

# 'Doomsday' ticks closer on nuclear, climate fears

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The Bulletin of Atomic Scientists created the "Doomsday Clock" as a barometer of how close the world is to an apocalyptic end. Global uncertainty on how to deal with the threats of nuclear weapons and climate change have forced the "Doomsday clock" one minute closer to midnight, leading international scientists said Tuesday.

Global uncertainty on how to deal with the threats of nuclear weapons and climate change have forced the "Doomsday clock" one minute closer to midnight, leading international scientists said Tuesday.

"It is now five minutes to midnight," said Allison Macfarlan, chair of the Bulletin of Atomic Scientists, which created the Doomsday clock in 1947 as a barometer of how close the world is to an apocalyptic end.

The last decision by the group, which includes a host of Nobel Prize

winning scientists, moved the clock a minute further away from midnight in 2010 on hopes of global nuclear cooperation and the election of President Barack Obama.

However, Tuesday's decision pushes the clock back to the time where it was in 2007.

"It is clear that the change that appeared to be happening at the time is not happening, not materializing," said co-chair Lawrence Krauss.

"And faced today with the clear and present dangers of nuclear proliferation, climate change and the continued challenge to find new and sustainable and safe sources of energy, business as usual reigns the norm among world leaders."

The clock reached its most perilous point in 1953, at two minutes to midnight, after the United States and the Soviet Union tested thermonuclear devices within nine months of one another.

It was a far-flung 17 minutes to midnight in 1991 after the two signed the long-stalled Strategic Arms Reduction Treaty (START) and announced further unilateral cuts in tactical and strategic nuclear weapons.

Increasing nuclear tensions, refusal to engage in global action on climate change, and a growing tendency to reject science when it comes to major world concerns were cited as key reasons for the latest tick on the clock.

The nuclear accident at Japan's Fukushima plant also highlighted the volatility of relying on nuclear power in areas prone to natural disasters, scientists said.

Robert Socolow, a member of the BAS science and security board and

professor of mechanical and aerospace engineering at Princeton University, said a common theme emerged in the scientists' talks this year.

He cited a "worrisome trend, notably in the United States but in many other countries, to reject or diminish the significance of what science says is the characteristic of a problem."

"The world is in a pickle. Many people want to live better than they live now on a planet of finite size," he added.

The group said it was heartened by a series of world protest movements, including the Arab spring, the global Occupy demonstrations and protests in Russia which show people are seeking a greater say in their future.

However, there is plenty of uncertainty in the nuclear realm, and even a renewed START deal between Russia and the United States has not achieved the progress scientists would like, said BAS board member Jayantha Dhanapala.

"At a time when there are going to be elections in the United States, in Russia, in France, and a change of leadership in China, there is some uncertainty therefore about the nuclear weapons programs of these countries and the policies that the new leadership will follow," said Dhanapala, a former UN under-secretary general for disarmament affairs.

"The world still has approximately over 20,000 deployed nuclear weapons with enough power to destroy the world's inhabitants several times over," he added.

"We also have the prospect of nuclear weapons being used by terrorists

and non-state actors and therefore the problem of nuclear weapon use either by accident or by design.... remains a very serious problem."

Executive director of the group, Kennette Benedict, highlighted the dangers of a continued world reliance on fossil fuels, noting that power plants built in this decade will spew pollution for the next 50 years.

"The global community may be near a point of no return in efforts to prevent catastrophe from changes in the Earth's climate," she said.

"The actions taken in the next few years will set us on a path that will be extremely difficult to redirect."

Krauss added that the Fukushima nuclear disaster in Japan has reminded scientists of the risks of trading one form of energy for another in a risky environment.

"With damage to a nuclear reactor in Japan, the complex issue of the relationship between nuclear reactors, nuclear weapons and sustainable energy production without global warming has become even more complex."

## **Towards midnight: Doomsday clock since 1947**

The movements of the symbolic Doomsday Clock, set up by The Bulletin of the Atomic Scientists, a prominent group of international scientists, together with reasons cited.

- 1947: Seven minutes to midnight

The clock first appears as a symbol of nuclear danger.

- 1949: Three minutes to midnight

The Soviet Union explodes its first atomic bomb.

- 1953: Two minutes to midnight

The United States and the Soviet Union test thermonuclear devices within nine months of one another.

- 1960: Seven minutes to midnight

Growing public understanding that nuclear weapons made war between the major powers irrational amid greater international scientific cooperation and efforts to aid poor nations.

- 1963: Twelve minutes to midnight

The US and Soviet signing of the Partial Test Ban Treaty "provides the first tangible confirmation of what has been the Bulletin's conviction in recent years -- that a new cohesive force has entered the interplay of forces shaping the fate of mankind."

- 1968: Seven minutes to midnight

France and China acquire nuclear weapons; wars rage in the Middle East, the Indian subcontinent, and Vietnam; world military spending increases while development funds shrink.

- 1969: Ten minutes to midnight

The US Senate ratifies the Nuclear Non-Proliferation Treaty.

- 1972: Twelve minutes to midnight

The United States and the Soviet Union sign the first Strategic Arms

Limitation Treaty and the Anti-Ballistic Missile Treaty.

- 1974: Nine minutes to midnight

SALT talks reach an impasse; India develops a nuclear weapon.

- 1980: Seven minutes to midnight

The deadlock in US-Soviet arms talks continues; nationalistic wars and terrorist actions increase; the gulf between rich and poor nations grows wider.

- 1981: Four minutes to midnight

Both superpowers develop more weapons for fighting a nuclear war. Terrorist actions, repression of human rights, and conflicts in Afghanistan, Poland and South Africa add to world tension.

- 1984: Three minutes to midnight

The arms race accelerates.

- 1988: Six minutes to midnight

The United States and the Soviet Union sign a treaty to eliminate intermediate-range nuclear forces; superpower relations improve; more nations actively oppose nuclear weapons.

- 1990: Ten minutes to midnight

The Cold War ends as the Iron Curtain falls.

- 1991: Seventeen minutes to midnight

The United States and the Soviet Union sign the long-stalled Strategic Arms Reduction Treaty (START) and announce further unilateral cuts in tactical and strategic nuclear weapons.

- 1995: Fourteen minutes to midnight

Further arms reductions stall while global military spending continues at Cold War levels. Risks of nuclear "leakage" from poorly guarded former Soviet facilities increase.

- 1998: Nine minutes to midnight

India and Pakistan "go public" with nuclear tests. The United States and Russia cannot agree on further deep reductions in their nuclear stockpiles.

- 2002: Seven minutes to midnight

The United States rejects a series of arms control treaties and announces it will withdraw from the Anti-Ballistic Missile Treaty. Terrorists seek to acquire and use nuclear and biological weapons.

- 2007: Five minutes to midnight.

North Korea's recent test of a nuclear weapon, Iran's nuclear ambitions, a renewed emphasis on the military utility of nuclear weapons," and the continued presence of 26,000 US and Russian nuclear weapons are cited.

- 2010: Six minutes to midnight.

President Barack Obama is hailed for helping to pull the world back from nuclear or environmental catastrophe, and leaders of nuclear weapons states are cooperating to reduce their arsenals for the first time

since 1945.

- 2012: Five minutes to midnight.

Global failure to take action against climate change, mounting nuclear tensions and an increasing tendency to reject science are cited as reasons for moving the clock.

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