# 1AC

## AFF

### 1AC---Jobs

#### Contention 1 is JOBS.

#### The economy will decline due to Trump’s tariffs.

Mutikani '25 reports [Lucia Mutikani; Correspondent at Reuters; 04-03-2025; "US economy slowing heading into tariffs turbulence"; Reuters; https://www.reuters.com/markets/us/us-weekly-jobless-claims-fall-labor-market-stays-stable-now-2025-04-03/; accessed 04-04-2025] leon

Fitch Ratings estimated that **the nation's tariff rate was now the highest in more than a century**. **Economists have warned of high inflation and possible job losses as households slash spending and businesses pull back on investment**, potentially pushing the economy into recession. Business and consumer sentiment had already tanked before Trump's sweeping tariffs.

"**This adverse trade news from the White House is an extreme external shock to the economy that is in all the university textbooks**, and so too is the need for being on high alert for signs of recession," said Christopher Rupkey, chief economist at FWDBONDS. "**Weekly job layoffs made by companies are minimal at the moment, but it is too early to forecast what businesses will do in the weeks and months ahead**."

Initial claims for state unemployment benefits dropped 6,000 to a seasonally adjusted 219,000 for the week ended March 29, the Labor Department said on Thursday. Economists polled by Reuters had forecast 225,000 claims for the latest week.

Low layoffs have kept the labor market humming. There were 1.07 job openings for every unemployed person in February, down from 1.13 in January, the government reported on Tuesday.

But **economists worry that Trump's tariffs blitz since returning to the White House in January could hurt the labor market**. **Trump sees tariffs as a tool to raise revenue to offset his promised tax cuts and to revive a long-declining U.S. industrial base, a view not shared by economists**.

U.S. **stocks opened sharply lower**. **The dollar plunged against a basket of currencies**. U.S. Treasury yields fell.

#### More broadly, oil decline will crashes the economy.

**Ahmed ‘23 continues** [Nafeez Ahmed, PhD in International Relations from the University of Sussex’s School of Global Studies, 3-29-2023, America’s Fossil Fuel Economy is Heading for Collapse – It Signals the End of the Oil Age, resilience, https://www.resilience.org/stories/2023-03-29/americas-fossil-fuel-economy-is-heading-for-collapse-it-signals-the-end-of-the-oil-age/, tristan]

US oil production is about to peak, but the world is unprepared for the tremendous economic and political consequences. The only path through is **energy and economic transformation**.

The global economy is currently teetering **on** the **edge** of a banking crisis. The IPCC has just released its final major report warning that global carbon emissions need to peak and decline immediately if we are to avoid plunging into dangerous global warming by breaching the 1.5C ‘safe limit’. And in recent weeks and months, industry leaders have announced that the US shale oil and gas **revolution is over.**

Yet few if anyone is talking about why these things are happening at the same time, and what they really mean.

One of our biggest problems is that we tend to think in silos and sectors. But in the real world, the sectors we assume operate separately are in fact **fundamentally interconnected**. We ignore and downplay these systemic interconnections at our peril.

The persistence of global inflation has taken many economists by surprise. While they recognise that the impact of Russia’s war in Ukraine on energy and food supplies has been the biggest driver, that silo-ed assumption has led to a failure to understand why inflation is unlikely to simply disappear anytime soon.

We have good reason to believe that the underlying drivers of inflation go beyond just the war in Ukraine. Although it’s extremely difficult to quantify, climate change and environmental degradation is driving inflation by eroding agricultural productivity leading to higher food costs. The impact of extreme weather events is also creating larger and larger damages to infrastructure which in turn is incurring greater costs. As these costs feed into the system, the supply of goods and services becomes more expensive.

Less difficult to quantify is the fact that inflation is historically linked to energy price hikes. And there is mounting evidence that the world is experiencing a major shift in the global fossil fuel system that entails rising costs and diminishing returns, which will end up having a major inflationary effect for far longer and deeper than conventionally assumed.

The end of the shale boom

Since late last year, there have been a growing number of reports pointing out that the US shale revolution is coming to an end. Yet the massive global consequences of this are not being discussed.

“US Shale Boom Shows Signs of Peaking as Big Oil Well **Disappear**” read one headline in the Wall Street Journal. “The **aggressive growth era** of US shale is **over**,” Scott Sheffield, CEO of top independent shale firm Pioneer told the Financial Times. “The shale model definitely is no longer a swing producer.” And according to Bloomberg: “The specter of peak oil that haunted global energy markets during the first decade of the 21st century is once again rearing its head”.

US **industry executives are** now **openly acknowledging** that US oil production is likely to peak within the next five or six years, or perhaps in 2030. But there is mounting evidence that the peak will come much earlier, with some industry observers pinpointing its arrival as early as within the **next one or two years.**

What’s extraordinary about these admissions is how little they are impacting public debate. The implications are seismic. They contradict bullish overinflated forecasts of the industry made two decades ago – in 2005, for instance, Washington DC think-tank RAND Corp was forecasting that the US had enough shale oil to last some 400 years; and in 2012, a senior ExxonMobil executive claimed that the US has “about 100 years of natural gas supply”.

These grand claims were often breathlessly reported as unimpeachable fact by some of the most respected media institutions in the world.

Naysayers (like myself) warning that shale oil and gas would offer at best a temporary boost that was bound to peak and decline in the near-term with major global economic consequences, were dismissed as ‘doomers’.

Now, it turns out, we were right all along.

Mistakes of forecasting

That’s not to say that the traditional ‘peak oilers’ at the time were spot on. They wrongly expected that following the plateauing of conventional oil around 2005, oil prices would rocket up permanently into triple digits as global oil production would go into terminal decline. That didn’t happen. Instead, global demand shifted to the more expensive forms of unconventional oil and gas – especially US shale – which made-up much of the short-fall as conventional oil production slowed down.

But this was a recessionary environment, so global demand was much lower than expected. The massive 2005-2008 global oil price spikes helped induce a banking collapse. After the 2008 financial crash, this meant that there was much less demand for oil – but as oil production projects are planned years in advance pegged to expectations of demand, the oil just kept pumping despite much lower demand due to economic recession.

The result was a glut of shale oil and gas on world markets that allowed oil prices to drop and fuelled widespread belief in a new era of ‘Made in America’ cheap oil.

The US shale boom had a good run, no doubt about it – but its ‘healthy’ lifespan appears to be around two decades. If US shale oil and gas is about to peak and decline in the next few years, what does this mean for the US and global economy?

Coming economic contraction

Given that the US shale revolution played the key role in keeping global oil prices down and lubricating the energy requirements of continued economic activity, the retraction of the US shale revolution will have **massive economic impacts**.

US production has accounted for around **70% of the total increase** in global oil capacity since 2019, and 75% of growth in liquified gas supplies. So as US shale oil and gas peaks, plateaus and declines, global oil and gas production **will do so too very shortly after.**

Gulf oil and gas producers, however, will not be able to step-in to fill the shortfall. US oil production is currently averaging around 11 million barrels per day (mbd).

A 2022 analysis of production data among the Organisation of Petroleum Exporting Countries (OPEC) which include the biggest powerhouses such as Saudi Arabia and the UAE, suggests that the maximum OPEC could collectively increase production is around 4.5 mbd – that is, **less than half of current US shale production.**

It’s also not clear how long OPEC can deploy spare capacity to maintain maximum levels of production. This suggests that OPEC will not be able to meaningfully fill the supply gap as US shale declines, which is a clear indicator that total global oil production will eventually begin to peak and decline.

