EXECUTIVE SUMMARY

The Reactor Around the Corner

Understanding Advanced Nuclear Energy Futures

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NUCLEAR ENGINEERING & RADIOLOGICAL SCIENCES
FASTEST PATH TO ZERO INITIATIVE
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About the Authors

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About the Collaboration

This project was an interdisciplinary collaboration at the **University of Michigan** between the Science, Technology, and Public Policy Program and the Fastest Path to Zero Initiative in the Department of Nuclear Engineering and Radiological Sciences.

The University of Michigan's **Science, Technology, and Public Policy** (STPP) Program is a unique research, education, and policy engagement center concerned with cutting-edge questions that arise at the intersection of science, technology, policy, and society. It is dedicated to a rigorous interdisciplinary approach and working with policymakers, engineers, scientists, and civil society to produce more equitable and just science, technology, and related policies. Housed in the Gerald R. Ford School of Public Policy, STPP has a vibrant graduate certificate program, community partnerships program, experiential learning activities, and a lecture series that brings experts in science and technology policy from around the world to campus. Our affiliated faculty do research and influence policy on a variety of topics, from national security to energy.

The University of Michigan's **Department of Nuclear Engineering and Radiological Sciences** (NERS) is consistently ranked as having the best nuclear engineering program in the United States. It seeks to advance the benefits of nuclear, radiological, and plasma technology for society through cutting-edge research in sustainable energy solutions and nuclear security and defense. NERS houses the **Fastest Path to Zero Initiative** (FPTZ), which supports research, policy, and tool development related to zero-carbon energy sources. NERS is also the home of the Michigan Memorial Phoenix Project, devoted to the peaceful, useful, and beneficial applications and implications of nuclear science and technology for the welfare of the human race.

If you would like additional information about this report, the Technology Assessment Project, or the University of Michigan's Science, Technology, and Public Policy Program, you can contact us at **stpp@umich.edu** or **stpp.fordschool.umich.edu**.

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Executive Summary

Nuclear energy, a source of stable, carbon-free electricity, has long been considered essential for meeting growing global energy demands. Amid the climate emergency, geopolitical instability, and energy insecurity, it has recently regained attention as a key solution to these issues. However, nuclear power remains controversial due to its history of severe accidents, the risks of proliferation and potential use of nuclear material in weapons, challenges in managing long-lived nuclear waste, and high construction costs for nuclear power facilities. Advanced nuclear energy technologies, particularly small modular reactors (SMRs), promise to solve the problems of nuclear power through improved designs. Governments, industries, and publics have shown increasing interest in SMRs and other advanced reactors as central to solving the world's energy crisis and have been supporting their rapid development.

However, the potential expansion of the global nuclear industry introduces—and in some cases reinforces—problems that technological solutions alone will not be able to fix. To help ensure that advanced nuclear energy serves the public interest rather than predominantly corporate and geopolitical actors, we must have robust governance frameworks in place *before* the widespread implementation of SMRs.

To understand advanced nuclear energy's potential impacts, we look to historical cases of science and technology in society. We know that every new and emerging technology, no matter how novel, has commonalities with past technologies and that societal responses to new technologies demonstrate recurring patterns. In this report, we analyze the implications of the widespread adoption of SMRs and other advanced nuclear reactors using what we call the analogical case study (ACS) method. This method examines the history of past technologies—similar in form, function, potential impacts, or some combination of the three—to anticipate the implications of emerging technologies.

> The potential expansion of the global nuclear industry introduces—and in some cases reinforces—problems that technological solutions alone will not be able to fix. To help ensure that advanced nuclear energy serves the public interest, we must have robust governance frameworks in place.

