Global Fissile Material Report 2007

Toward a Global Cleanout of Nuclear Weapon Materials

IPFM
INTERNATIONAL PANEL
ON FISSILE MATERIALS

Nuclear Weapon and Fissile Material Stockpiles and Reductions

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United Nations, New York City, October 19, 2007

Revision 5

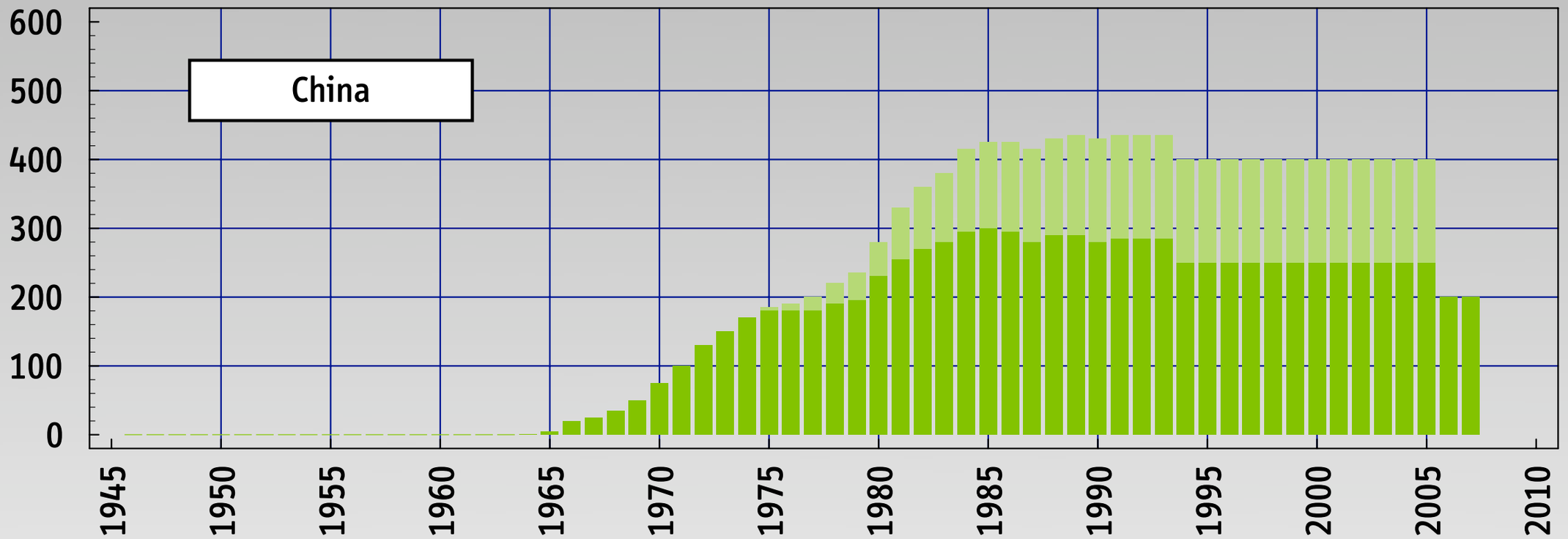
Nuclear Arsenals

(based on estimates by the Natural Resources Defense Council)

Country	Nuclear Warheads
United States	about 10,000 *(5000 deployed + 5000 in reserve)*
Russia	about 10,000 *(large uncertainty as to number awaiting dismantlement)*
France	348
United Kingdom	185
China	about 200
Israel	about 100
Pakistan	about 60
India	about 50
North Korea	less than 10

China's Nuclear Arsenal

(based on estimates by the Natural Resources Defense Council)



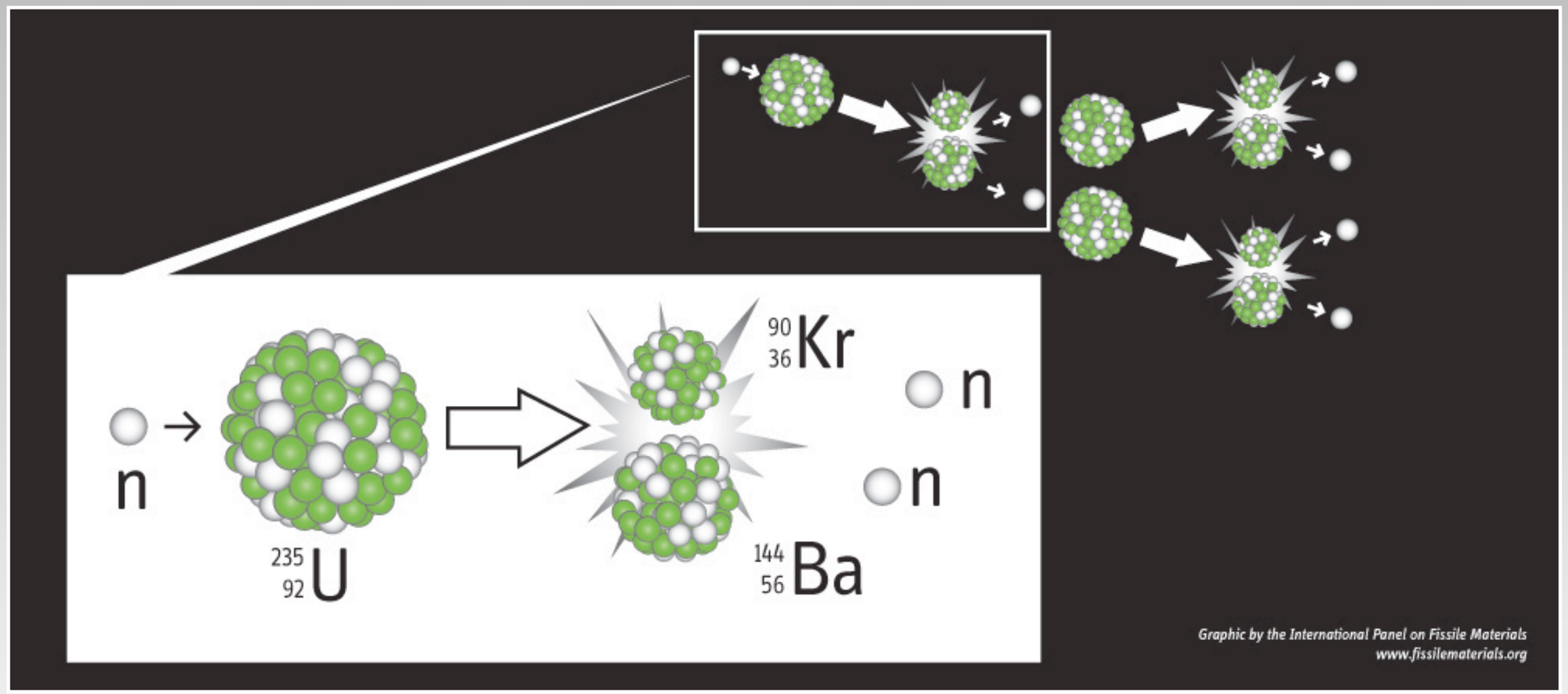
Most recent values based on 2006 U.S. Department of Defense assessment