In 2017, I assessed these trends in Failing States, Collapsing Systems. I predicted that US oil and gas production would probably peak and plateau **around 2025**, and that major Middle East producers would peak and plateau around the 2030s. This scenario now appears to be **unfolding before our eyes**. Yet no one is talking about it.

The near-term **economic and financial consequences** will be devastating, and they could lead to permanent long-term consequences without significant transformative action. The impact on the US economy will be profound.

Shale production accounted for **10% of GDP growth** in the United States from 2010-2015, which means that the next decade of shale’s plateauing and decline will gradually **wipe this** out. This will be experienced as a protracted inflationary economic crisis which, in turn, will contribute to volatility in global financial markets. Pundits will likely fail to understand these systemic interlinkages, focusing instead on failing banks, financial institutions and debt, without understanding its energetic triggers.

All this implies that we are **sleepwalking into a global energy crisis** that will, without accelerating the clean transformation of the energy system, create severe economic and financial consequences by undercutting the fundamental energetic basis of global economic flows. This will compound accumulated vulnerabilities in the banking system linked to unsustainable forms of debt.

The reverberations and bailouts seen in the cases of the Silicon Valley Bank, Credit Suisse and others are merely the opening cracks, that will become widening fissures in the absence of root-and-branch economic restructuring linked to the rapid development of a new energy system.

While that new system is still emerging, it is perhaps unavoidable that we will hit a number of bottlenecks. The danger is that instead of using these bottlenecks to restructure and adapt positively, we may end up regressing, with a loss of capital and energy that forestalls the full potential of transformation.

The window for action is extremely short: we need to act within this decade. Along the way, we need to be aware of the major trends which are likely to emerge as a result of the end of the US shale boom:

1. The illusion of cheap oil is evaporating

While we may still see fluctuating prices, it is becoming clearer that the glut of cheap oil this last decade was not a permanent feature of the energy system, but a temporary symptom of highly specific circumstances as the energy system moves deeper into a state of increasing inputs and diminishing returns. The immediate impact of the peak and plateau of US shale will be sustained high oil prices.

2. The near-term beneficiaries of this will be Gulf oil and gas producers

They currently appear to be the only fossil fuel energy suppliers with sufficient capacity to maintain production. They will therefore not only begin to dominate market share, they will also of course continue to reap higher profits from this more advantageous market position amidst high oil prices.

3. Some capital will move into OPEC for safety, but this is a mirage

Just as this last decade created the illusion of fossil fuel abundance due to the US shale boom, we may see that OPEC’s near-term ability to ramp up spare capacity as shale production declines perpetuates this illusion. We can expect to see lots of bullish statements from Gulf oil producers vindicating grand plans to expand their oil and gas production. Capital will move rapidly into OPEC countries, seen as a last safe space for investors looking for stability and growth. However, OPEC producers will also begin experiencing their twilight very shortly after the decline of US shale, which means that investors will begin to make serious losses as a result far sooner than they imagine.

4. Oil prices will **fluctuate within a higher range** as US shale peaks

While we can expect significant oil price volatility due to the recessionary impact of high oil prices which would lower demand and therefore allow prices to drop, as we move further into the era of plateau and decline across US and OPEC production, the overall decline in supply is likely to lead oil price fluctuations to narrow within a far higher range which will become a ‘new normal’ as long as oil demand remains high. This may also incentivise near-term conviction in the idea that new oil and gas investments are economical. That would be a colossal mistake, though, as we will see below due to coming reductions in oil demand in the latter half of this decade that will ameliorate high prices and make fossil fuel enterprises increasingly unprofitable.

5. We can expect heightened political polarisation

Incumbent industry ideology will likely blind many energy actors from recognising the writing on the wall – which explains the regressive self-defeating actions of the Biden administration in committing to Arctic drilling. This is like betting on the losing horse after being told it’s about to be overtaken by cars. It illustrates the power of America’s oil lobbies in their last ditch desperate attempt to stay alive on the back of taxpayer subsidies – flying in the face of hard economic realities (a few years ago I broke the story of the British military study which concluded that Arctic drilling was pointless for economic reasons because the costs are so high and returns so low as to make it commercially infeasible). That in turn suggests the political battleground between fossil fuel lobbies and clean energy advocates will become more fraught as the incumbency seeks to double-down in demanding more government subsidies. **Millions of jobs** will be at risk as the US shale industry declines, and this could create further negative economic and cultural consequences as the US returns to net import status.

6. Clean energy transformation will be critical to stabilise the global **economy and restore prosperity**

The **only viable pathway** through this crisis will be to accelerate the clean energy transformation focused on the deployment of exponentially improving technologies which are already scaling because they are cost-competitive with fossil fuels – namely, solar, wind and batteries. This will lay the groundwork for other potential applications such as e-fuels or green ammonia from green hydrogen. This transformation is already underway, and provides the opportunity for the US and others to produce larger quantities of energy at a fraction of the costs of fossil fuels. In Rethinking Climate Change, a RethinkX report for which I was contributing editor, we found that even in the absence of appropriate policy-decisions and major institutional barriers, economic factors will inevitably drive incumbent industries to collapse by 2040 as they are replaced by new solar, wind and battery systems. Unfortunately, while this is far faster than conventional analysts acknowledge, this is **not fast enough** to avoid dangerous climate change.

#### Affirming is key to growth.

Watson '22 writes [Nicholas Watson; IAEA Department of Nuclear Energy; Lucy Ashton; IAEA Department of Nuclear Energy; 04-14-2022; "Towards a Just Energy Transition: Nuclear Power Boasts Best Paid Jobs in Clean Energy Sector"; International Atomic Energy Agency; https://www.iaea.org/newscenter/news/towards-a-just-energy-transition-nuclear-power-boasts-best-paid-jobs-in-clean-energy-sector; accessed 02-25-2025] leon

**The move to clean energy will generate more jobs than are lost with the transition away from fossil fuels and the highest paid ones will continue to be in nuclear power, which provides significant and sustainable employment benefiting local and regional economies**, according to new research presented at an IAEA event.

With more than 130 countries either committing to or considering a target of net zero greenhouse gas emissions by 2050, **preparing for how this energy transition will affect the job market is critical**. Representatives from the clean energy industry joined a recent IAEA webinar on how rising living standards and job creation can be ensured as energy investments align to meet climate goals.

“Moving away from the use of fossil fuels must not leave anyone behind – this is the concept of a Just Transition,” Henri Paillere, Head of the IAEA Planning and Economic Studies Section, said at the webinar on “Investing in Low Carbon Technologies: Job Creation for Just Energy Transitions”. “Investing in all clean technologies is needed on a massive scale and this must be done in way that creates jobs, economic growth and supports sustainable development.”

**Investments in clean energy sources such as solar, wind and nuclear have a positive impact on gross domestic product** (**GDP**) **that is two to seven times stronger than spending on fossil sources such as gas, coal and oil**, according to an International Monetary Fund working paper. Analysis presented at the webinar by the International Renewable Energy Agency (IRENA) predicts that in a scenario where the global temperature rise is limited to 1.5° Celsius, consistent with global climate goals, **jobs in the renewables sector could grow from 12 million to 38 million by 2030**.