This report first gives an overview of the global history and regulatory environment of nuclear energy and outlines the current landscape of advanced nuclear energy development. Then we analyze the social, environmental, ethical, equity, economic, and geopolitical implications of SMRs and other advanced reactors through the ACS approach. We anticipate that SMRs, while having the potential to benefit countries and communities, are likely to have significant negative social impacts without robust governance frameworks. From our analysis, we find that the implementation of SMRs is likely to: entrench global disparities, privilege markets over the public good, overlook local and Indigenous knowledge, intensify environmental injustices, and abandon promises of local development and empowerment. Building on these insights, we provide policy recommendations for the governance of SMRs and the uranium supply chain. These policy recommendations are not exhaustive, and not all of them are necessarily unique to SMRs or other advanced nuclear reactors. They serve as a starting point for the responsible governance needed in the face of a potentially expanding nuclear industry to maximize the potential benefits and minimize the likely harms of the widespread adoption of these new nuclear energy technologies.

UNDERSTANDING THE ADVANCED NUCLEAR ENERGY LANDSCAPE

What is advanced nuclear energy?

Advanced nuclear energy, broadly, refers to a variety of nuclear reactors with significant design differences from today's nuclear reactors. While engineers have been developing advanced reactor concepts for decades—on paper, in laboratories, as pilot or demonstration projects, and for military applications such as nuclear submarine propulsion—recent years have seen a sharp increase in funding, research,

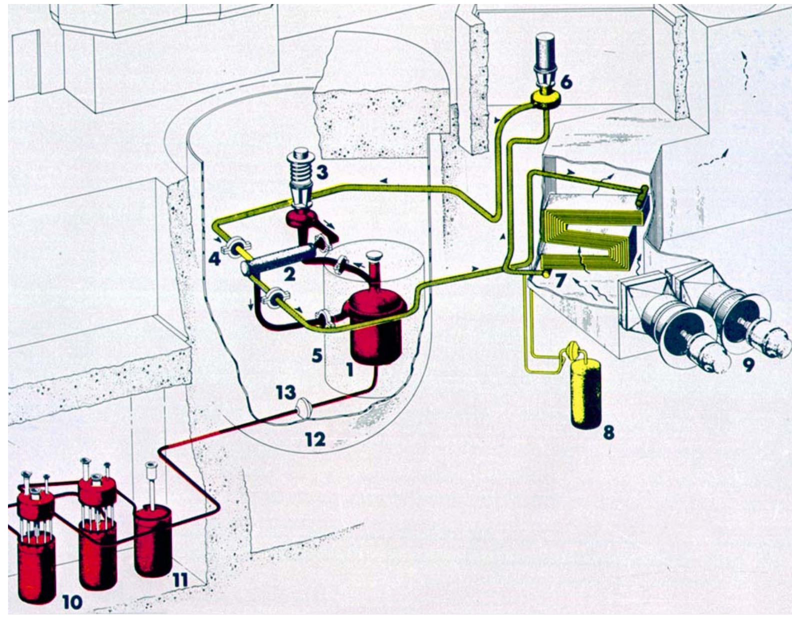
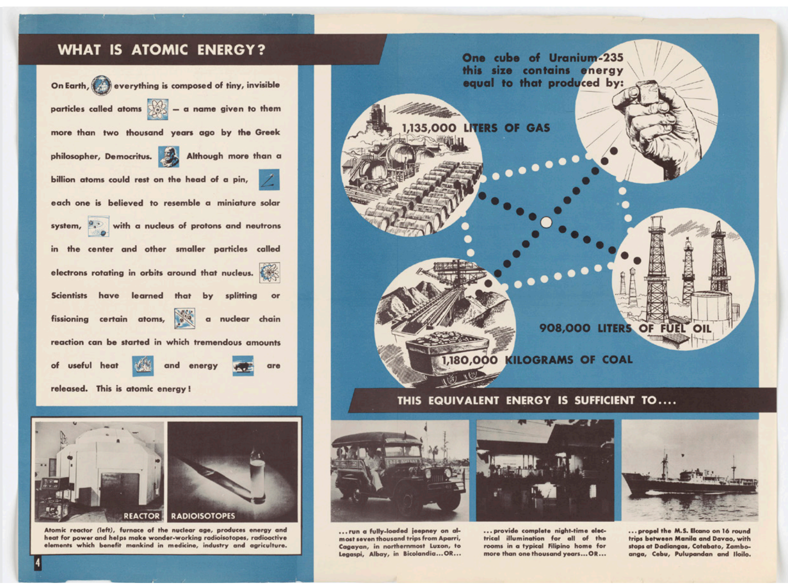


