Nuclear Energy in Poland?

Multiple Streams Analysis

Introduction

Two decades after Poland abandoned construction of its first nuclear power plant in 1990, the country once again chose to develop the controversial energy source. This essay uses John Kingdon's Multiple Streams framework (Kingdon, 1984) to explain Poland's original decision to develop nuclear energy, why the programme failed, and why it has restarted. The analysis provides timely decision-making guidance as Poland's plans for a new nuclear power plant enter an advanced stage, as well as wider energy policy agenda-setting lessons.

Plans to develop nuclear energy in Poland can be traced back to 1957, when Poland became a founding member of the International Atomic Energy Agency. The country's first research reactor became operational the following year, and the first government commitment to build a nuclear power plant occurred in 1971. A site in Żarnowiec was chosen and construction began in 1982. However, construction was abandoned in 1990 after a sustained period of protest and the country's nuclear programme was halted. Twenty-four years later in 2014, the government of Donald Tusk once again formally adopted a nuclear energy programme. Progress towards breaking ground on a new power plant has steadily progressed since then. A site has been selected at Lubiatowo-Kopalino and in December 2025 the European Commission approved Poland's financial aid for the project.

To analyse and contextualise these developments, the Multiple Streams Analysis (MSA) framework is adopted. Developed by John Kingdon in 1984, the framework has frequently been used empirically to explain energy policy developments (Brunner, 2008; Llamosas et al., 2018). MSA has also contributed to the development of evolutionary theories of policy change including Punctuated Equilibrium Theory, which is returned to later in this essay (Cairney & Jones, 2016). MSA argues that policy decisions result from the coupling of three largely independent streams of development, namely Problem, Policy and Politics. Policy change occurs when policy entrepreneurs work to couple the three streams and push forward "an idea whose time has come" (Kingdon, 1984, p. 1). The model shifts away from the previously ubiquitous idea of incrementalism and enables understanding of more radical change.

Problem Stream

The Problem Stream of MSA investigates how problems capture people's attention. Energy problems are typically framed across three dimensions: availability, affordability and sustainability. Each framing has influenced Poland's decision to pursue nuclear power generation differently, and their relative importance has varied with time.

The backdrop to Poland's first nuclear energy commitment in 1971 was an urgent need to revitalise and modernise its infrastructure and economy after the devastation of World War Two. The government ambition of electrifying the countryside and rail network indicated an electricity generation adequacy problem. Adding to this availability issue was a finite coal resource and limited alternatives.

Framing of energy policy changed through the 1970s and 80s as Environmentalism began to receive more attention. The mid-1970s 'Poznan Pit' coal mine and industrial hub development attracted protest over concerns that it posed a threat to local drinking water, and the project was eventually abandoned (Szulecki et al., 2022, p. 40). The Chernobyl disaster of 1986 was the key focusing event that shifted attention away from availability and towards the safety and environmental issues of nuclear energy.

The Solidarity-led coalition government formed in 1989 began Poland's shift from centrally planned communism to a market economy. Energy subsidies began phasing out and the residential cost of electricity doubled in price between 1990 and 1992 (Meyers et al., 1993). Affordability of energy returned to prominence as the young economy struggled (Bouzarovski & Tirado Herrero, 2017).

Transitionary effects aside, Poland's economy began to expand rapidly at the turn of the century. Security of Supply again became the dominant framing of energy policy in this new age of growth. Modern issues of Security of Supply encompass generation adequacy, intermittency of renewables, fuel security, and reliability of grid infrastructure. In the year 2000, 95% of Poland's electricity was generated from coal-fired power plants (Ritchie & Rosado, 2025). Coal production had been declining rapidly from its peak in 1979, and the country became a net importer of coal from 2008 (International Energy, 2011). The country sought diversification of its fuel mix away from coal and supply chains away from import dependence. Adding to this, hopes of shale gas deposits were slashed in the early 2010s as exploration proved disappointing[1].

