



Breaking Down the Iran Nuclear Deal

by Shelley Brooks, Ph.D.



There has been a lot of recent talk in the news about Iran and a nuclear deal. President Trump doesn't like the deal, which was negotiated under President Obama's administration. In 2015, the Joint Comprehensive Plan of Action (JCPOA) came into effect to keep Iran from developing **nuclear weapons** in exchange for a gradual relief from **sanctions** that have crippled its economy.



Iranian President Hassan Rouhani and Head of the Atomic Energy Organization of Iran (AEOI) Ali Akbar Salehi in Bushehr Nuclear Plant. Source: Tasnim News Agency. All Content by Tasnim News Agency is licensed under a Creative Commons Attribution 4.0 International License. January, 2015. Accessed: [https://commons.wikimedia.org/wiki/File:Rouhani_and_Salehi_in_Bushehr_Nuclear_Plant_\(1\).jpg](https://commons.wikimedia.org/wiki/File:Rouhani_and_Salehi_in_Bushehr_Nuclear_Plant_(1).jpg)

What exactly is the Joint Comprehensive Plan of Action (JCPOA)?

The JCPOA resulted from many years of diplomatic effort, and was signed in 2015 by authorities from the five permanent member countries of the **United Nations Security Council** (the United States, Russia, China, Britain, and France) as well as Germany and Iran. The JCPOA came about because the United Nations Security Council was concerned that Iran was developing nuclear weapons through its nuclear program (and not just nuclear energy for electricity). These weapons could be particularly problematic given that Iran has political enemies among neighboring countries in the Middle East, and given that Iran sponsors groups considered terrorist by many in the international community.

The JCPOA allows for the International Atomic Energy Agency to regularly monitor and report on Iran's nuclear program over the next 10-15 years to make sure that Iran is not developing weaponry. The deal also requires Iran to get rid of much of the equipment and materials necessary for building nuclear weapons. Iran agreed to these terms in exchange for economic gains, like being able to sell oil once again to Europe. As Iran meets its obligations listed under the deal, more sanctions are removed. In turn, the JCPOA provides the potential for economic consequences to snap back into place against Iran if the monitoring reveals that Iran looks to be building nuclear weaponry.

Why is the JCPOA in the news today?

In the United States, the JCPOA is a non-binding political commitment, meaning that the participating countries are not bound to the agreement under international law. Nor is the JCPOA an **executive agreement** or a **treaty** approved by Congress. In 2015, when the Obama administration presented the JCPOA to Congress, Congress was split on how to handle it. Though some believed it was the best way to prevent Iran from developing nuclear weapons, others believed that the plan was weak for not preventing Iran from developing nuclear weapons after the deal ends in fifteen years. Some also criticized the plan for allowing Iran to keep ballistic missiles that could be used for long range attacks. In response, Congress created a plan that required the U.S. President to certify, or report, every ninety days that Iran is going along with its part of the deal.

While the international monitoring agency has shown Iran to be in compliance with the terms of the deal over the past two years, President Trump, who has always believed the JCPOA is flawed and not in the security interest of the United States, chose in October not to certify. This does not mean that the deal has fallen apart. Trump's national security advisors, as well as members of the United Nations Security Council, have urged Trump not to remove the United States from the deal. They argue that the deal is still the best way to keep Iran from developing nuclear weaponry. Trump has left it to Congress to decide whether to comply with the deal (which creates conditions that allow Iran to purchase billions of dollars of American-built aircraft), or to reinstate sanctions that had been rolled back. In order to continue to comply with its end of the deal, the U.S. will need to remove another layer of sanctions in January 2018.



Key Terms

Climate Change—changes in the Earth's weather patterns, including long-term temperature changes.

Executive agreement—an international agreement that is not submitted to the U.S. Senate.

Fossil fuels—fuels such as coal, oil, and natural gas, formed from the remains of plants and animals that lived millions of years ago. This is a finite, non-renewable energy source that is not distributed evenly across the Earth. Some countries contain large supplies, some very little.

Greenhouse gases—gases that result from the burning of fossil fuels for industry, energy, and transportation, and trap heat in the atmosphere that contributes to rising temperatures and weather extremes. Carbon dioxide is one such gas, as is methane and chloro-fluorocarbons (CFCs).