Diagram of the Molten-Salt Reactor Experiment at Oak Ridge National Laboratory, United States. (*Oak Ridge National Laboratory* / *Wikimedia Commons*)

and design for their commercial development. Advanced reactors generally use novel fuel types for power generation, higher uranium enrichment levels, and alternative coolants and neutron moderators to improve fuel efficiency, enhance safety, and produce high heat amenable to secondary industrial processes such as hydrogen production or desalination. While designs vary, advanced nuclear reactors are generally grouped into three size categories: small modular reactors (SMRs), microreactors, and large advanced reactors. SMRs are slightly smaller than conventional nuclear reactors, producing about a third of the electricity output of a conventional reactor; microreactors are even more compact than SMRs and are typically portable, producing significantly less electricity than a conventional reactor; and large advanced reactors are similar in size to conventional reactors with different design characteristics. The categories of these different types of advanced nuclear reactors can overlap and are not consistently defined among experts. For the purposes of this report, however, we use the term *advanced nuclear energy* primarily to apply to small modular reactors (SMRs) and discuss microreactors where relevant.

The promises of the advanced nuclear industry

Advanced reactor developers promise safer designs, more efficient fuel use, less waste generation, and lower weapons proliferation risks. Particularly, SMRs and microreactors claim lower upfront construction costs and shorter construction times due to their smaller size, factory-made modular parts, and on-site assembly. SMRs and microreactors are thus more attractive for countries and locations that would not be able to support a large reactor. Microreactors are designed to be compact and portable, so they are promoted as flexible for deployment to remote or isolated locations. Some SMRs are designed to provide both *baseload* power—a reliable, continuous supply of energy—as well as *peaking* power, necessary for periods of heightened electricity demand. Developers also promise that SMRs will reduce accident risks with passive safety systems that harness natural forces, such as gravity and pressure variations, to stabilize the reactor in the case of an emergency without the need for external power or human intervention. Many SMRs are designed to operate at least three years, and in some cases even decades, without refueling, reducing the circulation of nuclear material and thus the risk of nuclear weapons proliferation.



U.S. propaganda poster from 1956 advertising the Atoms for Peace program. (*U.S. National Archives*)

These smaller reactors are leading the next wave of nuclear innovation, promising to better match today's energy market needs due to their unique features. SMR technology could be more accessible to low- and middle-income countries because of its siting flexibility and potentially lower upfront costs. And because microreactors and some SMRs such as floating nuclear power plants do not necessarily depend on the capacity or connectivity of local grids, they could electrify remote and rural areas. Given these advertised benefits, nuclear advocates in government, media, and industry portray SMRs as indispensable tools for meeting energy demands as well as climate goals. Nuclear fission does not produce any carbon emissions and can provide a steady supply of electricity. Some countries and communities look to replace fossil fuel-fired power plants with SMRs, using existing infrastructure such as water sources for cooling and transmission lines. In the process, they hope that the SMR industry would employ local workforces and communities with experience in the energy sector. Further, with an increase in extreme weather events and power disruptions, proponents claim that SMRs could restart the power grid in a major blackout. Others argue that they are likely to be more resilient to droughts and heat waves. However, the technology is at an early stage, and it is still unclear whether the SMR industry can fulfill its promises.

Who is building advanced nuclear reactors?

