**Plano West affirms Resolved: The United States should increase its use of nuclear energy for commercial energy production**

# C1 is empowering the world

#### Many developing nations lacks access to energy

[DiChristopher 19](https://www.cnbc.com/2019/02/14/bp-forecast-sees-renewables-and-natural-gas-dominating-energy.html)

BP forecasts that **the world’s energy demand will grow by a third through 2040**, driven by rising consumption in China, India and other parts of Asia. About 75 percent of that increase will come from the need to power industry and buildings. At the same time, energy demand will continue to grow in the transportation sector, but that growth will slow sharply as vehicles become more efficient and more consumers opt for electric cars. But despite the increase in supply, BP thinks **[since] two-thirds of the world’s population will still live in places with relatively low energy [access] consumption per head.****The takeaway:  the world will need to generate more energy**. Throughout most of that time, the world will continue to consume more oil year after year, until demand ultimately peaks around 108 million barrels per day in the 2030s. This year, OPEC expects global oil demand to reach 100 million bpd.

#### As a result

Jennifer T. **Gordon 20**, 1-9-2020, "International co-financing of nuclear reactors between the United States and its allies," Atlantic Council, <https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/international-co-financing-of-nuclear-reactors-between-the-united-states-and-its-allies/> //BW

As of October 2019, **thirty countries [are] were “considering**, planning or**starting” nuclear power programs**.4 Many of these are not members of the Organisation for Economic Co-operation and Development (OECD), and they are interested in acquiring civil nuclear capabilities, in large measure, to meet their anticipated increase in electricity demand.5 Advanced nuclear technologies, like small modular reactors (SMRs) with capacities up to 300 megawatts (MW), are often especially appealing in emerging markets where the need for reliable zero-carbon energy is pronounced, but current grid structures cannot support large light-water reactors (LWRs).6 **Growing demand in traditional and emerging markets for advanced reactors represents an opportunity for the United States to export new nuclear technologies** and regain a global leadership position.

**Unfortunately,**

François **Lévêque 14**, 12-30-2014, "The international trade of&nbsp;nuclear power plants: the&nbsp;supply side," No Publication, <https://journals.openedition.org/rei/5927?lang=en> //BW

On the supply side**,[while] the US [once] dominated the international market for many years.** Until the mid-1970s three-quarters of the plants built elsewhere, were either built by US firms or under licence (Piram, 2009). But **this dominant position [has] subsequently crumbled [and now].** Its share has dropped to less than a quarter of all the reactors built in the past 20 years. By value**, the US accounts** (US GAO, 2010**) for less than 10% of global exports of nuclear** **equipment** (reactors, large components and small parts), and about 10% of materials (natural uranium and plutonium).

**The revitalization of the US nuclear industry would reverse this trend in multiple ways**

## Enabling research and development, or R&D

Van Anh **Vuong 16 World Economic Forum ,** 5-6-2016, "This is how research and development improve profitability," World Economic Forum, https://www.weforum.org/agenda/2016/05/this-is-how-research-and-development-improve-profitability

**Firms in a strong financial position may** thus **have a better chance of both successfully innovating and exploiting the economic returns to their innovations** than those in a weak financial position. **As a result**, **the[y]** former **would have a higher return to [R&D] research and development investment and [are] be more likely to invest.**

#### As revenue increases, nuclear manufacturers invest more money in R&D leading to innovation

Jessica **Lovering 17**, 3-22-2017, "How to Make Nuclear Innovative," Breakthrough Institute, https://thebreakthrough.org/articles/how-to-make-nuclear-innovative

The report draws on lessons from some of the most innovative industries in today’s economy. The recent successes of these sectors—wide-body aircraft, pharmaceuticals, commercial spaceflight, and unconventional gas exploration—indicate that a networked, bottom-up,**[this]****privately led model would propel innovation and commercialization in the nuclear industry, allowing it to tap into the vast potential of the start-ups, national laboratories, universities, and venture capital that underpin innovation in the United States.**

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#### Innovation and developing advanced reactors is the best way to increase nuclear energy exports

Suzanne **Baker 17**, 1-10-2017, "Getting Back In The Game: A Strategy To Boost American Nuclear Exports," Third Way, https://www.thirdway.org/report/getting-back-in-the-game-a-strategy-to-boost-american-nuclear-exports

Innovation has long been America’s greatest advantage over our global competitors. We win by delivering products that disrupt old markets and open up new ones. We lose, however, when we rest on previous successes. From cell phones to solar modules, U.S. industries have pioneered countless high-value technologies that were ultimately replicated by foreign manufacturers who could undercut the cost and overtake the market. We are beginning to see this same pattern play out with the LWR technologies that allowed the U.S. to reap huge financial benefits and shape global standards for decades. **If [the US is] we are going to succeed in theis very lucrative [global] market in the long-term, we have [it has] to keep inventing better nuclear technologies that consumers will want**—and competitors will want to copy.**But to get [new reactors]**SMRs **ready for export abroad, the U.S. must first demonstrate readiness at home. Vendors have to gain experience with licensing and constructi[on]ng** SMRs **so that the U.S. nuclear supply chain remains robust**. The U.S. Department of Energy (DOE) is essential to this mission and has supported the development of SMR technology through the SMR Licensing Technical Support (LTS) Program. They are now working with companies to accelerate the licensing and siting process. DOE’s SMR development efforts are making great progress, and they should be continued and expanded to assist with manufacturing, assembly, and operation of SMRs at home and for export. A substantial ramp up of federal funding for SMRs beginning in fiscal year 2018 will ensure that U.S. technologies reach the global market ahead of our competitors and lock-in a significant amount of lucrative long-term contracts.

## Manufacturing Revival

François **Lévêque Continues**, 12-30-2014, "The international trade of&nbsp;nuclear power plants: the&nbsp;supply side," No Publication, <https://journals.openedition.org/rei/5927?lang=en> //BW

Indeed it has become a net importer, amounting to $15 billion a year. Meanwhile Canada, Russia and France have increased their market share (Finon, 2014). The first two export their proprietary reactor technology; France too, though its technology was originally derived from US imports. South Korea recently joined the nuclear exporters’ club, taking a similar route gradually to achieve technological independence (Nam, 2013). Japan is poised to do likewise. Its nuclear engineering companies have responded to calls to tender by new entrants such as Turkey and Vietnam. Former General Electric and Westinghouse licensees, they have gone further than their French and Korean counterparts, purchasing the nuclear assets of the two US companies2.**The decline in US nuclear sales abroad is not due to the arrival of more powerful competitors, [but] rather to the collapse of domestic demand. From the mid-1970s to the end of the 2010s not a single contract was signed for a new nuclear power plant in the US.**Engineering firms have had to weather more than 30 years without any domestic demand, preceded by years of uncertain profits sapped by the vicissitudes of regulatory pressure, with a major accident in 1979 (Three Mile Island) to crown it all (Joskow & Parsons, 2009). Enough to floor any industrial operation. **The decline at home led to [causing] a massive loss of industrial capacity and skills in enrichment, the manufacture of large forged parts and construction engineering.** On the other hand reactor R&D and design has survived and is still of first-class quality. The first new reactors to be built on US soil are Westinghouse AP 1000s. In 2006 China ordered four of these innovative next-generation reactors. General Electric has developed advanced boiling-water reactors too. So the US still features in new nuclear and the international market thanks to innovation and technology transfer. Westinghouse now sells brainpower rather than equipment. It is still earning money thanks to licence fees. For example it received its share of fees on the construction of the four Kepco reactors in the UAE (Berthélemy & Lévêque, 2011). The export version of this reactor still contains parts which belong to Westinghouse, including the software which controls the nuclear chain reaction in the reactor core. In short, the nuclear industry still operating in the US no longer comprises many factories and is partly controlled by Japanese firms, but it is still alive and profitable.

**This is why revitalizing the domestic nuclear industry would enable the US to reestablish factories and engineering capabilities needed to build reactors for export.**

## Standardization

**Current US nuclear plants suffer from a lack of consistent standards**

Jennifer T. **Gordon Continues**, 1-9-2020, "International co-financing of nuclear reactors between the United States and its allies," Atlantic Council, <https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/international-co-financing-of-nuclear-reactors-between-the-united-states-and-its-allies/> //BW

The Bulletin of the Atomic Scientists has argued, “**in the United States, new nuclear plants var[y]ied significantly in design,** due to the continual incorporation of new technological advancements—and also **because of differences in location, layout, climate conditions, and cooling method**s.”33 It is likely that, **[However,] as advanced reactor companies** establish agreements with the US Department of Energy and utilities—and especially as these companies **bring their reactors to demonstration and commercialization—there will be an increase in standardization or, at the very least, [and] fewer reactor types to license and site.**

**Standardizing nuclear designs reduces costs and improves quality**

Richard **Nephew 17** Columbia University https://energypolicy.columbia.edu/sites/default/files/The%20Geopolitics%20of%20Nuclear%20Power%20and%20Technology%20033017.pdf

This last point bears particular mention: **with** down-selecting and **a more harmonized list of nuclear reactor designs, it would also be easier for nonproliferation, safety, and security standards to be developed and enforced because they will all cover (more or less) the same standard facilities**. **This has great potential for reducing some of the various safety and security risksthat exist with nuclear facilities,** but it also has the potential to address the problem of fairness and equal treatment

**This solves back for the limitations preventing exports now**

Richard **Nephew Continues** Columbia University https://energypolicy.columbia.edu/sites/default/files/The%20Geopolitics%20of%20Nuclear%20Power%20and%20Technology%20033017.pdf

Nuclear power might yet fulfill the sense of promise that pervaded the 1950s and 1960s in regard to nuclear power as the energy source of the future, but a combination of policy decisions would be necessary to achieve this vision. **To date, geopolitical competition, economic factors, and [these] safety concerns have limited the reach of nuclear power.** New geopolitical forces—such as the challenges of development and climate change—could reshape the international playing field for nuclear energy’s benefit, and policy makers around the world will need to decide whether they wish to invest in such an effort.