Nuclear weapons/energy—atoms, which make up all matter on Earth, can be split. The center of the atom is called the nucleus. When an atom (and its nucleus) is split, pure energy is created, which can be used to create weaponry and energy/electricity.

Nuclear radiation—nuclear radiation, when properly contained, creates energy (and can be used to generate electricity, for instance), but if this radiation is released into the environment it contains light waves and particles that are dangerous and even deadly to people and other living things.

Sanctions—the United Nations, the United States, and European countries created sanctions, or consequences, for Iran as a form of protest against Iran's build-up of its nuclear capability. These included freezing Iranian money in foreign banks, or blocking sales to or from Iran of commercial products.

Treaty—According to the U.S. Constitution, a treaty is an agreement that has been made "by and with the Advice and Consent of the Senate." Internationally, however, a treaty is a legally binding agreement between nations.

United Nations Security Council—has primary responsibility for maintaining international peace and security.



Postage stamp, 1955. https://commons.wikimedia.org/wiki/File:Atoms_for_Peace_stamp.jpg

Atoms for Peace

The United States and Iran have not always been in conflict, and actually have a history of cooperating over nuclear energy during the mid-twentieth century. Iran in fact began its nuclear operations in 1957 as part of the Atoms for Peace Program built under President Eisenhower. Though the United States developed a nuclear program during WWII in its quest to create powerful weaponry, Eisenhower, like many leaders, was eager to apply nuclear energy to promoting economic growth in the post-war era. Soon, many countries around the world, including Iran, sought to use nuclear energy to generate electricity. Under the Atoms for Peace Program, Iran accepted materials, fuel, and scientific training from the United States in exchange for a commitment to pursue nuclear energy, not weaponry. By 1973, Iran was one of seventeen countries developing energy from nuclear power.

Why Nuclear Power?

Advocates of nuclear energy point out its advantages, such as the ability to produce large amounts of electricity without the use of **fossil fuels**. Nuclear power relies on uranium, a common element, which is appealing to countries that depend on foreign supplies of fossil fuels for much of their electricity. Nuclear power is also often seen as more environmentally friendly than coal, a common fuel burned to create electricity. Burning coal, and other fossil fuels, releases **greenhouse gas emissions** that trap heat in the Earth's atmosphere. In contrast, harnessing nuclear energy does not require the burning of fossil fuels. This makes nuclear energy appealing in an era of **climate change** awareness.