Supporters of commercial advanced reactor development include long-time nuclear nations such as France, Russia, the United Kingdom, and the United States; nations that are rapidly building out nuclear energy such as China; the private sector, including large, established nuclear power companies and newcomer startups developing SMRs and microreactors; and a range of academic experts and think tanks around the world. Countries are racing to dominate the global advanced nuclear reactor market and craft strategic ties with other nations through SMR cooperation. Rosatom, the Russian state corporation for nuclear technology, currently dominates the global export market, owning half of all nuclear reactor export contracts worldwide. Unhindered by recent Western sanctions, Russia continues to expand its nuclear energy technology globally, with a growing focus on SMRs. China National Nuclear Corporation, the Chinese state-owned nuclear enterprise, recently announced the commercial operation of its first advanced reactor demonstration plant and seeks to export another SMR design to other nations soon. France has supported both state-owned utility Électricité de France and private startups in the development of novel SMR designs, seeking to develop SMRs through international partnerships.

Elsewhere, the private sector, with assistance from government programs, is playing a significant role in funding SMR and microreactor ventures. In the United Kingdom, Rolls-Royce is developing and exporting SMRs, shepherded by Great British Nuclear, the government body responsible for the United Kingdom's nuclear power expansion. The U.S. government is supporting multiple companies developing advanced reactor designs, such as TerraPower and X-Energy, buoyed by a cooperative regulatory environment and competitive funding programs such as the Department of Energy's (DOE) Advanced Reactor Demonstration Program, which has recently funded private-public partnerships. U.S. national laboratories are also supporting the research, development, and testing of microreactors and Generation IV advanced reactors. Large technology companies such as Amazon and Google and public and private utility corporations have recently signed

Large technology companies such as Amazon and Google and public and private utility corporations have recently signed contracts with SMR developers to meet the rapidly growing energy demand from data centers powering the AI boom.

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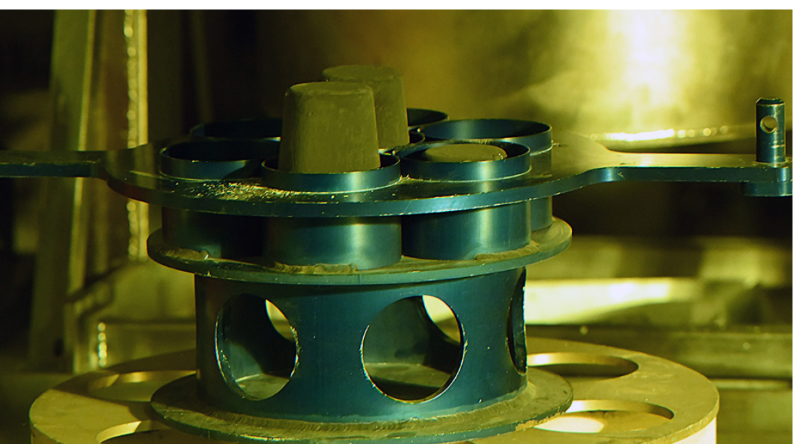
Government and industry support is not only limited to civilian applications of advanced nuclear reactors. Some nations' naval fleets have had nuclear-powered submarines and aircraft carriers for decades. Currently, some militaries are actively developing land-based small reactors to support remote operations with a reliable energy supply.

The risks and challenges of advanced nuclear energy

Despite great public interest and the rapid development of a diverse market, there are still considerable risks and uncertainties with SMRs. There is broad recognition that SMRs



HALEU reguli fabricated from downblended high-enriched uranium recovered from legacy EBR-II fuel at Idaho National Laboratory. (*U.S. Department of Energy*)

