Ready for Nuclear?

An assessment of capacities, imperatives, and uncertainties for new national nuclear power programs

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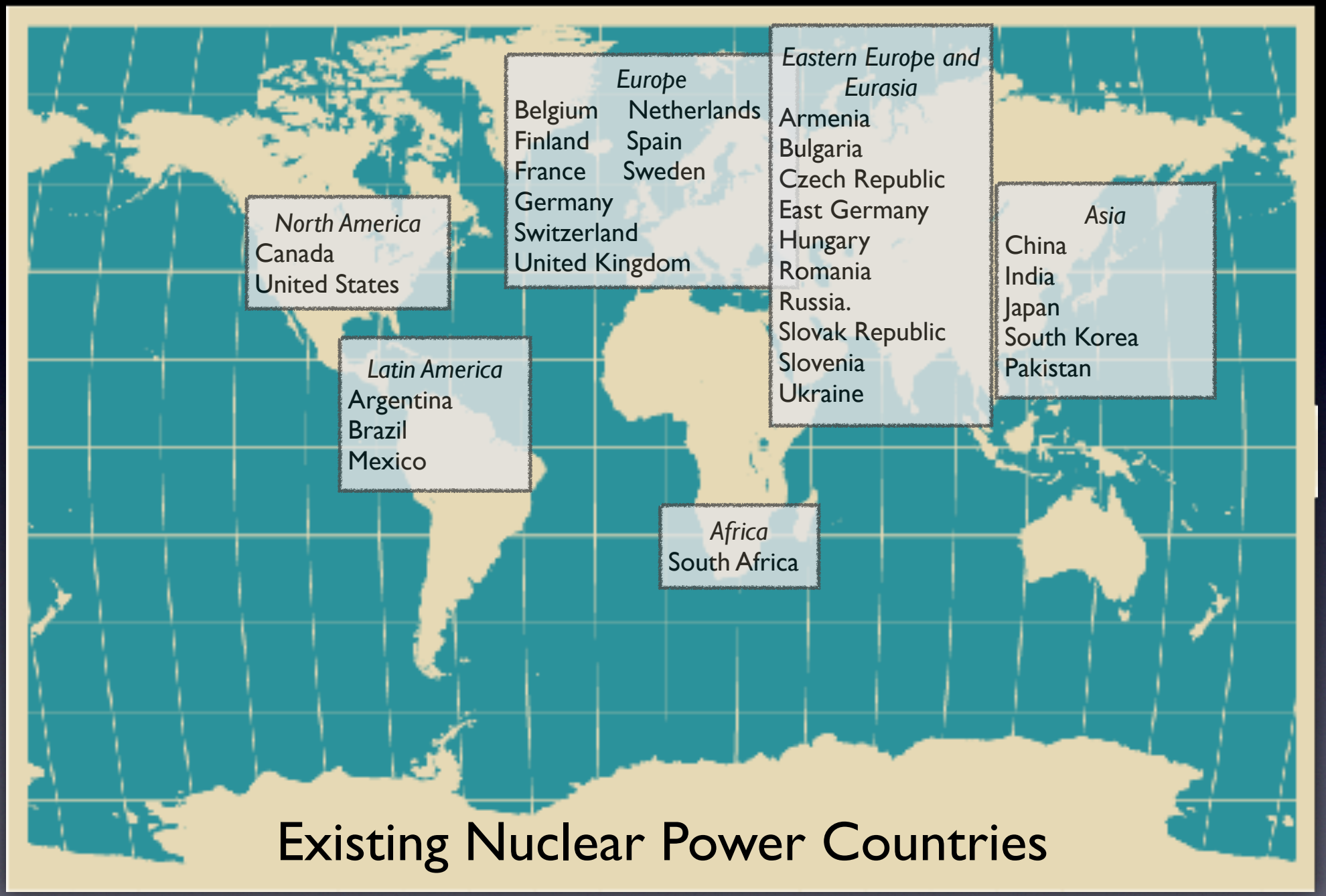