**However, nations will be more willing to purchase these safer, standardized reactors.**

## 4. Global Leadership

**Becoming a global leader in nuclear energy encourages other nations to adopt nuclear power as well**

Daniel B. **Poneman 19**, 5-24-2019, "We Can’t Solve Climate Change without Nuclear Power," Scientific American Blog Network, https://blogs.scientificamerican.com/observations/we-cant-solve-climate-change-without-nuclear-power/

The existential threat of nuclear annihilation did not go away when the Cold War ended, and now we face a second existential threat from climate change. **In the face of [existential threat from climate change]** these twin [this] threats, **American nuclear leadership is as critical** in 2019 as it was in 1954. The threat of nuclear proliferation abroad should not lead us to abandon nuclear energy at home. Indeed, **American nuclear leadership has always been critical to guiding the safe, responsible use of civilian nuclear energy around the world.**

#### **This is because US action in reducing emissions results in global action**

**Spitz 16** – internally citing a climate conference co-organised by the Global Climate Network which consists of nine think tanks around the world, including CAP, that cooperate on addressing issues related to clean energy and global warming – conference included/article cites 10 experts, including: Arabinda Mishra, director of the Climate Change Division at The Energy Resources Institute in India AND Andrew Light - CAP Senior Fellow AND Jiahua Pan, executive director of the Research Centre for Sustainable Development at the Chinese Academy of Social Sciences AND Marie Parramon, a sustainability legal specialist at the South African research consultancy IMBEWU AND Andrew Pendleton, senior research fellow at the Institute for Public Policy Research in the United Kingdom [Johnathan, writer for the Global Climate Network, “The world waits on US climate action: GCN panel of climate experts emphasizes importance of US leadership” GCN | May 1st, 2016| <http://www.globalclimatenetwork.info/news/the-world-waits-on-us-climate-action-gcn-panel-of-climate-experts-emphasizes-importance-of-us-leadership/>]

If we look at the Indian scene and look at the actions being taken by state and central governments, it’s a little bit difficult to understand why **it is** so **difficult to get** strong **legislation passed domestically in the United States**, said Arabinda Mishra, director of the Climate Change Division at The Energy Resources Institute in India, at a CAP panel discussion on Thursday. Mishra was joined by y

climate experts from around the world, who described continuing and ambitious efforts to reduce carbon emissions in Europe and the developing world and expressed confusion and dismay at the U.S. Senate’s inability to move such legislation forward. The panel agreed that **convincing action from Congress is necessary to persuade governments and private actors worldwide that** significantly **reducing emissions is both necessary and possible**. CAP Senior Fellow Andrew Light moderated the panel, which was co-organised by the Global Climate Network. The Global Climate Network consists of nine think tanks around the world, including CAP, that cooperate on addressing issues related to clean energy and global warming. Light cited the U.S. Environmental Protection Agency’s report released earlier this summer on the climate legislation proposed by Sens. John Kerry (D-MA) and Joe Lieberman (I-CT). The agency analysis showed that one scenario would provide a 50 percent chance of stabilizing global temperature increases at 2° C by the end of the century—and that’s only if the countries in the Group of 8 fulfill their commitments to reduce emissions by 80 percent by 2050 and the major carbon polluters in the developing world don’t begin aggressively reducing their emissions until 2050. Panelists agreed that **countries** around the world**look to the United States for leadership in reducing emissions**. Jiahua Pan, executive director of the Research Centre for Sustainable Development at the Chinese Academy of Social Sciences, explained that **many** of his compatriots **doubt whether they can achieve continued economic growth as well as significant reductions in emissions without U.S. action**. “If you would do a little more, that would be an encouragement for the Chinese to do a little more. If you would do much better, that would give the Chinese confidence that they can improve their standard of living without increasing carbon emissions,” he said. China has already taken determined and ambitious steps to create a clean energy infrastructure. The country shut down inefficient coal-fired power plants with a total capacity of 60 gigawatts—the size of the entire U.K. electricity system. But, said Pan, if the United States proves unable to significantly reduce its emissions, it would reinforce the lack of confidence among many Chinese that further reductions are possible alongside continued industrialization and urbanization. **American inaction has** also**created uncertainty about** U.S. **intentions internationally**. Marie Parramon, a sustainability legal specialist at the South African research consultancy IMBEWU, explained that her country’s government was preparing to levy a tax on carbon dioxide emissions and that many in the South African private sector are convinced that reducing emissions is necessary to maintain competitiveness in the long term. But **the United States’ failure****to** create a carbon market or **finance the development of clean energy technology is creating anxiety.** South Africans in government and in the private sector are growing hesitant to continue with their efforts on climate change, said Parramon.**If**

#### **If the US does not take action to cut emissions, other countries won’t do so either (**[**🐒**](https://emojipedia.org/monkey/) ***see*** [***🐒***](https://emojipedia.org/monkey/) ***do*)**

Carolyn **Beeler 19**, 9-18-2019, "Top US leadership is 'missing ingredient' in climate change action," Public Radio International, <https://www.pri.org/stories/2019-09-18/top-us-leadership-missing-ingredient-climate-change-action> //BW

**Top US leadership is the 'missing ingredient' in climate change action. “Under the current set of Trump administration policies, the US [will] is on track to achieve only about 14 to 17% emission reductions below 2005 levels in 2025,” Larsen said. The bigger question is how much global ambition to tackle the climate crisis will [fall] flag if the [US] world’s largest historic emitter is no[t] longer leading the push [to cut emissions]. Will [as] countries, seeing the US doing less on climate change, [may] do the same themselves “I completely believe that the missing ingredient this time around is the United States leadership driving climate as a head-of-state agenda,” Strait said.**

## 1st Impact: preventing climate change

Daniel B. **Poneman 19**, 5-24-2019, "We Can’t Solve Climate Change without Nuclear Power," Scientific American Blog Network, https://blogs.scientificamerican.com/observations/we-cant-solve-climate-change-without-nuclear-power/

American leadership in nuclear technologies is equally important when it comes to the climate challenge. It has been three years since the Paris Climate Agreement and **the world is** already **falling far short of its collective commitments to reduce carbon emissions. Even if all nations achieved 100 percent of the reductions they pledged in Paris, the world would not come anywhere near the goal of [to] limit temperature rise to 2 degrees Celsius** over preindustrial levels, much less the 1.5-degree target that scientists say we must achieve if we are, for example, to save the earth’s coral reefs. Projected increases in renewable power and plans to invest in carbon-capture technologies, efficiency measures, reforestation and other steps are important but will not get us there.

**That is why the International Energy Agency has concluded that meeting the goal of 2 degrees C [it] will require doubling nuclear power’s contribution to global energy consumption by mid-century**. Late last year the Intergovernmental Panel on Climate Change reached a similar conclusion: in most scenarios consistent with the target of 1.5 degrees C, nuclear energy would have to more than double.

#### **Passing 2 degrees warming would have severe environmental consequences**

Alan **Buis 19** **NASA**, 6-19-2019, "A Degree of Concern: Why Global Temperatures Matter – Climate Change: Vital Signs of the Planet," Climate Change: Vital Signs of the Planet, https://climate.nasa.gov/news/2865/a-degree-of-concern-why-global-temperatures-matter/

**Ocean warming, acidification and more intense storms will cause coral reefs to** decline by 70 to 90 percent at 1.5 degrees Celsius warming, **becom[e]ing all but non-existent at 2 degrees warming. Their loss would sharply decrease biodiversity in these regions and directly impact[ing] about [500 million] half billion people worldwide who depend on coral reefs for food [and] livelihoods, coastal protection, tourism, and other ecosystem services.** Ocean food webs — interconnected systems such as pteropods, bivalves, krill and fin fish that transfer solar energy and nutrients from phytoplankton to higher animal species — will see increasingly higher risks of impact at 1.5- and 2-degrees Celsius warming, respectively, with bivalves such as mussels at the highest risk.

## 2nd Impact: Electricity Access

Kaweewit **Kawjinda UN 17,** 11-22-2017, "UN Report: Access to energy crucial for escaping poverty," Business Insider, <https://www.businessinsider.com/ap-un-report-access-to-energy-crucial-for-escaping-poverty-2017-11> //BW

BANGKOK (AP) — A United Nations report says **the world's least developed countries need access to electricity if they are to break out of poverty.** The report by the U.N. Conference on Trade and Development released Wednesday urges wealthy nations to do more to honor their aid commitments to help bridge the energy gap. It say**s 60 percent of people in the[se] world's poorest countries**, 47 of which meet the U.N.'s standards for being "least developed," **have no access to electricity — some 577 million people in total.**  **[the reason is that] access to stable supplies of electricity is crucial for helping businesses in developing countries grow. [since] More than 40 percent of businesses in the countries** covered in the report **suffer from inadequate**, unreliable and unaffordable **power,** it said. They report an average of 10 power outages a month, each lasting about five hours, **that cost them 7 percent of the value of their sales**, it said.

## AFFIRM

~~Energy access creates development~~

[~~https://blogs.scientificamerican.com/observations/to-end-poverty-increase-access-to-energy/~~](https://blogs.scientificamerican.com/observations/to-end-poverty-increase-access-to-energy/)

**~~Access to reliable and abundant energy helps to create safe and prosperous communities.~~**~~Widely available and safe medical care can proliferate. Productive agriculture fueled by effective fertilizer can feed growing populations.~~**~~Enhanced infrastructure can enable efficient transport of goods and services~~**~~.~~ **~~A more educated population can move countries away from labor and subsistence economies and retain and attract talent~~**~~.~~ ~~None of this can happen without fuel, feedstock and reliable power. It is expanding access to modern energy that creates and expands the virtuous cycle of economic development.~~

[~~https://www.businessinsider.com/ap-un-report-access-to-energy-crucial-for-escaping-poverty-2017-11~~](https://www.businessinsider.com/ap-un-report-access-to-energy-crucial-for-escaping-poverty-2017-11)

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## Unfinished Impact: Prolif (idk if war or not)

Clea Simon 20, 3-3-2020, "The real trade-offs attached to going green with nuclear energy," Harvard Gazette, https://news.harvard.edu/gazette/story/2020/03/the-trade-offs-attached-to-going-green-with-nuclear-energy/

The stakes, both stressed, are high, in part because any talk about nuclear energy not only takes into consideration global safety, but also touches on the possibility that the enrichment process used for nuclear fuels can be a cover for additional enrichment to produce weapons. The ideal, said Moniz, would be for all countries seeking assistance in developing nuclear power programs to enter agreements like the one between the U.S. and the United Arab Emirates, in which the UAE agreed never to seek to enrich its own fuel.

However, both noted this kind of treaty is not likely. Because the U.S. is no longer the sole provider of nuclear reactors or fuel, “we cannot call the shots,” said Poneman. “If we say no, they can go to Korea or France or Russia or China.”

