

# Global Infrastructure Permitting

Survey of  
Best Practices

June 2023





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A Survey of Best Practices

June 2023

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# Contents

<b>Executive Summary</b>	1
<b>1 Introduction</b>	5
<b>2 The Economics of Permitting Risk</b>	9
<b>3 Net Zero Goals Face Overwhelming Permitting Obstacles</b>	19
<b>4 The Competitive Advantage of Efficient Permitting</b>	29
<b>5 Survey of Permitting Regimes</b>	35
The United States	37
The European Union	52
Germany	62
Denmark	68
Spain	71
The Netherlands	73
Norway	79
Australia	82
New Zealand	86
Japan	89
China	93
<b>6 Best Practices and Recommendations</b>	101
<b>Conclusion</b>	107



# Global Infrastructure Permitting



A Survey of Best Practices, June 2023

## *Executive Summary*

The construction of major infrastructure projects, such as power plants, highways, and ports, is heavily regulated. In major industrial economies, such projects typically require complex permits, which in turn entail extensive study of potentially significant environmental impacts. Securing the permits needed for construction and operation and completing the related environmental impact assessments (EIAs) often takes more time than actual construction and can even be more expensive. The costs, delays, and uncertainties of the process are major hurdles to the efficient deployment of needed infrastructure.

Permitting inefficiency deprives Americans of the modern infrastructure they need and deserve. It also makes any transition to net-zero carbon emissions impossible, regardless of whether that goal is even advisable. The permitting risk entailed in major infrastructure investments is poorly understood and reduces many investment decisions to speculation, which in turn inhibits infrastructure investment. That has led to a structural infrastructure deficit that is constricting supply and raising prices across the economy.

In the United States, there is a growing bipartisan consensus that the federal regulation of infrastructure permits and environmental reviews must be reformed. Congress has been making marginal improvements to the process for years, leading to the permitting reforms of the recent Fiscal Responsibility Act of 2023, which raised America's statutory debt ceiling.<sup>1</sup> Though significant, the recent changes bear the hallmarks of earlier efforts: They are tinkering at the margins of a major problem that needs a more comprehensive solution.

One reason that congressional deliberations have not produced more thoroughgoing changes is almost certainly the insular nature of the debate: Few American policymakers have any idea what other countries are doing to improve their infrastructure regulations. That is a dangerous lacuna, and the purpose of this report is to help fill it.

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<sup>1</sup> Fiscal Responsibility Act of 2023, Pub. L. No. 118-5. (June 3, 2023).

Infrastructure deficits are a worldwide problem. Developing countries suffer from it in obvious ways, but even the most advanced economies struggle with “infrastructure governance.”<sup>2</sup> Governments are waking up to the fact that inefficient infrastructure regulation is a significant competitive disadvantage. There appears to be growing international competition to improve regulations for infrastructure delivery. Some countries have moved further and quicker than others in advancing infrastructure modernization while still protecting the environment, especially in particular sectors such as renewable energy and transportation. This report surveys those reforms in the hopes of enriching U.S. policymakers’ deliberations with new perspectives and ideas.

This report discusses the economic impact of permitting risk and the challenge it poses for national policy priorities, from deploying adequate infrastructure to achieving international emissions targets. The permitting and environmental review regimes of selected major economies are examined for best practices. The report concludes with a summary of best practices and recommendations for U.S. policymakers.

Permitting risks, including political and regulatory risks, are difficult to quantify. Longitudinal data on projects, from proposal to outcome, are often lacking. The lack of understanding regarding the risks of infrastructure investments is an obstacle to infrastructure investment and results in resource misallocation. It is crucial to collect comprehensive data on permit application outcomes in order to make the risks of infrastructure investment quantifiable, otherwise investment decisions will continue to face often prohibitive uncertainty.

Most studies outlining pathways to net-zero carbon emissions offer some estimate of transition costs. None of them consider the impact of permitting risk on capital formation, however, implying a systematic underestimation of both the cost and feasibility of a net-zero transition. As this report shows, under current law, the United States simply cannot authorize renewable energy infrastructure at the scale and speed necessary to meet its stated emissions goals. Without permitting reform, the U.S. will not come close to meeting those commitments.

In the meantime, the U.S. is increasingly falling behind major competitors in the quality of its infrastructure. With China on the rise, that is not something America can afford. Like companies in the private economy, nations create wealth through innovation. The prosperity of a country is not determined by natural resources, but by the innovative allocation of human resources.