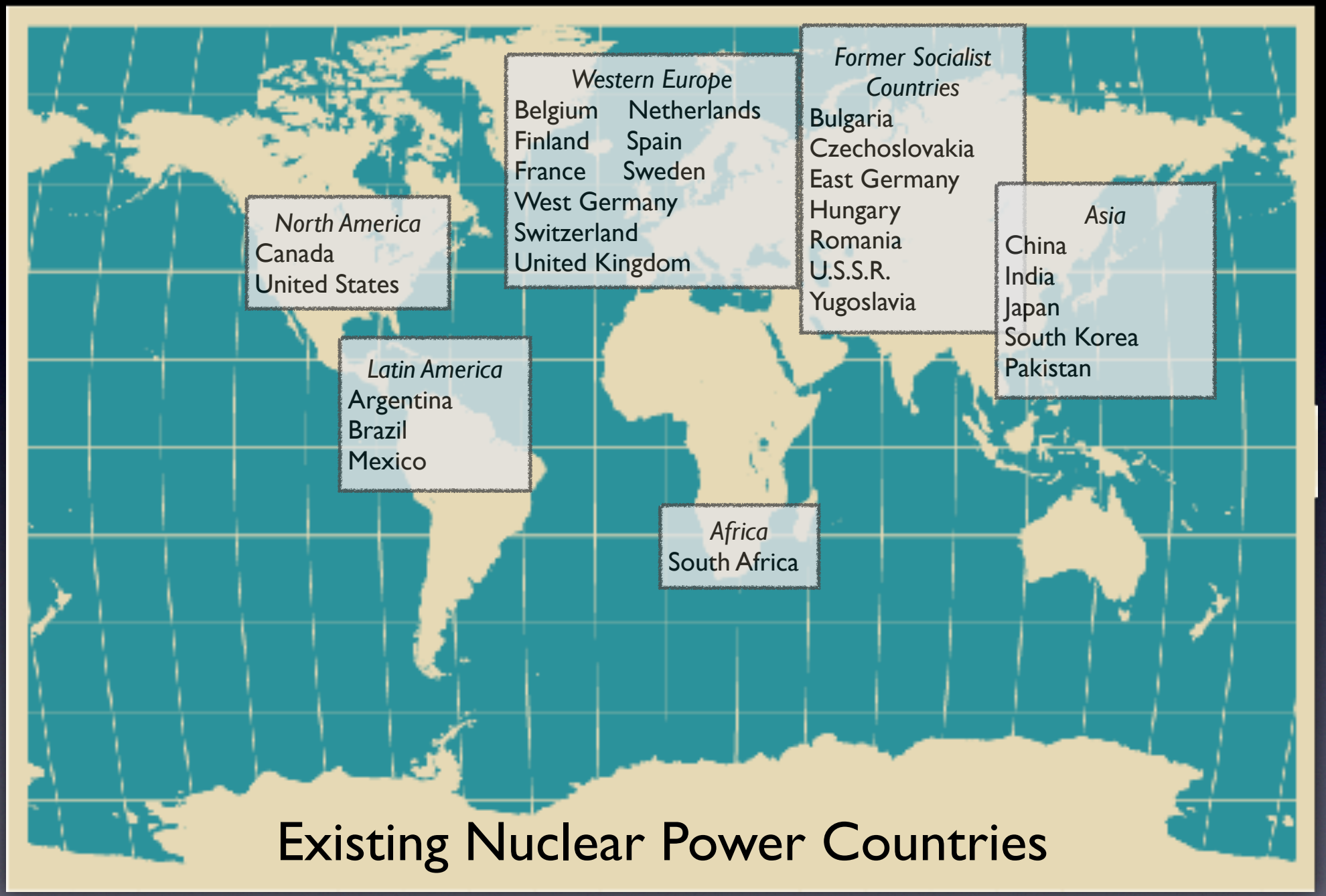
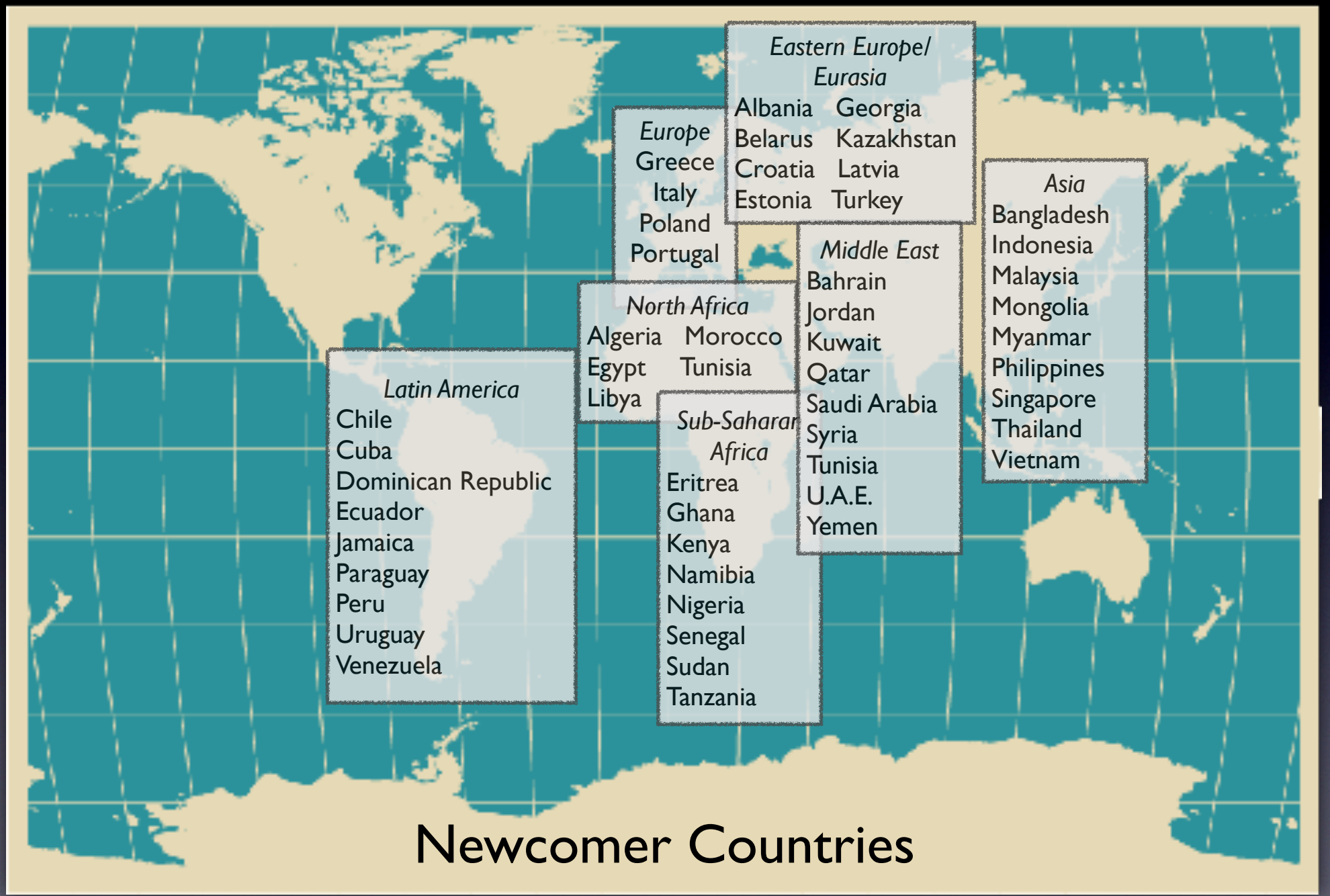