That does not mean there is no international consensus, said Moniz. Even with the U.S. pulling out of the 2015 Joint Comprehensive Plan of Action, colloquially known as the Iran nuclear deal, he said, Tehran is still allowing verification by IAEA inspectors. “Iran recognizes that the foundation of the international community having confidence that they are not doing a weapons program relies on them staying with that,” he said. [The Washington Post reported Tuesday that Iran is dramatically ramping up production of enriched uranium after the Trump administration’s 2018 decision to abandon the accord, the IAEA confirmed in a report that also criticized Tehran for blocking access to suspected nuclear sites.]

Perhaps a way forward, Moniz suggested, would be to urge other advanced nuclear powers to adopt the “gold standard” of the U.S.-UAE agreement and, when that isn’t feasible, focus on verification. Enforcing these standards, said Poneman, calls for the U.S. to reconsider nuclear as a global reality, and to resume our role in its development. “If you care about nuclear safety and you care about nuclear security, you have to want U.S. leadership,” he said.

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<https://thehill.com/blogs/congress-blog/energy-environment/430029-nuclear-energy-is-a-critical-investment>

**A strong U.S. export industry would guarantee U.S.-level safety and quality standards. It would also preserve U.S. leadership in global nonproliferation efforts. Without this U.S. leadership, China and Russia will fill the void, and ultimately those nonproliferation standards for nuclear materials and technology will be weakened.**

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Robert Hargraves 17, 6-26-2017, "'Energy is worth a war': US nuclear supremacy is collapsing, but there's a way to win it back," Business Insider, https://www.businessinsider.com/nuclear-power-fall-rise-united-states-2017-6

Without a strong nuclear power industry and international trade the US has lost negotiating leverage. For example the new 123 agreement with Vietnam does not prohibit it from enriching or reprocessing uranium or other fuels in order to be permitted to trade with US suppliers. The renewed agreement with South Korea weakened limitations on fuel manufacturing and offered some spent fuel processing assistance at US national labs.

<https://tcf.org/content/report/cooperating-nuclear-power/> (this card is very mediocre)

**Russia and China’s foray into the Middle East’s nuclear business is also adding to the worries about nuclear proliferation. Unlike the United States, these countries do not have a legal** regime that ties civilian nuclear cooperation with a forswearing of enrichment and reprocessing activities. Under Section 123 of the U.S. Atomic Energy Act of 1954, all American nuclear cooperation with other countries requires a closely monitored peaceful nuclear cooperation agreement—commonly referred to as a “123 agreement.”85 Even then, most countries receiving higher levels of peaceful nuclear assistance are more likely to pursue and acquire the bomb, as seen in U.S. civilian nuclear assistance to Iran; Soviet aid to Libya; French, Italian, and Brazilian nuclear exports to Iraq; and U.S. nuclear cooperation with India.86 It is also true, however, that American leadership in peaceful nuclear cooperation and its place in the broader context of the United States’ nonproliferation policy has had a critical role in limiting the spread of nuclear weapons. There is empirical evidence that nations dependent on the United States for economic and military support have been significantly less likely to pursue nuclear weapons after the development of credible sanctions policies in the late 1970s (namely, the Nuclear Non-Proliferation Act of 1978).87

When the United States was at the helm of the spread of civilian nuclear technology, 123 agreements were the cornerstone of the global nonproliferation regime. Washington currently has such agreements in place with twenty-two individual countries—including two of the Middle East’s nuclear aspirants, the Emirates and Turkey—as well as the twenty-seven members of the European Atomic Agency (Euratom).88 Jordan and Saudi Arabia are also in negotiations for 123 agreements. And because American companies are deeply linked to supply chains, intellectual property, and partnerships with other countries’ nuclear firms, such as those in Japan and South Korea, 123 agreements have a significant impact even in countries where Americans are not leading reactor construction. In contrast, **neither Russia nor China has a comparable legal regime to ensure that their civilian nuclear technology is not diverted to noncivilian uses.** Those countries’ nuclear developers can operate without 123 agreements in place, and it is doubtful whether the nature of a client’s nuclear ambitions are of great concern to Moscow and Beijing. The upshot is that, despite the United States’ development of a fairly robust nonproliferation legal framework, the international community is likely to continue to treat the acquisition of any new nuclear capabilities in the Middle East with anxiety, if not outright opposition.

Daniel B. **Poneman**, 5-24-2019, "We Can’t Solve Climate Change without Nuclear Power," Scientific American Blog Network, https://blogs.scientificamerican.com/observations/we-cant-solve-climate-change-without-nuclear-power/

The U.S. should lead the way in the development of these reactors so they can be deployed at home and abroad over the next decade. As a growing number of countries around the world turn to nuclear power as a source of carbon-free electricity, it is strongly in our interest that they do so with safe, American-made technology. **Countries that adopt the new U.S. reactor designs will also be subject to U.S. nonproliferation requirements, which are second to none.**

American leadership in nuclear technologies is equally important when it comes to the climate challenge. It has been three years since the Paris Climate Agreement and the world is already falling far short of its collective commitments to reduce carbon emissions. Even if all nations achieved 100 percent of the reductions they pledged in Paris, the world would not come anywhere near the goal of limiting temperature rise to 2 degrees Celsius over preindustrial levels, much less the 1.5-degree target that scientists say we must achieve if we are, for example, to save the earth’s coral reefs. Projected increases in renewable power and plans to invest in carbon-capture technologies, efficiency measures, reforestation and other steps are important but will not get us there.

**That is why the International Energy Agency has concluded that meeting the goal of 2 degrees C will require doubling nuclear power’s contribution to global energy consumption by mid-century**. Late last year the Intergovernmental Panel on Climate Change reached a similar conclusion: in most scenarios consistent with the target of 1.5 degrees C, nuclear energy would have to more than double.

# Framing

#### **CX: xxxxx**

[aff frontlines + extensions](https://docs.google.com/document/d/1y4ZzN2rpg3pUNCq4FW0wM4FdmpXJVaqEdKYJxqJ0V1E/edit#heading=h.dd3fe1n6rqj2) CSM KKK

[[OLD] AFF draft 0.1 - energy prices and ff shift](https://docs.google.com/document/d/1EZDJPPC7HyBSWqVFTGleS0_CWyq9ddJ1rSjZ8YTECC4/edit#heading=h.mrv0fvskb0r) Our old Aff

# Lay Rhetoric

Cheese Frontline strats: We account, directionality, no warrant, not a turn

# Frontlines

## C1: emPowering America

### Extension/Weighing

[Silverstein] 35% of reactors are at risk of shutting down rn but we need to keep them running to keep electricity prices low. In the past a single reactor shutdown increased electricity costs by 350 mil. This is a huge problem - Since 1/3 of Aamericans can barely pay their electricity bills, [clemente finds that] a 10% inc in electricity prices pushes 840k americans into poverty.

### Frontlines

#### FL: Renewables solves

1. DOE -nuclear’s 3x more reliable since its not dependent on when theres sun or wind outside.[Baker of bloomberg] In Texas switching to a renewable grid caused power shortages whenever the wind stopped blowing inc prices by 40,000%

#### FL: Don’t quant

1. IHS - would dec price by 27%

### FL Cards

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IHS xx, xx-xx-xxxx, "Nuclear Powers the U.S. With Clean Energy," Nuclear Energy Institute, https://nei.org/fundamentals/nuclear-powers-us-with-clean-energy

Nuclear energy contributes clean, reliable electricity to a diverse energy system. A diverse supply of fuels balances the benefits and risks associated with each source. In fact, a study by global information firm IHS Energy shows that losing “diversity in U.S. power grid will result in greater price fluctuations, higher power bills and create negative impacts throughout the economy.”

The study found that the current diverse electricity portfolio lowers the average retail price of electricity by 27 percent and reduces the variability of monthly consumer electricity bills by around 22 percent. That equals major savings for consumers. The study also found that losing this diversity would cause:

a decline of U.S. gross domestic product by $158 billion

a reduction in 1 million jobs

$845 less in disposable income annually per household.

#### Grid Instability

DOE The xx, xx-xx-xxxx, "Nuclear Power is the Most Reliable Energy Source and It's Not Even Close," Energy.gov, https://www.energy.gov/ne/articles/nuclear-power-most-reliable-energy-source-and-its-not-even-close

Nuclear energy is America’s work horse. It’s been rolling up its sleeves for 6 decades now to provide constant, reliable, carbon-free power to millions of Americans. Just how reliable has nuclear energy been? It has roughly supplied a fifth of America’s power each year since 1990. To better understand what makes nuclear so reliable, take a look at the graph below. Nuclear Has The Highest Capacity Factor As you can see, nuclear energy has by far the highest capacity factor of any other energy source. This basically means **nuclear power plants are** producing maximum power more than 92% of the time during the year. That’s about 1.5 to **2 times more as natural gas** and coal units, **and** 2.5 to **3**.5 times **more reliable than wind and solar plants.** Nuclear power plants are typically used more often because they require less maintenance and are designed to operate for longer stretches before refueling (typically every 1.5 or 2 years). Natural gas and coal capacity factors are generally lower due to routine maintenance and/or refueling at these facilities. Renewable plants are considered intermittent or variable sources and are mostly limited by a lack of fuel (i.e. wind, sun, or water). As a result, these plants need a backup power source such as large-scale storage (not currently available at grid-scale)—or they can be paired with a reliable baseload power like nuclear energy.

#### **Relying on renewable energy means massive price spikes**

David R Baker,Will Wade,James Thornhill, 8-26-2019, "Sometimes, a Greener Grid Means a 40,000% Spike in Power Prices," Bloomberg, https://www.bloomberg.com/news/articles/2019-08-26/sometimes-a-greener-grid-means-a-40-000-spike-in-power-prices

**The road to a world powered by renewable energy is littered with unintended consequences. Like a 40,000% surge in electricity prices. Texas power prices jumped from less than $15 to as much as $9,000 a megawatt-hour this month as coal plant retirements and weak winds left the region on the brink of blackouts during a heat wave. It’s a phenomenon playing out worldwide.** Germany averted three blackouts of its own in June and has seen prices both spike and plunge below zero within days as it swaps out coal and nuclear energy for wind and solar. In the U.K., more than a million homes lost power on Aug. 9, in part because a wind farm tripped offline. **There is no easy solution.** In Germany, grid operators were forced to tap emergency reserves to avoid outages in the heat of June as some blamed bad wind generation forecasts. Power prices there surged at times on the prospect of shortages and plunged below zero at other times when solar generation flooded the system. A group representing the nation’s biggest power suppliers warned that **the grid may become increasingly unstable as** the government orders coal and **nuclear plants** to **shut. “By 2023 at the latest, we will be running with eyes wide open into a shortfall in secure capacity,”** said Stefan Kapferer, a managing director for the group BDEW.

