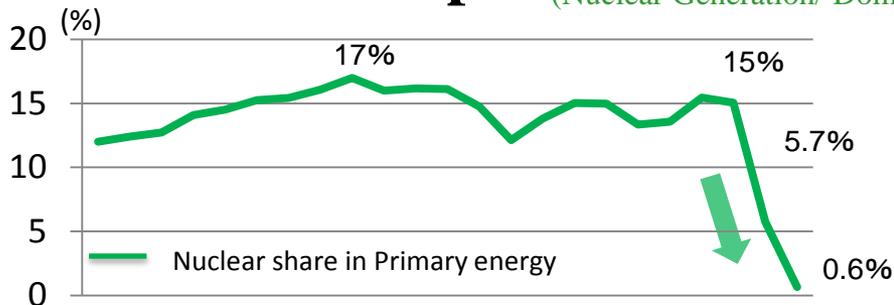
How Long Will the US Underwrite the Global Energy Security System?



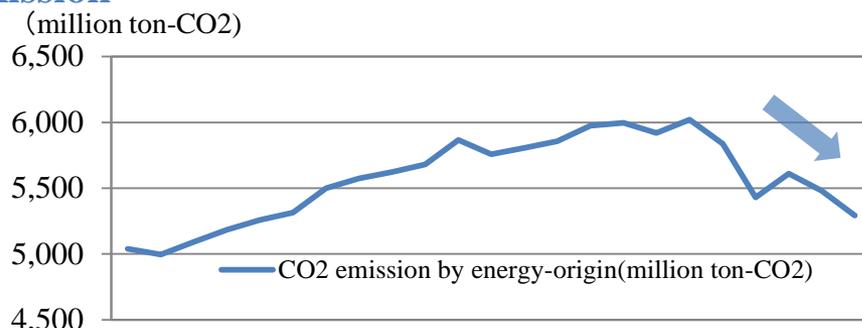
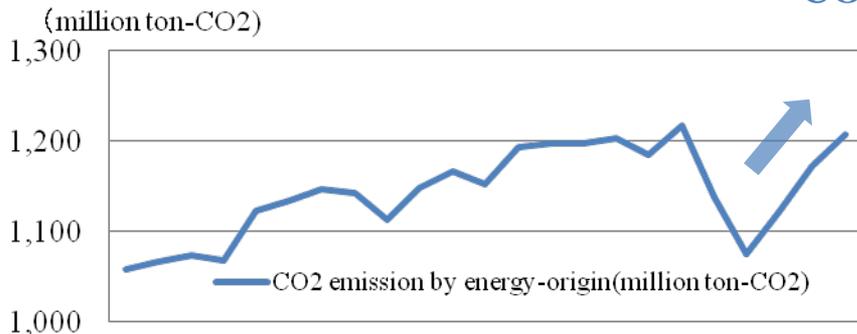
Comparison of Japanese and U.S. Energy Situations

Japan **Nuclear Share** U.S.

(Nuclear Generation/ Domestic supply of primary energy)

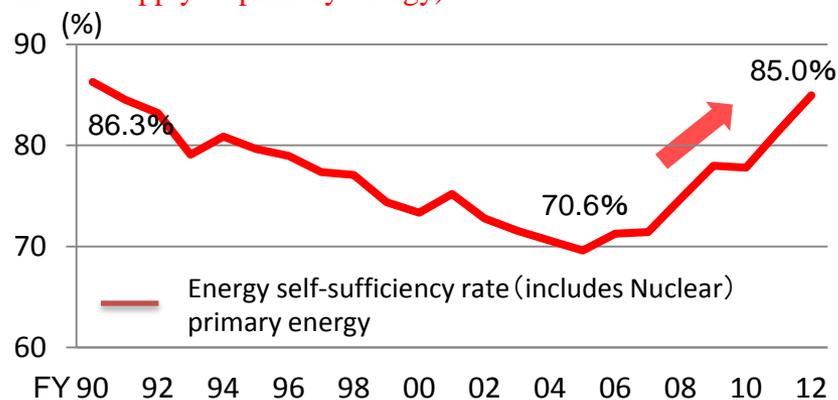
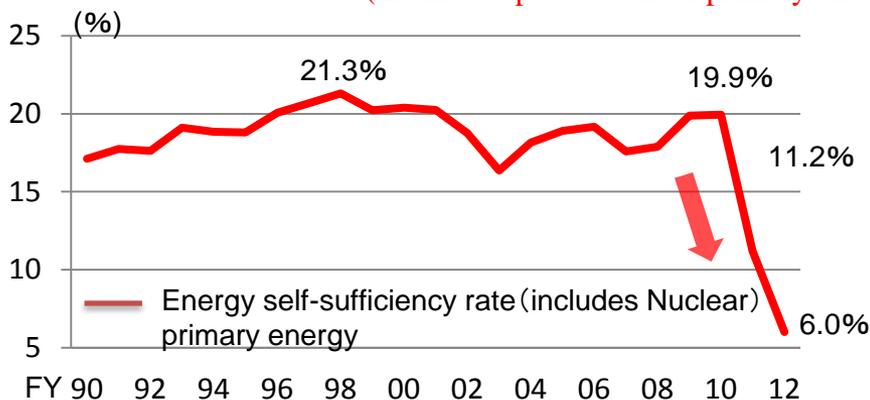