Europe
Belgium
Finland
France
Germany
Switzerland
United Kingdom
Netherlands
Spain
Sweden
Eastern Europe and Eurasia
Armenia
Bulgaria
Czech Republic
East Germany
Hungary
Romania
Russia.
Slovak Republic
Slovenia
Ukraine
North America
Canada
United States
Asia
China
India
Japan
South Korea
Pakistan
Latin America
Argentina
Brazil
Mexico
Africa
South Africa
Existing Nuclear Power Countries



Existing Nuclear Power Countries



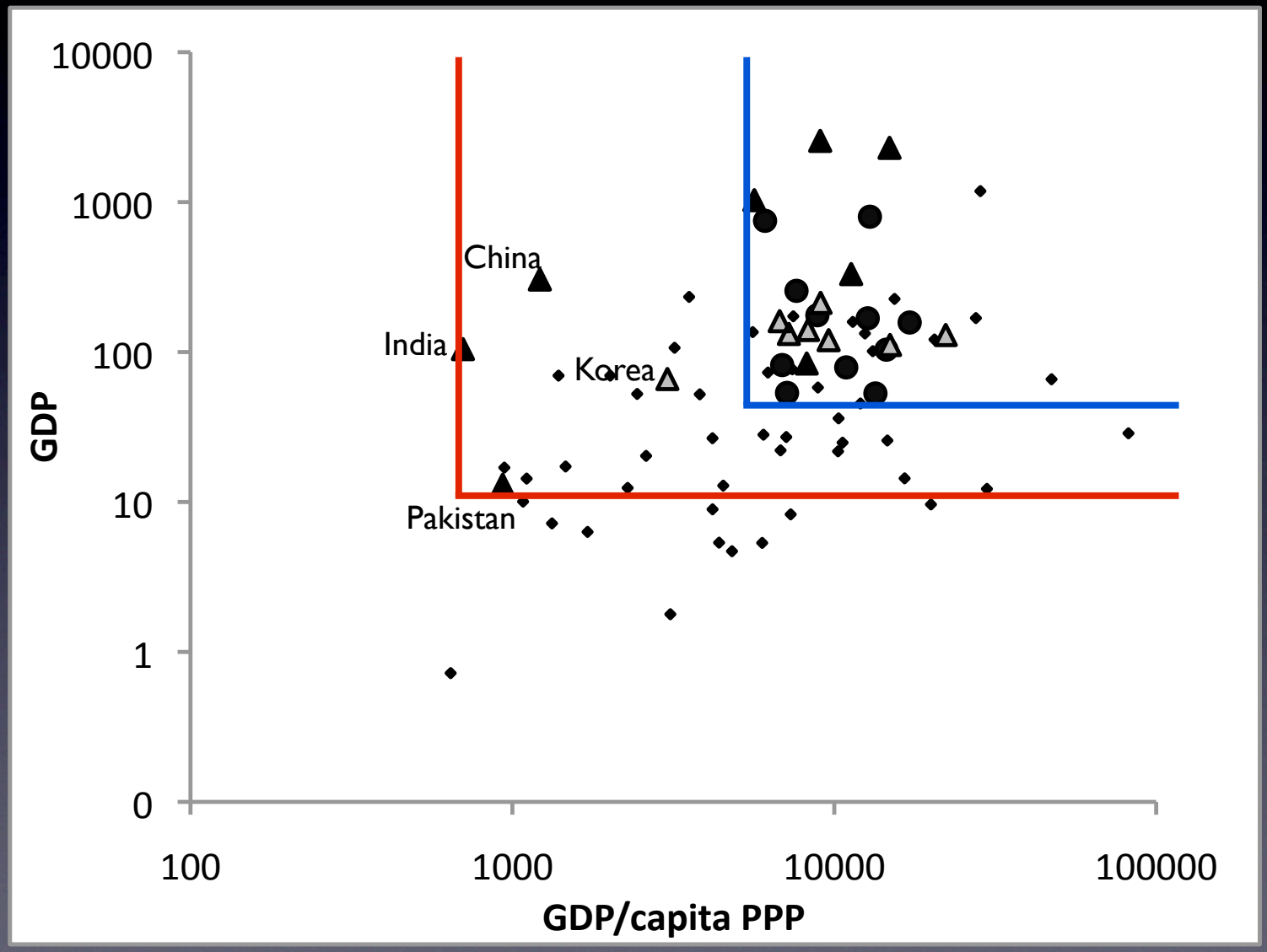
Newcomer Countries

- Which of these countries *can* implement nuclear power?
- Why are these countries motivated to pursue nuclear power?
- Are there reasons for concern in spreading nuclear energy?