(China may not deploy tactical nuclear weapons)

China *"possesses the smallest nuclear arsenal"* among the nuclear weapon states of the NPT

(Ministry of Foreign Affairs of the People's Republic of China, 2004, text mirrored at www.ipfmlibrary.org/prc04.pdf)

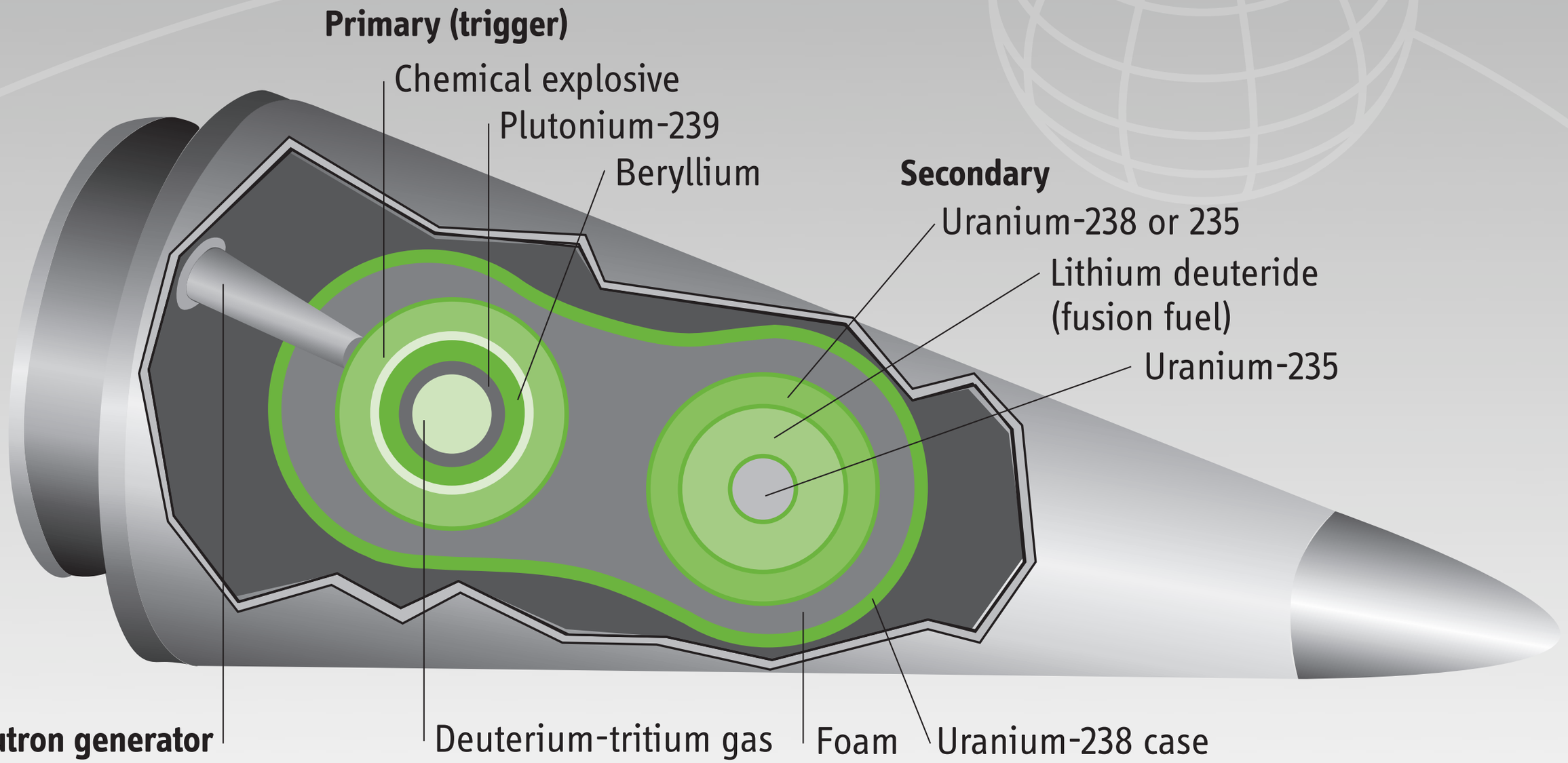
What Are Fissile Materials?



