Atoms for Peace or Atoms for War?
The Future of Nuclear Energy and Nuclear Weapons

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# Nuclear Power: Expansion vs. Spread Post-Fukushima 2013

**Red** = Canceling plans  **Green** = Continuing with plans  **Black** = No evidence  **Yellow** = Ongoing debates that have produced a delay or uncertainty about plans

## States with Nuclear Power Programs

<table>
<thead>
<tr>
<th>Americas</th>
<th>Western Europe</th>
<th>Eastern Europe</th>
<th>Central and South Asia</th>
<th>East Asia/Oceania</th>
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## Aspiring Nuclear Power States

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Governance, Corruption, and Regime Type 2013


*Measurement for Democracy/Autocracy Score is mean Polity IV 20-point score on a 100-point scale. Scores above 50 represent democracy; below 50 implies non-democracy.*

Figure © Scott D. Sagan 2013
The Nuclear Fuel Cycle

States with Nuclear Weapons

The graph illustrates the increase in the number of states with nuclear weapons from 1945 to 2010. The countries represented include the USA, UK, RUS, ISR, FRA, CHI, IND, S AFR, PAK, UKR, BEL, KAZ, and NK.
States that Explored or Pursued Nuclear Weapons

- ITA, WGER
- AUS
- TAI
- EGY
- YUGO
- AUS
- IRAQ
- S AFR
- SWI
- SWE
- BRA
- SYR
- LIB
- ALG
- ROM
- TAI
- YUGO
- SK
- IRAN
- IRAN
- IRAQ
- BRA
- S AFR
Five Cracked “Pillars” of the NPT

Article X:
“Each Party shall in exercising its national Sovereignty have the right to withdraw from the Treaty... It shall give notice of such withdrawal... three months in advance.”
Iran’s Nuclear Program
Evidence on Iran’s Bomb Program

- Instructions for making uranium metal hemispheres
- Tests of implosion-type detonation systems
- Missile RV engineering work
- Communication and links between nuclear and missile programs
- Failure to cooperate fully with IAEA
Iran: A Security-Driven Program?

“If anyone in the neighborhood has [the bomb], we must be ready to have it.”
- Shah Mohammed Reza Pahlavi, 1973

“The commander has said we can have no victory for another five years, and even by then we need to have 350 infantry brigades, 2500 tanks, 300 fighter planes... [Iran would need] a considerable number of laser and nuclear weapons to confront the attacks.”
- Ayatollah Khomeini, 1988

“The moral teachings of the world are not very effective when war reaches a serious stage...We should fully equip ourselves in the defensive and offensive use of chemical, bacteriological, and radiological weapons.”
- Hashemi Akbar Rafsanjani, 1988
Iran’s Security Concerns

• 2001 U.S. Nuclear Posture Review

• January 22, 2002: “Axis of Evil” Speech

• 2003: Tehran should “take a number”

• 2006: “How can a side that wants to topple the regime also attempt to negotiate?”

Ali Larijani, Iran’s top nuclear negotiator
August 2005 - October 2007
Iran: Domestic Politics

• Broad support for nuclear power

• Split on nuclear weapons?

• Reformers and industry want international trade

• IRGC and weapons interest
Iran: The Norms Model

- Fatwa Against Chemical and Nuclear Weapons
- Islam and the Nuclear Taboo
- Membership in the “Nuclear Power Club”
November 2013 Iran Nuclear Deal

- Interim deal between P5+1 and Iran reached on November 24th in Geneva

- Adds time to an Iranian nuclear “breakout” in exchange for limited sanctions relief
  - Suspension of work on Arak
  - No enrichment above 5%
  - Dilute or convert 20%
  - Improved IAEA safeguards
Recent Developments on Iran Nuclear Deal

Negotiators Wait for Start of Closed-Door Negotiations in March 2014
Ensuring a Safer Nuclear Future

- International Fuel Bank
- Regional Repositories
- NSG Export Guidelines
- IAEA Additional Protocol
2014 Hague Nuclear Security Summit

• Pledge by 35 countries to turn nuclear security guidelines into national law and undergo external reviews of nuclear security procedures
  – Russia, China, India, and Pakistan not part of group endorsing these measures

• New nuclear materials reduction commitments by Japan, Italy, and Belgium