CO2 Emission

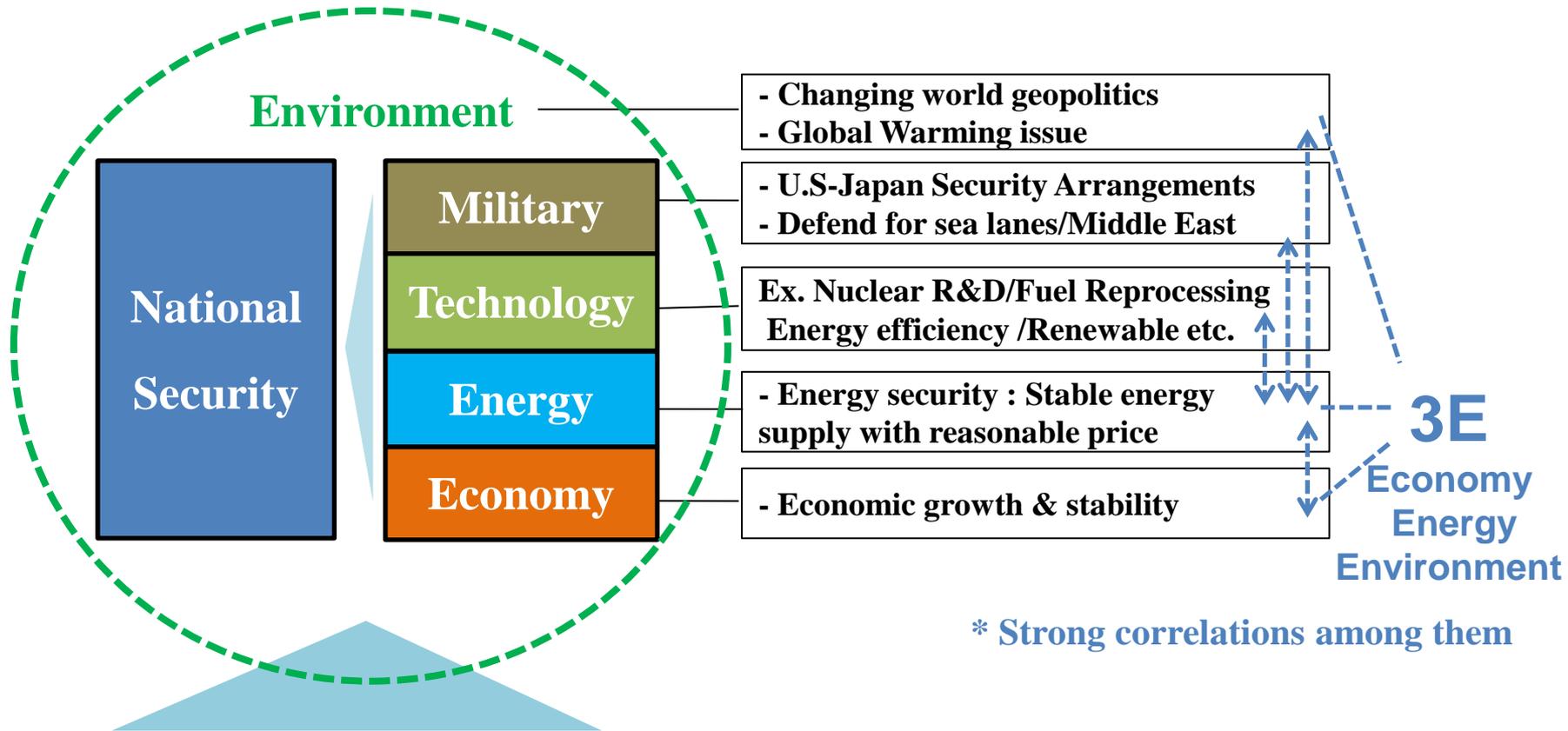


Energy Self-Sufficiency Rate

(Domestic production of primary energy / Domestic supply of primary energy)