require a different regulatory approach than conventional nuclear reactors because they are designed and built differently, but these efforts are at an early stage. In addition, governments may need to develop new regulations to accommodate the waste from SMRs which may include new byproducts and increased levels of radioactivity. Although developers promise that the modular, factory-based, shippable approach will reduce costs, this remains speculative until a significant number of operational prototypes are built. Global financing is also a challenge. Despite the relatively lower expected manufacturing cost of SMRs, construction is still expensive, and many multilateral development banks do not fund nuclear reactor projects (though the World Bank recently reversed its longtime ban on nuclear financing). Furthermore, the export of advanced nuclear reactor technology does not eliminate fundamental concerns about weapons proliferation—with more countries adopting SMRs, transfer of nuclear knowledge and amounts of fissile material will increase. Advanced reactors also do not eliminate radioactive waste—the long-term safe management of high-level radioactive waste will always be a necessity. Finally, to achieve smaller sizes, longer operating cycles, increased efficiencies, and better fuel utilization, many SMR designs require a special type of fuel with higher uranium enrichment levels—high-assay low-enriched uranium, or HALEU. To date, the only country that produces commercial HALEU is Russia, presenting a conflict in geopolitical interests for some Western nations, which have been working to end their reliance on Russian uranium and to ensure a stable supply chain of fuel for SMRs by developing domestic HALEU production capabilities.

THE IMPLICATIONS OF ADVANCED NUCLEAR ENERGY

Our analysis aims to expand the political debate about advanced reactors—which currently focuses on whether or not they solve the nuclear industry's waste, cost, safety, and proliferation concerns—to encompass the potential systemic implications of this emerging nuclear technology. Based on the social patterns observed in our analysis of analogous technologies in society, we anticipate that the implementation of advanced nuclear energy—particularly small modular reacors—will have significant social, environmental, ethical, equity, economic, and geopolitical impacts.

Though nations potentially receiving SMR technology hope to attain energy security and independence, SMRs are likely to become tools of geopolitical competition between powerful nations, who will use SMRs to exert their political, economic, and military influence in the name of exporting low-carbon, reliable, and affordable energy technology.

Entrenching global disparities

Though SMRs may become a vehicle for global nuclear technical cooperation, our case research indicates that SMRs will exacerbate current international power imbalances. Though nations potentially receiving SMR technology hope to attain energy security and independence, SMRs are likely to become tools of geopolitical competition between powerful nations, who will use SMRs to exert their political, economic, and military influence in the name of exporting low-carbon, reliable, and affordable energy technology.

Resources that powerful states use to gain leverage over receiving nations include nuclear-related skills and expertise, a large workforce, manufacturing capabilities, and access to infrastructure financing. Rather than securing energy autonomy, these relationships can generate ongoing economic and political dependence. SMRs and their supply chains will likely introduce or reinforce neocolonial relationships from the global level down to the local. They will create new avenues for the indirect control of low-income countries by powerful states or transnational companies through economic and political means. Promises of local benefits for these nations are unlikely to be fulfilled due to incomplete and inequitable integration of infrastructure into local context.

Privileging markets over the public good

SMR developers depict their technology as a necessary and revolutionary upgrade from the reactors in use for the past 70 years. With this framing comes the promise that these novel

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reactors can not just mitigate the risks and reduce public opposition but can also solve deeper social ills such as inequitable energy distribution and climate change. However, market pressures will likely prevent these promises from becoming reality and will actually increase the risks of SMRs, making them vulnerable to error and even catastrophic malfunction.

To maximize financial gains, the SMR industry will emphasize the novelty and importance of its technology in order to suppress regulatory oversight. The industry will frame SMRs as vital to fulfilling national goals like energy and infrastructure security, which will hinder governments' efforts to regulate them. At the same time, the industry will exploit its superior expertise in SMR technology to influence regulation in its own favor. Finally, the SMR industry will prioritize economic viability over public interests and access to public resources. This will lead to the industry undermining its promises of less profitable outcomes such as rural distribution and climate change mitigation. It will also reinforce racial inequities in pursuit of profit, exploiting racialized labor and land to support the SMR supply chain.