Measuring Capacity

Newcomer Countries	Benchmark
Financial	
GDP	Existing NP Country GDP
GDP/capita	Existing NP Country GDP/capita
Institutional	
Government Effectiveness	Existing NP Country Current Government Effectiveness
Technological	
Current and Projected Grid Capacity + Grid Connections	10 GWe grid between now and 15 years

Financial Capacity



Institutional Capacity

Government Effectiveness Rating	Newcomer Countries	All Existing NP Countries	Existing NP Countries with Mixed or Private Ownership
75-100	12%	60%	97%
50-75	40%	27%	3%
25-50	27%	13%	-
0-25	21%	-	-

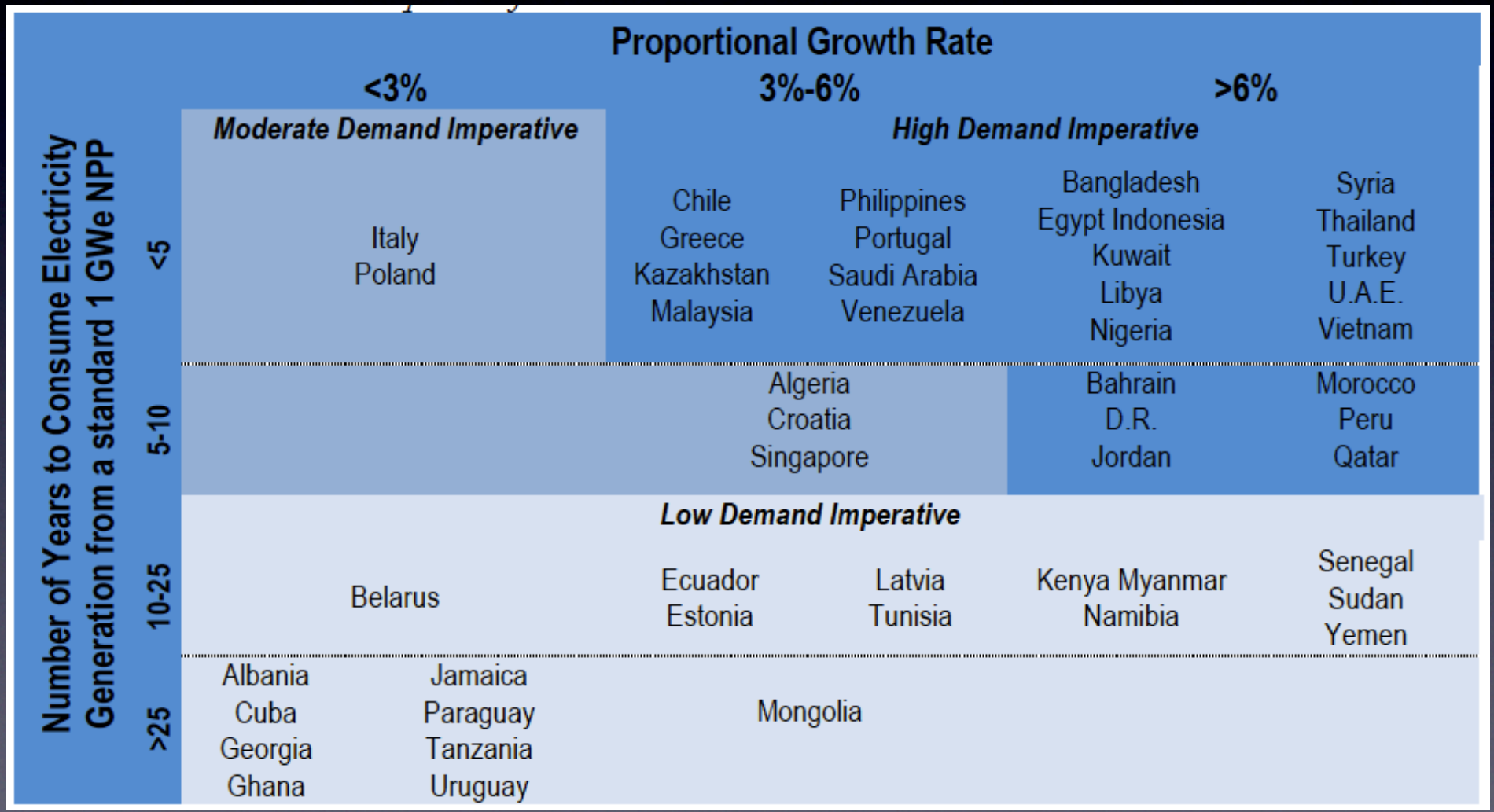
Technological Capacity

High				*Medium*		*Low*	
Current grid > 10 GWe		**Prospective Grid > 10 GWe in <15 years**		**Small grid, but strong grid connections**		**Unlikely to have a suitable grid**	
Chile	Portugal	Algeria	Eritrea	Belarus	Latvia	Albania	Nigeria
Egypt	Saudi	Bahrain	Libya	Croatia	Morocco	Cuba	Paraguay
Greece	Arabia	Bangladesh	Peru	Estonia	Namibia	Ecuador	Senegal
Indonesia	Singapore	Dominican	Syria	Georgia	Qatar	Ghana	Sudan
Italy	Thailand	Republic		Jordan	Uruguay	Jamaica	Tanzania
Kazakhstan	Turkey					Kenya	Tunisia
Kuwait	U.A.E.					Mongolia	Uganda
Malaysia	Venezuela					Myanmar	Yemen
Philippines	Vietnam						
Poland							
18		9		10		16	