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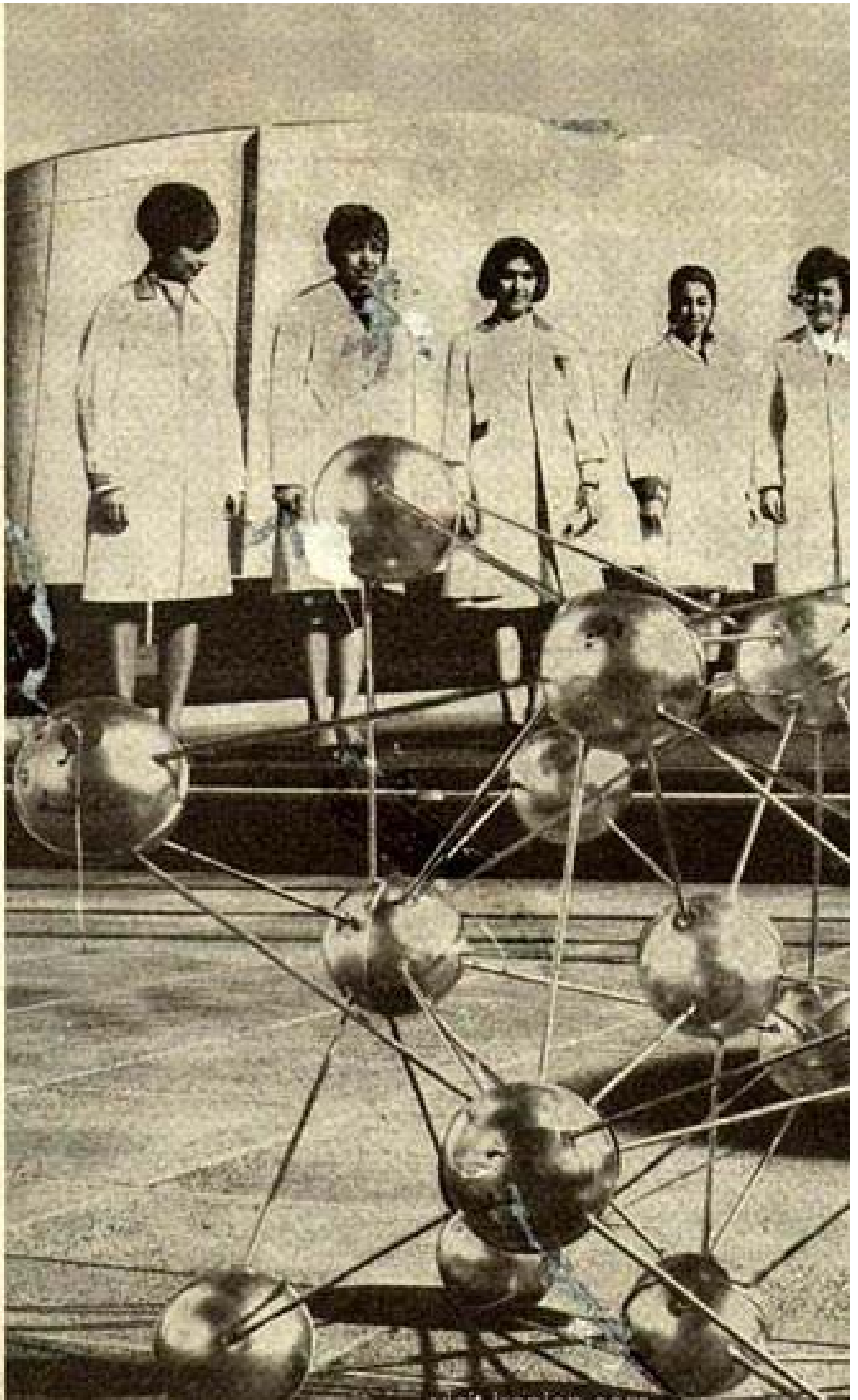
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دکتر زهره طالبی زاده



Iranian newspaper clipping from 1968 reads: "A quarter of Iran's Nuclear Energy scientists are women." The picture shows female Iranian PhDs posing in front of Tehran's research reactor. https://commons.wikimedia.org/wiki/File:Atomic_women_Iran.JPG.

Drawbacks to Nuclear Power

Critics of nuclear energy, however, point out that nuclear plants are extremely expensive to build and maintain compared to other energy sources. Beyond economic concerns, critics also highlight the potential health and environmental risks associated with nuclear energy. There have been a number of major accidents at nuclear power plants that released dangerous **nuclear radiation** into the nearby environment.

Chernobyl, located in present-day Ukraine, is a prime example of this. In 1986, a nuclear power plant outside of this city exploded and killed thirty people within a few weeks. Thousands of other people developed cancer as a result of the radiation exposure. But this was not the total extent of the damage. The Exclusion Zone - an area of one thousand square miles surrounding the Chernobyl power plant - is so contaminated with radiation that its environment is forever compromised and unfit for communities. Even without an accident, the very process of creating nuclear energy generates the most toxic, long-lasting and life-endangering leftover waste. Nuclear waste is often buried deep underground to limit its ability to contaminate communities and landscapes. But, for over thirty years, nuclear waste was often dumped into the ocean. Only in 1982 did the international community agree on how to properly dispose of nuclear waste.

Nuclear Energy Today and in the Future

Today, more than thirty countries operate nuclear power plants, and these plants generate about 11% of the world's electricity. Meanwhile, nine countries have nuclear weapons, with Russia's and the United States' arsenal accounting for more than 90% of the world's supply. Iran is therefore far from alone in its desire and ability to create nuclear energy, and potentially weaponry. Nuclear weapons, as well as nuclear waste and accidents, all take a serious toll on the environment. Of course, so does the most common form of energy production - the burning of fossil fuels.