**Other energy transition-related jobs** – such as energy efficiency, power grids, energy system flexibility – **could grow from 16 million to 74 million over the same period**, said Michael Renner, Programme Officer in the Knowledge, Policy and Finance Centre at IRENA. By contrast, **conventional energy jobs would decline from 39 million to 27 million**.

“Clearly the raw numbers alone look quite good,” Renner said. “**The transition-related jobs outweigh the job losses in fossil fuels**.”

According to the IMF paper, **investments in nuclear power produce the biggest economic multiplier effect of any clean energy source**. **Nuclear power creates about 25% more employment per unit of electricity than wind power**, while workers in the nuclear industry earn one third more than those in the renewables sector, the paper showed.

Similar findings were presented by Philippe Costes, Senior Advisor at the World Nuclear Association (WNA). “**Nuclear offers jobs with higher wages than any other energy technology, roughly 25-30% higher**. But importantly, **while nuclear provides jobs locally around the plant and in regional economies during construction similar to wind, during operation only nuclear provides significant and sustainable jobs to the local and regional economies**,” Costes said at the webinar.

#### Indeed,

**Lee ’10 continues** [Chien-Chiang Lee, Professor of Finance @ National Sun Yat-sen University (Kaohsiung, Taiwan) & Ph.D. in International Economics @ Chung Cheng University, 6-24-2010, Nuclear energy consumption, oil prices, and economic growth: Evidence from highly industrialized countries, Energy Economics, https://sci-hub.ru/10.1016/j.eneco.2010.07.001, Willie T.]

During the two energy crises in the 1970s, the price of oil **doubled, even tripled** in some countries, resulting in an increase of production cost and sharply reducing export competitiveness, which may have reduced imported-energy-dependent countries' economy performance and international competitiveness. Fossil fuels including coal, oil, and gas nowadays provide **85% of energy needs**, and fossil-fuelled economic growth is the **main factor for global warming** through the release of carbon dioxide (CO2) into the atmosphere. In December 1997 the third session of the Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in Kyoto, Japan adopted the Kyoto Protocol. Annex I countries agreed to reduce their collective greenhouse gas emissions by 5.2% from their 1990 level by 2008 to 2012. The U.S. President Obama's New Energy for America plans to reduce 10 million barrels of oil consumption per day by 2030 and to cut the country's collective greenhouse gas emissions by 80% from the 1990 level by 2050.

To combat these energy and environmental configurations, one of the important priorities of energy and environmental policy is to **diversify the sources of energy** and to find a **secure, cheap, and nonGHG**-emitting energy supply (Fiore, 2006; Vaillancourt et al., 2008; Wolde-Rufael, 2010). As noted by the International Energy Agency (IEA, 2008), nuclear energy may **answer these conditions**, as it **reduces the instability** of oil prices, the dependence on oil imports for many countries, and greenhouse gas emissions. Therefore, nuclear energy (non-carbon energy) may be a **crucial substitute** energy for oil, and whether imported-energy-dependent countries can adopt nuclear energy to replace the majority of fossil fuels in their economy has become an important issue.

#### Otherwise, unemployment kills.

Crudele '20 quantifies [John Crudele; Columnist and Business Journalist; 04-20-2020; "Is unemployment really as deadly as coronavirus?"; New York Post; https://nypost.com/2020/04/20/explaining-the-link-between-unemployment-deaths-amid-coronavirus/; access at https://archive.ph/Zn0Am#selection-779.5-779.53; accessed 04-04-2025] leon

Pitt’s Rickert chastises his colleagues for acting so happy and says: “**Every 1 percent unemployment goes up, 40,000 people die**. Did you know that?”

**Is that 40,000 figure just Hollywood nonsense**?

**Well, it’s not**. Or at least it is close. And that, in a nutshell, is what President Trump has to deal with right now.

If he opens up the economy, there could be a spike in cases of coronavirus and a rise in deaths unless there is some medical breakthrough. Already, 41,000 people are reported to have died from the disease in the US alone.

But **if the president keeps the economy closed, the unemployment rate is bound to climb** and if you believe Pitt’s character — and the academic research upon which that statement is based — people will die because of that as well.

There’s a technical term for this — it’s called being damned if you do and damned if you don’t.

**Before the economic mess this virus caused, the US unemployment rate was just 3.5 percent**. In March, it rose to 4.4 percent. And there are predictions that it will go as high as 13 percent and maybe even 15 percent before people start returning to work.

So, **if the calculations are correct, that 10 percentage point-plus rise in the jobless rate would cause more than 400,000 deaths that have nothing to do with the virus** and everything to do with the distressed economy.

#### Indeed, a recession is devastating.

Bradford ’13 furthers [Harry Bradford, Prize-winning conductor and choral director; 4-5-2013, "Three Times The Population Of The U.S. Is At Risk Of Falling Into Poverty," HuffPost, https://www.huffpost.com/entry/global-poverty-900-million-economic-shock\_n\_3022420, accessed on 10-16-2023] tristan + leon

Hundreds of millions of people worldwide are on the brink of poverty. A recent study by the International Monetary Fund warns that as many as **900 million people could fall back into poverty in the event of an economic shock like the Great Recession**. **That figure is three times the size of the U.S. population**. According to the World Bank, 1.2 billion people are currently living on less than $1.25 a day.

#### Even worse, sustained economic decline risks war.

Brands ’21 writes[Hal Brands; professor @ John Hopkins University and senior fellow @ the American Enterprise Institute; 09-24-2021; “China Is a Declining Power—and That’s the Problem”; Foreign Policy; https://foreignpolicy.com/2021/09/24/china-great-power-united-states/; accessed 02-10-2025] tristan

**Slowing growth** makes it **harder** for leaders to **keep the public happy**. Economic underperformance weakens the country against its rivals. Fearing **upheaval**, leaders **crack down on dissent**. They maneuver desperately to keep geopolitical enemies at bay. Expansion seems like a solution—a way of **grabbing economic resources** and **markets**, making nationalism a **crutch** for a **wounded regime**, and **beating back foreign threats**.

**Many countries** have **followed this path**. When the United States’ long post-Civil War **economic surge ended**, Washington violently **suppressed strikes and unrest at home**, built a powerful blue-water Navy, and engaged in a **fit of belligerence** and imperial **expansion during the 1890s**. After a fast-rising imperial Russia fell into a deep slump at the turn of the 20th century, the tsarist government cracked down hard while also enlarging its military, seeking colonial gains in East Asia and sending around 170,000 soldiers to occupy Manchuria. These moves backfired spectacularly: They antagonized Japan, which beat Russia in the first great-power war of the 20th century.

A century later, Russia became aggressive under similar circumstances. Facing a **severe, post-2008 economic slowdown**, Russian President Vladimir Putin invaded two **neighboring countries,** sought to create a new Eurasian **economic bloc**, staked Moscow’s claim to a resource-rich Arctic, and steered Russia deeper into dictatorship. Even democratic France engaged in **anxious aggrandizement** after the end of its **postwar economic expansion** in the 1970s. It tried to rebuild its old sphere of influence in Africa, deploying 14,000 troops to its former colonies and undertaking a dozen military interventions over the next two decades.