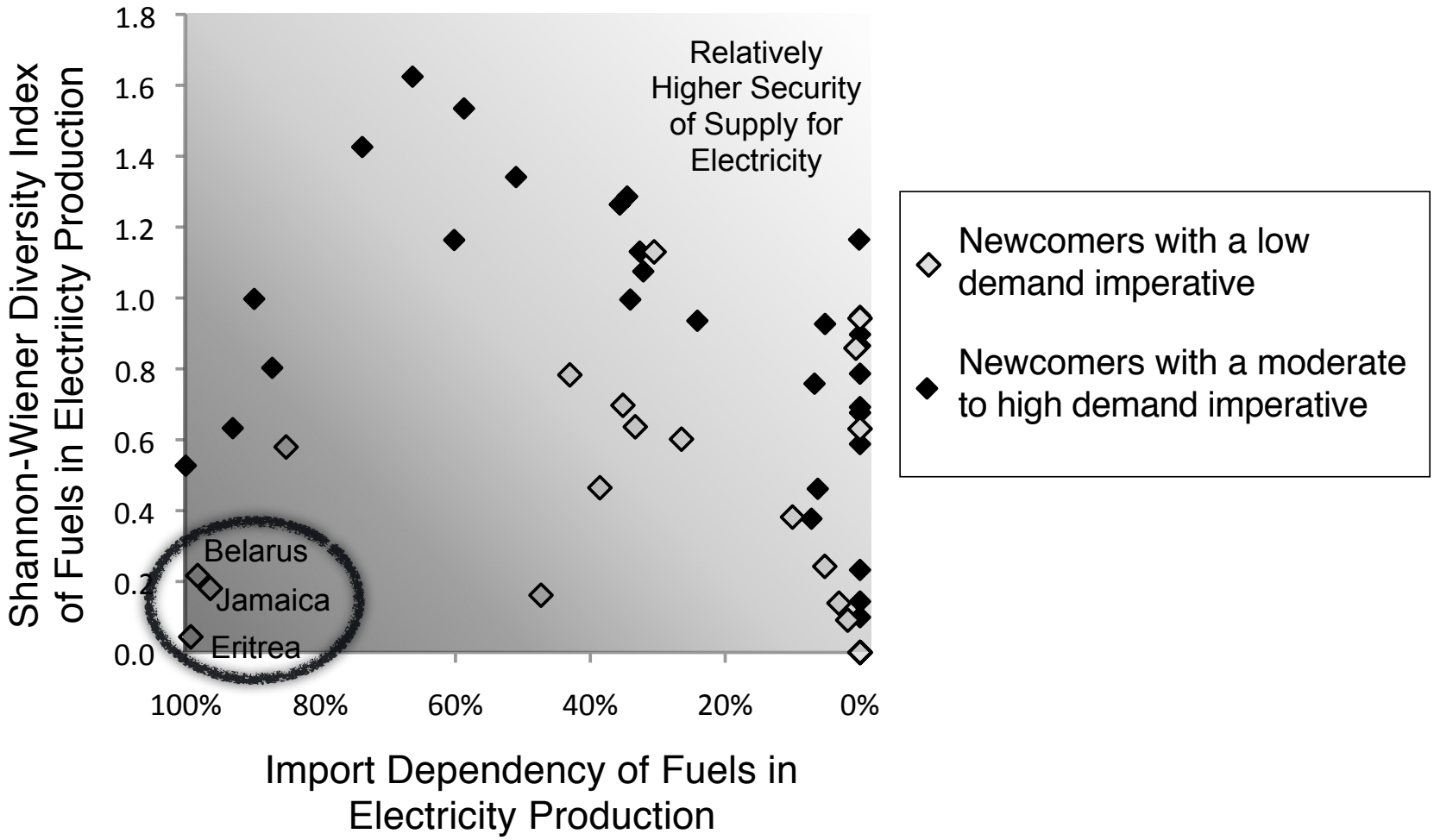
Measuring Motivation

Newcomer Countries	Benchmark
Demand	
5-year Electricity Consumption Growth Rate	5-year Growth Rate Before the Construction of first NPP
Magnitude of Growth Rate	Years to Consume Additional Power from a Standard 1 GWe NPP
Energy Security	
Fuel Import Dependency and Diversity of Electricity System	

Motivation Results: Demand



Motivation Results: Security of Supply



Risks in Nuclear Energy in Newcomers

Risks in Nuclear Energy in Newcomers

- Historically **4** Countries politically unstable
- ↓
- Pursued Nuclear Weapons