Material that can sustain an explosive fission chain reaction
notably highly enriched uranium or plutonium (of almost any isotopic composition)

(term is not officially used by the IAEA)

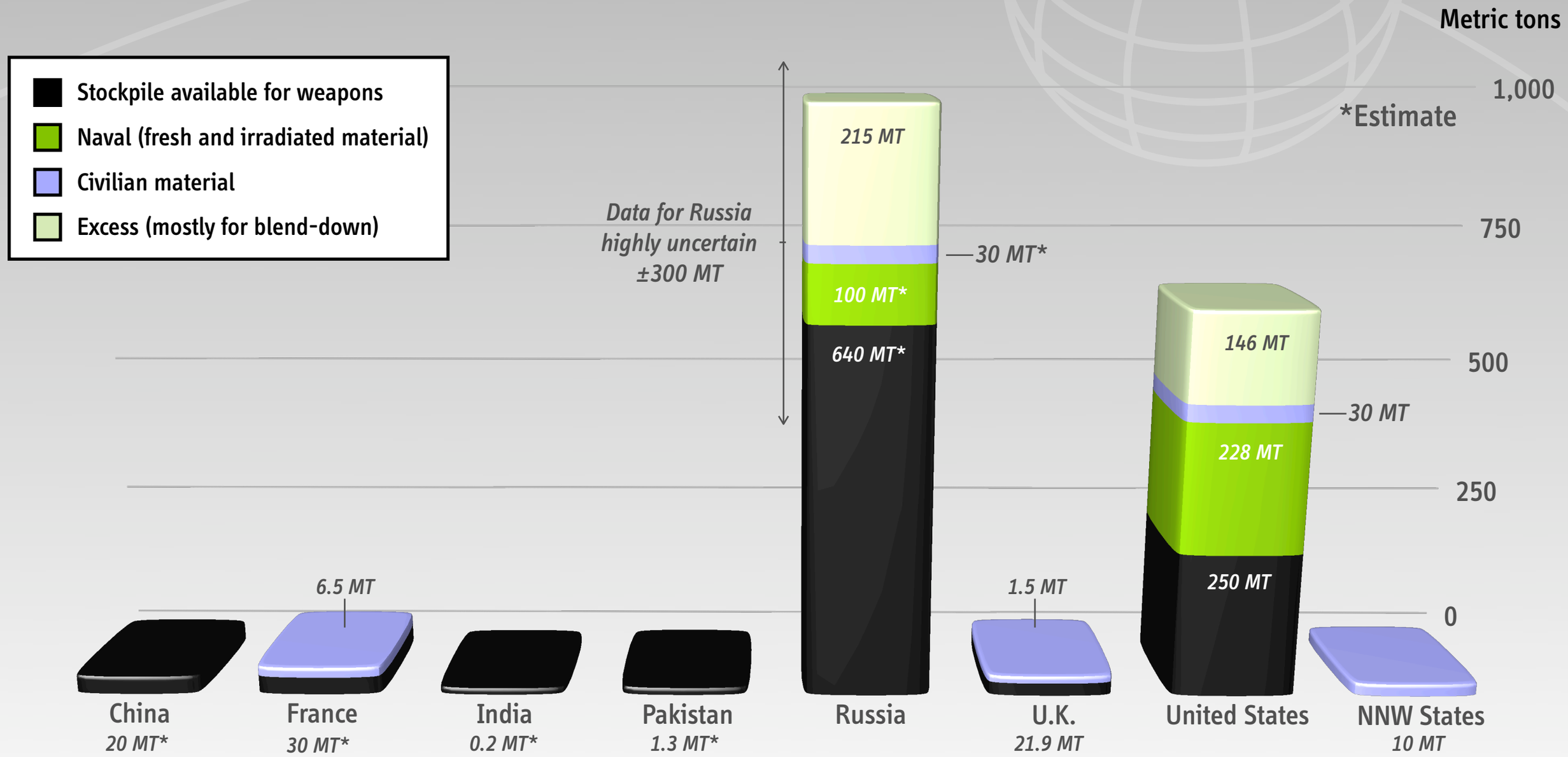
Modern Thermonuclear Warhead



A modern thermonuclear warhead may contain *both* plutonium and highly enriched uranium

