



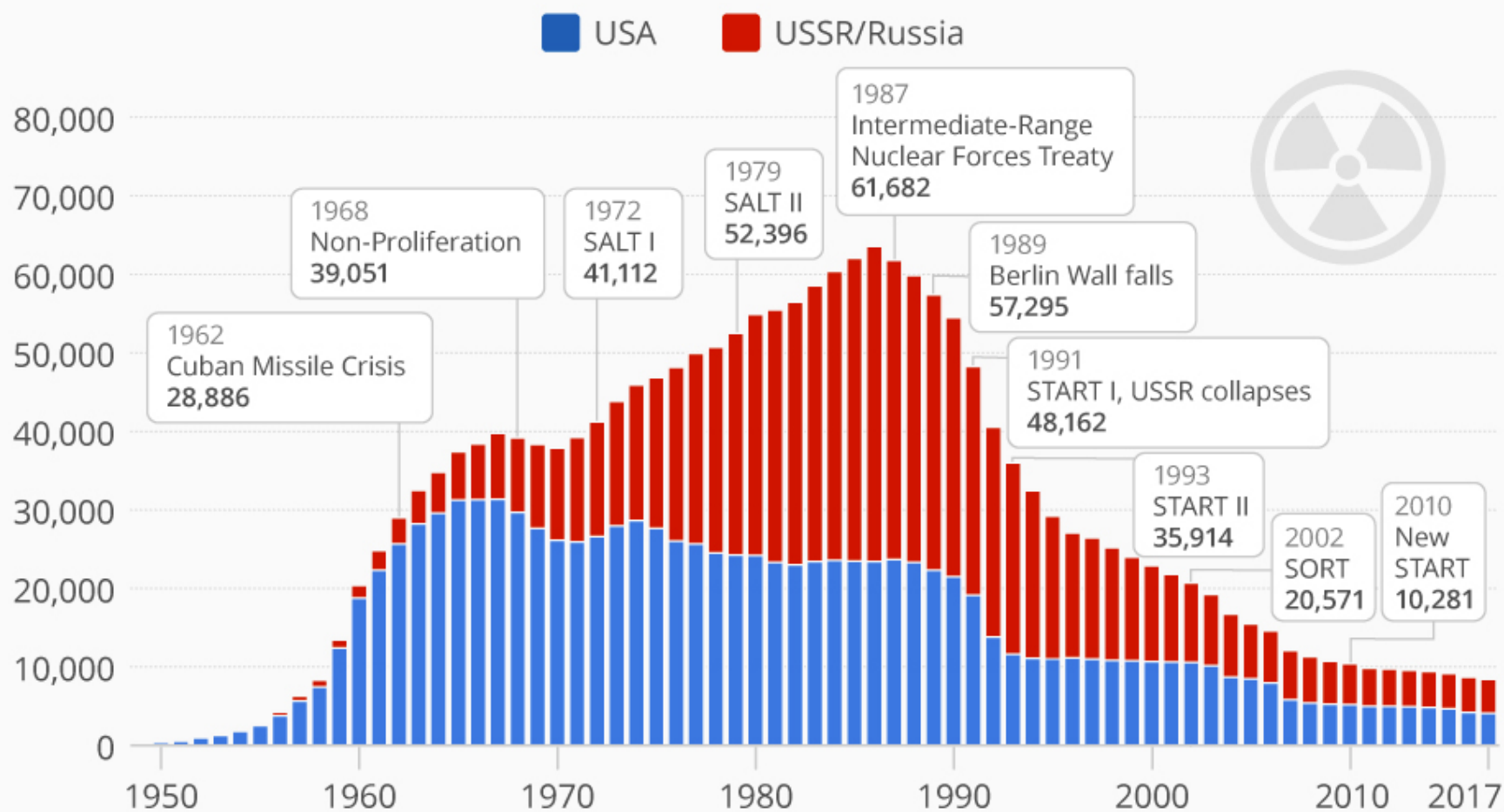
August 1942>July 1945 >August 1945>January 1956>January 1946>Aug 1949>October 1962>July 1969>June 1982

Why did they proliferate?