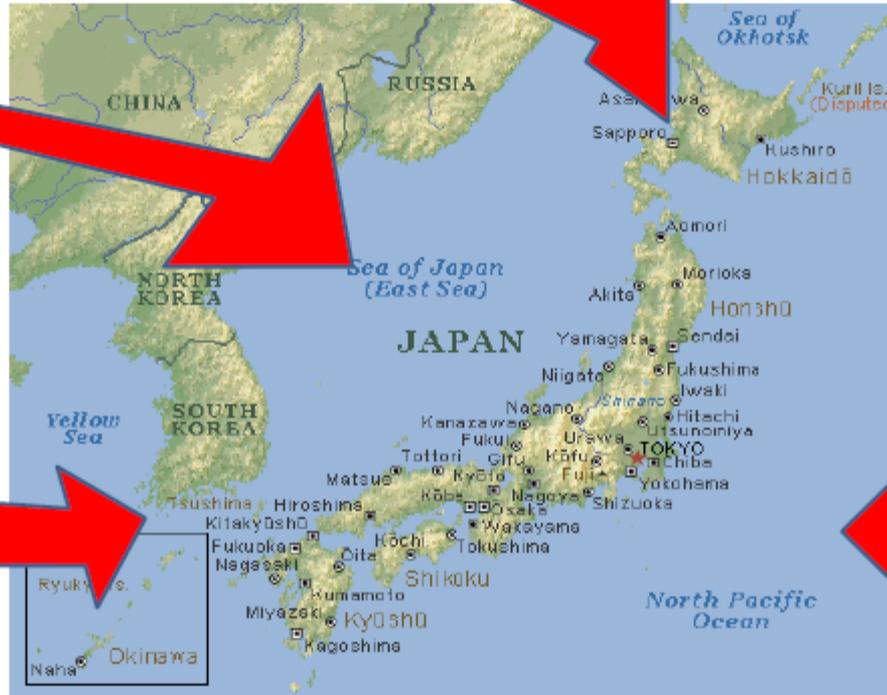
What is the Security? What secures the nation?



Nuclear energy is essential for Japan's comprehensive security.

Energy Imports of Japan

A pipeline from Russia would be fraught with difficulty as well as much opposition from the United States



LNG imports from Alaska are possible in the future, but as of now, this is uneconomical as well as politically difficult.

US LNG exports from the Gulf of Mexico are also a possibility in the medium-term, but this will not be in a quantity sufficient enough to offset dependence on the Middle East. Also, the price will be at competitive levels.

China will become increasingly aggressive both in the Pacific region as well as the Middle East to secure energy resources. This will be especially true in discussions over maritime boundaries.

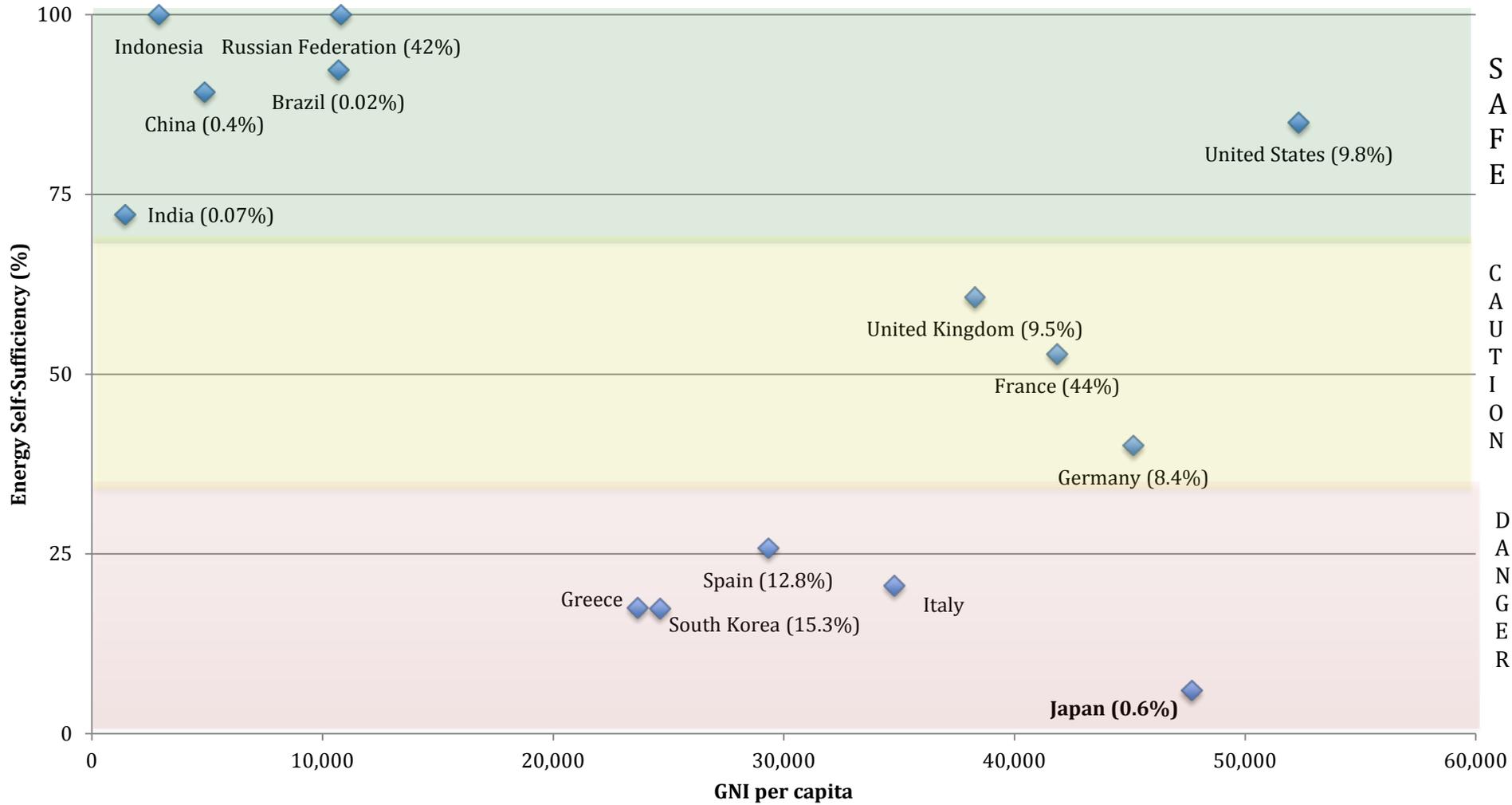
Over 30% of Japan's LNG imports and over 87% of its oil imports come from the Middle East and this number is rising as traditional suppliers such as Indonesia exhaust their reserves.