The JCPOA, and the 1968 Treaty on the Non-Proliferation of Nuclear Weapons, are aimed to limit the chances that nuclear radiation will spread as a result of warfare. But nuclear power, an energy that first emerged as a weapon, is now an important part of the global energy matrix. Relevant questions today ask whether the demand for nuclear energy will only increase alongside a growing global population and economy? Or, will the economic costs associated with nuclear energy, as well as its health and environmental risks, cause it to lose ground to renewable energies (such as wind and solar) as they become more efficient and affordable?

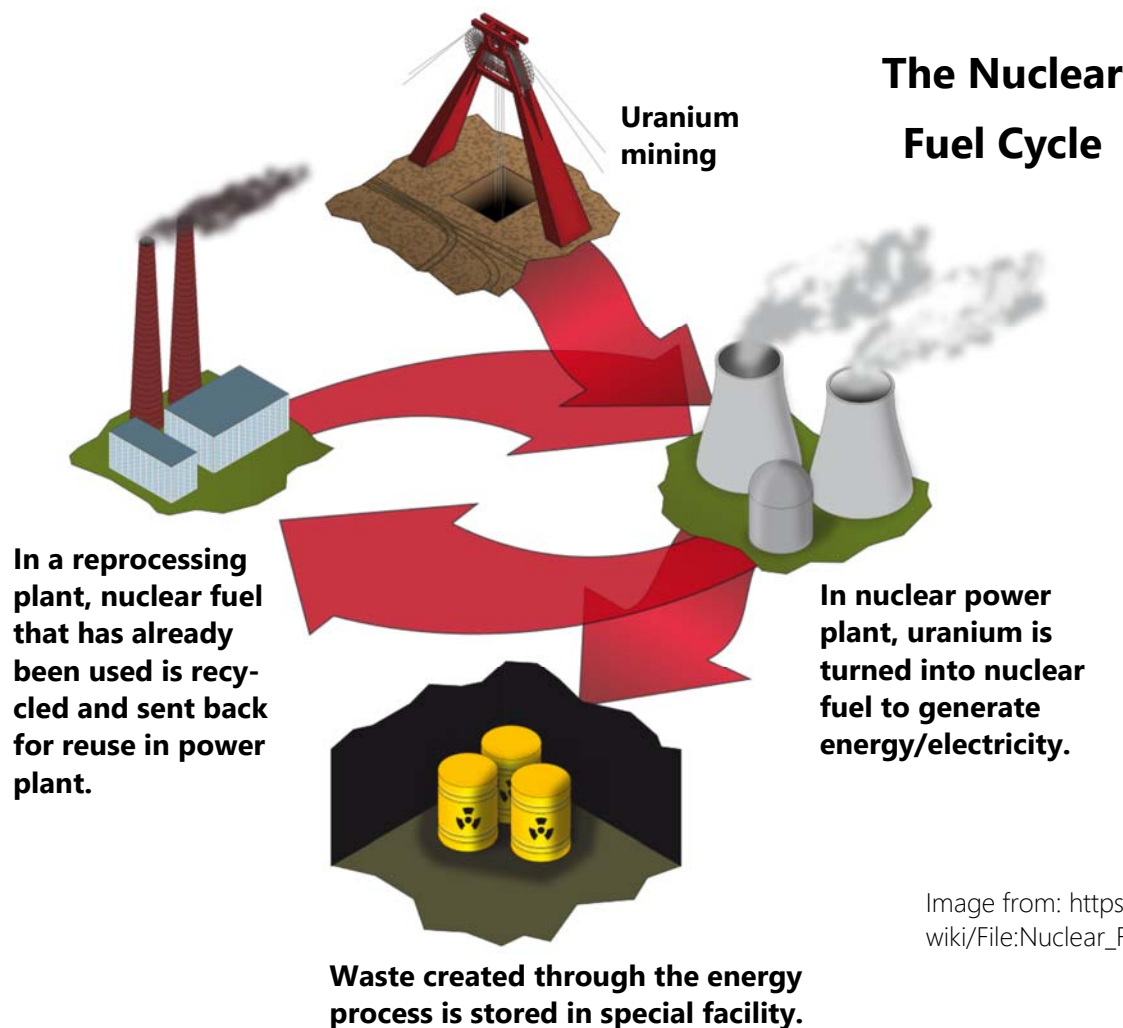


Image from: https://commons.wikimedia.org/wiki/File:Nuclear_Fuel_Cycle.svg

A Brief Timeline of Nuclear Energy

Nuclear Weaponry

1942 – The United States begins a project to build nuclear weapons, called the Manhattan Project