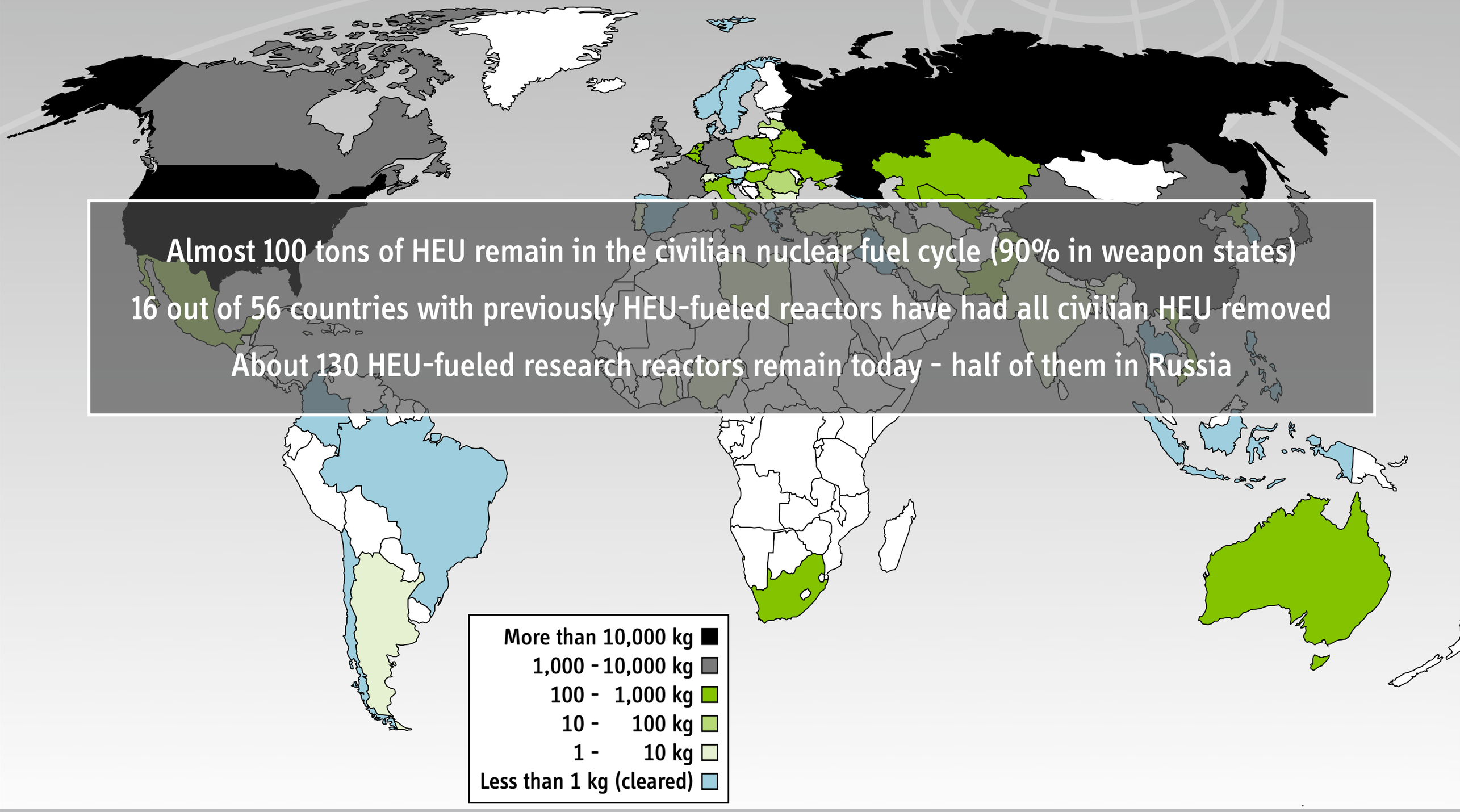
(Average estimated values are 4 kg and 25 kg of plutonium and HEU, respectively)

Highly Enriched Uranium Stockpiles



(250 MT of HEU are equivalent to 10,000 nuclear weapons)

Civilian HEU Worldwide

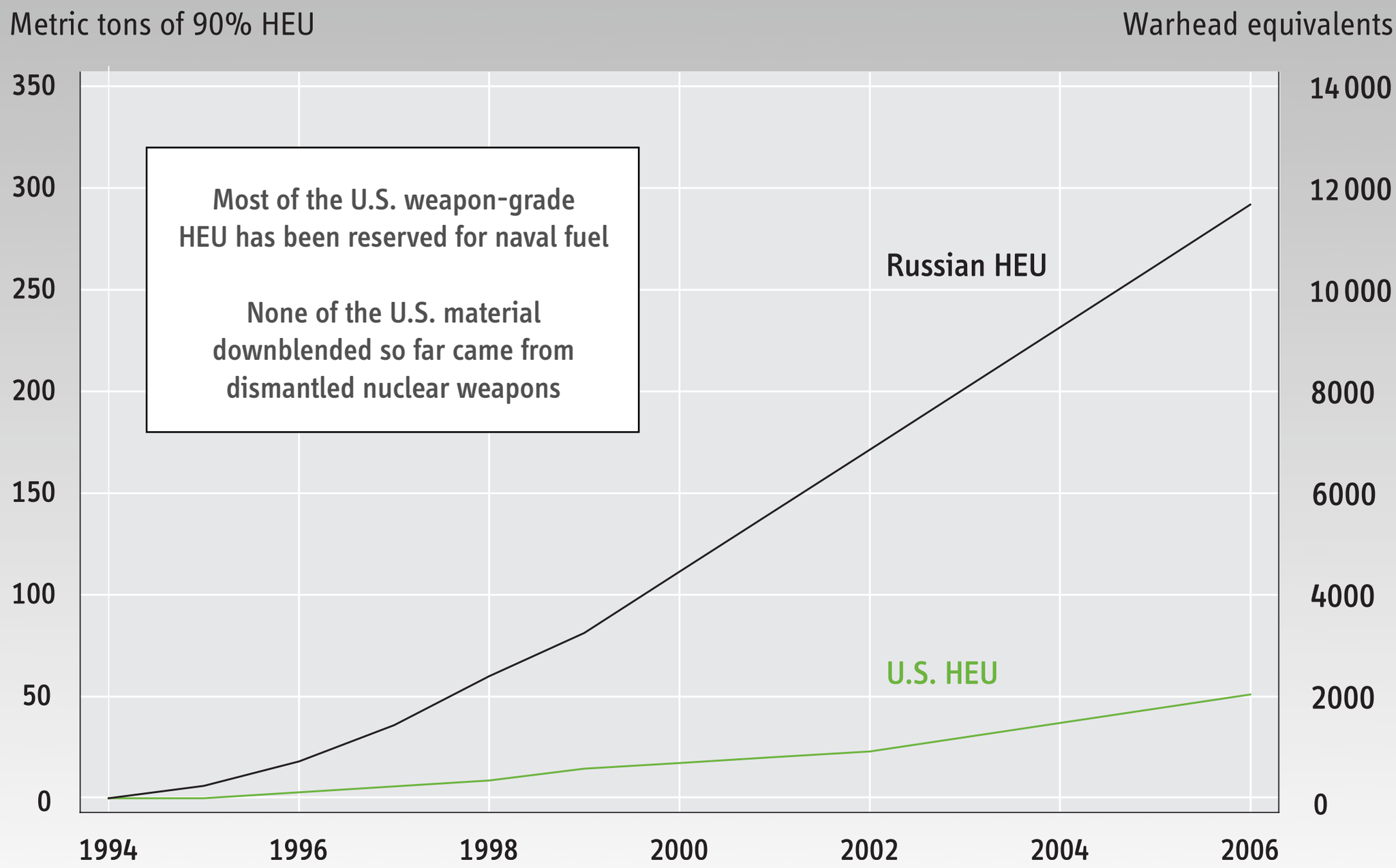


Almost 100 tons of HEU remain in the civilian nuclear fuel cycle (90% in weapon states)