#### Nuclear power is the only power source that’s reliable in extreme weather

James **Conca 19 Forbes**, 11-29-20**19,** "Bitter Cold Stops Coal, While Nuclear Power Excels," Forbes, <https://www.forbes.com/sites/jamesconca/2019/11/29/bitter-cold-stops-coal-but-nuclear-excels/#1e8884864845>

**Through** thick and thin, **extreme hot or** extreme **cold,** the **nuclear plant[s] never**seems to**stop producing** over 9 billion kWhs of **energy** every year, enough to power Seattle. The same with all other nuclear plants in America. Whether it’s **[while] coal, gas [and] or renewables**, [extreme] cold weather seems to hurt them like grandpa with a bum knee. And it doesn’t help that our aging energy infrastructure keeps getting a D+ from the American Society of Civil Engineers. Most generation systems **suffer outages during extreme weather,** but most of those involved fossil fuel systems. [for example]. coal stacks **[since they] are fr[eeze] ozen and die**se**l generators simply can’t function [and] in such low temperatures. Gas chokes up, [and] - its pipelines can’t keep up with demand - and prices skyrocket**. This was seen again last week, when record-breaking cold engulfed Illinois. But Exelon Generation’s 10 operating nuclear plants kept putting out their maximum power without a hitch. Coal and gas struggled. “Even during this unseasonably cold weather, our Illinois fleet’s performance further demonstrates the reliability and resiliency of nuclear power in any kind of weather,” Bryan Hanson, Exelon’s Chief Nuclear Officer, said. “We are dedicated to being online when customers need us most, no matter what Mother Nature throws at us at any time of year.” **The problem with widespread cold or heat starts because there is a spike in electricity and gas demand, since everyone is re-adjusting their thermostats** and it takes a lot more energy to keep us at comfortable temperatures duri**ng these extremes.** Interestingly, **[this is why] nuclear prices do not go up**- the reactors just keep running. They don’t have to worry about fuel supply - they have enough on hand for years - and they don’t have to do anything special to deal with the **[in] extreme weather**. In recent years, the cost of electricity from the nearby Columbia Generating Station has fallen to 4.2¢/kWh, regardless of weather. **Many gas plants increase their prices** during bad weather, **as much as ten-fold** in New York and New England.

## C2: emPowering the World

### Extension/Weighing

Even though the developing world needs more and more energy, the US isn’t able to sell reactors to these nations and the US now only controls 10% of the global nuclear market.

We increase exports to dev nations because:

1. R&D -[vuong lowering baker] Building more reactors in the US increases profits that manufacturers use for R&D to build advanced next-generation reactors - these are more efficient and most desired by international customers so countries will buy lots of them.
2. Manufacturing Revival- [levique] We’ve lost the advanced factories and machinery needed to build reactors because there wasn’t a single reactor purchase in the US in almost 30 years- This is why revitalizing the domestic nuclear industry would enable the US to reestablish factories and the engineering capabilities we need to build reactors for exports, driving down manufacturing costs and increasing exports.
3. Standardization - [gordon and nephew] If there’s a new push to develop and build reactors, nuclear manufacturers will standardize meaning that they adopt a consistent set of designs and safety standards while improving security, so nations who might have been afraid of nuclear power become much more likely to purchase reactors from us.
4. Global leadership - [poneman and spitz] Developing nations don’t know if they can efficiently switch away from fossil fuels without hurting their economies so they aren’t willing to switch unless the US acts first and switches to nuclear, showing leadership to prove that such a transition is possible.
   1. Could link in?

Impacts:

1. Warming- it’s try or die - the only way to keep warming under 2 deg C is if we double the world’s use of nuclear power - otherwise we see coral reefs and ocean ecosystems go extinct that 1/2 a bil people rely on for food - causes mass starvation in developing nations -this o/w on magnitude since it affects more people than all their impacts combined
2. Electricity Access- [Kawjinda] Electricity is the only way for 60% of the world’s poorest people to escape poverty since their economies and businesses depend on it, thats 577 mil ppl

Dev nations o/w:

1. Most vuln to climate change- dev nation incomes are around 1% of the US so less able to buy things to protect themselves
2. No gov protection?
3. Magnitude - big #s

W o/w SV:

1. Warming pulls attention away from setcol - it’s all the media covers
2. Hoerner 8 - warming is a root cause of SV/setcol, minorities and the global poor are disproportionately affected.

### Frontlines

#### FL: Russia China importing now/They get renewables now anyways

1. Yale 3 weeks ago- china’s exporting 70% of the world’s coal plant through the bri - not nuclear, that makes warming worse - means US need to solve back
2. World Nuclear Association 20 - too many countries so demand outpaces supply, overall still is a shortage in the squo
3. Turn - inc competition from multiple sellers drives down prices
4. Turn - Ulrich/russian reactors are super dangerous - horrible safety record, pollution that destroys the env, high chance of reactor failure and disasters - not long term solution
5. Turn - NEI/advanced next-gen US reactors developed through R&D are much safer and more efficient - less emissions are needed to solve for warming
6. This concedes any DAs if true-- if it was true that they were exporting we would have seen all the neg impacts happen already

#### FL: Too Expensive/Takes too long

1. Subsidies solve back
2. Morgan 15 - Small Modular Reactors (SMRs) can be made on assembly lines which is much cheaper. It also removes the need to build large energy grids so he concludes its especially economically viable in dev countries.
3. Gordon/ 30 countries want it
4. Economies of scale drive down manufacturing prices - reuse factories (that’s link 2)

#### FL: Renewables better

1. Your ev is from the US - econ situation diff in dev countries
2. Gustin 18- Most of dev countries are using solid fuels like coal and biomass which are awful and still will be even by 2030 -concludes that the current shift to renewables is far too slow to solve for warming
3. Manley 16 - up to 50% is wasted - dev nations don’t have the sophisticated infrastructure to deal with inconsistent power generation
4. EIC - nuclear is 1000 times more efficient than renewables, takes less land, and releases 1000 times less emissions

#### FL: Gov wouldn’t support adv research

1. Gardner 20 -bipartisan proposal in congress to fund adv reactor research just two weeks ago

#### FL: Need 14k reactors

1. Scalar benefit- every plant we build trades off w/ emissions
2. Only reason we can’t do now is b/c we don’t have r&d/factories/etc. -- we must scale capacity now to meet demand over the next decade

#### FL: Shutdowns bc meltdowns

1. At best limited to a single country, US still continued
2. 3 mile island - we recovered p fast
3. Sheldrick 19 -Japan restarted reactors 8 years after fukushima, just temporary while they developed new safety measures

#### FL: Uranium DA

1. Power Mag 19 - could have thorium reactors in 4 years, doesn’t use uranium
2. Conca - ocean mining. its affordable and only makes up a small fraction of costs

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### FL Cards

Apr 30, 2019 19, 4-30-2019, "A Thorium Molten Salt Reactor When and Where You Need It," POWER Magazine, https://www.powermag.com/a-thorium-molten-salt-reactor-when-and-where-you-need-it/

Hargraves expects ThorCon to have a commercial scale prototype up and running within four years. This includes two years dedicated to building and testing a pre-fission, full-scale test platform. Once a shipyard has built the 500-MWe demonstration plant, it will be towed, ballasted to the seabed floor, and connected to the grid. After that, two years of extensive plant testing will lead to a licensed design for mass production. With a projected cost of electricity of less than 5¢/kWh, the ThorCon plant could play an important role in energizing emerging economies. ■

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#### FL: Shutdowns

Aaron Sheldrick 19, 11-27-2019, "Japan clears restart at nuclear reactor closest to epicenter of 2011 quake," U.S., https://www.reuters.com/article/us-japan-nuclear-restarts/japan-approves-restart-for-nuclear-reactor-closest-to-epicenter-of-2011-quake-idUSKBN1Y10K7

TOKYO (Reuters) - Japan’s Tohoku Electric Power said on Wednesday it has won initial regulatory approval to restart a reactor at its Onagawa power plant, more than 8 years after it was damaged in the earthquake and tsunami that caused the Fukushima disaster.

#### **Warming exacerbates various forms of structural violence**

Hoerner 8 (J. Andrew, Former director of Research at the Center for a Sustainable Economy, Director of Tax Policy at the Center for Global Change at the University of Maryland College Park, and editor of Natural Resources Tax Review. He has done research on environmental economics and policy on behalf of the governments of Canada, France, Germany, the Netherlands, Switzerland, and the United States. Andrew received his B.A. in Economics from Cornell University and a J.D. from Case Western Reserve School of Law—AND—Nia Robins—former inaugural Climate Justice Corps Fellow in 2003, director of Environmental Justice and Climate Change Initiative “A Climate of Change African Americans, Global Warming, and a Just Climate Policy for the U.S.” July 2008, http://www.ejcc.org/climateofchange.pdf)