What are the consequences of US nuclear proliferation?

How U.S. And Russian Nuclear Arsenals Evolved

Stockpiled nuclear warhead count by year



@StatistaCharts

Source: Federation of American Scientists

statista

United Kingdom



France - Timeline of Proliferation

- Pre-WWII- early nuclear research
- 1954- nuclear weapons program approved
- 1960- first atomic test in French Algeria
- 1964- first atomic weapons available
- 1968- first hydrogen bomb test in South Pacific
- 1971- expansion to land and naval bases
- 1968-1996- controversial experiments in South Pacific
- 1999- end of land missiles
- 2009- NATO rejoined, warhead limit



Israel





Source: Auth, *The Philadelphia Inquirer*, 2002 (adapted)

What is the main idea of this 2002 cartoon?

INDIA



World Nuclear Forces, 2017



Source: The Stockholm International Peace Research Institute, July 2017

INDIA PUSHES TO JOIN ELITE NUCLEAR CLUB



WHAT'S THE NUCLEAR SUPPLIERS GROUP

- A multinational body which seeks to reduce nuclear proliferation by controlling export and re-transfer of materials used in nuclear weapons.
- As of 2014, NSG has 48 members

WHY IT'S IMPORTANT TO INDIA

- Easier access to materials for nuclear facilities—primarily civilian.
- Many see it as a way India could help in curbing proliferation of nuclear arms.
- May strengthen India's geopolitical clout

WHY NSG IS CAUTIOUS

India has not yet signed Nuclear Proliferation Treaty. Says even France had not but was made a member.



Pakistan, an ally of China, may see it as a massive threat.

Source: TNN

TIMES INTERNET

Pakistan's Nuclear Proliferation

- **Phase I:**
 - Began in 1954, ended around 1971
 - Turbulent beginning → Slow to start nuclear development program
 - 1960s → Adopted nuclear option policy due to concern over India's nuclear potential
 - 2 events catalyzed shift in Pakistan's nuclear posture in 1970s:
 - Civil War in Pakistan in 1971
 - Detonation of a nuclear device ("Smiling Buddha") by India in 1974
- **Phase II:**
 - Began around December 1971, ended at the end of the Cold War
 - Bhutto decides to reboot the Atomic Energy program in light of security issue and looming nuclear challenge from India
 - Superpower rivalry in Afghanistan
 - Pakistan's geopolitical importance to the U.S. → U.S. more tolerant of nuclear program
- **Phase III:**
 - Post-Cold War → New international system effects Pakistan's strategic environment
 - U.S. became less like an ally and more like a nuclear watchdog
 - Kashmir Dispute → Believed that Pakistan assembled a crude nuclear device during this time
 - Pakistan carries out six nuclear tests in May 1998 in response to Indian tests

Nonproliferation of Argentina and Brazil

Common History

- Early military governments pursue nuclear weapons programs
- Civilian-run democratic governments in the early 90s reverse these programs
- The Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials is established
- Both actively pursue extensive nuclear energy programs to this day

Both nations are seeking to advance their nuclear energy programs and are working together to create sustainable energy in the region



Atucha Nuclear
Complex
Buenos Aires
Province, Argentina



Angra Nuclear
Complex
Rio De Janeiro, Brazil

Non-Proliferation

After the collapse of the Soviet Union in 1991, the Soviet union split into four independent republics: Russia, Belarus, Kazakhstan, and Ukraine. All former Soviet Union nuclear weapons were consolidated into Russia and taken off the soil of Kazakhstan, Belarus and Ukraine.