Rössing uranium mine during IAEA Director General Yukiya Amano's official visit in December 2013, Namibia. (*Conleth Brady / IAEA*)

Overlooking local and indigenous knowledge

The "tech fix" narrative of SMRs is likely to exacerbate social alienation among marginalized communities and further devalue their knowledge in the pursuit of land and resources, including by extending settler colonialist practices. Some SMR developers and governments have expressed the importance of building public trust through democratic decision-making and deeper engagement with community experiences, responding to frustrations that the nuclear energy industry has traditionally sidelined, such as local concerns regarding reactor design, siting, and governance as well as uranium mining and milling. However, treating SMRs as a simple technological solution will obscure harm to marginalized communities while devaluing their knowledge in the process. An attitude of tech-solutionism will almost always privilege the technology over the knowledge of marginalized communities. Second, SMRs—like conventional nuclear energy—are likely to extend a legacy of settler colonialism based on resource extraction on Indigenous lands and the rejection of valuable Indigenous knowledge for sustainable land stewardship. Even though they offer key pathways to environmental sustainability, social equity, and public trust, the voices of marginalized communities are not only likely to be invalidated and ignored, but perhaps even actively and violently silenced.

Intensifying environmental injustices

SMRs will introduce and exacerbate direct and indirect environmental harms, especially on marginalized communities, that complicate the justification for using them to mitigate climate change. Though framed as a solution to the climate crisis, SMRs—even if they are successful in replacing fossil fuel plants—will enable industrial growth that is environmentally harmful. Beyond environmental concerns such as the management of high-level radioactive waste and end-of-life considerations for nuclear power infrastructure, climate-focused narratives overlook the environmental harms caused by the under-regulated industries enabled by SMRs. For example, the prospect of abundant, stable energy and the production of high process heat makes SMRs especially attractive to heavy industry. By co-locating with SMRs, these industries will introduce potential harms including local natural resource extraction, land degradation, and air and water pollution. Recent tech industry investments in SMRs to power the growing number of data centers for AI and other digital technologies will likewise exacerbate environmental impacts to land and water. The expanded development and construction of SMRs and other advanced nuclear energy technologies will also increase demand for uranium mining, an industry that is widely under-regulated and governed by inconsistent standards internationally, putting pressure on Indigenous lands already contending with a legacy of environmental and human harms from nuclear ventures.

SMRs are thus likely to exacerbate environmental risks and subsequent health burdens, either directly or indirectly. This will disproportionately affect marginalized communities, who lack the resources to prevent or manage them. Potential catastrophic accidents, while rare, will affect vulnerable populations the most. Communities with environmental and health concerns will be forced to advocate for themselves to address these risks and prevent harms. Protest or resistance to constructing uranium extraction and processing facilities, SMRs, or co-located industrial infrastructure in or near communities may be criminalized. Finally, corporate and government priorities are likely to squeeze vulnerable populations out of their local resources and limit their access to the energy benefits that SMRs could bring to the communities that need them most.

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Abandoning promises of local development and empowerment

SMR proponents argue that newly built nuclear plants, particularly in rural or low-income regions, will foster job creation that will reinvigorate local economies. Some governments and developers imagine the

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complete transformation of former coal towns, with unemployed workforces and decommissioned plants, to be a logical starting point. Yet SMR jobs require expertise that most rural communities do not possess, and coal workers will likely struggle to gain employment in the industry as a result.

Some advocates assert that SMRs could also enable greater citizen autonomy in local energy governance. Where conventional nuclear has lacked robust public participation in past planning and governance processes, SMR ownership by local cooperatives and small municipal utility companies may encourage self-governance and wider community consent. However, to realize these promises—from plentiful and accessible jobs, to economic development, to energy self-governance—proactive decision-making in technology design and policy action are needed. Additionally, disadvantaged communities are likely to be further marginalized in the process. However, achieving community governance of energy infrastructure may be possible through grassroots efforts and national-level policy. Unless the SMR industry prioritizes local consent and engagement in the same way it prioritizes cheap and efficient operations, promises of community development and empowerment will go unrealized.

Policy Recommendations

As the world seeks more reliable, low-carbon sources of energy, many hopes and expectations rest on emerging technologies such as small modular reactors (SMRs) and other advanced nuclear energy systems. However, if this technology is adopted without robust governance frameworks that are sensitive to labor practices, environmental impacts, and broader societal implications, there is significant risk that its harms will outweigh the benefits. Robust governance would help ensure that the implementation of SMRs serves the public interest rather than predominantly corporate and geopolitical actors.