Everywhere we turn, the issues and impacts of climate change confront us. One of the most serious environmental threats facing the world today, climate change has moved from the minds of scientists and offices of environmentalists to the mainstream. Though the media is dominated by images of polar bears, melting glaciers, flooded lands, and arid desserts, there is a human face to this story as well. Climate change is not only an issue of the environment; it is also an issue of justice and human rights, one that dangerously intersects race and class. All over the world people of color, Indigenous Peoples and low-income communities bear disproportionate burdens from climate change itself, from ill-designed policies to prevent it, and from side effects of the energy systems that cause it. A Climate of Change explores the impacts of climate change on African Americans, from health to economics to community, and considers what policies would most harm or benefit African Americans—and the nation as a whole. African Americans are thirteen percent of the U.S. population and on average emit nearly twenty percent less greenhouse gases than non-Hispanic whites per capita. Though far less responsible for climate change, African Americans are significantly more vulnerable to its effects than non- Hispanic whites. Health, housing, economic well-being, culture, and social stability are harmed from such manifestations of climate change as storms, floods, and climate variability. African Americans are also more vulnerable to higher energy bills, unemployment, recessions caused by global energy price shocks, and a greater economic burden from military operations designed to protect the flow of oil to the U.S. Climate Justice: The Time Is Now Ultimately, accomplishing climate justice will require that new alliances are forged and traditional movements are transformed. An effective policy to address the challenges of global warming cannot be crafted until race and equity are part of the discussion from the outset and an integral part of the solution. This report finds that: Global warming amplifies nearly all existing inequalities. Under global warming, injustices that are already unsustainable become catastrophic. Thus it is essential to recognize that all justice is climate justice and that the struggle for racial and economic justice is an unavoidable part of the fight to halt global warming. Sound global warming policy is also economic and racial justice policy. Successfully adopting a sound global warming policy will do as much to strengthen the economies of low-income communities and communities of color as any other currently plausible stride toward economic justice. Climate policies that best serve African Americans also best serve a just and strong United States. This paper shows that policies well-designed to benefit African Americans also provide the most benefit to all people in the U.S. Climate policies that best serve African Americans and other disproportionately affected communities also best serve global economic and environmental justice. Domestic reductions in global warming pollution and support for such reductions in developing nations financed by polluter-pays principles provide the greatest benefit to African Americans, the peoples of Africa, and people across the Global South. A distinctive African American voice is critical for climate justice. Currently, legislation is being drafted, proposed, and considered without any significant input from the communities most affected. Special interests are represented by powerful lobbies, while traditional environmentalists often fail to engage people of color, Indigenous Peoples, and low-income communities until after the political playing field has been defined and limited to conventional environmental goals. A strong focus on equity is essential to the success of the environmental cause, but equity issues cannot be adequately addressed by isolating the voices of communities that are disproportionately impacted. Engagement in climate change policy must be moved from the White House and the halls of Congress to social circles, classrooms, kitchens, and congregations. The time is now for those disproportionately affected to assume leadership in the climate change debate, to speak truth to power, and to assert rights to social, environmental and economic justice. Taken together, these actions affirm a vital truth that will bring communities together: Climate Justice is Common Justice. African Americans and Vulnerability In this report, it is shown that African Americans are disproportionately affected by climate change. African Americans Are at Greater Risk from Climate Change and Global Warming Co-Pollutants ¶ • The six states with the highest African American population are all in the Atlantic hurricane zone, and are expected to experience more intense storms resembling Katrina and Rita in the future

Yale Jan Ellen 20, 2-17-2020, "The potential climate consequences of China's Belt and Roads Initiative » Yale Climate Connections," Yale Climate Connections, https://www.yaleclimateconnections.org/2020/02/the-potential-climate-consequences-of-chinas-belt-and-roads-initiative/

Reaching back nearly 20 years, that research shows about $245 billion in energy sector financing, more than $186 billion of it considered BRI. More than 75% of it, covering scores of projects, involves fossil fuels. The largest segment is coal, followed by oil and natural gas. There is also hydropower, but classic renewables are barely a blip.

Timothy Gardner 20, 2-28-2020, "U.S. senators unveil bill to support renewable and nuclear power, efficiency," U.S., https://www.reuters.com/article/us-usa-energy-senate/u-s-senators-unveil-bill-to-support-renewable-and-nuclear-power-efficiency-idUSKCN20L2Y1

WASHINGTON (Reuters) - The top two senators on the U.S. Senate energy committee unveiled a bipartisan energy legislation package on Thursday that would support renewable energy, efficiency measures and nuclear power, and aides said it should move quickly to a vote in the chamber.

It contains provisions for nuclear power, which does not produce carbon emissions in generating electricity. The bill authorizes programs on research into advanced nuclear energy and fuels.

#### Nuclear is way better than renewables anyways -- this card is so broken

Open100 is a project of the **Energy Impact Center**, a Washington, DC based research institute focused on climate restoration. <https://www.open-100.com/faqs>

**Nuclear reactors do not produce air pollution or carbon dioxide** during operation. **When accounting for lifecycle emissions from all phases of the project**—mining, construction, operation, and decommissioning—**nuclear power plants have the lowest carbon footprint of any electricity generation method. Nuclear plants can produce 1,000 times as much energy as renewables for the same material input, meaning 1,000 times less physical waste and emissions for the same amount of energy produced,** all with an ecological footprint a fraction of the size.

NEI Nuclear Energy Institute xx, xx-xx-xxxx, "Advanced Nuclear," https://www.nei.org/advocacy/build-new-reactors/advanced-nuclear

New reactors and technologies hold the promise of the future of clean, reliable energy. But the possibilities go well beyond electricity generation. The nuclear reactors of tomorrow—some less than a decade away—will offer a variety of benefits such as water desalination, process heat and alternative fuels generation, and access to power beyond the grid. They will help remote areas have reliable and clean electricity options and provide immediate power after a disaster. Some designs will even allow us to recover and recycle elements in nuclear waste that can still produce energy.

Exciting Possibilities of Advanced Reactors

Advanced reactors represent the cutting edge in nuclear technology: many are inherently safer by design, with some—like the small modular reactor (SMR) being developed by NuScale Power—capable of operating without the need for safety-related backup electrical systems.

Advanced nuclear reactors are being designed to more quickly adjust their electricity output to match demand, helping them stabilize the grid in areas with a high volume of intermittent renewables.

Advanced reactors will use a variety of coolants including water, molten salt, high temperature gas and liquid metal.

Reactors will come in a wide range of sizes, from a few megawatts to more than 1,000 (like traditional reactors). This will allow owners to tailor their electricity generation to their energy demands. This is particularly important for smaller companies, rural electric cooperatives or municipal agencies and for isolated and distributed applications.

Developers are creating simpler designs, incorporating factory construction, and working to lower overall construction and operating costs to be more competitive with other forms of energy generation like natural gas.

Advanced reactors are being designed to power hybrid energy systems that not only produce electricity for the grid, but can also produce clean drinking water, and hydrogen or heat to decarbonize the industrial and transportation sectors.

#### **Rosatom is terrible – safety issues, environmental degradation, prolif, and massive corruption. Ulrich et al. 14**

Kendra Ulrich, Jehki Harkonen and Brian Blomme, ROSATOM RISKS: EXPOSING THE TROUBLED HISTORY OF RUSSIA’S STATE NUCLEAR CORPORATION, October 2014, <http://www.greenpeace.org/hungary/PageFiles/636986/rosatom_risks.pdf> VC

As a Russian state-backed entity that oversees almost every aspect of Russia’s civil and military nuclear programmes, Rosatom is one of the largest nuclear vendors in the global market. Yet problems are rampant, due to its very size and the scale of its operations, its entrenchment within the Russian government and the revolving door between government officials and Rosatom top management, and the lack of truly independent oversight over the company. One of **Rosatom’s** predecessor entities oversaw the world’s worst nuclear disaster at Chernobyl. Although the corporation now says that it has learned from the catastrophe, **its more recent safety record exposes that little has changed in terms of its safety culture** – **both within Russia and in other countries to which it exports nuclear technology.** Plagued with safety violations and accidents, **lacking an adequate skilled workforce, using the equivalent of low-skilled, forced labour on reactor sites, and having an absence of adequate quality controls, Rosatom’s reactors pose an unacceptable risk to the public both within Russia and abroad. The pervasive corruption within the company that has come to light in recent years not only reveals the inordinate potential for the siphoning of public funds – some of which were intended to promote nuclear safety – into wealthy private accounts, but also casts serious doubts on the ability of the Russian government to ensure such gross violations do not occur again.** Rosatom has enormous ambitions to expand its nuclear programme globally. Fuelled by Russian federal money and income from oil and gas exports, **the state corporation aims to vastly expand its global nuclear fleet** via its “Build-Own-Operate” model. This ambition seems less focused on investing in smart economic ventures than on other potentially motivating factors. Yet, even with the funding of the Russian government behind Rosatom, **analysts have still raised significant doubts as to whether it is possible for any one operator to adequately finance so many nuclear projects – as the financial burden would be enormous if not impossible to bear. Rosatom’s** claims are inflated but their **ambition remains unchecked**. Further, both within Russia and in other countries, **Rosatom’s nuclear construction projects have not only been characterised by a lack of proper quality control and safety concerns**, but also by delays and cost overruns – like the nuclear industry everywhere else. In cases where investors have put in their own funds, rather than leaving financing up to Rosatom, potential customers are either waiting for energy they thought they would have years earlier, or are left with an enormously growing expense. Alternatively, as in the case of Bulgaria, they end up terminating the project after realising that the bill had more than doubled.239 Finally, **Rosatom’s spent-fuel reprocessing leads to large-scale releases of radioactivity into the environment** and increased health risks to the general population, as well as to a major risk of accidents and to an even greater spread of contamination. The proposal to take back spent-fuel waste from reactors supplied by Rosatom but operated overseas not only fails to remove the risk at a reactor site – since spent fuel must be cooled onsite prior to transport – but significantly increases the risks to the public, including during transportation. At the same time, Russia’s fast-breeder programme – used to justify continued reprocessing and plutonium stockpiling – experiences significant delays and other problems, as has happened with other countries that have attempted to develop such reactors. The one result has been a greater risk of nuclear weapons proliferation, as stockpiles of weapons-usable plutonium have continued to increase in Russia. The on-going geopolitical crisis in Ukraine has highlighted the vulnerability of the nuclear industry to political developments. One major current problem arising from recent developments is that Rosatom could be prevented from transporting nuclear fuel through Ukraine. Rosatom presents major concerns as a business partner in every respect. From a financial, safety, political and security perspective, the company’s nuclear expansion ambitions both within Russia and abroad pose unnecessary and unacceptable risks to communities and potential customers alike.

Ahmed Abdulla, M. Granger Morgan 15, xx-xx-xxxx, "Nuclear Power for the Developing World," Issues in Science and Technology, https://issues.org/abdulla/

Many proponents of nuclear power believe that the technology’s problems can be solved through innovation. Some have held up a vision of small modular reactors (SMRs), capable of producing 5 megawatts to 300 megawatts of electricity that would be manufactured on a factory production line and then shipped to the field as a complete module to be installed on a pre-prepared site. Proponents argue that factory manufacturing would not just reduce costs; it could also result in dramatic improvements in quality and reliability. Moreover, if these SMRs could then be returned—still fully fueled—to secure facilities at the end of their core life, the risk of proliferation could be better managed.