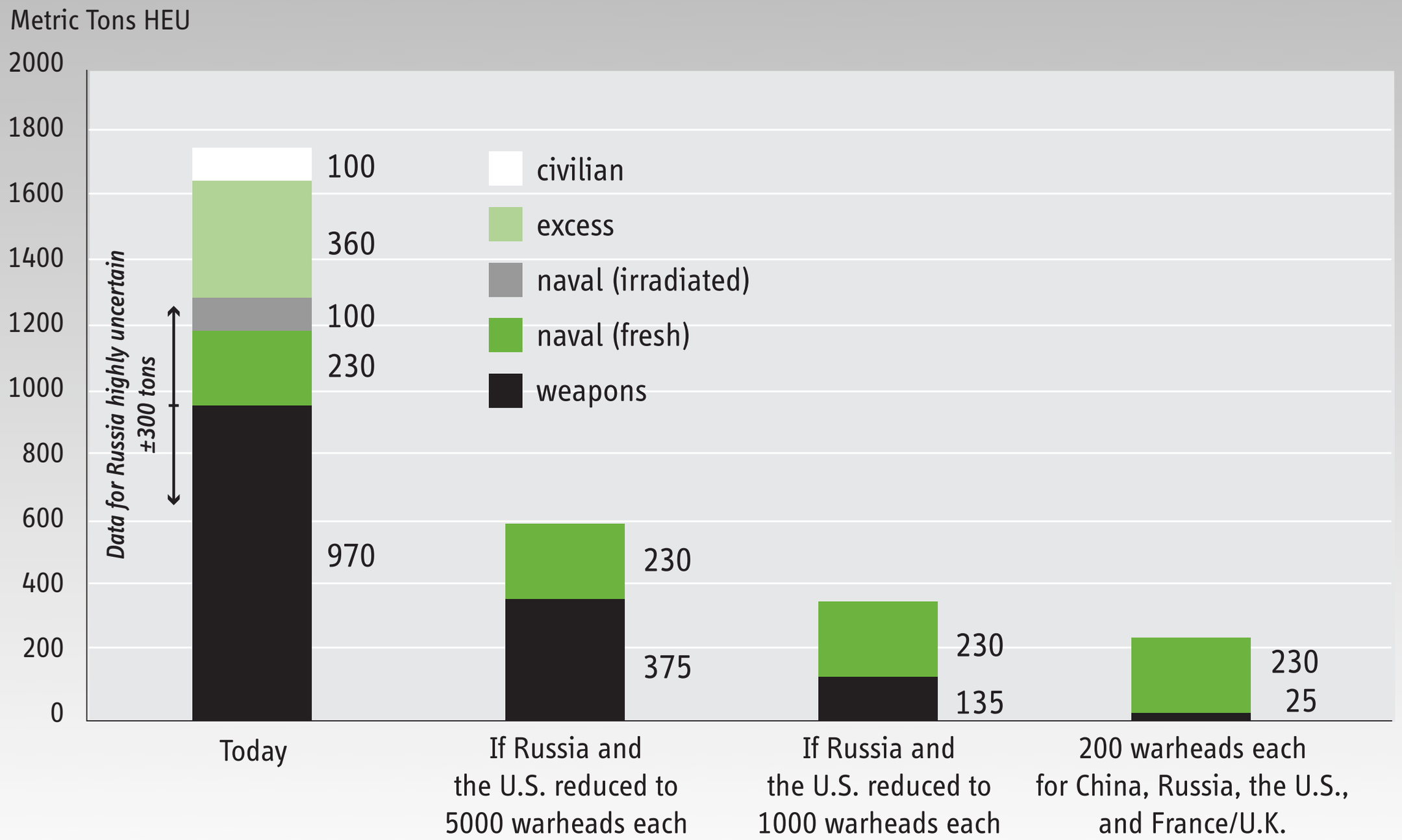
16 out of 56 countries with previously HEU-fueled reactors have had all civilian HEU removed