Comprehensively manage safety and risk

1

RECOMMENDATION 1: **ADOPT MEASURES TO MINIMIZE RISK ACROSS THE NUCLEAR FUEL CYCLE.**

Governments, the nuclear industry, and international organizations must comprehensively manage risk across the nuclear fuel cycle. This should include:

a. Mandating publicly accessible environmental justice reviews for all nuclear energy-related projects, including uranium extraction and processing, power plant construction, industrial co-siting, and spent nuclear fuel management. These reviews should have longitudinal frameworks that account for historical environmental burdens and compounding exposure risk across the entire nuclear fuel cycle.

b. Adopting policies that ensure responsible sourcing of uranium and discourage the purchase of uranium that does not meet strict environmental and ethical standards across the nuclear fuel cycle. This means transparency for the life cycle of the uranium to ensure clear communication of labor and environmental standards throughout the mining, transport, and processing stages. International and national certifications can also be created to give compliant companies a competitive advantage.

c. Adopting policies that ensure geopolitically responsible sourcing of HALEU fuel for SMRs and discourage the entrenching of exploitative geopolitical relationships.

d. Supporting labor protections for workers across the fuel cycle, especially for mining, and implementing existing international labor standards that prioritize the safety and health of workers.

e. Developing international protection guidelines that address the historical exploitation and vulnerability of Indigenous lands.

Conduct inclusive and collaborative public participation

2

RECOMMENDATION 2: FOSTER EMPOWERED PUBLIC INVOLVEMENT.

Governments and SMR developers must foster inclusive and collaborative public participation in governance, design, development, siting, operation, and waste management. These processes should empower publics to have a meaningful choice over the governance and planning of their nuclear infrastructure, including community veto power. In addition:

a. Communities, national governments, and international agencies should co-develop standards for collaboration, including mandates for early-stage engagement for governance, design, planning, siting, industrial co-location, operation, and decommissioning.

b. National governments should support the enforcement of community engagement standards.

c. Plant developers and co-siting industries should also fund community engagement, encourage stakeholder dialogue, create venues for communities to communicate concerns (e.g., local governance boards comprising a representative group of citizens from the host communities), and support organizations to address and implement these concerns.

d. Licensing authorities should require guidelines for energy allocation and land use that are developed collaboratively between communities and developers.

e. Governments should protect the right to dissent and engage in civil protest about regional, national, and international nuclear projects.

3

RECOMMENDATION 3: BUILD PUBLIC CAPACITY TO BALANCE INDUSTRY DOMINANCE.

Government and philanthropy must invest in public capacity for nuclear energy development and regulation as a counterweight to industry influence. This can include facilitating collaborations with academia, government research facilities, and industry; creating financial support for networks of environmental justice groups, think tanks, and civil rights litigation firms; resources for impacted populations, especially Indigenous communities; and fostering research on socially and ecologically robust strategies for the safe and equitable use of nuclear energy technology.

4

RECOMMENDATION 4: **REQUIRE TRANSPARENT EVALUATION OF ENVIRONMENTAL AND SOCIAL IMPACTS.**

Government agencies funding SMR research and development must require prospective developers to submit social and environmental impact reports and plans for how to mitigate or prevent the anticipated burdens of SMRs. In the evaluation and approval process, these should be given equal weight to the technical merit of evaluations such as safety assessments. This will require expanding the types of experts on review panels. Continued government support should be conditional on their successful implementation.

Implement strong financial controls

5

RECOMMENDATION 5: **MINIMIZE DEPENDENCE ON PRIVATE AND FOREIGN INVESTORS.**

National and local regulators should implement strong financial controls on SMR development and investment. This includes:

- Limiting private funding and foreign investment in the production of SMRs to prevent investor and geopolitical interests from influencing decisions in ways that outweigh domestic concerns.
- Prioritizing investments that build domestic capacity for regulation and oversight; research, development, and deployment; and environmental justice in order to avoid long-term dependencies when countries accept foreign investment in SMRs.