Most recently, the binding climate targets of the European Union have necessitated changes to Poland's energy policy. The Electricity and Heat Sector produced 45% of Poland's CO2 emissions in 2023 (International Energy, 2026), and so is critical to the country's climate action efforts. The fall in cost of newer technologies including Solar and Wind have enabled some diversification, but the country remains highly dependent on coal and seeking alternatives. The breakdown of its 2024 electricity generation mix included 54% Coal, 15% Wind, 12% Gas, 9% Solar, and 10% from other sources (Ritchie & Rosado, 2025). Significant exposure to coal, and more recently gas imports, have left Poland vulnerable to price spikes from supply shocks. Russia's invasion of Ukraine is the most recent example of this. This has prompted a recent swing of attention back towards Security of Supply and Affordability.

Policy Stream

The MSA policy stream refers to the pool of ideas competing for attention. The model suggests these ideas exist and are developed somewhat independently from a problem. Whether an idea is a feasible solution to a problem depends largely on the problem's framing. The MSA model isn't wholly accurate when applied here to energy policy. Kingdon explains that "Many ideas are possible in principle, and float around in a 'policy primeval soup' in which specialists try out their ideas in a variety of ways - bill introductions, speeches, testimony, papers, and conversation" (Kingdon, 1984, p. 19). Energy policy options are restricted by technology, which typically develops slowly and is usually championed by an international community of policy entrepreneurs. Additionally, piloting or trialling is often limited practically by the indivisibility of large infrastructure projects.

The availability of energy solutions to Poland in the 1970s were limited to an expansion of coal-powered plants, hydropower, the development of oil-powered plants, or the development of nuclear energy. Without significant domestic oil deposits and two global price crises in the 1970s, oil development remained unattractive at scale. Development of large-scale hydropower plants peaked over the 1968–1983 period but were not on their own enough to satisfy the country's growing electricity demand. Over half of Poland's potential hydropower comes from the river Vistula, and there were plans to develop this in the second half of the 20th century, called the Lower Vistula Cascade (Ankiersztejn, 2013). Coal was a valuable export and a finite resource, so expansion of coal-powered generation was also unattractive.

Interest in nuclear energy was growing at the time and seen by many as the energy of the future. The Warsaw University of Technology had opened a nuclear department in the late 1950s, producing an early generation of policy entrepreneurs. Nuclear energy was also being developed rapidly in the

[1] ExxonMobil and Chevron withdrew in 2012 and 2015 respectively.

Eastern Bloc and Poland was already manufacturing nuclear power components for export, developing domestic industrial supporter for the technology.

Technology improvements between 1970 and 1990 deepened the pool of proven energy technologies, increasing the ambiguity of identifying a preferred policy option, and contributing to Poland's decision to scrap its nuclear energy program in 1990. The main advances are summarised below.

1. Wind: Generation capacity of wind turbines began increasing rapidly from around 1985. The Netherlands, Denmark, and Germany were early champions of the technology (WindEurope).
2. Gas-powered electricity generation became economically feasible in the 1990s as high-efficiency combined-cycle gas turbines (CCGT) were developed.
3. Interconnection: The collapse of communism allowed Poland to develop its electrical interconnection with continental Europe. The country became fully synchronised with continental Europe in 1995. Increased capacity to import electricity reduced domestic generation requirements.

The turn of the century brought further technological advancement, and a gradual integration of Poland with the European energy market (Sikorska, 2021). These modern developments further broadened the solutions available to satisfy electricity demand growth as the country grew strongly and are relevant alternatives to Poland's current nuclear program:

1. Solar: The cost of grid-scale solar generation fell through the 2010s and it is now among the cheapest technologies (Lazard, 2025).
2. Offshore Wind: This technology was already mature in Europe when policy entrepreneurs began pushing for its development in Poland around 2018 (WindEurope, 2018). This technology requires a significant investment in offshore transmission infrastructure and regulatory integration.
3. Small Modular Nuclear Reactors (SMRs): Still in their infancy, nuclear SMRs promise to deliver the benefits of nuclear power at a more manageable scale; a few hundred MW in comparison to traditional nuclear developments which are typically multiple GWs.
4. Oil and Gas: In July 2025 Poland made its largest oil and gas discovery ever. Although the discovery is only an estimation and the extent to which it is recoverable has not yet been determined, it has the potential to significantly alter the balance of fuel trade.