### 1AC---Climate Change

#### Contention 2 is CLIMATE CHANGE.

#### We aren’t meeting climate goals.

Nunes '24 finds [Ashley Siefert Nunes; Climate and Energy Media Manager; 10-24-2024; "New Scientific Report Confirms World Leaders Failing to Meet Climate Goals, With Rich Nations Causing Greatest Harms"; Union of Concerned Scientists; https://www.ucs.org/about/news/new-scientific-report-confirms-world-leaders-failing-meet-climate-goals-rich-nations; accessed 03-11-2025] leon

WASHINGTON—The United Nations Environment Programme (UNEP) released its annual emissions gap report today. According to this latest analysis, **global heat-trapping emissions have yet to peak, and the world is on track to endure global average temperatures that rise between 2.6 and 3.1 degrees Celsius** above pre-industrial levels based on nations’ current emission reduction pledges, **far exceeding the Paris Agreement temperature goals**.

As with other recent scientific studies, **this report raises alarm about the disconnect between the science-based goals of the Paris climate agreement and both the pledges countries have made to rein in heat-trapping emissions** and the policies they have implemented thus far to achieve those commitments. Scientific agencies around the globe are already forecasting that **2024 will be deemed the hottest year on record**, continuing a trend of rising global average temperatures.

**Below is a statement by Dr. Rachel Cleetus, the policy director and a lead economist in the Climate and Energy Program at the Union of Concerned Scientists** (UCS). **She has more than 20 years of experience working on international climate and energy issues** and is a regular attendee of the annual U.N. climate talks. Dr. Cleetus will be attending this year’s negotiations, also called COP29, taking place next month in Baku, Azerbaijan, just after the U.S. presidential election.

“**This report forcefully confirms that nations’ efforts to cut heat-trapping emissions have been grossly insufficient to date**. Global heating records are being topped year after year, and people and ecosystems worldwide are suffering the devastation of unrelenting climate change disasters and increasingly irreversible impacts. To put it bluntly, **decades of inadequate action have put the 1.5 degrees Celsius goal further out of reach and world leaders are failing their people**. The consequences are profound—but **the policy choices decided now are as crucial as ever to limit future harm**.

#### Fortunately, nuclear energy offers an effective solution.

Hansen '13 confirms [James E. Hansen; PhD, American adjunct professor; Pushker A. Kharecha; PhD, Climate scientist; 03-15-2013; "Prevented Mortality and Greenhouse Gas Emissions from Historical and Projected Nuclear Power"; ACS; https://pubs.acs.org/doi/10.1021/es3051197; accessed 03-10-2025] leon

In the aftermath of the March 2011 accident at Japan’s Fukushima Daiichi nuclear power plant, the future contribution of nuclear power to the global energy supply has become somewhat uncertain. Because nuclear power is an abundant, low-carbon source of base-load power, it could make a large contribution to mitigation of global climate change and air pollution. **Using historical production data, we calculate that global nuclear power has prevented an average of 1.84 million air pollution-related deaths and 64 gigatonnes of CO2-equivalent** (GtCO2-eq) **greenhouse gas** (GHG) **emissions that would have resulted from fossil fuel burning**. On the basis of global projection data that **take into account the effects of the Fukushima accident, we find that nuclear power could additionally prevent an average of 420 000–7.04 million deaths** and 80–240 GtCO2-eq emissions due to fossil fuels by midcentury, depending on which fuel it replaces. By contrast, we assess that **large-scale expansion of unconstrained natural gas use would not mitigate the climate problem and would cause far more deaths than expansion of nuclear power**.

#### For example,

Maguire '24 reports [Gavin Maguire; Global Energy Transition Columnist; 09-19-2024; "Georgia's new nuclear plants drive US power sector clean-up"; Reuters; https://www.reuters.com/business/energy/georgias-new-nuclear-plants-drive-us-power-sector-clean-up-maguire-2024-09-19/; accessed 03-11-2025] leon

**From 2018 through 2022, the Vogtle site generated an average of 2,813 gigawatt hours** (GWh) of electricity a month **for the state of Georgia**, around **27% of total state electricity supplies according to Ember**.

**Since Vogtle 3 started operations in April 2023, that generation total rose to an average of around 3,500 GWh a month**, and climbed to over 4,600 GWh in May 2024, when Vogtle 4 first started operating.

CHANGING MIX

The sharply higher production from nuclear reactors has impacted Georgia's electricity mix in several key ways.

Firstly, **the share of generation from nuclear reactors jumped to 37% in May** - **a full 10 percentage point above the long-term average** - **as the Vogtle 4 plant came online**.

Secondly, the state's overall electricity generation total climbed to new highs as more nuclear generation was added to the output from other sources.

During the January to May period, Georgia's total electricity generation was 55,634 GWh, which was a record for that period and marked a 12.3% jump from the same months in 2023, Ember data shows.

Thirdly, the higher level of nuclear generation also boosted Georgia's total clean electricity output levels, which exceeded generation from the state's fossil fuel assets during March, April and May of this year for the first time on record.

Clean power's share of the Georgia generation mix was a record 47% for the January to May period, and compares to 41.5% during the same months a year ago.

Sustained output from Vogtle 3 and 4 over the remainder of 2024 could help push the clean power share of the overall mix closer to 50%.

WIDER IMPACT

**Vogtle's full ramp-up was also evident farther afield, with the carbon intensity of power production of the Southern Company Services power system dropping by 14% so far in 2024 from 2023's average** levels.

#### Thus, more investment is key.

Fisher '24 reports [Matt Fisher; Reporter at the IAEA Department of Nuclear Energy; 10-18-2024; "New IAEA Report on Climate Change and Nuclear Power Focuses on Financing"; International Atomic Energy Agency; https://www.iaea.org/newscenter/news/new-iaea-report-on-climate-change-and-nuclear-power-focuses-on-financing; accessed 03-07-2025] leon

According to the report, **global investment in nuclear energy must increase to 125 billion USD annually, up from the around 50 billion USD invested each year** from 2017-2023, **to meet the IAEA’s high case projection for nuclear capacity in 2050**. **The more aspirational goal of tripling of capacity**, which more than 20 countries pledged to work towards at COP28 last year, **would require upwards of USD 150 billion in annual investment**.

#### Historically, investment has been effective.

Freebairn '24 continues [William Freebairn; Reporter for S&P Global; 05-15-2024; "Layers of IRA tax credits boost nuclear energy's economics, drive uprate interest"; S&P Global; https://www.spglobal.com/commodity-insights/en/news-research/latest-news/electric-power/051524-layers-of-ira-tax-credits-boost-nuclear-energys-economics-drive-uprate-interest; accessed 03-06-2025] leon

**The US Inflation Reduction Act has provided multiple avenues for nuclear plant operators to benefit**, with some options to layer multiple credits and even sell the credits for more rapid profits, industry officials said May 14.

The IRA, passed in 2022, **contains a series of credits for clean energy, many of which can apply to nuclear energy in some way**, speakers at two panel sessions at the Nuclear Energy Institute's policy conference said in Washington.

**The IRA's passage has dramatically reversed the fortunes of nuclear operators, especially those in competitive power markets**, noted David Brown, senior vice president of federal affairs at **Constellation, the largest US nuclear plant operator by capacity**. **The IRA was** "**transformational**" **for the company, he added**.

For the 10 years prior to the IRA's passage, **Constellation had sought federal and state support to keep nuclear units from retiring prematurely**, and had implemented a hiring freeze as it planned to shut four reactors, Brown said. **With the security provided by the IRA, the company has hired 3,000 workers and is planning to renew the operating licenses of all of its 23 reactors**, he said.