6

RECOMMENDATION 6: **PRIORITIZE DOMESTIC BENEFITS.**

Countries that receive foreign investment for uranium extraction should implement controls on natural resource export to ensure domestic benefits. This could include establishing state-owned companies for uranium mining and processing, the profits of which should return to directly affected regions and communities.

Strengthen and adapt legal and regulatory frameworks

7

RECOMMENDATION 7: **SHIFT FINANCIAL RISK BURDENS AWAY FROM PUBLICS.**

National and local governments should shift financial risk burdens from publics to investors and developers. This can be done through:

a. "Polluters pay" frameworks for SMRs and co-siting industries to ensure financial liability for environmental degradation and pollution, environmental clean-up, and necessary technological maintenance for safe operations and decommissioning.

b. Re-evaluation and revision of existing legislation to shift the financial and physical risks of failures, such as severe accidents or failed infrastructure projects, away from communities and taxpayers to the nuclear industry.

c. Liability limits and financial protections for the nuclear industry should not be used as incentives for SMR development.

8

RECOMMENDATION 8: **PROTECT REGULATORY AGENCIES FROM INDUSTRY INFLUENCE.**

National governments must protect their regulatory agencies from industry influence. Governments should enact policies prohibiting a "revolving door" between regulatory roles and roles advocating for nuclear energy both in industry and government. This could include requiring waiting periods before changing positions, implementing transparency measures that track employment history and relationships, and increasing funding and interagency support to be less dependent on industry experts.

Equitably distribute benefits

9

RECOMMENDATION 9: **EQUITABLY DISTRIBUTE ENERGY RESOURCES.**

Regional utilities must dedicate a percentage of power to meet community needs, as determined by community governance boards. Utilities should provide discounted rates on power for host, mining, and waste storage communities, including residential, school, and local business customers.

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10 RECOMMENDATION 10: EQUITABLY REDISTRIBUTE PROFITS.

National governments should enact policies that ensure equitable redistribution of profits from the activities across the entire nuclear fuel cycle—including mining, processing, power generation, and waste management—to the communities and territories most affected by industry activity. They should include a self-determination process for representatives of those communities to make decisions about distribution and spending mechanisms.

11 RECOMMENDATION 11: INVEST IN JOB TRAINING AND LOCAL ECONOMIC TRANSITIONS.

National, regional, and local governments should work together to create accessible, responsive, and comprehensive job training programs for host communities, providing tuition waivers, scholarships, application assistance, and licensing exam preparation for locals. Typically, job assistance programs in communities transitioning between industries have not been effective or enduring. Therefore, it is especially important to supply these programs with sufficient resources and connect them to local knowledge to sustain them over the long term. When job transition programs are deemed unfeasible or unlikely, other robust, long-standing forms of compensation should be supplied to communities, such as funding for healthcare, infrastructure, and local cultural and education needs.

Identify, repair, and remediate harms

12 RECOMMENDATION 12: ACKNOWLEDGE AND REPAIR PAST DAMAGE, PROTECT AGAINST FUTURE HARMS.

International agencies and national and local governments must acknowledge, repair, and remediate past social, economic, and environmental damage from nuclear-related activities and protect previously affected communities from repeated harms. This can be done through:

a. A government council or commission that formally recognizes and reconciles past harms caused by the nuclear enterprise and provides substantive financial compensation, health care, restoration of mineral rights, environmental remediation, and legal protections against future harms for affected communities.

b. Adherence to existing sovereignty and environmental protection agreements, including the United Nations Declaration on the Rights of Indigenous Peoples and the Rio Declaration.

VIEW THE FULL REPORT

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If you would like additional information about this report, the Technology Assessment Project, or University of Michigan's Science, Technology, and Public Policy Program, you can contact us at **stpp@umich.edu** or **stpp.fordschool.umich.edu**.

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