It is a lovely vision, but its realization lies decades in the future, if it is even possible. Estimates of the capital cost per megawatt of first-generation light water SMRs lie a factor of two or three above that of conventional reactors. Of course, since SMRs would be much smaller, the total cost would be much lower; hence, choosing an SMR would not be a “bet the company” decision. But few firms in the developed world are likely to be interested, absent a significant price on carbon emissions, or perhaps a new business model that incorporates other uses for a small-scale reactor (such as water desalination or hydrogen production) in tandem with electrical generation.

The same may not be the case across the developing world. If the cost of more advanced small modular reactor designs can be brought down, even to the range of conventional reactors, many nations may find SMRs an attractive way to meet their growing demands for electricity or process heat, and may find the smaller size more compatible with their smaller, less-developed electricity grids.

Georgina Gustin 18, 5-3-2018, "World Is Not on Track to Meet UN’s 2030 Sustainable Energy Goals," InsideClimate News, https://insideclimatenews.org/news/03052018/un-sdgs-renewable-energy-sustainable-development-goals-solar-climate-clean-cooking-transportation-fuels

The world's poorest countries are making progress toward the United Nations' sustainable energy goals, but not as quickly as development agencies had hoped, according to a new report from the UN, the World Health Organization and three other international agencies. Of the 1 billion people who lack access to electricity, mostly in sub-Saharan Africa and South Asia, only about a third will get it by 2030, they found, and more than 2 billion will still be cooking with unhealthy, polluting fuels. The report, Tracking SDG7: The Energy Progress Report, was released Wednesday at a two-day forum on sustainable energy in Lisbon. It presents a report card on the energy targets contained in the latest UN Sustainable Development Goals, a broad array of anti-poverty objectives that take the risks of climate change into account. The targets were updated in 2015 as guideposts for balancing human health needs, particularly in the developing world, with environmental health. The goals are closely linked to the fight against global warming and the emissions reductions goals of the Paris climate agreement. Experts often say it will be impossible to achieve either set of international targets without the other. The energy goals include universal access to electricity, universal access to clean cooking fuels, and increases in renewable energy and energy efficiency. Progress has been especially slow in shifting toward sustainable, modern cooking sources and away from dirty cooking fuels, such as charcoal, wood and dung. About 3 billion people, or 40 percent of the world's population, have no alternatives, and the pollution from their stoves and ovens kills an estimated 4 million people a year. The report projected that 2.3 billion people will still use these fuels in 2030. "The need for rapid deployment of clean cooking fuels and technologies has not received the attention it deserves from policy-makers, and lags well behind the rate of electrification in almost every country, even in spite of the smaller costs needed to ensure clean cooking solutions for all compared to electrification," the report says.

World Nuclear Association 20, 1-4-2020, "Emerging Nuclear Energy Countries," https://www.world-nuclear.org/information-library/country-profiles/others/emerging-nuclear-energy-countries.aspx

**About 30 countries are considering, planning or starting nuclear power programmes, and a further 20 or so countries have at some point expressed an interest**. In the following list, links are provided for those countries that are covered by specific country papers: In Europe: Albania, Serbia, Croatia, Portugal, Norway, Poland, Belarus, Estonia, Latvia, Lithuania, Ireland, Turkey. In the Middle East and North Africa: Gulf states including UAE, Saudi Arabia, Qatar and Kuwait; Yemen, Israel, Syria, Jordan, Egypt, Tunisia, Libya, Algeria, Morocco, Sudan. In west, central and southern Africa: Nigeria, Ghana, Senegal, Kenya, Uganda, Tanzania, Zambia, Namibia, Rwanda, Ethiopia. In Central and South America: Cuba, Chile, Ecuador, Venezuela, Bolivia, Peru, Paraguay. In central and southern Asia: Azerbaijan, Georgia, Kazakhstan, Mongolia, Bangladesh, Sri Lanka, Uzbekistan. In SE Asia and Oceania: Indonesia, Philippines, Vietnam, Thailand, Laos, Cambodia, Malaysia, Singapore, Myanmar, Australia. In east Asia: North Korea. **Despite the large number of these emerging countries, they are not expected to contribute very much to the expansion of nuclear capacity in the foreseeable future** – the main growth will come in countries where the technology is already well established. However, in the longer term, the trend to urbanisation in less-developed countries will greatly increase the demand for electricity, and especially that supplied by base-load plants such as nuclear. The pattern of energy demand in these countries will become more like that of Europe, North America and Japan.

Adeladza Kofi Amegah 15, 3-19-2015, "WHO," World Health Organization, https://www.who.int/bulletin/volumes/94/3/15-155812/en/#navigation

Globally, 41% of households, over 2.8 billion people, rely on solid fuels (coal and biomass) for cooking and heating.1 In developing countries, solid fuels are typically burnt in open fires and inefficient traditional cookstoves, often in poorly ventilated cooking spaces. Women who are customarily responsible for cooking, and their young children, are most exposed to the resulting high levels of air pollutants released including carbon monoxide (CO) and particulate matter (PM).

In 2010, household air pollution was estimated to be responsible for 3.5 million premature deaths worldwide.2 Household air pollution also contributes to outdoor air pollution, causing an additional 370 000 deaths and 9.9 million disability-adjusted life years globally in 2010.3 There is strong evidence linking household air pollution exposure with cardiovascular diseases,4,5 acute lower respiratory infections, chronic obstructive pulmonary disease and chronic bronchitis, lung cancer, cataract,6,7 low birth weight and stillbirth.8,9 Other health outcomes associated with household air pollution, for which evidence is less robust, include pharyngeal and laryngeal cancer,10,11 otitis media,12 asthma,13,14 tuberculosis,15 neonatal mortality16 and nutritional deficit.17 Indirect health effects from collecting firewood include assault of women and girls, insect (including disease vector) and snake bites, school absenteeism and musculoskeletal injuries from having to carry large bundles of firewood on the head and back for long distances.18

Jamie **Manley 16**, 10-4-2016, "India Already Has a Problem With Wasting Renewable Energy on the Grid," No Publication, https://www.greentechmedia.com/articles/read/how-can-india-avoid-wasting-renewable-energy

Solar and wind only accounted for 3.5 percent of the power generated in India in 2015. But if the government achieves its ambitious targets for renewable energy deployment, the amount of solar and wind power on the grid could quadruple by 2022. **Yet there are already signs that the grid’s ability to absorb these new power sources could be a major bottleneck for renewable energy growth in India, jeopardizing the country’s energy and climate goals.**

Although there is not clear national data, regulatory filings from Tamil Nadu, where the problem is thought to be the most extreme, p**ut the curtailment rate for wind power between 33 percent and 50 percent -- an astonishingly high figure.**

The problem is, in part, a technical one**. Solar and wind power are not as easy to control as traditional fossil fuel plants, so power grids need to become flexible enough to handle last-minute changes in power generation.**

Distance is also an issue. In India, six states in the western and southern regions account for 80 percent of all of the country’s currently installed solar capacity, but only 38 percent of power demand. **For grid operators used to being able to turn fossil fuel plants on and off at will, these changes can take some getting used to. If new measures are not put into place to accommodate variable renewable energy sources, a situation can arise where the physical grid -- or the grid operator -- is unable to use solar and wind power when it becomes available.**

# Frontlines

## c1

Jonathan A. **Lesser**, 7-10-**2019,** "Nuclear Power Can Meet Our Emissions-Free Energy Demands," Manhattan Institute, https://www.manhattan-institute.org/nuclear-power-emissions-free-solution

**The** domestic **nuclear power industry is in** the midst of **a decades-long decline.** The causes are many. Plant construction costs that spiraled out of control because of “one-off” designs and changing regulatory requirements, decreases in electricity demand growth that eliminated the need for planned units, and irrational fears of nuclear accidents have all taken their toll on the industry. More recently, environmental and political opposition has caused some nuclear plant owners to agree to retire plants prematurely—including Exelon’s Oyster Creek plant in New Jersey, Indian Point in New York, and Diablo Canyon in California—rather than face costly and protracted litigation. Lastly, the decline in natural gas prices and changes in wholesale electric market designs—including subsidies for wind and solar generation—have also adversely affected nuclear plant profitability, especially for smaller, single-reactor plants. These factors have caused a number of U.S. nuclear plants to be shuttered before the end of their useful lives. Currently, 11 of the 60 operating plants, with a total capacity of 17,000 megawatts (MW) and producing about 125 terawatt-hours (TWh) of electricity annually (enough to power more than 12 million homes),[1] are slated for closure by 2025. By comparison, in 2018, the 30,000 MW of utility-scale solar photovoltaics (PV) and 94,000 MW of wind power in the country produced 63 TWh and 275 TWh, respectively.[2] The total generating capacity of the nation’s nuclear plants is a little over 99,000 MW, about the same as wind power. Yet in 2018, nuclear generation totaled over 800 TWh, more than double the amount of wind and solar PV generation combined. (One key reason that nuclear produces so much more electricity than solar or wind for a given amount of capacity is that solar and wind are inherently intermittent energy sources while nuclear plants are designed to run all the time.) **Several policies are necessary to preserve this power source. They include:** Eliminating subsidies for renewable energy at the state and federal level, including federal production tax credits, state renewable portfolio standards, and feed-in tariffs for renewable resources that are increasingly distorting wholesale electric markets.Linking **subsidies for existing nuclear plants** to wholesale market prices of electricity and combining them with performance incentives that require improved operating efficiency over time. However, before subsidies are granted **to prevent a nuclear plant’s closure[s],** a comprehensive cost-benefit analysis should be performed to ensure that the grant is not a futile exercise or is so costly that building replacement generating capacity is a lower-cost alternative. Providing government loan guarantees for the **construction of new nuclear plants.** But these guarantees must require investors to bear a portion of the financial risk and require developers to prove that their reactors are safer and more reliable than existing ones. **[and] Developing public-private** partnerships that will leverage existing nuclear-focused Department of Energy (DOE) facilities like the Idaho National Laboratory and the Oak Ridge National Laboratory. Those labs can be used to test and evaluate**new nuclear technologies.** Test reactor sites can also be used to validate more efficient manufacturing techniques. Solving the current political logjam over a permanent spent-fuel repository by identifying communities near geologically suitable sites that wish to host such a depository with the promise of local jobs and improved economic growth.