**The IRA includes various tax credits that can apply to nuclear operators**, said Matt Crozat, the Nuclear Energy Institute's executive director of strategy and policy development. Operating plants are eligible for a production tax credit of up to $15/MWh, while new nuclear capacity can choose between a PTC of $30/MWh or an investment tax credit of 30%. **The investment tax credit can rise to as much as 50% if nuclear projects include sufficient domestic content** and are built in former coal plant communities, Crozat added.

Capacity increases at existing nuclear plants qualify as new capacity and owners can elect the PTC or ITC, speakers said. This has triggered a resurgence of interest in such uprates, several noted.

**Constellation has said up to 1,000 MW of additional nuclear capacity could be obtained from its fleet in coming years through uprates**, while NEI President and CEO Maria Korsnick said in a speech at the conference May 14 that **2.5 GW of capacity across the US could be added at existing nuclear plants via uprates**.

#### Our opponents may talk about renewables, but

Snyder '23 writes [Van Snyder; Spent 53 years as a mathematician, Engineer at Caltech; 03-16-2023; "Five Myths About Nuclear Power"; Substack; https://vsnyder.substack.com/p/five-myths-about-nuclear-power; accessed 02-19-2025] leon

**A 2009 MIT study concluded that nuclear power plants could be built for $4 per watt, and produce electricity for 6¢ per kWh**. Reactors under construction in Finland and Sweden cost about $7.50 per watt; ones in China cost $1.50 per watt. Delays due to lawsuits, difficulty certifying a new reactor, and licensing in an ever-changing regulatory environment add significant cost, especially interest on capital. It would be helpful if the Nuclear Regulatory Commission were to adopt the French system of licensing reactor designs, instead of individual reactors.

**The operating cost of a reactor is quite low because fuel cost is low**. Using $30/lb for uranium ore and 4.5% enrichment, **the contribution of the cost of uranium to the price of electricity is 0.116¢ per kilowatt hour** (kWh). This was the origin of Lewis Strauss’s infamous '“too cheap to meter” quip, which ignored all other costs. **Reducing oxide to metal, enriching the concentration of the fissile isotope (U-235) from the natural state of 0.7%, to 5%, and fabricating fuel assemblies, increase the fuel price to 0.5¢ per kilowatt hour**. Economic details are explained in Chapter 13 of Plentiful Energy.

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The lowest-cost electricity in California, 5¢ per kWh, is produced by the Diablo Canyon Nuclear Generating Station. Fixed cost amortization over the life of the facility contributes 74%, or 3.7¢ per kWh. Labor and other non-fuel recurring costs are 0.8¢ per kWh. The average California delivered electricity price is 30¢ per kWh.¶ The 3.3 GWe Palo Verde nuclear generating station in Arizona was constructed for $1.79 per watt. Its delivered price for electricity is 4.3¢ per kWh. It is the most profitable electric utility in the U.S.¶ Waste disposal is incorrectly cited as a social cost not internalized in the pricing structure. Since 1981, utilities had been paying 0.1¢ per kWh into the Federal Nuclear Waste Disposal Fund for this purpose, until a Federal court ruled in 2013 they no longer needed to pay because the Department of Energy had reneged on its legal responsibility to take custody of spent fuel. It was included in the rate customers paid. The fund now stands at $43 billion. Nuclear power is the only industry that fully internalizes all costs!¶ Another factor sometimes cited is subsidies. Federal subsidies for light-water reactors are larger than subsidies for gas or hydro generation, but substantially less than for wind or solar photovoltaic (PV).¶ State and local subsidies vary. The additional California solar PV subsidy is 40% of the Federal subsidy.¶ The first full-scale instance of any new system is always expensive, but both construction and operating costs always decrease with experience. A 300 MWe IFR-type reactor could be built for less than $8 per watt. A GE/Hitachi consortium estimates they could build 380 MWe modular instances called S-PRISM (Super Power Reactor Innovative Small Modular) for less than $2 per watt, if they were to have a stream of orders that is sufficiently secure to justify a factory to construct essentially identical ones, instead of building each one, subtly different from any other, on site.¶ In Conceptual Design of a Pilot-Scale Pyroprocessing Facility, Argonne National Laboratory and Merrick & Company proposed a forty hectare $398 million pilot-scale pyroelectric refining facility to process 100 tonnes per year of any type of spent fuel, a small fraction of the cost of a PUREX facility. Operating cost would be 0.05¢/kWh. Because utilities paid into the Federal Nuclear Waste Disposal Fund, and because Yucca Mountain has been canceled, this facility and similar larger-scale facilities ought to be constructed using those funds, not funded as part of the construction of new reactors, and not from the general fund of the Federal treasury — but the Nuclear Waste Disposal Act prohibits using the funds for reprocessing.¶ If the goal of modernizing the energy sector is to reduce or eliminate carbon dioxide (CO2) emissions, comparison to fossil fuels is irrelevant. Several scientists calculated that the only renewable source that can in principle provide all current energy usage is solar. Wind cannot provide more than about 15% of current total energy usage, which will surely increase (and wind won't). Conservation and all other schemes, alone or together, are inadequate to close the gap between wind supply and energy demand.

<<LINE BREAKS CONTINUE>>

**Solar PV panels cost about $3 per peak installed watt of label capacity**. Setting aside their inability to destroy spent nuclear fuel, it seems attention ought to focus on them instead of new designs of nuclear reactors. **The amount of electricity produced in a year, divided by the amount that would be produced if the system ran continuously at full label power output, is the capacity factor**. **The Department of Energy reported that the 2018 national average capacity factor for solar PV was 25%**. **Nuclear generating stations averaged 92.5%**. **With a 25% capacity factor, the cost of a solar panel**, at $3 per peak watt, **is $12 per average watt, about six times the expected cost of S-PRISM modules**.

Solar panels last about 25 years, but must operate more than four years to repay the energy invested in their fabrication, deployment, and recycling. The capital cost of $12 per average watt, amortized over twenty-five years at 5%, deducting the four-plus year energy payback period, is $26.61 per watt of average capacity.

The capital cost for solar PV panels does not include operating and maintenance costs, electricity storage, significant grid changes necessary to exploit diffuse sources, and recycling.

Several independent studies have determined that **renewable sources would need 390-800 watt-hours' storage per average watt of demand to provide firm power**, for which the industry definition is 99.97% availability. In Adequate Storage for Renewable Energy is Not Possible, using twelve years of data for California, I calculated that more than 2,800 watt-hours’ storage per watt of average demand would be necessary. Using five years of nationwide data, more than 800 watt-hours’ storage per watt of average demand is necessary. The May 2020 price for Tesla PowerWall 2 batteries was $0.543, not including installation. The warranty period is ten years. For 800 watt-hours, **the total cost would be more than 3.8 times total USA GDP every year**, for batteries alone, or “only” $49,000 per month for each of America’s 128 million households. **These amounts of storage will be entirely inadequate the next time Mount Tambora erupts and produces another** “**year without a summer**” such as 1816. This or something similar will happen again. The only question is “when?”

**These sorts of calculations never appear in arguments that renewable electricity is less expensive than nuclear power**.