The economics of each technology has changed over time and studies have been conducted at various points in Poland's history to determine the best technology mix. A year after Poland joined the European Union in 2004, the union's flagship Emissions Trading System was launched and put an explicit cost on carbon emissions from the energy sector. In 2009, a report to the Ministry of the Economy identified nuclear as the most cost-effective method of carbon dioxide abatement of the major generating options.

Politics Stream

The final stream flowing independently of the previous two is Politics. Kingdon refers narrowly to politics as including electoral, partisan, national mood, and pressure group factors (Szulecki et al., 2022, p. 145). The interaction of these factors is a major determinant of which problem and idea are brought to the top of the decision-making agenda.

Political power in Cold War Poland was monopolised domestically by the communist Polish United Workers' Party (PZPR), with significant external influence from the Soviet Union. The country's energy policy remained largely independent but aligned with the Eastern Bloc through technology standardisation and the Council for Mutual Economic Assistance (COMECON). Lobbying from graduates of Warsaw University of Technology's nuclear department played a significant role in the early plans for nuclear power (Szulecki et al., 2022, p. 78). Public participation in policy was minimal

and the decision in 1971 to pursue nuclear went largely unchallenged. In fact, the program remained largely secret until reaching local permitting stages in 1982 (Szulecki et al., 2022). Needing to modernise its economy through electrification, with few technology alternatives and a concentration of political power, the window of opportunity opened, and nuclear energy found its time.

Open opposition to nuclear energy began in the early 80s. Reduced censorship during the Solidarity Carnival increased awareness about environmental issues, although the subsequent period of martial law suppressed collective action (Szulecki et al., 2022, p. 78). In 1985 as restrictions eased, the newly established Freedom and Peace movement organised the first open protest of nuclear warheads. Their terrifying sand sculptures on the beach of Mrzeżyno drew significant attention to the risk of nuclear armament and sowed early distrust in nuclear energy by association. The following year, public mood turned swiftly against nuclear energy in the wake of Chernobyl (Szulecki et al., 2022, p. 55).

Public sentiment in the lead up to and aftermath of Chernobyl is documented by Kacper Szulecki, Janusz Waluszko, and Tomasz Borewicz in their book 'The Chernobyl Effect: Antinuclear Protests and the Molding of Polish Democracy, 1986–1990'. In their words, nuclear disaster "changed from a far-off event into something close and frightening". Poland reacted quickly in the aftermath of Chernobyl, despite Soviet cover-up attempts. The priority was reducing the cancer risk posed by radioactive clouds passing over Poland. Iodine was administered to 18.5 million people only three days after learning of the accident (Millard, 1988). The worst effects of radiation were avoided but the public was now intimately familiar with the risks posed by nuclear energy. Protests spread fast around the country, initially led by the youth movement *I Prefer to Be* and the social *Freedom and Peace* movement (Szulecki et al., 2022, p. 58). Protest initially fell on deaf ears as the government maintained its pro-nuclear stance. Things began to change in 1989 when mounting pressure from Solidarity and a faltering economy finally forced the Polish United Workers' Party to the negotiation table.

The Round Table Negotiations of early 1989 marked the first serious debate of the nuclear energy program in political spheres. Solidarity opposed the development primarily on economic grounds. They also argued against the technocratic system that developed the program in the first place, referring to it as an "arbitrarily enforced program" (Szulecki et al., 2022, p. 118). The issue remained undecided as the incumbent government held their pro-nuclear stance, arguing it was necessary to fuel the economy and displace 'dirty' coal. The semi-democratic elections of June 1989 saw several opponents of Żarnowiec elected to parliament. Construction of the power plant was subsequently put on hold for the year 1990, so a decision could be made.