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2 OECD, Recommendation of the Council on the Governance of Infrastructure, OECD/LEGAL/0460, July 16, 2020, <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0460>.



To maintain their competitive advantage, nations must maintain favorable factors of production such as skilled labor and infrastructure. A simple and predictable legal framework is crucial for encouraging risk-taking and private investment. Complex regulations and unpredictable legal systems can hinder innovation and economic growth, creating developing-world risks for even the most advanced economies.

This report examines permitting and EIA processes in the United States, European Union, Australia, New Zealand, Japan, and China. It summarizes recent and ongoing efforts to enhance permitting efficiency, with an emphasis on energy infrastructure.

While government should never pick winners and losers in the private economy, sector-specific reforms are often valuable sources of general reforms. Based on the global best practices surveyed in this report, the U.S. Congress should enact sweeping reforms of the permitting process for major infrastructure projects. Drawing on those examples, this report makes urges Congress to consider key innovations:

- A single agency acting as a “one-stop-shop” for obtaining all necessary permits through a single application process for major infrastructure projects.
- Centralized data collection and a comprehensive online database with GIS maps should be established to improve project tracking.
- Better regional planning and environmental preassessment to allow authorities to gather information in advance and share it with potential developers.
- Recognizing the national interest and providing agencies with sufficient resources and training are important to give voice to the public interest and to ensure efficient and timely processing of permit applications and environmental reviews.
- In cases where local opposition or resources conflicts create controversy, independent mediators could facilitate fair resolutions.
- An ongoing formal review mechanism to identify and address regulatory barriers.

In the century ahead, America’s prospects will depend on the quality of its infrastructure, which in turn will depend on the efficiency of its permitting regime. Permitting reform is vital to America’s future and is becoming more urgent with each passing day.



# 1

## Introduction

*Around the world, uncertainties in the permitting process impose enormous costs on society.*

Modern infrastructure is part of the foundation of an affluent society. From gleaming skyscrapers and rapid transportation to efficient energy and innovative communications networks, society is built on infrastructure. Yet even in the developed world, there is an infrastructure deficit. One recent study estimates a global infrastructure financing gap of \$15 trillion by 2040.<sup>3</sup>

Underinvestment in infrastructure is a worldwide phenomenon, with many causes. In the developed world, one of the key causes is inefficient “permitting,” which refers to the process by which governments authorize the construction and operation of infrastructure. Major infrastructure projects such as offshore wind farms, liquefied natural gas (LNG) export facilities,

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3 Amin Mohseni-Cheraghloo and Naomi Aladekoba, “The global infrastructure financing gap: Where sovereign wealth funds and pension funds can play a role,” Atlantic Council, October 31, 2022, <https://www.atlanticcouncil.org/blogs/econographics/the-global-infrastructure-financing-gap-where-sovereign-wealth-funds-swfs-and-pension-funds-can-come-in>.

and utility-scale solar plants invariably require multiple permits from national and/or local governments, and in virtually all major industrial economies those permits entail lengthy assessment of environmental impacts.

The EIA process often takes more time than actual construction, and sometimes is even more expensive. The costs, delays, and uncertainties of the process are a major hurdle to the efficient deployment of needed infrastructure.

In most of the developed world, the permitting process is characterized by significant paperwork burdens, delays, and uncertainties, and imposes significant burdens on government resources. The resulting inefficiency in permitting deprives society of many needed infrastructure projects that would otherwise show a positive return on investment. Hence, inefficient permitting imposes enormous costs on society, costs which are difficult to quantify and not fully understood by investors or policymakers.

In the United States, a bipartisan consensus on the need to reform the federal system of permitting and environmental review for major infrastructure projects has been slowly building for more than a decade. The realization is gaining ground that the burdens, delays, and uncertainties of the federal permitting process are a daunting obstacle to infrastructure modernization, including any clean energy transition, and a significant global disadvantage for the country as a whole. This realization led, most recently, to Congress enacting significant permitting reforms as part of the recent Fiscal Responsibility Act of 2023, which raised America's statutory debt ceiling.<sup>4</sup>

But those reforms, while significant, are not enough. Much more sweeping reform is needed. As one McKinsey report noted, "Large infrastructure projects suffer from significant undermanagement of risk throughout the life cycle of a project, as the management of risk isn't properly accounted for in their planning."<sup>5</sup> This is nowhere truer than in the United States.