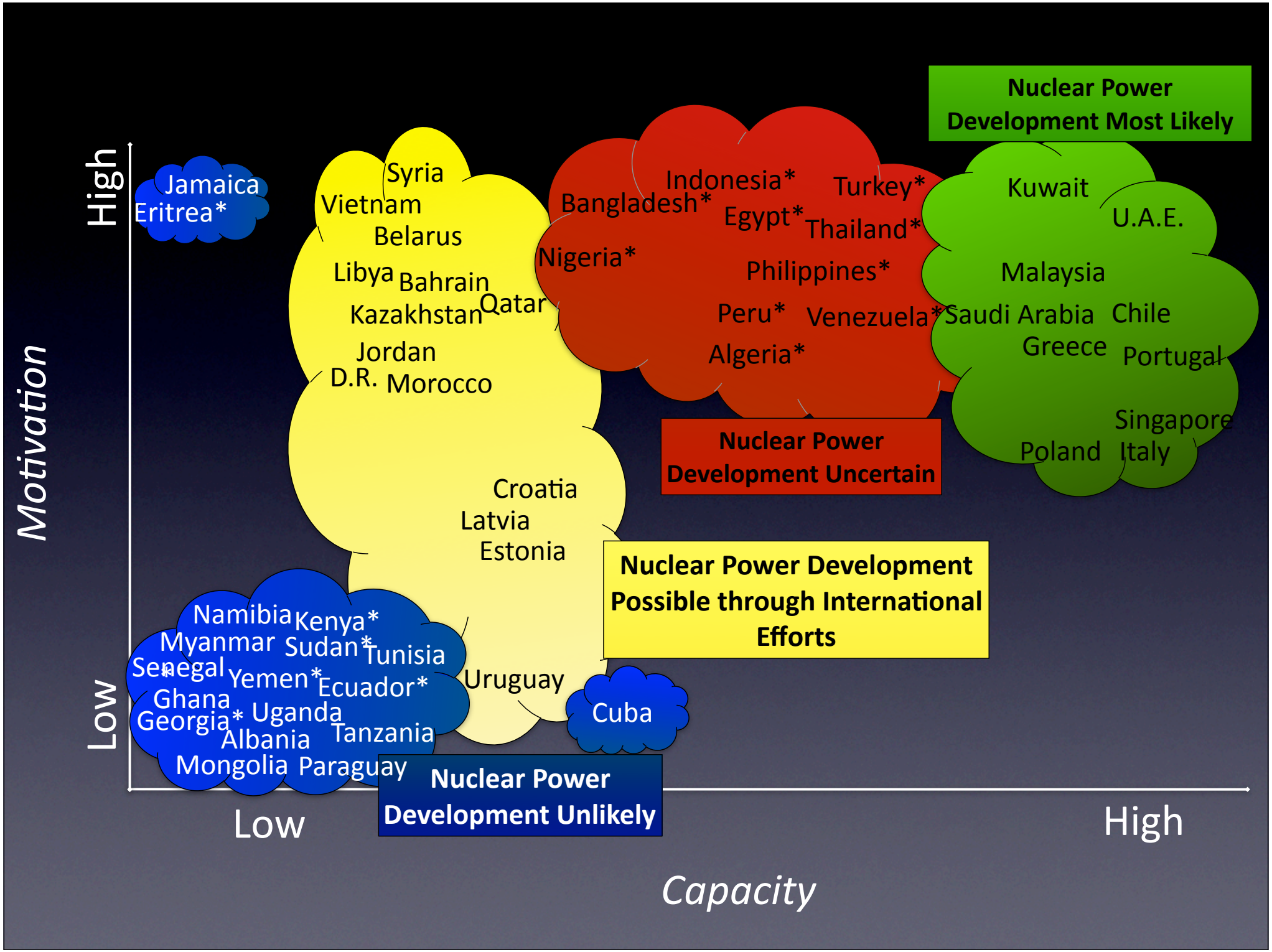
15% of Existing Weapons Countries were Unstable

Risks in Nuclear Energy in Newcomers

15% of Existing Weapons Countries were Unstable

- 9 of Newcomers already unstable
- 19 of Newcomers very high risk for future instability

Probability of Instability for Most Unstable Newcomers Countries : 90%


Nuclear Power Development Most Likely
Kuwait
U.A.E.
Malaysia
Saudi Arabia
Chile
Greece
Portugal
Singapore
Poland
Italy
Indonesia*
Turkey*
Bangladesh*
Egypt*
Thailand*
Nigeria*
Philippines*
Peru*
Venezuela*
Algeria*
Nuclear Power Development Uncertain
Syria
Vietnam
Belarus
Libya
Bahrain
Qatar
Kazakhstan
Jordan
D.R.
Morocco
Croatia
Latvia
Estonia
Uruguay
Nuclear Power Development Possible through International Efforts
Jamaica
Eritrea*
Namibia
Kenya*
Myanmar
Sudan*
Tunisia
Senegal
Yemen*
Ecuador*
Ghana
Georgia*
Uganda
Albania
Tanzania
Mongolia
Paraguay
Cuba
Nuclear Power Development Unlikely
High
Motivation
Low
Low
High
Capacity

The Expansion of Nuclear Power...

- 10 Countries likely
- 10 Countries dangerous
- 14 Countries possible w/ international cooperation
- Contextual understanding of nuclear feasibility
- 18 Countries Unsuitable
- What is their rationale?

Thank You

Your Questions?