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It leads to nuclear weapons proliferation (no it doesn't)¶ In a March 2017 Scientific American interview, John Holdren, President Obama's Science Advisor, said “… breeder reactors… [require] what amounts to a plutonium economy… and trafficking in large quantities of weapons-usable material.”¶ A plutonium economy unrelated to breeder reactors already exists. The often-repeated hyperbole ”trafficking in large quantities of weapons-usable material” is nonsense.¶ Spent fuel from a British municipal reactor was used to make a nuclear explosion. The yield was a fraction of the Hiroshima weapon, which was a much simpler uranium device. The British remarked “We will not try that again.”¶ If plutonium is less than 93% isotopically and chemically pure Pu-239, explosive yield decreases rapidly. In an IFR-type system, plutonium in spent fuel never contains more than 54% Pu-239, and is never more than 40% chemically pure. Separating isotopically pure Pu-239 from spent fuel presents a much more difficult problem than for uranium. Plutonium isotopes in spent fuel, other than Pu-239, emit 50 times more heat, 5,000 times more neutrons, and 100 times more gamma radiation. This could damage a weapon or cause predetonation, and makes maintenance of fine mechanical tolerances difficult. Expensive remote assembly is mandatory. A 1994 Lawrence Livermore National Laboratory study stated “spent IFR fuel cannot be used to make a nuclear weapon without significant further processing.” No one makes weapons from spent fuel because it is the most difficult substance from which to do so.¶ Producing isotopically pure plutonium directly in a reactor requires controlling the neutron energy more precisely than is practical in a municipal reactor, and irradiating the fuel for durations far shorter than would be economical. Even the most rudimentary inspection regime would detect this. If an inspection regime is not practical in rogue states, don't sell them reactors, spent fuel, or means to reprocess fuel.¶ Even if truly “weapons-ready” material existed, the proliferation argument is a red herring. No country's nuclear power stations or fuel reprocessing affect any other country's desires, decisions, or ability to acquire nuclear weapons. On-site reprocessing implies very few opportunities for diversion or theft. Plutonium in spent fuel in an IFR-type system is in a highly-radioactive and therefore easily monitored state. Advanced industrial economies already have nuclear weapons, or have the means to make them much more effectively than from spent municipal reactor fuel. Only a fast-neutron reactor can consume all fissionable metals in spent fuel and decommissioned weapons.¶ There isn't enough uranium (there's plenty)¶ The Australian Uranium Association estimated that it is economically feasible at current prices to recover about 4.5 million tonnes of uranium. Known or projected reserves of lower quality increase the estimate to 18.5 million tonnes. Activists insist an all-electric Earth would demand about 15,000 GWe. Using the one tonne per GWe-year rule of thumb, 18.5 million tonnes is enough to satisfy this demand, if it were used with 100% efficiency, for only about 1,200 years. But today’s reactors use only 0.6% of the energy in mined uranium, so this fuel would last less than ten years. The situation isn't nearly so bleak, however.¶ In the United States, there are about 90,000 tonnes of 5%-used fuel, and about 900,000 tonnes of depleted uranium left over from enriching mined uranium. A 1,700 GWe all-electric U.S. energy economy could be powered by this “waste” in fast-neutron reactors for 525 years, or longer depending upon use of renewable sources, without mining, milling, refining, enriching, or importing one gram of new uranium. Spent fuel is significantly more radiotoxic than depleted uranium, so it should be consumed first. Every country that has nuclear reactors has stocks of spent fuel and depleted uranium.¶ IFR-type reactors extract 99.99% of the energy immanent in mined uranium but today's reactors extract only 0.6%. The price of uranium would contribute the same amount to the delivered electricity price from IFR-type reactors if it were to increase 167 fold. Uranium could be economically extracted from lower quality ores, or from seawater, where there is estimated to be at least a thousand times more than could be extracted from land. Another low-quality ore is coal-fired power plant waste, which contains nineteen times more energy in the form of uranium and thorium than was extracted by burning the coal. Thorium, four times more common than uranium, can be converted to fissile fuel by neutron transmutation in a fast-spectrum reactor.¶ Nuclear fission is an effectively inexhaustible source of energy.¶ It is possible to breed about 5% more fuel from uranium than is consumed, but only about 1% more from thorium. If the goal is to deploy a fleet of new breeder reactors fueled only by recycled fuel, thorium should not be used before sufficient reactors are in service.¶ The first two goals of the IFR project were safety and waste mitigation. The third was fuel economy.¶ The system problem¶ Most energy discussions focus only on components — wind turbines and solar panels.¶ Electricity production and distribution is a system problem, not simply a component problem.¶ In Burden of Proof: A comprehensive review of the feasibility of 100% renewable-electricity systems, Renewable and Sustainable Energy Reviews 76, Elsevier (2017), pp 1122-1133, Ben Heard et al described an analysis of 24 studies that claimed to explain how to construct and operate regional, national, or continental-scale electricity systems. None of the studies described systems that were physically feasible. Heard et al concluded there was no point to study economic viability.

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**A more serious system problem is that the Earth does not have sufficient materials to build the** “**technology units**” **that the International Energy Agency** (IEA) **demands be built to provide all energy from renewable sources**. To stay out of the weeds, here is just one problem: **Five times more copper is needed than is known to exist on the Earth in forms that can be recovered**.

#### Absent action,

Cassella '23 concludes [Carly Cassella; Senior Journalist at Science Alert; 08-30-2023; "Scientists Warn 1 Billion People on Track to Die From Climate Change"; Science Alert; https://www.sciencealert.com/scientists-warn-1-billion-people-on-track-to-die-from-climate-change; accessed 03-11-2025] leon

If the world reaches temperatures 2°C above the average global preindustrial temperature, which is what we are on track for in the coming decades, then that's a lot of lives lost. **For every 0.1 °C degree of warming from now on, the world could suffer roughly 100 million deaths**.

# 2AC

### Our Case

**Nuclear is better. 3 warrants.**

**A. GHG emissions.**

**Oracle '22** [Change Oracle, 7-20-2022, "Nuclear Power Versus Renewable Energy", Change Oracle https://changeoracle.com/2022/07/20/nuclear-power-versus-renewable-energy/, doa 4-2-2025] //ALuo

**Nuclear energy** has **advantages** over **renewables** in terms of **reliability**, **GHG emissions**, **land use** and **waste**. Nuclear is **far more reliable** (dispatchable) than renewables like wind and solar. Nuclear plants keep **churning out energy** even when the wind is not blowing, and the sun is not shining. ¶ Nuclear is also one of the cleanest sources of energy. Recent research published in the Journal of Cleaner Production found that the emission of GHGs and natural resource use associated with nuclear power generation was similar to that of renewable energy. An analysis by the European Commission indicates that in terms of **full-cycle production**, the **emissions** from nuclear are around the **same as wind**. Other studies have concluded that nuclear may be even **cleaner** than **solar**. Orano claims that nuclear power generates **four times fewer** GHGs than **solar**.

**B. Land use.**

**Oracle '22** [Change Oracle, 7-20-2022, "Nuclear Power Versus Renewable Energy", Change Oracle https://changeoracle.com/2022/07/20/nuclear-power-versus-renewable-energy/, doa 4-2-2025] //ALuo

Nuclear also requires **substantially** **less land** than wind and solar. According to some assessments, nuclear requires 1/2,000th as much land as wind and 1/400th as much land as solar. US government data indicates that a 1,000-megawatt wind farm requires 360 times more land than a similar-capacity nuclear facility, while a solar plant requires 75 times more area.