This report aims to fill a number of gaps in our understanding of those obstacles. It surveys infrastructure permitting regimes of select industrial economies to glean best practices in reducing burdens, delays, and uncertainties. The report sheds light on the many significant and often poorly understood costs that the permitting process imposes on infrastructure

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4 Fiscal Responsibility Act of 2023, Pub. L. No. 118-5 (June 3, 2023).

5 McKinsey & Company, "A risk-management approach to a successful infrastructure project," November 2013, <https://www.mckinsey.com/capabilities/operations/our-insights/a-risk-management-approach-to-a-successful-infrastructure-project>.

investments, public and private.

Beyond the obvious – the costs of the permit application to the developer, the costs to the government of processing the permit application, the cost of lawsuits brought to stop the projects – there is the cost that potential delays impose on the initial investment decision. The potential for delay is often a “pure uncertainty” (as opposed to a statistically quantifiable risk) that constrains the supply of infrastructure and results in higher prices than would be obtained under conditions of efficient infrastructure delivery.<sup>6</sup>

Accordingly, this report begins with a discussion of the economic impact of permitting risk and uncertainty. It then looks at the daunting obstacles that permitting costs pose for the deployment of clean energy infrastructure at the scale and speed necessary to achieve the “Net Zero” emissions reductions targets of the Paris Agreement on Climate Change. The report then argues that efficient permitting is a vital competitive advantage for an industrial economy and will be a major determinant of economic leadership in the century ahead.

Next, the report surveys the permitting and environmental review regimes of major economies around the world: the United States, the European Union (including Germany, Denmark, Spain, the Netherlands, and Norway), Australia, New Zealand, Japan, and China. Particular attention focuses on recent reform efforts in those jurisdictions.

The report concludes with a summary of best practices from the around the world, including a discussion of what are likely to be the world’s best-performing permitting regimes, and ending with recommendations for U.S. policymakers.

Further research is needed in all these areas. A systematic assessment of survey data is warranted, particularly longitudinal data that tracks projects from proposal to the early years of operation. While the scope of this report is necessarily qualitative, it will hopefully serve as a first step toward the more comprehensive examination that is needed.

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6 Presidential Policy Directive 21 identifies 16 sectors of critical infrastructure: Chemical, Commercial facilities, Communications, Critical manufacturing, Dams, Defense industrial base, Emergency services, Energy, Financial services, Food and agriculture, Government facilities, Healthcare and public health, Information technology, and Nuclear reactors, materials, and waste. Most of these require federal permits. PPD-21, February 12, 2013, <https://obamawhitehouse.archives.gov/the-press-office/2013/02/12/presidential-policy-directive-critical-infrastructure-security-and-resil>.



# 2

## The Economics of Permitting Risk

*Permitting risks are not properly accounted for in infrastructure investments, planning, or policy.*

Understanding the risks associated with infrastructure investments is essential for getting infrastructure policy right. Yet despite its strategic importance, the scale of capital at stake, and lots of lessons from the “school of hard knocks,” those risks remain poorly understood. There is a growing recognition among international organizations, governments, investors, and infrastructure operators about the need to account for, and mitigate, risks in infrastructure projects.

Infrastructure investment involves complex risk analysis, allocation, and mitigation due to the unique and illiquid nature of such investments. Investors must carefully analyze the risks associated with a project throughout its lifespan and determine what premium to charge for bearing those risks, as well as decide whether the risk is tolerable at any price. Where private financing perceives prohibitive risks, or the scale of capital is beyond the capacity of a country’s private sector, governments need to step in, often partnering with the private sector and, among other things, absorbing some of the private-side risk.

## **Infrastructure Investment: Cost, Risk, and Uncertainty**

Infrastructure investments entail a wide variety of costs, including the risk of loss. Among the costs of the development process are the following:

- **Developer Permit Costs.** These include both the cost of the permit application and the opportunity cost of the time spent complying with permitting requirements and represent largely irreversible investments.
- **Developer Construction Costs.** These are the costs of physical construction after securing the permit, which may entail expenditures prior to securing the permit. Aside from capital assets, which may be saleable or stranded, these may also be largely irreversible investments.
- **Regulator Process Cost.** This is the cost to government authorities of processing all needed approvals.
- **Litigation Costs.** These are the costs to developers and government authorities associated with litigation related to the permitting process and initial operational launch of the project.
- **Uncertainty.** This is the potential loss associated with cost overruns, delay, or abandonment of the project, and less-than-expected revenues once operational. Economists distinguish between quantifiable risks and unquantifiable uncertainties.