The year was marked by widespread protest, petition, a port blockade, and a 44-day hunger-strike by anti-nuclear activists. An informal referendum was also held in Gdansk near the site of the proposed power plant, with a 44% turnout and 86% voting against the construction. The referendum was ignored by government, and they remained steadfast in their position on nuclear energy (Szulecki et al., 2022, pp. 142-161). The role of lobbying grew in the new government, with some newly elected officials relying on the advice of ministerial and energy experts who opposed shutting down the project at such an advanced stage. The argument that Soviet nuclear technology was unreliable was prevalent for many of these politicians, and attention turned towards European technologies. Support was offered by French and German companies and governments to complete construction of the plant.

One positive case study from this time comes from a town called Różan, where radioactive nuclear waste from the country's research reactor had been stored since 1961. Locals protested and even blockaded the facility in early 1990 when open opposition became possible. They protested on the grounds that they were not properly informed of what was being stored, and safety measures were being violated at the facility. The demands of the residents were met relatively quickly, and a form of participatory governance now occurs at the site. The residents have been acknowledged as

stakeholders of the site and have oversight of its activities as well as the facilities to monitor radioactivity in the area. Additionally, the facility now provides a stable income stream for the town.

Running out of options, anti-nuclear activists launched an international campaign with the help of the Austrian Green Party around July of 1990. Participants included other European Green parties as well as Greenpeace, and continent-wide protest ensued swiftly. This included a protest by some members of the European Parliament in Brussels, as well as protests outside Polish diplomatic missions. Finally, the prime minister Tadeusz Mazowiecki relented at an international conference in Sweeden in September. Seemingly making an impromptu decision, he stated that the nuclear program would be halted for fifteen years. The following day back in Poland, the council of ministers adopted a decision to abandon the construction of Żarnowiec. The government ratified this decision on the 9th of November 1990, ending the country's first nuclear program. They did however state that a new nuclear power plant may be possible in the future if safe and economical.

Poland joined the European Union on May 1st 2004, requiring the country to develop a long-term policy framework (International Energy, 2011). A 2005 policy document, *Energy Policy of Poland until 2025,* brought nuclear energy back to the government's agenda. Endorsed by Prime Minister Marek Belka, the document echoed 1990 pro-nuclear arguments and stated that nuclear was necessary to diversify the energy mix and reduce greenhouse gasses. Political parties were largely in consensus, and when the liberal-conservative Civic Coalition won the 2007 elections, Prime Minister Donald Tusk continued the pro-nuclear stance. Accusations of technocracy could once again reasonably be levelled against the government's decision to adopt a program of nuclear energy. Public opinion on nuclear energy, surveyed by the Centre for Public Opinion Research (CBOS) in 2006, found that 58% of the public were against the construction of a nuclear power facility in Poland; 12% higher than in 1989 (Centre for Public Opinion, 2022).

Interestingly, Poland's response to the 2011 Japan tsunami and consequential reactor meltdown at the Fukushima power plant was muted and didn't slow government plans to restart Poland's nuclear programme. Tusk adopted the official Poland Nuclear Power Programme in 2014 (Council of Ministers, 2014), kickstarting the country's second venture into nuclear energy.

State owned Polskie Elektrownie Jądrowe (PEJ) was established to lead the project and select a site for the new nuclear power plant. NIMBYism was strong, for example 94% of local residents in Mielno opposed development of the plant there (Szulecki et al., 2022, p. 202). Finally in 2021 PEJ announced Lubiatowo-Kopalino as the site of the flagship development, and an agreement was signed with U.S. owned Westinghouse Electric Corporation for its construction. Some local protests have taken place at the site since its announcement, with a focus on protecting coastal ecology. Political support was reaffirmed for nuclear energy in the latest government-backed energy policy document, Poland's Energy Policy until 2040 (PEP2040).

Public opinion has shifted drastically in favour of nuclear power after the energy crisis of 2022 that followed Russia's invasion of Ukraine. 75% of people were recorded as being in favour of building a nuclear power plant in Poland. Even more surprisingly is the apparent reduction in NIMBYism, 54% of respondents said they would respond positively to a nuclear power plant being built near their place of residence; an uptick of 30% on the previous year (Centre for Public Opinion, 2022). In its most recent poll in 2024, CBOS found that the percentage of people in favour had slipped from 75% to 64% (Centre for Public Opinion, 2024) so the question remains, is this support a transient consequence of the energy crisis or a lasting window of opportunity for nuclear.