About 130 HEU-fueled research reactors remain today - half of them in Russia

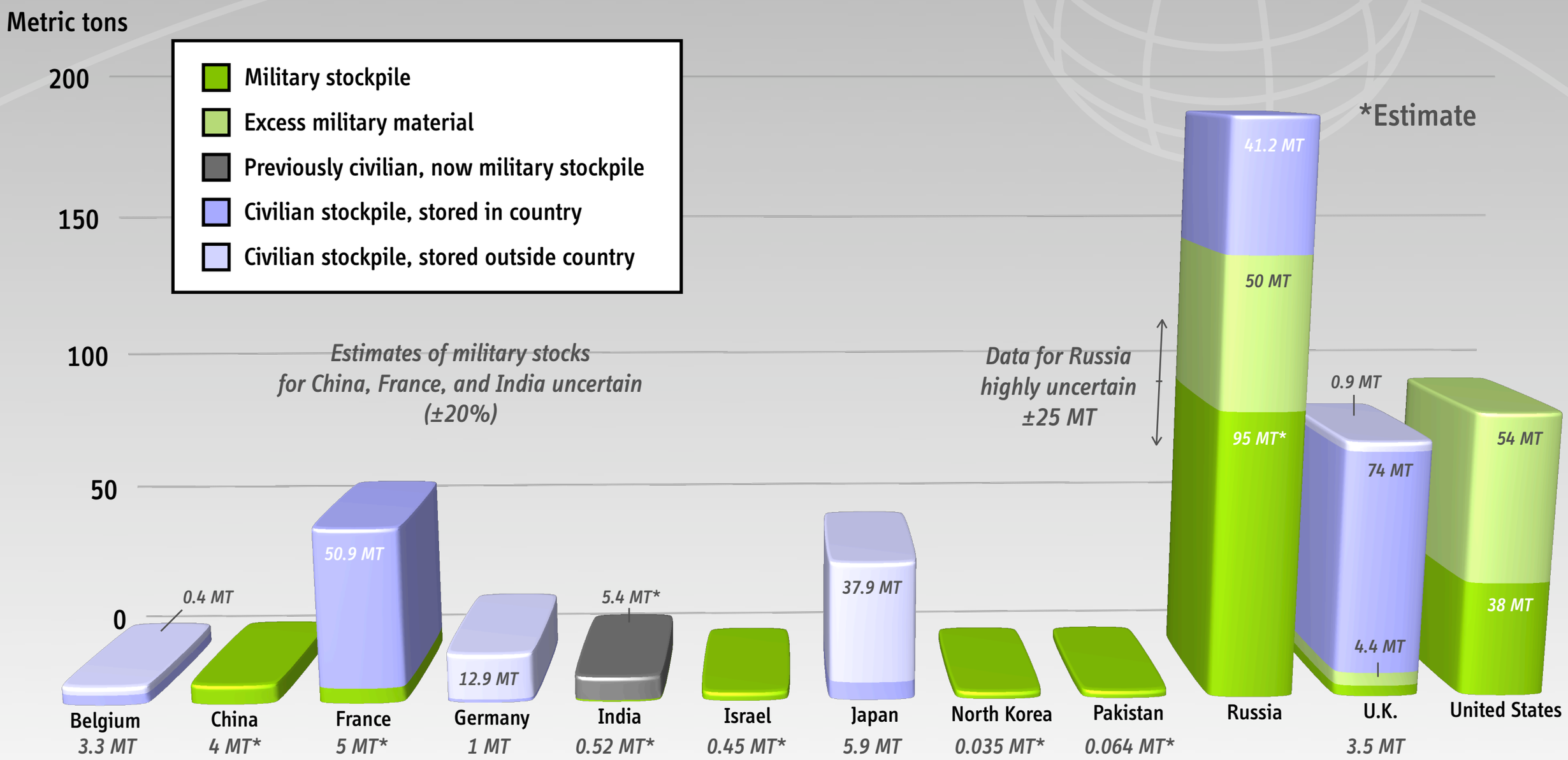
Progress of Excess HEU Disposition



Scope for Warhead and HEU Stockpile Reductions