Beyond the expected costs of development, investors face significant risks that add to the “cost” of investment. Those risks consist of a range of possible losses from negligible to total loss, with associated probabilities from unlikely to virtually certain. Because the costs of development accumulate throughout the development process, the risks change over time, continuously impacting management and investment decisions. Government incentives can mitigate exposure to risk, reduce potential losses, and increase prospective returns, thereby making infrastructure investments more viable. But that often means exchanging one form of political and regulatory risk for another, as the investments then become dependent on subsidies the continuance of which depends on political factors entirely beyond investors’ control.

As one McKinsey report notes, “Large infrastructure projects suffer from significant undermanagement of risk in practically all stages of the value chain and



throughout the life cycle of a project.”<sup>7</sup> As the McKinsey report notes, the development of modern infrastructure projects is highly complex, involving a wide range of risks. Investors often have assumptions about the regulatory framework and viability of the permit application that are largely speculative. Government officials often overlook how the risks of the permitting process impact investors’ decisions, even when they care. All too often they don’t, particularly in the case of agencies captured by environmental advocacy groups that are opposed to industrial development generally.

As a result, the cost of financing infrastructure rises, often beyond the point where debt financing is viable, forcing disproportionate reliance on equity and public sources of financing.<sup>8</sup> The reduced supply of efficient infrastructure investments results in a reduced supply of infrastructure, raising prices across the economy and resulting in significant social losses, including deadweight loss.

These losses ripple across the economy, reducing economic output and weakening the country’s economic prospects. They are all part of the cost of inefficient permitting.

## **Towards a Taxonomy of Permitting Risk**

The Organization for Economic Co-Operation and Development (OECD) report *Infrastructure Financing: Instruments and Investments*, grouped dozens of risk factors into three categories: (1) political and regulatory risk, (2) macroeconomic and business risk, and (3) technical risk.<sup>9</sup> These risks all affect the “time-value of money,” and therefore impact the real cost of capital. Prominent among political and regulatory risks are environmental review, rise in pre-construction costs from a longer-than expected permitting process, and cancellation of permits.<sup>10</sup>

These permitting risks resist quantification for several reasons. Longitudinal data that track individual projects from proposal through completion or abandonment are hard to find and aggregate. Moreover, permitting regimes vary so much from

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7 McKinsey & Company, “A risk-management approach to a successful infrastructure project.” (Nov. 1, 2013), <https://www.mckinsey.com/capabilities/operations/our-insights/a-risk-management-approach-to-a-successful-infrastructure-project>.

8 Daniel Zelikow and Fuat Savas, “Mind the gap: Time to rethink infrastructure finance,” World Bank Blogs: Getting Infrastructure Finance Right, May 20, 2022, <https://blogs.worldbank.org/ppps/mind-gap-time-rethink-infrastructure-finance>.

9 OECD, *Infrastructure Financing Instruments and Incentives* (2015), <https://www.oecd.org/finance/private-pensions/Infrastructure-Financing-Instruments-and-Incentives.pdf>.

10 Id.



country to country that a transnational apples-to-apples comparison is difficult even when one can get the data. This contrasts with other kinds of regulatory risk, such as changes in taxation, regulation, or legal environment, and with macroeconomic risks such as inflation and exchange rate fluctuations, about which information is more readily available.

The impact of this gap in our understanding of infrastructure risks is hard to overstate. It reduces many investment decisions to guesswork, ultimately resulting in misallocation of resources and dead-weight social loss. To give one prominent example, Princeton University's *Net Zero America* report (Princeton Net Zero Study) estimates that the U.S. will have to invest as much as \$14 trillion to achieve net-zero by 2050.<sup>11</sup> But that estimated capital cost is subject to a major caveat, buried in a footnote on page 254 of the report:

*\*Estimated capital cost of energy supply assets including power generation, transmission and distribution, fuels conversion assets and CO2 transport infrastructure. Excludes liquid and gaseous fuel distribution infrastructure for which very significant investments will be needed across all net zero pathways. Also excludes pre-investment studies, permitting and finance costs.*

That is quite an asterisk, containing two major sources of highly variable cost for a renewable energy transition. First is the quiet reference to the enormous amount of *new* dispatchable fossil fuel power that will be required to keep the electricity grid stable as renewables are added.<sup>12</sup> Second, and central to this report, is the exclusion of "pre-investment studies, permitting and finance costs" from the estimate of transition costs.