## c2

### f/l reactor bad

No Author, 3-27-2019, "Murkowski, Booker, and 13 Colleagues Reintroduce the Nuclear Energy Leadership Act," No Publication, https://www.energy.**senate**.gov/public/index.cfm/2019/3/murkowski-booker-and-13-colleagues-reintroduce

“**Developing advanced nuclear technologies** to meet our energy needs **will** not only **expand our sources of reliable and affordable energy** but will also **[and] reduce our carbon footprint**,” Portman said. “This legislation helps break down the barriers to advanced nuclear development, ensuring that the U.S. is the leader on nuclear technology and innovation. I have long supported policies that grow the economy and create jobs while reducing emissions, and I look forward to working with my colleagues on this legislation.”

**Advanced** reactors are the next generation of breakthrough **nuclear technologies** that will **offer significant advantages** for power generation. **Some are smaller than today’s commercial reactors and can provide increased reliability and resilience to the grid, as well as off-grid power. Others will utilize exotic fuels, materials, and coolants to decrease the cost of delivered power** or provide high-temperature process heat for industrial manufacturing.

Richard **Nephew 17** Columbia University https://energypolicy.columbia.edu/sites/default/files/The%20Geopolitics%20of%20Nuclear%20Power%20and%20Technology%20033017.pdf

An unquestionable element in the declining attractiveness of nuclear power in OECD countries is the unsettled nature of the safety issue—at least in terms of public perception. In 2010, the Nuclear Energy Agency of the OECD released a comparison of safety statistics for various forms of energy production over 1969 to 2000, and it found that far more people had died because of conventional energy production than nuclear power.29 Even after Fukushima, nuclear power remains a comparatively safe form of energy production, and development of new reactor designs continues to improve the safety characteristics. This is particularly the case with reactors that include passive safety features. These reactors don’t require the involvement of personnel in order to deal with potentially dangerous situations. **Today’s new-generation reactors are already ten times safer than the previous generation of reactors, as addressed in the accompanying Center on Global Energy Policy study on advanced reactor design**

### f/l to one link takes out all

Richard **Nephew 17** Columbia University https://energypolicy.columbia.edu/sites/default/files/The%20Geopolitics%20of%20Nuclear%20Power%20and%20Technology%20033017.pdf

**The authors offer three recommendations that can** help to address these questions and **face the challenges presented to nuclear power today**, with an approach to the geopolitical issues around nuclear energy includes the following elements:

1.A concerted approach to demystify the science around nuclear power and to ensure local communities and the public at large have an appropriate appreciation for the role nuclear energy can play.

**2**.A renewed global partnership for **managing the risks of proliferation** that combines political and technical factors. This should include cooperation among governments to reduce the risk of nuclear reactors serving as Trojan horses for proliferation (either directly or as a result of their fuel needs), and it should include improved export controls on a global level.

**3**.Government **support for nuclear research and development**, both through **investment vehicles** and private public partnerships. It must also incentivize the **safe**, economic, and reliable **operation** of the current fleet **of nuclear reactors**. This should include mechanisms to streamline the R&D process, which has become saturated with designs that have no chance of entering production and sap millions in resources that might better be applied in bringing new reactor designs to market.

# Extra Cards

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#### [card] The US needs to do XYZ to grow the US’s domestic nuclear industries, it would revitalize our nuclear industry.

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#### This is why comprehensive action is needed to rescue nuclear plants and keep them online

Jonathan A. **Lesser**, 7-10-**2019,** "Nuclear Power Can Meet Our Emissions-Free Energy Demands," Manhattan Institute, https://www.manhattan-institute.org/nuclear-power-emissions-free-solution

**The** domestic **nuclear power industry is in** the midst of **a decades-long decline.** The causes are many. Plant construction costs that spiraled out of control because of “one-off” designs and changing regulatory requirements, decreases in electricity demand growth that eliminated the need for planned units, and irrational fears of nuclear accidents have all taken their toll on the industry. More recently, environmental and political opposition has caused some nuclear plant owners to agree to retire plants prematurely—including Exelon’s Oyster Creek plant in New Jersey, Indian Point in New York, and Diablo Canyon in California—rather than face costly and protracted litigation. Lastly, the decline in natural gas prices and changes in wholesale electric market designs—including subsidies for wind and solar generation—have also adversely affected nuclear plant profitability, especially for smaller, single-reactor plants. These factors have caused a number of U.S. nuclear plants to be shuttered before the end of their useful lives. Currently, 11 of the 60 operating plants, with a total capacity of 17,000 megawatts (MW) and producing about 125 terawatt-hours (TWh) of electricity annually (enough to power more than 12 million homes),[1] are slated for closure by 2025. By comparison, in 2018, the 30,000 MW of utility-scale solar photovoltaics (PV) and 94,000 MW of wind power in the country produced 63 TWh and 275 TWh, respectively.[2] The total generating capacity of the nation’s nuclear plants is a little over 99,000 MW, about the same as wind power. Yet in 2018, nuclear generation totaled over 800 TWh, more than double the amount of wind and solar PV generation combined. (One key reason that nuclear produces so much more electricity than solar or wind for a given amount of capacity is that solar and wind are inherently intermittent energy sources while nuclear plants are designed to run all the time.) **Several policies are necessary to preserve this power source. They include:** Eliminating subsidies for renewable energy at the state and federal level, including federal production tax credits, state renewable portfolio standards, and feed-in tariffs for renewable resources that are increasingly distorting wholesale electric markets.Linking **subsidies for existing nuclear plants** to wholesale market prices of electricity and combining them with performance incentives that require improved operating efficiency over time. However, before subsidies are granted **to prevent a nuclear plant’s closure[s],** a comprehensive cost-benefit analysis should be performed to ensure that the grant is not a futile exercise or is so costly that building replacement generating capacity is a lower-cost alternative. Providing government loan guarantees for the **construction of new nuclear plants.** But these guarantees must require investors to bear a portion of the financial risk and require developers to prove that their reactors are safer and more reliable than existing ones. **[and] Developing public-private** partnerships that will leverage existing nuclear-focused Department of Energy (DOE) facilities like the Idaho National Laboratory and the Oak Ridge National Laboratory. Those labs can be used to test and evaluate**new nuclear technologies.** Test reactor sites can also be used to validate more efficient manufacturing techniques. Solving the current political logjam over a permanent spent-fuel repository by identifying communities near geologically suitable sites that wish to host such a depository with the promise of local jobs and improved economic growth.

**Decreasing barriers to research is key to developing new reactors**

https://energypolicy.columbia.edu/sites/default/files/The%20Geopolitics%20of%20Nuclear%20Power%20and%20Technology%20033017.pdf

there are some reactor designs that more efficiently and effectively satisfy the interest of enhanced safety, reduced cost, mitigated waste issues, managed regulatory questions, and reduced risk of contributing to nuclear weapons proliferation. **Consideration should be given by policy makers** around the world **to** identifying mechanisms for prioritizing further research and development on these types of reactor designs while **reducing uncertainties surrounding whether regulators will approve the designs.** **These uncertainties greatly hinder the development and deployment of advanced nuclear technologies and increase associated costs.** At the same time, the study also clearly shows there are at least fifty new reactor designs being developed, with at least thirty-five countries looking into adding nuclear power to the energy mix. These numbers highlight the discussed need to prioritize R&D further. In other words, a technology down-selection and standardization by the international community is needed in order to reduce R&D and licensing costs and truly leverage economies of mass production

**[replace with encouragement] Historically, the Trump Administration has promoted the nuclear industry by removing barrier to innovation**

Julia Pyper, 10-1-2018, "Trump Signs Legislation to Promote Advanced Nuclear Reactor Technology," No Publication, <https://www.greentechmedia.com/articles/read/trump-signs-legislation-to-promote-advanced-nuclear-technology>

The Trump administration has made shoring up existing nuclear power plants a key — and controversial — component of its energy agenda. But it's also looking ahead to the next generation of nuclear reactor technology.

On Friday, **President Trump signed the Nuclear Energy Innovation Capabilities Act (NEICA), which passed** earlier last month **with bipartisan support. The bill is expected to speed up the development of advanced reactors in the U.S. by eliminating several of the financial and technological barriers standing in the way of nuclear innovation.**

“There are some truly transformative advanced nuclear technologies being developed in America right now, and this bill just reinforces this administration’s continued efforts to revitalize the nuclear industry,” said Ed McGinnis, principal deputy assistant secretary for the Office of Nuclear Energy, in a statement.

NEICA was designed to foster collaboration between the public and private sectors, building on relationships formed under the Department of Energy's Gateway for Accelerated Innovation in Nuclear program. To help offset upfront costs, the bill calls for a cost-share grant program to cover a portion of the licensing fees charged by the U.S. Nuclear Regulatory Commission during its new technology review process.

It also directs the DOE to facilitate the siting of advanced reactor research demonstration facilities through partnerships with private industry.

US support creates

[Byers of Global Energy Institution 18](https://www.globalenergyinstitute.org/us-coal-exports-can-help-fuel-world)

As of 2016, an estimated 1.1 billion people still live without access to electricity – between one-seventh and one-eighth of the global population. By 2030, IEA projects that nearly 400 million of these people will gain access, in large part due to new coal-fired power plants, to over 600 gigawatts of electricity which are currently planned or under construction around the world. Accordingly, **direct and indirect U.S. government support for financing** this **electrification would** not only **advance** longstanding **economic development** and humanitarian objectives but also serve to enhance diplomatic and trade relationships that could enable new partnerships to expand U.S. exports of thermal coal.

Katie Tubb, 9-11-2019, "The Nuclear Energy Leadership Act: A Missed Opportunity for Leadership by Congress," Heritage Foundation, https://www.heritage.org/nuclear-energy/report/the-nuclear-energy-leadership-act-missed-opportunity-leadership-congress

Regulations. In NEIMA, Congress endeavored to address the muddled regulatory pathway to license unconventional, non-light-water reactor designs. The nonexistent licensing pathway drove some companies (such as Advanced Reactor Concepts) to pursue licensing in Canada. Further, the process is exorbitantly expensive; for example, NuScale reportedly expects to pay $85 million in NRC fees for the licensing process, and internally to spend $2 for every dollar the NRC charges.27

Currently, eight advanced or small modular reactor companies are progressing through the NRC’s pre-application and design certification regime, even as the NRC begins to execute NEIMA.28

Congress needs to provide oversight and hold the NRC accountable as it implements NEIMA.