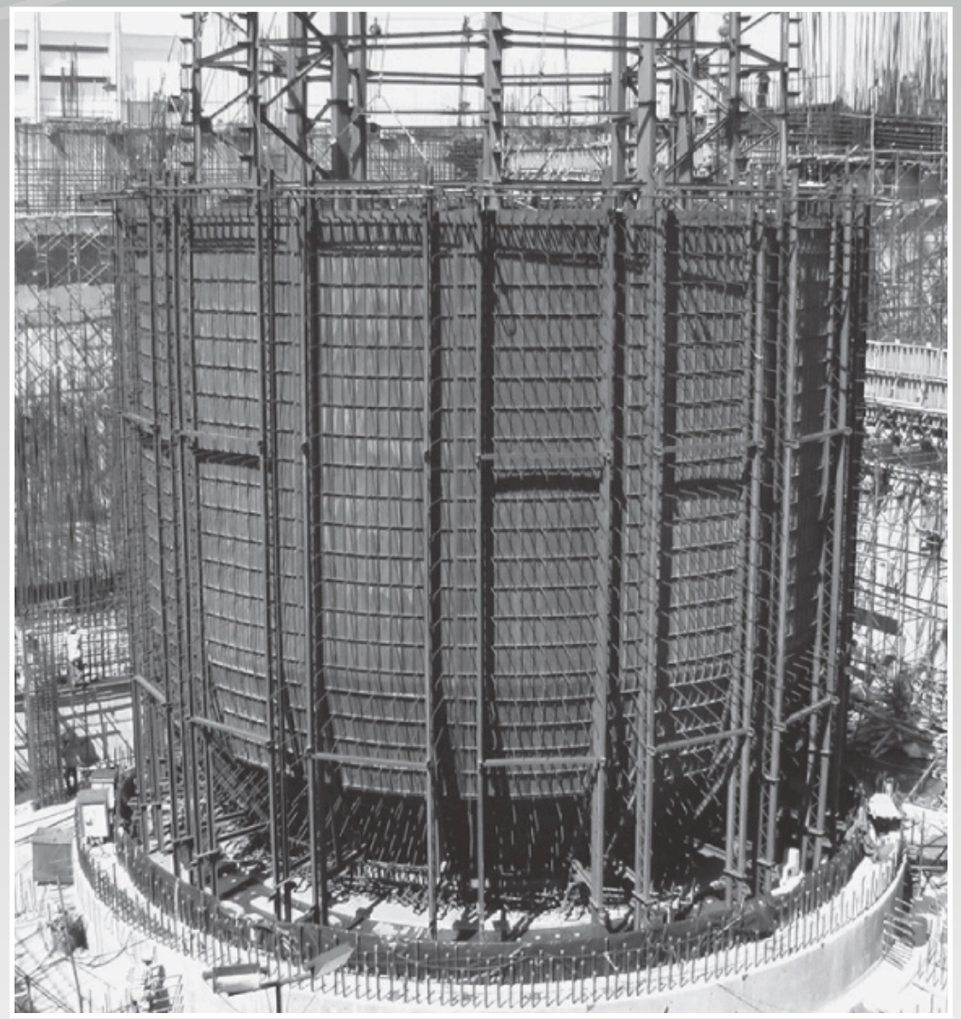


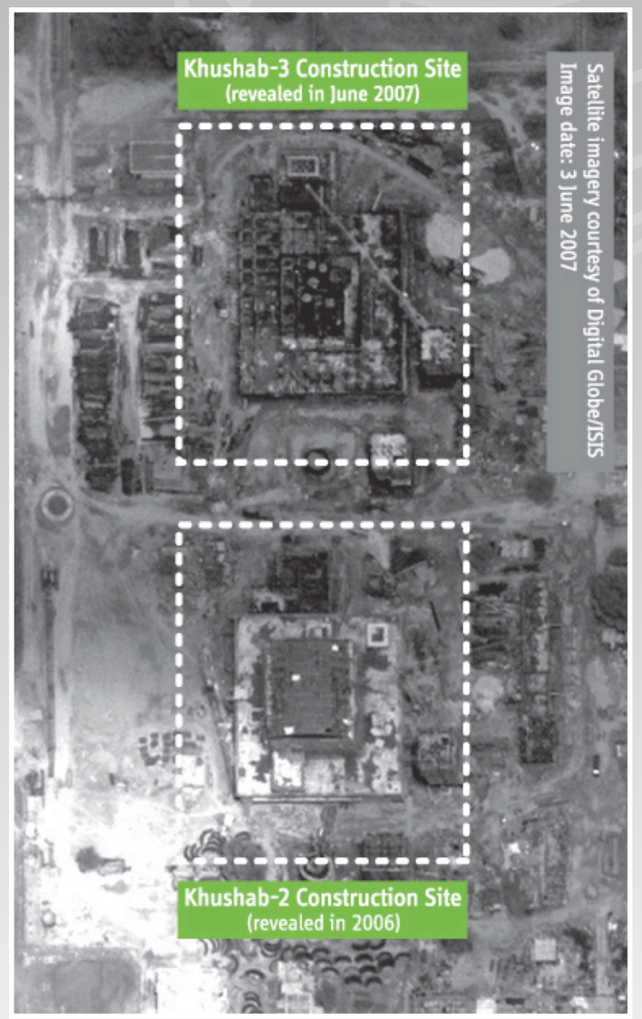
Global Stocks of Plutonium



(50 MT of plutonium are equivalent to more than 10,000 nuclear weapons)