Japan's Energy Mix

Fuel type as % of total electricity (approximate)	Pre-Fukushima (2010)	Post-Fukushima (2011)	2030 – 'Zero Option'	2030 – Practical Option
Oil (Imported)	7.5	14.4	30	10
Gas (Imported)	29.3	39.5	30	35
Coal (Imported)	25.0	25.0	25	10
Nuclear (Indigenous)	28.6	10.7	0	30
Renewables (Indigenous)	1.1	1.4	10	5
Hydro/Geothermal (Indigenous)	8.6	9.0	10	10
Bottom Line: % Imported vs. % Indigenous	61.8% vs. 38.2%	78.9% vs. 21.1%	80% vs. 20%	55% vs. 45%

Comparison of Energy Self-Sufficiency Rates

Japan's energy self-sufficiency is the lowest in the world



Source : IEA Energy Balance(2013) , the World Bank

Slides in Japanese

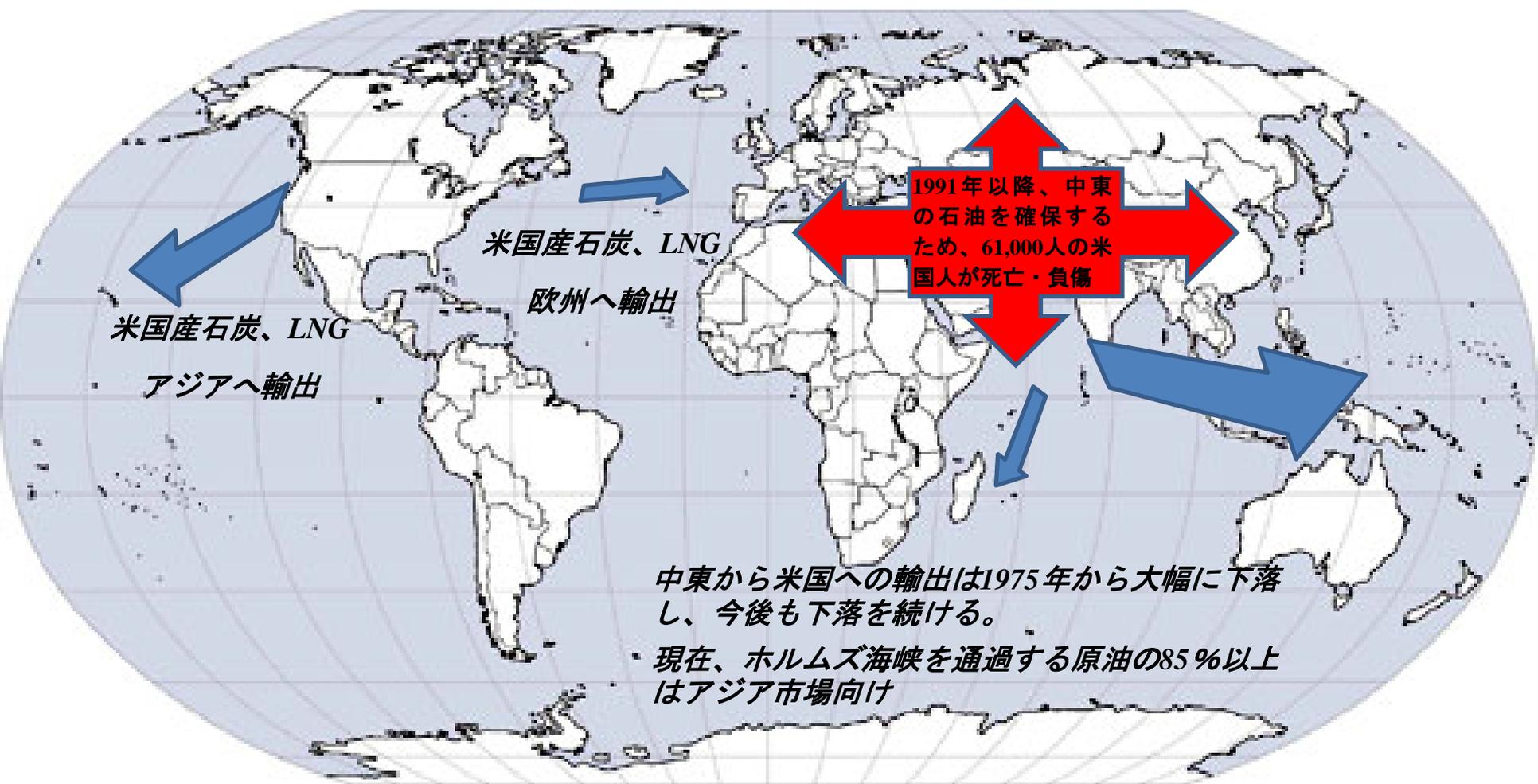
世界における原子力エネルギーの位置付け

エネルギーセキュリティの観点からの原子力エネルギーの重要性及び
世界における原子力利用の拡大と日本の役割

William F. Martin
Former Deputy Secretary
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世界のエネルギーの流れの変化：

米国は世界のエネルギーセキュリティシステムの確保をいつまで引き受けるのか？

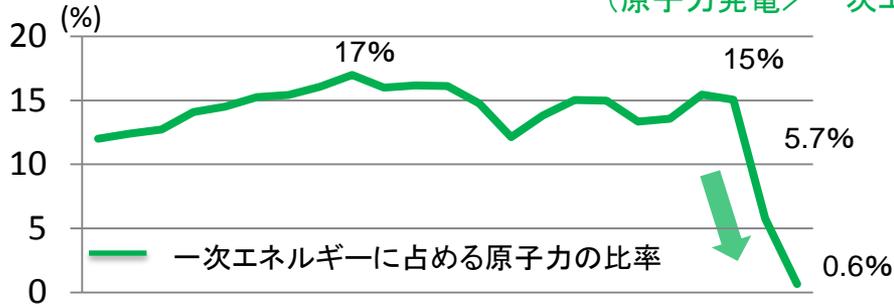


エネルギー情勢の日米間比較

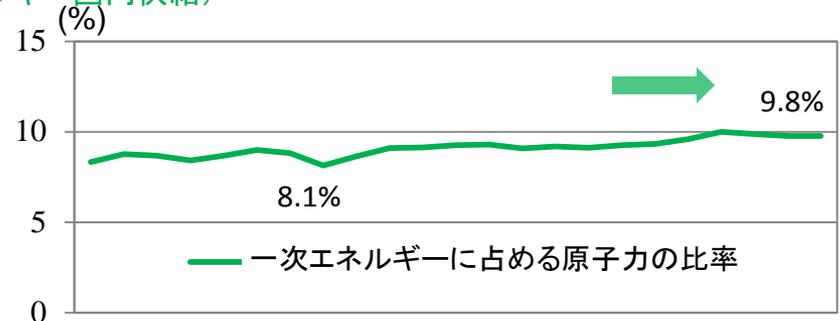
日本

原子力比率

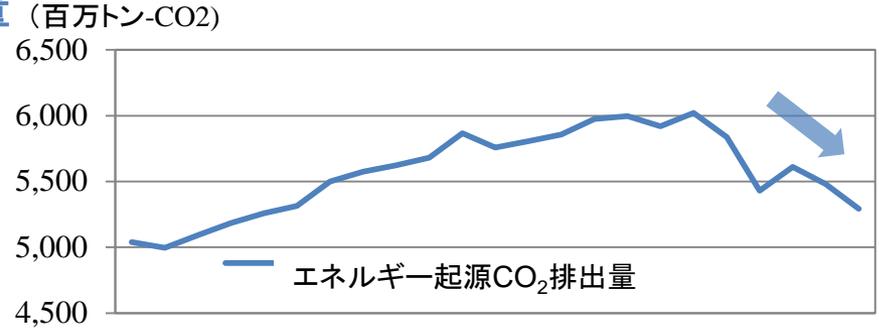
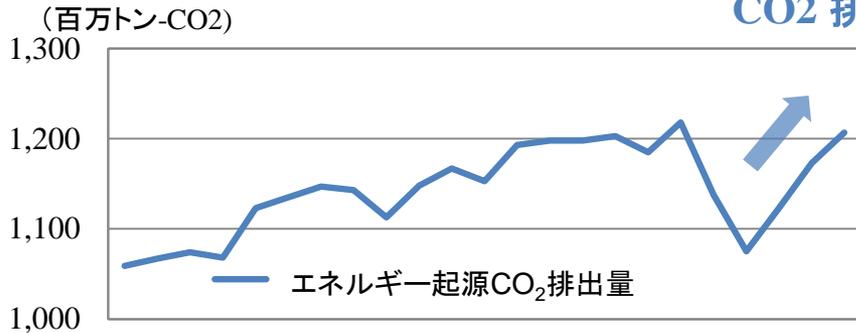
(原子力発電 / 一次エネルギー国内供給)