Acceded to the Non-Proliferation Treaty:

Belarus- July 22, 2019

Kazakhstan- February 14, 1994

Ukraine- December 5, 1994

Iraq: Non-Proliferation

- 1970's, Developed Nuclear Reactor under Saddam Hussein with help from France in the name of peace and science
 - Hoped it would help deter Iran and Israel but keep the war of reclaiming Arab lands alive
 - Wanted to showcase Iraqi technical advancement
- 1980, Operation Scorch Sword
 - Iranian attempts to destroy Iraqi nuclear program
- 1981, Operation Opera
 - Israeli success at destroying nuclear reactor
- 1988, UN brokered ceasefire in Iran-Iraq War
 - Iraq destroyed its chemical weapons and dismantled chemical and nuclear programs
- 1998, Iraq rejected IAEA checks
 - Bush Admin suspected Saddam started nuclear program again
- 2003, U.S. Invasion of Iraq
- Today, Iraq has signed many nuclear weapons agreements & treaties
 - Does not have a nuclear program and has no current desire to

Japan

Can Japan develop Nuclear Weapons?

-Article 9 : ...the Japanese forever renounce (...) the threat or use of force as means of settling international disputes.

Why Japan does not develop Nuclear Weapons?

- Responsibility for only country to have experienced atomic bombs; three nuclear free principles
- Demerits for joining NTP
- Alliance between Japan and the United States

Libya

Why Libya wanted nuclear weapons

- Regime security
- Arab unity
- Anti-Israel policy

1969 – 1981: obtaining elements for a ‘civil’ nuclear program

- Seeming preservation of nuclear norms
- Reluctant suppliers
- Soviet nuclear relationship

1981 – mid-1990s: pursuit of fissile matter for nuclear weapons

- Plutonium route, uranium conversion, centrifuge enrichment
- Lack of technical knowledge and Russian proliferation concerns

mid-1990s – 2003: reinvigoration of nuclear efforts

- A.Q. Khan

2003 – present: after the deal

- Libya was cooperative and non-confrontational
- Incremental approach to the dismantlement

Why Libya ultimately did not proliferate

- Sanctions
- Arab peace talks with Israel
- Failure to develop scientist with the skills necessary



President George W. Bush receives a tour of nuclear material surrendered by Libya and flown to the Oak Ridge National Laboratory, a U.S. facility in Oak Ridge, Tenn., in 2004.



South Africa Nuclear Development

Nuclear State from 1970's to 1993

Dismantling Process:

February 22, 1990 - President de Klerk ordered the destruction of the six completed weapons and the partially completed seventh weapon

July 1, 1991- signed the Treaty on the Non-Proliferation of Nuclear Weapons as a non-nuclear weapon state party

March 24, 1993 - President de Klerk announced to the Parliament the existence and abandonment of the former nuclear weapons program

April to August 1993 - International Atomic Energy Agency (IAEA) inspections confirmed the complete dismantlement of the nuclear weapons program

April 11, 1996 – South Africa joined Treaty of Pelindaba with other African nations to create a nuclear weapons free zone on the African continent

2015 – South Africa still possessed approximately. 185lbs of highly enriched uranium in a central facility under IAEA safeguards

Motivation for Nuclearization:

- Deterrence strategy in response to a fear of a direct invasion of South African controlled Namibia by Soviet backed forces
- Apartheid leaders extreme sense of nationalism
- Fear of onslaught by black nationalists

Motivation for Denuclearization:

- Departure of Cuban forces from Angola, Namibia's independence and the dissolution of the Soviet Union
- Deisolation from the West following the downfall of the apartheid regime as well as seeking the lessening of sanctions from the United States
- Prevention of atomic weapons falling into the hands of a black government

SOUTH KOREA AND NON PROLIFERATION

- Developed interest in nuclear weapons in the 1950s
- Began construction on first nuclear power plant in 1971
- Has signed NBT and CTBT
- USA deployed tactical nuclear weapons in South Korea from 1958-1991 (at one time had over 900 warheads)
- Signed the Joint Declaration on the Denuclearization of the Korean Peninsula in 1992
- Under the “nuclear umbrella” of the United States (along with Japan)
- One third of the countries power comes from nuclear reactors