1945 – The United States drops two nuclear bombs on Japan to end WWII

1949 – The Soviet Union explodes a nuclear weapons. The United States and the Soviet Union become enemies in the Cold War, with both sides capable of nuclear warfare.

Nuclear Energy/Electricity

1951 – Nuclear energy first used to create electricity

1957 – A nuclear plant in California is the first to produce power for commercial purposes

1957 – Iran joins the U.S. Atoms for Peace Program, receiving materials and training for producing nuclear energy

1984 – Nuclear energy becomes the second largest producer of electricity, after coal, in the United States

2017 – Nuclear energy provides around 11% of the world's electricity

Nuclear Accidents

1979 – Three Mile Island nuclear plant accident in Pennsylvania causes no deaths, but creates considerable public opposition to generating nuclear energy in the United States

1986—Chernobyl nuclear accident in the Soviet Union (present-day Ukraine) kills thirty people and sickens thousands; devastates the landscape

2011—Fukushima nuclear accident in Japan due to earthquake and tsunami; no deaths

Politics & Diplomacy

1953 – President Eisenhower establishes the Atoms for Peace Program, an international agency focused on creating peaceful uses for nuclear energy

1957 – The International Atomic Energy Agency (IAEA) forms to promote the use of nuclear energy for peaceful purposes and to limit the use of nuclear weapons

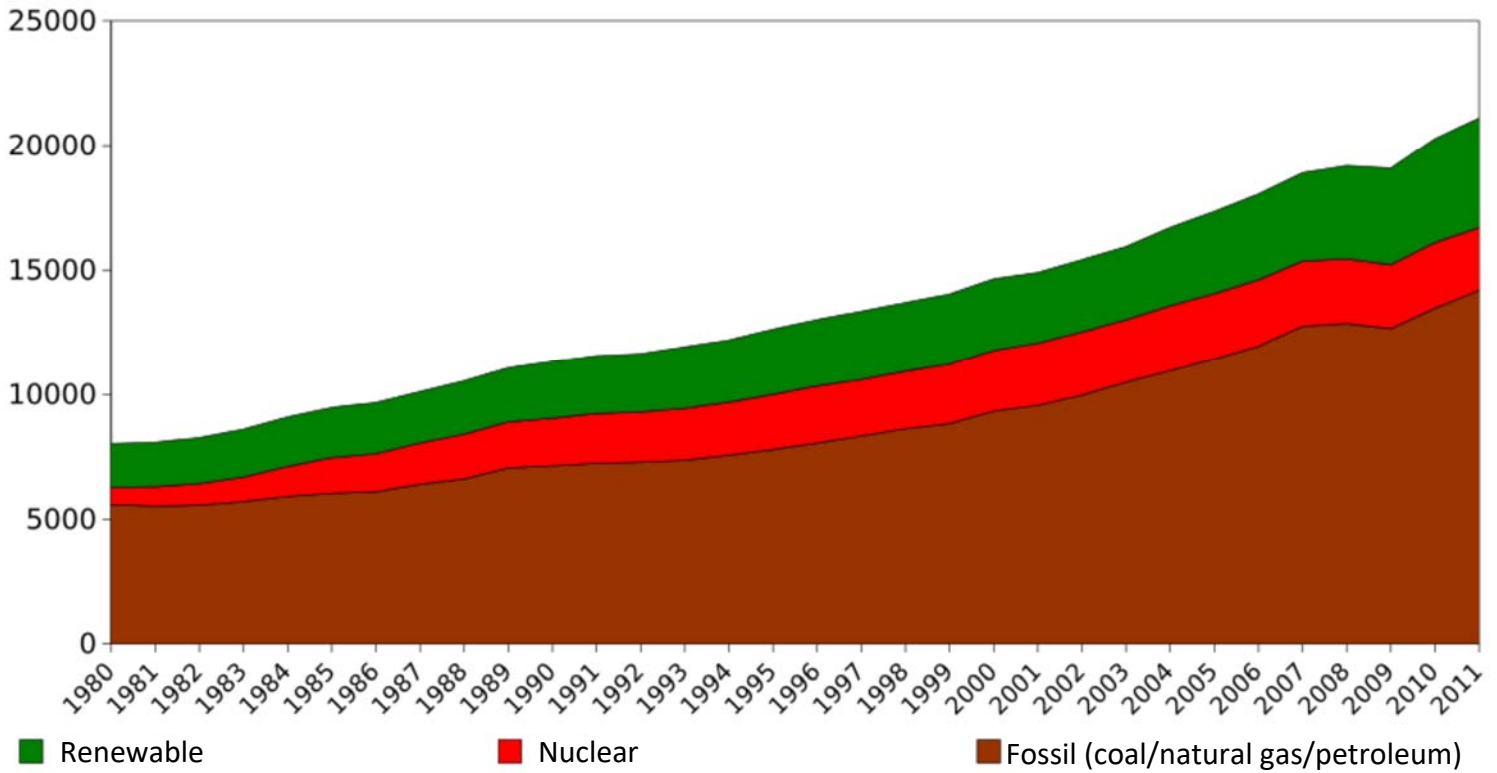
1968 – The Treaty on the Non-Proliferation of Nuclear Weapons is adopted to stop the spread of nuclear weapon capabilities. The Soviet Union, the United States, and Iran all sign.