**C. Waste.**

**Oracle '22** [Change Oracle, 7-20-2022, "Nuclear Power Versus Renewable Energy", Change Oracle https://changeoracle.com/2022/07/20/nuclear-power-versus-renewable-energy/, doa 4-2-2025] //ALuo

While there are valid concerns about nuclear waste, there are also legitimate issues with renewable waste. Wind and solar generate a litany of chemical wastes including toxic heavy metals like cadmium, arsenic, chromium, and lead. While nuclear waste can remain radioactive for thousands of years, waste metals associated with renewables remain dangerous forever. Perhaps most importantly, the volume of **nuclear waste** is a **tiny fraction** of **renewable waste.** Nuclear waste is **1/10,000th** of the waste generated by solar and **1/500th** of the waste generated by wind.

### AT: Link---Meltdowns

#### Low safety has been used for years---at worst kills their timeframe, at best disproves the link.

**Gilinsky '24** [Victor Gilinsky, commissioner @ the US Nuclear Regulatory Commission during the Ford, Carter, and Reagan administrations. 11-21-2024, "Congress wants to turn the nuclear regulator into the US industry’s cheerleader—again", Bulletin of the Atomic Scientists, https://thebulletin.org/2024/11/congress-wants-to-turn-the-nuclear-regulator-into-the-us-industrys-cheerleader-again/, doa 3-8-2025] YL

The US Congress **overwhelmingly approved** the **ADVANCE Act in July** to **accelerate licensing** of “advanced” reactors. These consist mainly of fast reactors, which **radically differ** from those operating today, and include “fusion machines.” There were **no public hearings** on the act, and it shows **every sign** of having been written by **interested parties** and with **little vetting.**¶ The Energy Department and the US nuclear industry are promoting fast reactor demonstration projects, the prime being TerraPower’s Natrium project in Wyoming. The project **broke ground** in June but still awaits a full construction permit. No commercial reactors of this type are operating today. TerraPower foresees selling hundreds of such reactors for domestic use and export. The new law is largely directed at clearing the way for the rapid licensing of such reactors by the Nuclear Regulatory Commission (NRC). It does so in part by providing additional resources but also—more ominously—by **weakening** the agency’s **safety reviews** and inspections in the **name of efficiency**. ¶ In a bureaucracy, you get what you incentivize for: Congress wants the commissioners to make clear to safety reviewers that every hour they will take is an hour that society will be deprived of nuclear energy (and someone’s grandmother will sit in the dark). This sort of pressure **spells trouble.** The safety of complex systems with **inherent dangers** is a subtle trade and **requires unbiased attention** to avoid serious errors. That is especially true of newly commercialized technology. NRC safety reviews and inspections are especially critical in protecting the public because, with nuclear power, there is no customer feedback loop like there is with, say, commercial flying. If people get worried about flying, they can vote for more safety by not buying tickets. Once a nuclear plant is turned on, there is realistically not much the public can do.¶ The Energy Department’s web page said the new law would help to “build new reactors at a clip that we haven’t seen since the 1970s.” But the department seems to forget that the 1970s spurt of licensing—encouraged by the commissioners of the old Atomic Energy Commission—resulted in light-water power reactors with many safety problems. These problems were then left for the newly independent NRC to resolve, taking years and leading to considerable expense.¶ Weaker definition of safety. For Congress to address the mission statement of a federal agency is itself strange. Mission statements, like “vision” statements, are products of business schools and management consultants and are typically brief generalities that hardly anyone pays much attention to. The Energy Department says its mission is “to ensure the security and prosperity of the United States by addressing its energy, environmental, and nuclear challenges.” Congress could have told the department to speed up the reactor development process, but it didn’t. Instead, it acted on the assumption that the stumbling block to a nuclear future lies in the NRC licensing system.¶ The ADVANCE Act acknowledges the need for the NRC to continue to enforce the safety requirements of the Atomic Energy Act while pursuing the goal of “efficiency.” But in doing so, the new act does not cite the Atomic Energy Act’s original safety standard of “adequate protection” (Section 182), but rather a watered-down version of “reasonable assurance of adequate protection.” In the law, words matter.¶ The commission has been using that weaker standard of safety **for some years**—not legitimately, in my view. The new act now **validates it**. The NRC lamely claims that the additional three words are just explanatory—needed to avoid the implication that “adequate protection” would mean perfect safety—and do not affect the basic standard. But the commissioners don’t dare apply that logic to the security part of the NRC’s responsibilities, which, if they did, would read: “to promote reasonable assurance of the common defense and security.” There is no question that the addition changes the meaning.

#### The aff requires more regulation.

**IEA '25** [IEA, Paris-based autonomous intergovernmental organization, established in 1974. 1-16-2025, "A new era for nuclear energy beckons as projects, policies and investments increase", https://www.iea.org/news/a-new-era-for-nuclear-energy-beckons-as-projects-policies-and-investments-increase, doa 3-22-2025] //ALuo

Innovations in nuclear technologies are helping to drive momentum behind new projects, the report finds. SMRs, a type of smaller scale nuclear power plants that are quicker to build with greater scope for cost reductions, are drawing increasing interest from the private sector. The report highlights how the introduction of SMRs could lead to lower financing costs. With the right support, SMR installations could reach 80 GW by 2040, accounting for 10% of overall nuclear capacity globally. However, the success of the technology and speed of adoption will hinge on the industry’s ability to bring down costs by 2040 to a similar level to those of large-scale hydropower and offshore wind projects.¶ A new era for nuclear energy will require a lot of investment. In a rapid growth scenario for nuclear, annual investment would need to double to USD 120 billion already by 2030. Given the scale of the infrastructure investment required, the rollout of new nuclear projects cannot rely exclusively on public finances. IEA analysis shows that ensuring the predictability of future cash flows is key to bringing down financing costs and attracting private capital to the nuclear sector. The report highlights that the private sector is increasingly viewing nuclear energy as an investible energy source with the promise of firm, competitive, clean power that can serve energy-intensive operations 24/7. Notably, big names in the technology sector are signing power purchase agreements with developers to provide electricity for data centres and artificial intelligence.¶ To take advantage of the opportunities that nuclear power offers, governments must be prepared to provide the strategic vision alongside stable regulatory frameworks that will give the private sector confidence to invest. The report details how incentives and public finance more broadly can unlock the investment needed to deliver greater clean and reliable power from nuclear.

#### China thumps.

**Andrews-Speed '20** [Philip Andrews-Speed, Research Fellow @ the Oxford Institute for Energy Studies. 4-10-2020, "The governance of nuclear power in China", Oxford Academic, https://academic.oup.com/jwelb/article/13/1/23/5818940?login=false#204518176, doa 3-9-2025] //ALuo