Permitting represents a crucial variable cost in infrastructure investments. In the United States alone, the full extent of such costs is almost certainly in the hundreds of billions of dollars and could be in the trillions. Any complete estimate of permitting costs must include not just the cost of compliance with the permitting process but also the impact of permitting uncertainty. That uncertainty is a combination of potential loss and probabilities that are mostly unknown, because the

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11 E. Larson, C. Greig, J. Jenkins, E. Mayfield, A. Pascale, C. Zhang, J. Drossman, R. Williams, S. Pacala, R. Socolow, E.J. Baik, R. Birdsey, R. Duke, R. Jones, B. Haley, E. Leslie, K. Paustian, and A. Swan, *Net-Zero America: Potential Pathways, Infrastructure, and Impacts*, Final report, Princeton University, Princeton, NJ, 29 October 2021, <https://www.dropbox.com/s/ptp92f65lgds5n2/Princeton%20NZA%20FINAL%20REPORT%20%2829Oct2021%29.pdf?dl=0> (emphasis added).

12 For more on the importance of energy abundance to any clean energy transition, see, Mario Loyola, *Unleashing America's Energy Abundance*, Competitive Enterprise Institute, Sept. 2022, <https://cei.org/studies/unleashing-americas-energy-abundance/>.

relevant sectoral data are woefully lacking.

Whatever the extent of the economic losses from inefficient permitting, those losses are clearly significant. One influential academic study notes that inefficient permitting and resulting delays lead to increased costs and postponement of project benefits, hinder construction schedules, and create opportunities for political interference.<sup>13</sup> Inefficiency

entails unnecessary costs incurred because of delay or duplication of effort: extra process costs to achieve the same outcome. Inefficiencies have negative consequences for the permitting agency, the project developer, and the public. These problems, the authors note, are particularly



**Permitting represents a crucial variable cost in infrastructure investments.**

prevalent in innovative and environmentally beneficial projects. Despite the importance of permitting in environmental regulation, there has been limited research on the factors influencing the effectiveness of these processes.

Of the risks of permitting, the least well-understood almost certainly entails the greatest cost: the uncertainty associated with how long the permitting process will take. Because the delay can range from minor to long enough that the project has to be abandoned, the risk of delay comprehends a non-trivial possibility of total loss of the capital invested, particularly prior to commencement of construction. The pre-construction permitting process often lasts longer than actual construction, sometimes much longer. In the typical infrastructure project, years are spent navigating the permitting process before any capital assets have been acquired.

Virtually<sup>14</sup> all the funds expended in the permitting process prior to the acquisition of capital assets needed for construction represent an “irreversible investment”: Once made, the investment generally cannot be recovered if the permitting pro-

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13 Nicola Ulibarri, Bruce E. Cain, and Newsha K. Ajami. “A framework for building efficient environmental permitting processes.” *Sustainability* 9.2 (2017): 180. <https://www.mdpi.com/2071-1050/9/2/180#sec5-sustainability-09-00180>.

14 The permitting process often consists of costly resource reports (geotechnical studies, cultural studies, etc.). Their value increases the closer the developer gets to a successful permit application and can be significant once the permit is granted. Indeed, many developers specialize in obtaining permits and related interconnection agreements (for power plant projects), which they then sell at a considerable premium to developers who specialize in construction and operation.

cess is unsuccessful.<sup>15</sup> And there is usually little way to estimate the chances of significant delay or denial of the permit application.<sup>16</sup> That is due, as previously noted, to lack of data about similar projects, but it also due to the indeterminacy of the legal regime, which endows regulators with an arbitrary degree of authority, making their decisions and the whole course of interaction highly unpredictable.

These costs can rise exponentially with infrastructure scale. The largest infrastructure projects are typically extraordinary feats of engineering. Such projects—for example, large offshore wind installations—typically entail construction supply chains of staggering complexity. The various phases of the project must be sequenced efficiently, and if permitting delays throw off the sequence, construction costs can quickly balloon alongside lost revenue to the point of catastrophic losses.

## **The Economics of Uncertainty**

To understand the costs which arise from the potential for delayed operations, start with a typical interruption in business activity. Business interruption insurance typically covers both lost profits and fixed costs during the interruption period.<sup>17</sup> To put this in economics terms, business interruption insurance does not cover “direct costs” of production, which can be avoided by not producing. It does cover “indirect costs” of production, such as rent, taxes, and some employee salaries, which cannot be avoided by temporarily reducing production and would therefore represent an economic loss to the business. To recover the full opportunity cost of the owner’s capital and labor, such insurance typically also covers lost profits that could reasonably be anticipated.