1973 – The Arab Oil Embargo stopped the sale of oil from many oil-producing countries to the United States, prompting the United States to turn increasingly to nuclear energy

1979 – Iranian Revolution deposes U.S.-supported Shah of Iran; U.S. ends nuclear support to Iran; Iran receives nuclear support from other countries

2015 – After twenty months of negotiations, the Joint Comprehensive Plan of Action signed by Iran, the United States, Britain, France, China, Russia, and Germany

Amount of Electricity Created Each Year in the World, measured in TerraWatt hours



Classroom discussion questions (for graph, timeline, and background reading):

- What do you notice about the amount of electricity used in the world over the period 1980 to 2011?
- The total world population grew from 4.4 billion in 1980 to 6.9 billion in 2011. What other factors do you think contributed to the growth in the amount of electricity generated in the world during this period?
- What do you think are the advantages and disadvantages of increasing the amount of electricity available to the world?
- Given that nuclear power exists, how do you believe nuclear energy and nuclear weaponry should be monitored, regulated, and used?
- Do the benefits of nuclear energy outweigh its drawbacks?

Graph from: <https://commons.wikimedia.org/w/index.php?curid=14706243>

Additional Resources

Education and the Environment Initiative (EEI) Connections <http://www.californiaeei.org/>

A program of CalRecycle's Office of Education and the Environment, EEI lessons are designed to foster environmental literacy among California students. The EEI collection includes a variety of lessons that support learning on the topic of fire and human history, including connections to industrialization, fossil fuels, and climate change.

- 11.8.6. [Postwar Industries and the Emerging Environmental Movement](#), Lesson 3, "Tracking the Postwar Industrial Boom"
- 11.11.5. [Many Voices, Many Visions: Analyzing Contemporary Environmental Issues](#), Lesson 6, "The Role of Advocacy in a Democracy" (note: while this lesson does not directly deal with nuclear energy, it provides students with the opportunity to learn about historic controversies over environmental issues, and the role of advocacy groups in these controversies).

The History Blueprint, a CHSSP initiative <http://chssp.ucdavis.edu/programs/historyblueprint>

The *History Blueprint* is designed to provide educators research-based and Standards-aligned resources to develop student critical thinking, literacy skills, and historical content knowledge.

- Cold War America #3: [Anti-Communism at Home](#), Containing Nuclear Power
- Cold War World/America #5: [The End of the Cold War \(1979-1991\)](#), Nuclear Fear

Suggested reading:

Nuclear Power and the Environment, edited by RM Harrison, RE Hester. Royal Society of Chemistry, 2011.

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