The capacity of the National Nuclear Safety Administration in terms of the number and expertise of staff has been a topic of concern for several years, particularly given the rapid growth of China’s nuclear power plant capacity. This is a problem for the whole of the nuclear industry in China, not just the National Nuclear Safety Administration.127 The IRRS Mission to China in 2010 noted this deficiency in the National Nuclear Safety Administration, reporting there were 59 staff in the Department of Nuclear and Radiation Safety Management, 230 in the Nuclear and Radiation Safety Centre (the technical service organization of National Nuclear Safety Administration) and 200 in the regional offices.128 The government followed up on the IRRS Mission recommendations and invested heavily in boosting staff numbers. By the time of the 2016 IRRS mission, the Nuclear and Radiation Safety Centre had a staff of 600 and the regional office staff numbered 331. The total number of individuals involved in nuclear and radiation safety regulation exceeded 1000.129 For comparison, the USA Nuclear Regulatory Commission employs about 4000 people.130 In September 2018, the USA hosted 98 nuclear power plants with an aggregate capacity of 99 GWe, with two more reactors under construction.131 At the same time, a total of 40 nuclear power plants were operating in China, with another 20 under construction and up to 20 more due to start construction by 2020.132 Thus it appears that as of 2016, the National Nuclear Safety Administration remained understaffed in comparison to the regulatory agencies in the USA and France.133 As a result, the managerial and technical staff are probably working under huge pressure.134¶ The 2010 IRRS Mission report also identified shortfalls in the technical competency of National Nuclear Safety Administration staff that had already been recognized by National Nuclear Safety Administration leadership before the mission.135 Part of the problem of technical competency arises from the fact that most National Nuclear Safety Administration staff are recruited through the national civil service examination, rather than through a process directed at those with a strong background in nuclear subjects. Further, the salaries of National Nuclear Safety Administration staff are well below those working in the nuclear power industry.136 The 2016 IRRS Follow-Up Mission testified that considerable improvements had been made, involving greatly enhanced training programmes and new knowledge management systems, including social networking software that was heavily used to share experiences.137

### AT: Oil

#### First administration disproves.

**Martucci ’24** [Brian Martucci, writer and editor specializing in commercial real estate, energy and the environment. 11-8-2024, “Nuclear sector’s views on second Trump administration mixed as Rogan interview raises questions”, Utility Dive, https://www.utilitydive.com/news/nuclear-energy-sector-mixed-views-second-trump-administration-joe-rogan/732407/, doa 3-25-2025] //ALuo

“We should have no subsidies … all the companies should internalize their costs in the way that they internalize their profits,” Kennedy told Tesla CEO and fellow Trump backer Elon Musk in an online discussion last year.¶ But the first Trump administration was broadly supportive of the U.S. nuclear industry. It provided billions in loan guarantees to facilitate construction of Plant Vogtle units 3 and 4; supported the failed Carbon Free Power Project at Idaho National Laboratory, a proposed 462-MW plant that would have used NuScale’s small modular reactor technology; and advanced the pro-nuclear Partnership for Transatlantic Energy Cooperation, the Trump presidential campaign said in 2023.¶ In 2019, Trump signed the Nuclear Energy Innovation and Modernization Act, or NEIMA, which paved the way for the technology-neutral Part 53 advanced reactor licensing pathway. The NRC is expected to finalize Part 53 regulations by 2027.

#### Decarbonization and regulations are inevitable, but diversification solves.

**Musrepov ’24** [Gabit; Partner @ KPMG; September; KPMG; “Energy Transition and Its Impact on the Oil and Gas Industry,” https://kpmg.com/kz/en/home/insights/2024/09/energy-transition.html; DOA: 3-25-2025] tristan

3. Impact of energy transition on prices and changes in consumer structure for the oil and gas industry

The implementation of scenarios aimed at reducing GHG emissions is associated with stricter regulatory standards on the part of national governments, as well as trends related to changes in the investment structure when investors are increasingly investing in green energy projects (including hydrogen projects), while investments in the development of fossil fuels will be reduced – this will directly affect the oil and gas industry.

The oil and gas industry will need to adapt to the changes by adopting more energy-efficiency technologies, implementing the best available technologies to minimize negative environmental impacts, carbon capture and storage technologies (CCUS, Direct Air Capture), and building on the practical results achieved in reducing GHG emissions in cooperation with stakeholders. To withstand the increasing level of competition, oil and gas companies will need to increase their own investments to implement decarbonization programs and sustainable development practices.

As an example of carbon regulation that in the future will have a direct impact on the oil and gas industry in Kazakhstan, the CBAM (Carbon Border Adjustment Mechanism), the European Union's mechanism for cross-border carbon regulation, will impose additional duties on groups of goods supplied to the EU depending on the amount of greenhouse gas emissions emitted into the atmosphere during production and the level of carbon tax paid in the country where the goods are produced. Although oil and petroleum products are not subject to these duties for 2025-2026, when CBAM is scheduled to be launched, the trend shows that these duties will be extended to the oil and gas sector in the future. As the EU is Kazakhstan's main trading partner (40.5% share of exports to EU countries14), it can be concluded that Kazakhstan will have to adapt to the new measures the medium term, either by reconfiguring its oil export structure or reducing oil production.

The introduction of new technologies and practices will increase production costs and, consequently, the selling price of oil and gas to consumers, while the price threshold for profitability will be determined by the demand and purchasing power of major consumers. Fossil fuel consumers will also be affected – large consumers will also have to comply with best sustainability practices. Given the trend towards stricter regulatory mechanisms for fossil fuel suppliers, the main consumers will be developing and undeveloped countries where there is no global climate agenda (no comprehensive decarbonisation programs or carbon neutrality targets). Therefore, much will depend on the purchasing power of these countries and the cost of oil production: in the future, these countries will not be able to pay the oil price that developed countries can afford and will reduce their purchases of oil products, while oil will no longer be in high demand in developed countries as renewable and low-carbon energy sources will account for a large share of energy. Major oil and gas suppliers need to take this into account and diversify their economies by developing other sectors and implementing the energy transition by increasingly developing the renewable energy industry and switching to low-carbon energy sources.

It is important to note that the implementation of the energy transition presents not only challenges and constraints but also new jobs and opportunities for oil and gas companies to invest in RES, energy efficiency technologies, best available practices in the decarbonisation sector (carbon capture and storage technologies, use of hydrogen to replace fossil fuels), development in the development and implementation of climate projects and other practices aimed at achieving carbon neutrality. Therefore, in adapting to the energy transition, oil and gas companies will need to overcome emerging challenges: change their management approach, set new company priorities in environmental aspects, and develop sustainable development practices in cooperation with stakeholders (consumers, suppliers of new technologies, logistics companies and others). The energy transition for the oil and gas industry is a complex process that requires assessing risks from emerging challenges and developing a comprehensive development strategy for the long term so that companies in this field can successfully adapt and remain sustainable in changing market conditions and global trends aimed at minimizing climate change.

### AT: Internal---Russia

#### No chance of nuclear use and Putin shifts inwards.

**Snyder ’23** [Timothy; Professor of History @ Yale University, Best Selling Author, Permanent Fellow @ Institute for Human Sciences in Vienna, Member @ Council of Foreign Relations, DPhil @ Oxford University, BA @ Brown University, 2003 American Historical Association’s George Louis Beer Award, 2013 Hannah Arendt Prize, 2015 VIZE 97 Prize; February 8; “Nuclear war!,” https://snyder.substack.com/p/nuclear-war; DOA: 3-25-2025] tristan

Rather than just listening to Ukrainians about their evaluation of risk of local nuclear use, we sometimes seek Putin's inner thoughts. When people imagine the use of Russian nuclear weapons in Ukraine, a certain weird empathy comes into play: Putin will feel that his back is against the wall, that he has no choice.

If we treat that as a hypothesis, we see that it has been disproven. Russia lost the battles of Kyiv, Kharkiv, and Kherson without using nuclear weapons. Russia has suffered almost a year of surprising defeats of various kinds, not least the collapse of its entire war plan, which involved overthrowing the Ukrainian government and controlling the entire country. And yet: no nuclear weapon use. Instead, each defeat generates stories about how Russia was not actually defeated. That is worth noting. The escalation one actually sees is narrative. It takes more and more work for Russians to explain defeat as victory. But so far they have been up to the task.