Congress and the Administration should also continue this leadership by re-evaluating at least two additional areas of regulation, namely those related to radiation exposure standards and exports. First and briefly, radiation exposure standards have lagged woefully behind scientific advances. Excessively conservative standards have increased cost and complexity of nuclear reactor design and operation—for little or no public health and safety benefit. The implications are much larger than the nuclear industry, however: Deficient standards dangerously misinform the public about the actual risk. Though the Environmental Protection Agency (EPA) is responsible for setting baseline standards, radiation exposure standards thereafter are inconsistent across federal agencies. As the Government Accountability Office concluded in 2000: “EPA- and NRC-preferred protection levels…are both well below the range where radiation effects have been conclusively verified. In this regard, the disagreement essentially involves policy judgments—not strictly scientific judgments.”29

Second, **the likely market for nuclear energy is overseas, given growing electricity demand in the developing world.30**

**However, American nuclear companies face an inefficient export regime that neither advances the intended purpose of achieving security and nonproliferation benefits, nor enables nuclear energy companies in the U.S. to be competitive abroad.**For example, a 2017 report by the Clean Air Task Force found that it takes the DOE, State Department, and interagency process an average of 400 days to review an export application under the DOE’s Part 81031 specific authorization regulations. It took fewer than 150 days in the 1990s.32 The DOE has also used export regulations to close markets to American companies. Most notably, the DOE delayed export authorization for two years and ultimately amended its policy in early 2018 to deny nuclear technology exports to China for small modular reactors and advanced nuclear concepts.33 This has all but closed the door for advanced nuclear companies, such as NuScale and TerraPower, the latter of which initially chose to license its design in China. This policy change occurred despite the recent completion of four Westinghouse reactors in China as part of an earlier contract.

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<https://kleinmanenergy.upenn.edu/policy-digests/why-some-nations-choose-nuclear-power>

### **Customer nations, having decided to use or extend their use of nuclear power, may choose a vendor partly to make or strengthen a political alliance**. This premise may be part of the reason that Russian nuclear reactors are being built in Belarus and Finland and Chinese nuclear reactors are being built in Pakistan (WNA 2017a; WNA 2017b; WNA 2017c; WNA 2017e).

<https://issues.org/abdulla/>

The same may not be the case across the developing world. If the cost of more advanced small modular reactor designs can be brought down, even to the range of conventional reactors, many nations may find SMRs an attractive way to meet their growing demands for electricity or process heat, and may find the smaller size more compatible with their smaller, less-developed electricity grids.

Biomass

<https://www.realclearpolitics.com/articles/2018/06/26/the_tragic_cost_of_energy_poverty_137345.html?_lrsc=c52a9a96-d4d0-4306-987a-843da7ae1ff7&utm_campaign=elevate&utm_source=linkedin&utm_medium=social>

Today, over 1 billion people worldwide have no electricity. **Almost 40 percent of humanity – nearly 3 billion people – still use biomass**, animal dung or other fuels **that are dangerous for indoor cooking and heating**, no different than was done hundreds of years ago.

Living in energy poverty is not simply an inconvenience; it’s a social and economic tragedy. According to a report by the World Bank, the lack of modern, efficient cooking fuels is “one of the world’s major public health challenges, causing more premature deaths than HIV/AIDS, malaria and tuberculosis combined.” According to the World Health Organization, **more than 4 million people die each year from the effects of indoor air pollution**, half of them children under the age of 5.

# C1 is emPowering America

#### Right now, America’s nuclear power industry is on the decline

**Ken Silverstein Forbes 17**, 5-22-2017, "If Nuclear Energy Is Replaced By Natural Gas, Say Goodbye To Climate Goals," Forbes, <https://www.forbes.com/sites/kensilverstein/2019/05/10/if-nuclear-energy-is-replaced-by-natural-gas-say-goodbye-to-climate-goals/#2bdc08201699>

In the United States, 98 n**[while] nuclear reactors** are generating power, **produc[e]**ing 20% of the country’s electricity and **60% of [the US’s] its carbon-free power.** The Union for Concerned Scientists found that **35% of the [USs]** the **active nuclear [plants] units are at risk of closure** — 22% of the U.S. capacity — **because they can’t compete [economically] with natural gas.** That would increase U.S. power sector emissions by 4% to 6%. **Providing a subsidy thus has it benefits.**“Carbon-reduction policies work—and they’re affordable,” says Steve Clemmer, director of energy research for the Union for Concerned Scientists. “A national carbon price and/or low-carbon electrify standard would help avoid an over-reliance on natural gas, while costing the average U.S. household only $0.74 to $1.03 per month.” He adds that the public health benefits of $230 billion for using a low-to-no carbon fuel would be double the cost associated of pricing carbon. But the International Energy Agency is warning that while renewable energy is blossoming, it will only account for 18% of the world’s energy in 2040. That falls short of the 28% that it says is needed to mute global warming's impact. To reduce the level of heat-trapping emissions, it says that renewables would have to be targeted toward home-heating and transportation.

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**The US must fund these nuclear plants to prevent them from shutting down, since closures would significantly decrease the supply of electricity, causing prices to increase.**

#### ~~Loss in electricity supply~~

Mark **Perry Uni of Michigan 16** (full professor of economics at the Flint campus of the University of Michigan, where he has taught undergraduate and graduate courses in economics and finance since 1996. Starting in the fall of 2009, Perry has also held a joint appointment as a scholar at the American Enterprise Institute. Perry holds two graduate degrees in economics (M.A. and Ph.D.) from George Mason University and an MBA degree in finance from the University of Minnesota). “What happens when a nuclear power plant is shut down” The Detroit News. April 11, 2016. [http://www.detroitnews.com/story/opinion/2016/04/11/nuclear-power-plant-closed/82923486/.](http://www.detroitnews.com/story/opinion/2016/04/11/nuclear-power-plant-closed/82923486/) AM

A recent study indicates that **closing a nuclear plant has substantial energy-replacement costs** and significant, if usually unacknowledged, environmental consequences. The twin-unit **[After the] San Onofre nuclear plant in Southern California was shut down** in 2012. According to a study by two economists, Lucas Davis of the University of California-Berkeley and Catherine Hausman of the University of Michigan, **electricity generating costs rose by $350 million** during the year following San Onofre’s closing. What’s more, during that year, based on a rate of $35 per ton of carbon, the study determined that the increased cost of carbon releases due largely to the need for natural gas totaled $316 million. Carbon emissions rose by 9 million metric tons, which is equivalent to putting 2 million additional cars on the road. When a nuclear plant is closed, hundreds of people who work at the plant lose their jobs. According to the Nuclear Energy Institute, each reactor employs between 400 and 700 highly skilled workers, has a payroll of about $40 million and contributes $470 million to the local economy. In Michigan alone, four nuclear plants — Cook 1 and 2, Palisades, and Fermi 2 — employ nearly 3,000 people.

### The impact is preventing energy poverty

**Ingber ‘18** Ingber, Sasha, NPR Reporter. “31 Percent Of U.S. Households Have Trouble Paying Energy Bills.” September 19, 2018. NPR. <https://www.npr.org/2018/09/19/649633468/31-percent-of-u-s-households-have-trouble-paying-energy-bills> [Premier]

**Nearly a third of households in the United States have struggled to pay their energy bills**, the Energy Information Administration said in a report released Wednesday. The differences were minor in terms of geography, but Hispanics and racial minorities were hit hardest. About one in five households had to reduce or forgo food, medicine and other necessities to pay an energy bill, according to the report. "Of the **25 million households** that **reported forgoing food and medicine to pay energy bills,** 7 million faced that decision nearly every month," the report stated. More than 10 percent of households kept their homes at unhealthy or unsafe temperatures.

**A rise in energy prices would be devastating**

Jude**Clemente 14, Forbes,** 11-24-2014, "Americans Can't Afford Higher Electricity Prices," Forbes, https://www.forbes.com/sites/judeclemente/2014/11/24/americans-cant-afford-higher-electricity-prices/#62cc0f5f5a05

Per a recent report by U.S. Senators Lisa Murkowski and Tim Scott, **a 10% increase in home energy costs would push 840,000 more Americans into poverty.** The University of Kentucky's Center for Business and Economic Research concludes: A 10% increase in electricity prices: **reduces economic growth by** 4.1% in the short-run and **5.7%** in the long-run **and 2) reduces employment growth by** 4% in the short-run and **11% in the long-run.**

#### ~~(optional impact)~~ **~~Because the economy is especially vulnerable right now, this would bring the US and global economies into recession~~**

~~Catherine~~ **~~Thorbecke 20~~**~~, 3-2-2020, "Coronavirus could cut global economic growth outlook in half, OECD warns ," ABC News, https://abcnews.go.com/Business/coronavirus-cut-global-economic-growth-outlook-half-oecd/story?id=69334244~~

**~~With~~ ~~[Because of] the [Coronavirus] outbreak~~ ~~of the novel coronavirus~~~~, the global economy is facing its greatest threat since~~ ~~the~~ ~~[2008]~~ ~~financial crisis~~**~~, according to the Organization for Economic Co-operation and Development's interim economic outlook, released Monday. Boone noted that the world economy was already weakened by trade and political tensions, and that the outbreak has caused further uncertainty for households and firms.~~ **~~"The world economy is now~~** ~~too~~ **~~fragile~~** ~~for governments to gamble on an automatic sharp bounce-back," she said, calling for action. The organization presented two economic outlooks stemming from the coronavirus~~**~~:~~ ~~A best-case scenario would mean a "temporary blow"~~** ~~to the world economy.~~ **~~The worst case~~~~scenario~~** ~~would be a "Domino scenario," with broader contagion occurring. "Containment measures and fear of infection~~ **~~would~~** ~~hit~~ **~~[Cuts in] production [and]~~ ~~as well as~~ ~~spending [could]~~ ~~hard~~**~~and~~ **~~drive~~** ~~many of the epidemic~~ ~~affected~~ **~~countries into outright recession~~**~~," Boone wrote of the worst-case scenario in a blogpost explaining their findings.~~

~~Christina~~ **~~Kindlon IMF~~** ~~13, 4-11-2013, "IMF Study Shows Possible Consequences of Economic Recession," Borgen Project, https://borgenproject.org/imf-study-shows-possible-consequences-of-economic-recession/~~

~~The International Monetary Fund (IMF) released the results of a new study, showing that~~**~~a~~~~nother~~ ~~global~~ ~~economic~~ ~~recession could throw~~ ~~nearly~~ ~~900 million people~~ ~~back~~ ~~into poverty.~~**