In early 2025, Prime Minister Donald Tusk signed a cooperation agreement with Canada on nuclear energy. The Prime Minister has also recently advocated for the *'repolonization'* of Poland's economy, advocating for energy security and domestic supply chains (Polskie Radio English, 2025).

Discussion

There is a sense that history may repeat itself when Poland begins construction at Lubiatowo-Kopalino next year. The expected completion of the power plant is 2040, and there is a real possibility the window of opportunity may close before then. It might be expected that once construction at Lubiatowo-Kopalino site has reached a certain level of progress, the economic argument for its completion will take precedence. However that is likely to be a decade from now, and there is ample time for any of the three streams to decouple.

The analysis has shown that public receptivity to nuclear energy is sensitive to changes of framing within the problem stream. These changes are often precipitated by focusing events such as the Chernobyl disaster or European Union accession. Most recently, support for nuclear energy has surged in the wake of 2022 price spikes. Yet the environmental, safety, and economic concerns of nuclear energy remain and could reasonably take priority once again.

Bounded rationality may also be a key determinant of the project's success. It is one thing to agree in principle with the benefits of nuclear energy, but quite another to see a nuclear power plant constructed. Public engagement in advance of construction at Lubiatowo-Kopalino may soften this effect. Wang et al., 2019 found that public engagement positively affects public acceptance of nuclear energy, although their findings were supported by a survey rather than an empirical study (Wang et al., 2019).

It is worth noting that the political process of Poland's first nuclear program is somewhat better described by the Punctuated Equilibrium Theory (PET) developed by Baumgartner and Jones (Baumgartner & Jones, 1991), than by MSA. When the venue of policymaking changed from a closed group of communist party leaders to open construction at the Żarnowiec site, the scope of considerations widened beyond the technical and participation in the policy-making process grew rapidly. Nevertheless, longer-term development of policy options captured by the Multiple Streams analysis could not be captured effectively by PET.

Political support is likely to remain stable while the country continues to expand rapidly and can afford the significant capital expense of nuclear energy. The European Union has reaffirmed its classification of nuclear as environmentally sustainable in a recent court case (Europe, 2025), further stabilising international support. The recent focus on protectionism and onshoring of supply chains from Poland's government is likely to benefit the case for nuclear. Any further Cost-Benefit Analysis of Lubiatowo-Kopalino should consider the role of nuclear within the wider government strategy, paying particular attention to the strategic complementarities of the program (Coyle, 2022).

The incremental improvement of policy options is likely to act over a longer time-horizon than political developments. Developing offshore wind power as well as the recently discovered oil and gas reserves is likely to take a number of years, perhaps no sooner than the construction of Lubiatowo-Kopalino. Growth of onshore wind and solar is contributing to Poland's binding climate targets and may undermine the decarbonisation argument for nuclear energy. The speed that Lubiatowo-Kopalino is constructed at, relative to the advancement of alternatives, is likely to be a key determinant of its success and should be a focus area of policy makers.

A policy option that may reinforce the window of opportunity for the nuclear energy program is the development of nuclear SMRs. Agreements have already been signed between industry players and developers to bring SMRs to Poland (Euronews, 2025). This may also ensure the politics stream remains coupled by strengthening the push from industry to develop the necessary framework and approval process to accommodate nuclear energy in Poland.

In conclusion, the key risk for Lubiatowo-Kopalino is a swing in public support. Continual management of framing through a proactive public engagement campaign will help to derisk this. The successful case study of Różan is evidence that acknowledging the public stake in nuclear projects can increase the probability of their success. Unavoidable risks still remain, such as unfavourable focusing

events or an economic downturn that challenges the project's financing. To negate these, the speed of construction at Lubiatowo-Kopalino and its evaluation within a wider government strategy will be key.

The analysis offers insight into wider energy policy agenda-setting. Problem framing played an important role in the development of energy policy in Poland, and its management should be a central component to any energy policy. Finally, country-specific social and historical factors were illustrated by the failure at Żarnowiec, emphasising the oversimplification of taking a blanket pro- or anti-nuclear energy stance.

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