米国

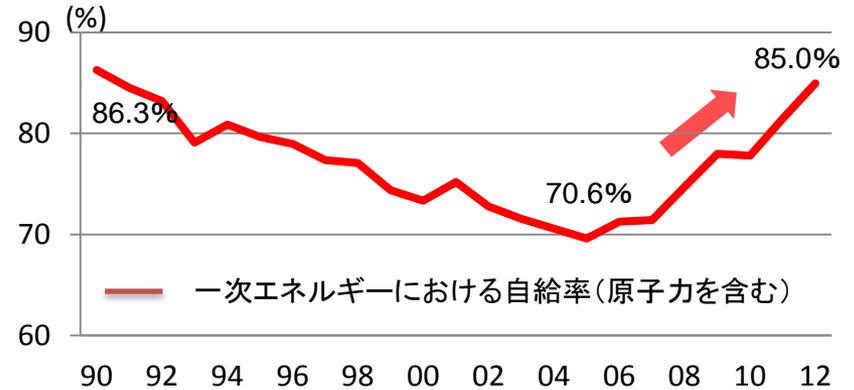
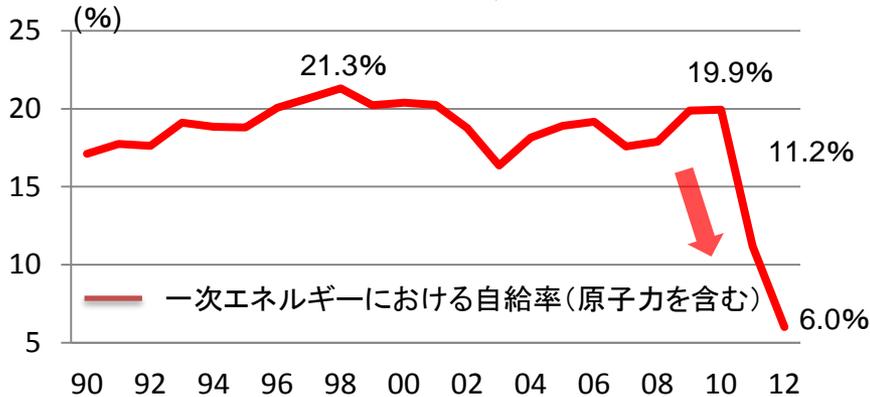