Plutonium Production in South Asia

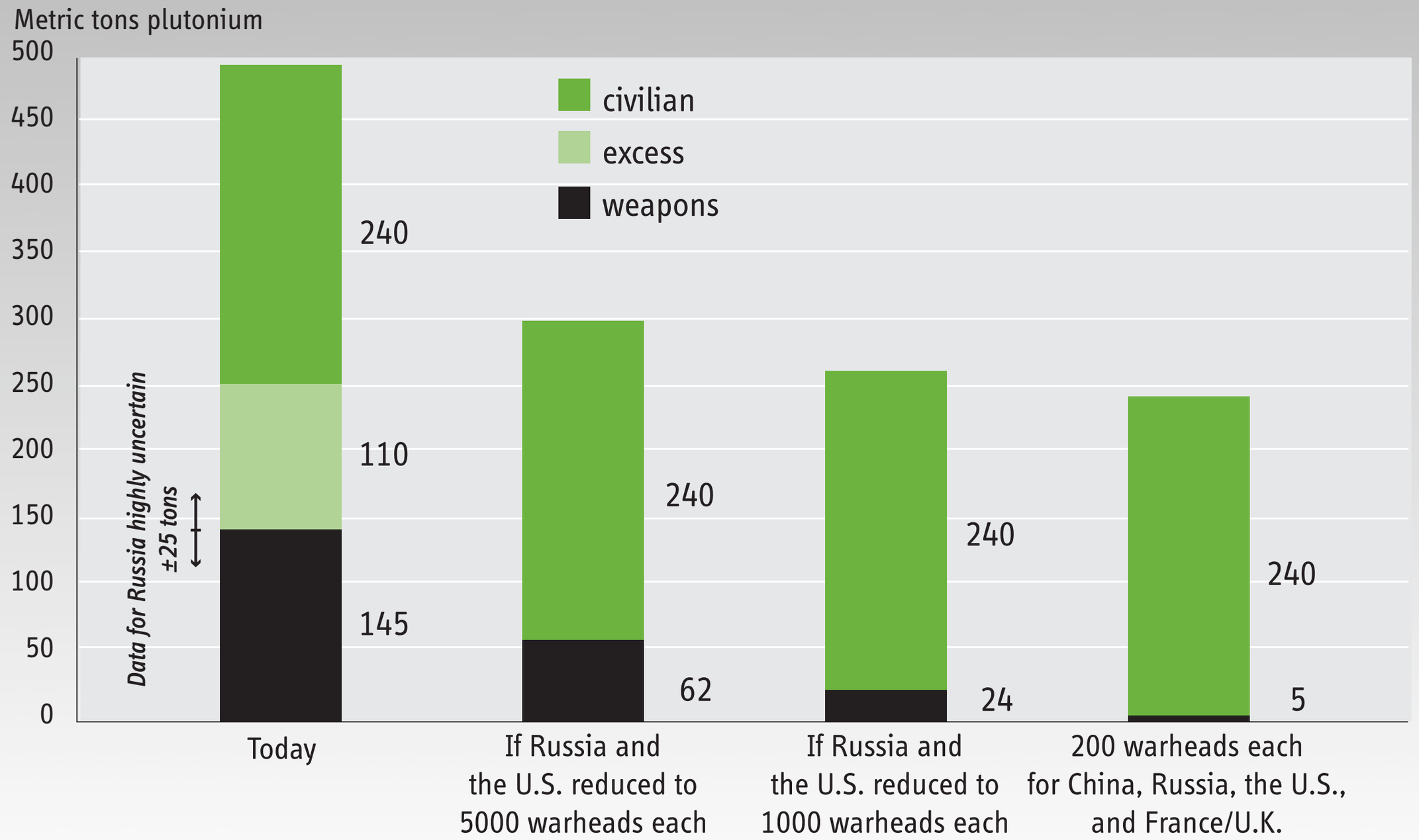




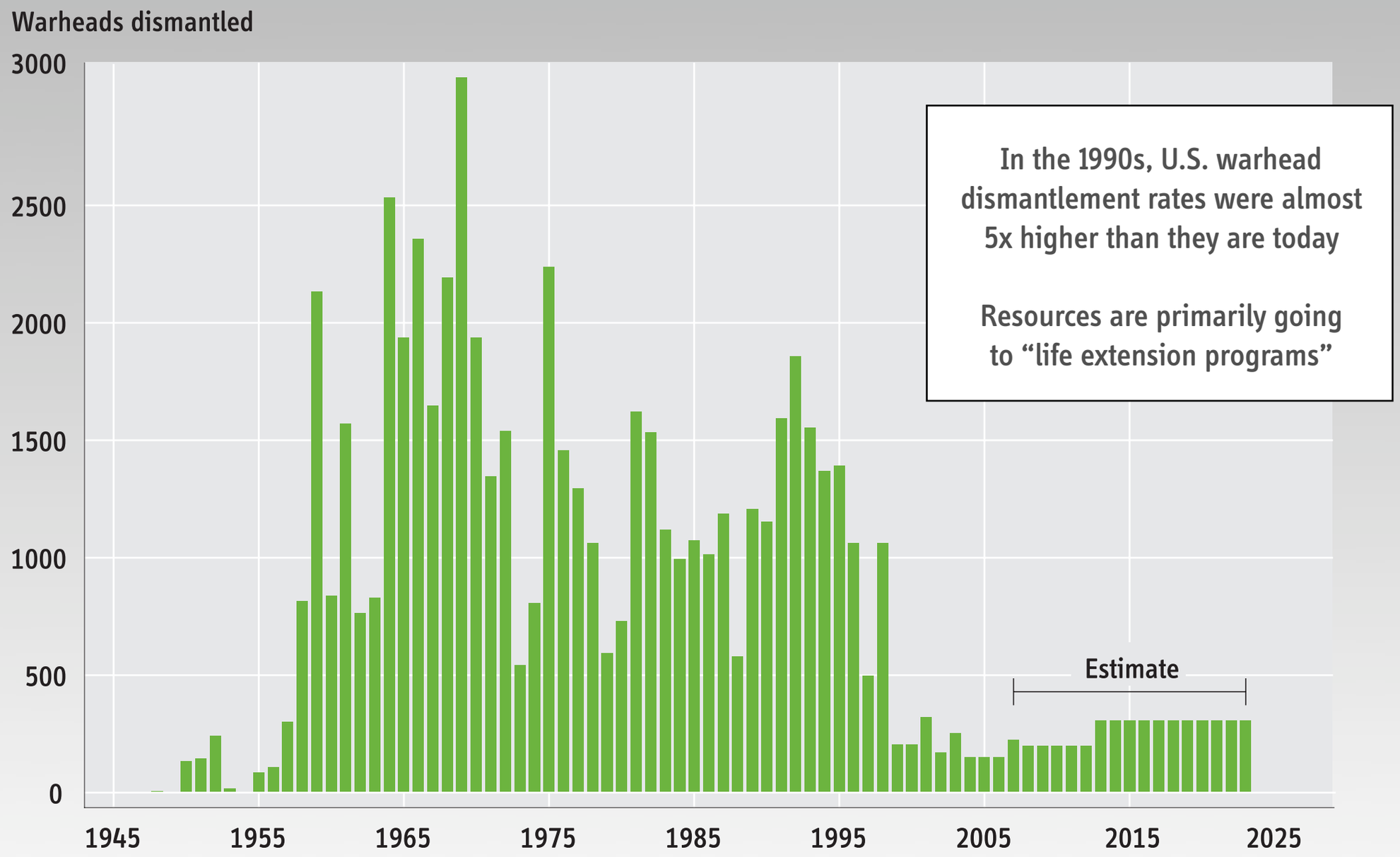
More than 140 kg of weapon-grade plutonium will be produced annually in the blankets of the Indian Prototype Fast Breeder Reactor
If used for the weapons program, this would correspond to a five-fold increase of India's plutonium production capacity

Pakistan's new reactor projects (Khushab-2 and -3) would at least triple current plutonium production rates

Scope for Warhead and Plutonium Stockpile Reductions



U.S. Warhead Dismantlement Rate



In the 1990s, U.S. warhead dismantlement rates were almost 5x higher than they are today

Resources are primarily going to "life extension programs"

Conclusion

Existing Fissile Material Stockpiles

Dominated by Russia and the United States

(and still large enough for 20-40,000 nuclear weapons)

Disposition of excess stocks has been slower than anticipated in the 1990s

(with the exception of Russian HEU downblending)

Production of fissile material stopped in the nuclear weapon states of the NPT

Emerging fissile material arms race in South Asia

Roadblocks to Reductions in Fissile Materials and Nuclear Weapons

Global stockpile of fissile material highly uncertain, primarily due to lack of information on Russia

(Example of the U.K. and the U.S. with both plutonium and HEU holdings declared)

Large naval HEU and growing civilian plutonium stockpiles