CO2 排出量

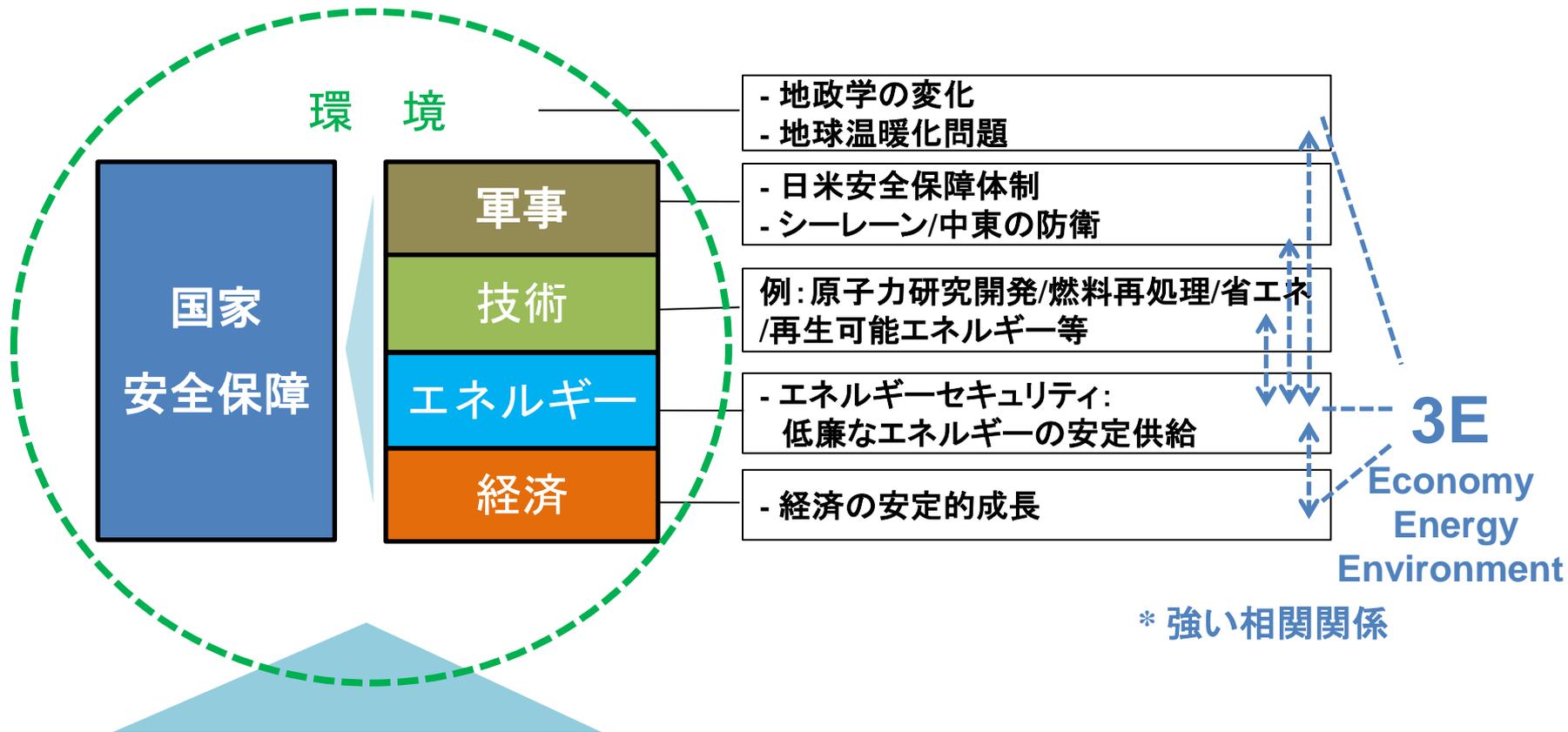


エネルギー自給率

(一次エネルギー国内生産量 / 一次エネルギー国内供給量)



セキュリティとは？ 国家を守るのとは何？



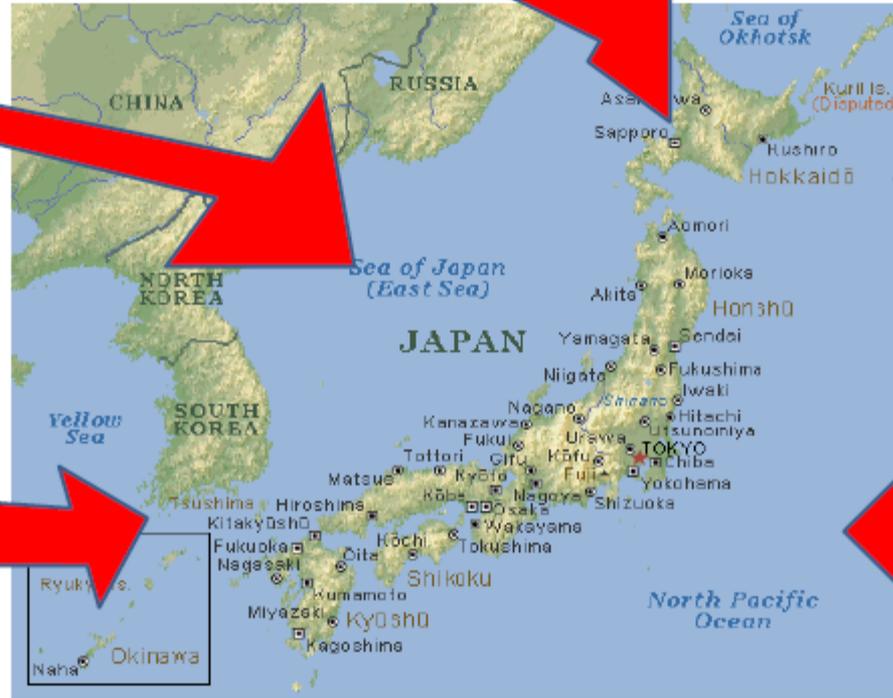
原子力エネルギーは日本の総合的なセキュリティのために不可欠

日本のエネルギー輸入

ロシアからパイプラインを引くのは困難を伴うだけでなく、おそらく米国は反対する。

アラスカからのLNG輸入は将来的には可能であるが、現時点では政治的に困難だけでなく非経済的。

メキシコ湾からのLNG輸出も中期的には可能性があるが、中東依存を相殺する十分な量にはならない。
また、価格は競争力のあるレベルになる。

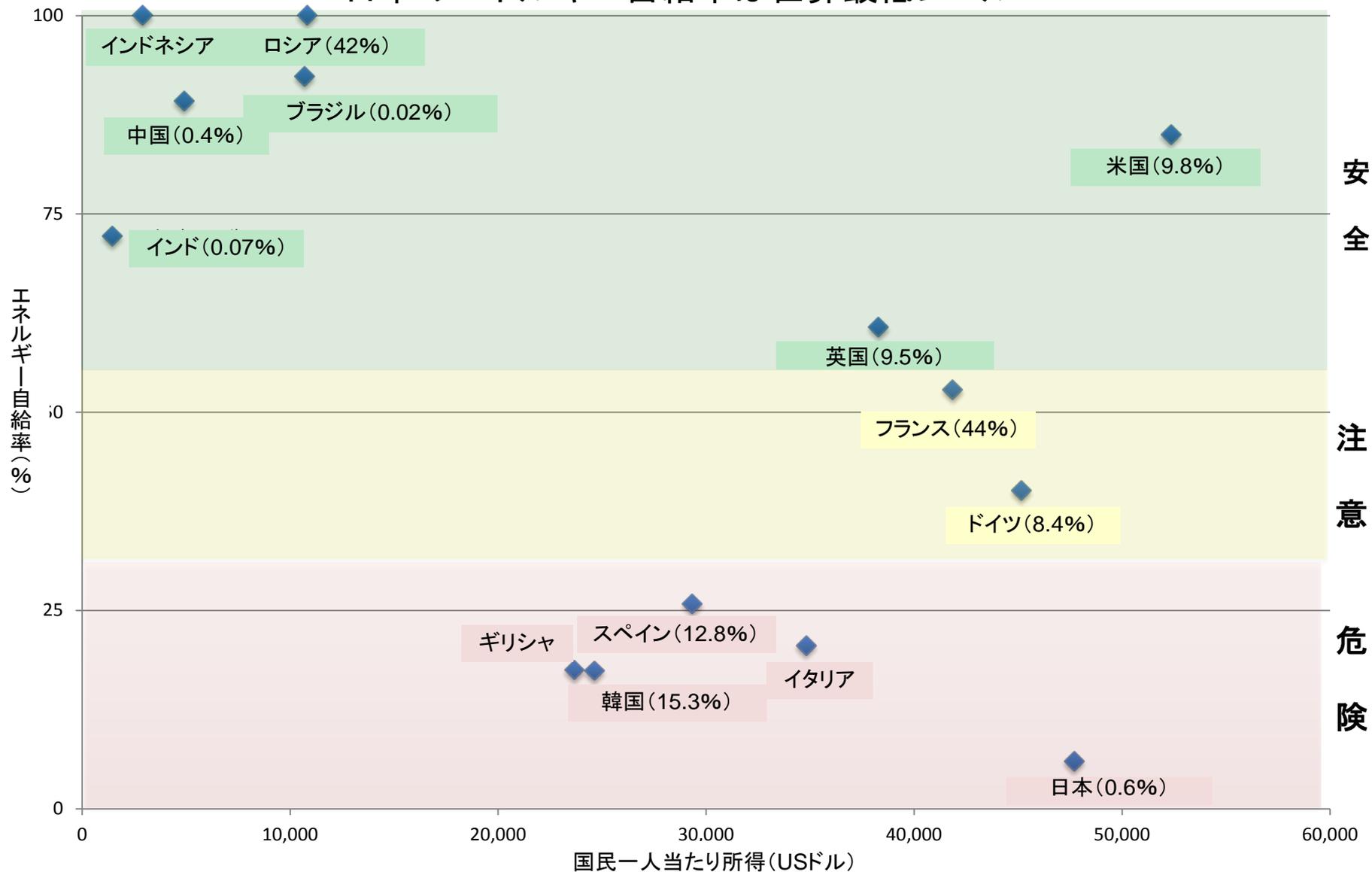


Japan's Energy Mix

燃料種 総電力に占める割合(%)	福島事故前(2010年)	福島事故後(2011年)	2030年—ゼロオプション	2030年—現実的オプション
石油(輸入)	7.5	14.4	30	10
ガス(輸入)	29.3	39.5	30	35
石炭(輸入)	25.0	25.0	25	10
原子力(自給)	28.6	10.7	0	30
再生可能エネルギー(自給)	1.1	1.4	10	5
水力/地熱(自給)	8.6	9.0	10	10
輸入/自給の比率	61.8% vs. 38.2%	78.9% vs. 21.1%	80% vs. 20%	55% vs. 45%

世界各国のエネルギー自給率の比較

日本のエネルギー自給率は世界最低レベル



注: ()内の数字は一次エネルギー供給に占める原子力発電の比率

出所: IEA Energy Balance(2013), the World Bank