Now suppose an insurer decides to enter the infrastructure-permitting-risk-insurance business. He offers to insure the developer of a utility-scale solar plant to be built on federal land in Arizona against the potential loss resulting from a delayed or denied permit from the Bureau of Land Management. The developer wants the insurer to cover the irreversible investments made during the permit application

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15 Avinash K. Dixit and Robert S. Pindyck, *Investment Under Uncertainty*. Princeton University Press, 1994.

16 More comprehensive collection of longitudinal data on project proposals would be very valuable. There are firms that specialize in gathering such data in particular sectors. One such firm, Westney Consulting, was recently acquired by McKinsey & Company. See, <https://www.mckinsey.com/about-us/new-at-mckinsey-blog/mckinsey-brings-a-mega-shift-to-megaprojects-with-westney-consulting>.

17 National Association of Insurance Commissioners, Business Interruption/Businessowner’s Policies, last updated Feb. 1, 2023, <https://content.naic.org/cipr-topics/business-interruptionbusinessowners-policies-bop>.

(i.e., the \$25 million it might cost to develop the permit application, most of which cannot be recouped). To fully recoup his opportunity costs, the developer also wants the insurance to cover some of the expected profits.

How would the insurer price that policy? Insurance premiums are based on actuarial science applied to a sufficiently large and reliable data set so that the insurer can know with some precision and confidence the probability that any particular insured will file a claim. The more limited the data set that the prospective insured belongs to, the more uninsurable is the person or project. In the real world, infrastructure projects in development are largely uninsurable for business interruption, for the same reason that debt financing is generally unavailable to such investments: the unknowns of the regulatory process are simply too great.

In the face of such uncertainties, the irreversible investment of a permit application is often a grim prospect, testing even the most risk-tolerant investors.<sup>18</sup> In his 1921 treatise on economic theory, *Risk, Uncertainty, and Profit*, University of Chicago economist Frank Knight wrote, "There is a fundamental distinction between the reward for taking a known risk and that for assuming a risk whose value itself is not known."<sup>19</sup> A known risk, he wrote, is "easily converted into an effective certainty by grouping cases," whereupon it becomes insurable, while the "higher form of uncertainty not susceptible to measurement" is uninsurable.

Knight found the possibility for pure profit in that "higher form of uncertainty," advancing a pragmatic approach to innovation that relied heavily on entrepreneurial agency. Of course, pure uncertainty can be a source of profit as long as the outcome depends on the entrepreneur's efforts. If the prospects for an investment are both dominated by uncertainty and mostly outside the investor's control, then the enterprise is more speculative than entrepreneurial, more roulette than poker, as it were.

One excellent International Monetary Fund (IMF) Working Paper asks, "What are the main underlying factors that determine the level of insurance coverage across countries?" In answering the question, the authors make a crucial connection among Knightian uncertainty, the strength of a country's institutions, and the insurability of people in that country:

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18 Andrew B. Abel and Janice C. Eberly. "The effects of irreversibility and uncertainty on capital accumulation." *Journal of Monetary Economics* 44.3. 1999, pp. 339-377.

19 Frank Knight, *Risk, Uncertainty and Profit*, Washington: Beard Books, 1921, pp. 47-48.

When institutional quality is lower, uncertainty is higher and insurability is lower; at the same time, income levels tend to be lower. ... [T]he institutional quality-transparency-uncertainty nexus is the dominant determinant of insurability. In general, weak governance results in uninsurable risks; at least, it tends to make risks more difficult to quantify, which results in lower insurability. Using Knight's argument, "the structures and methods for reducing uncertainty" are not as developed and are undermined by weak governance in countries where insurance coverage is low.<sup>20</sup>

The lack of comprehensive longitudinal data on project-level permit application outcomes is a major impediment both to infrastructure delivery and to infrastructure policy. The U.S. government should prioritize the collection of this data, for projects in the U.S. as well as abroad.

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20 S. Nuri Erbaş and Chera L. Sayers, "Institutional Quality, Knightian Uncertainty, and Insurability: A Cross-Country Analysis," IMF Working Paper, Office of Executive Directors, International Monetary Fund, July 2006, p. 10, <https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Institutional-Quality-Knightian-Uncertainty-and-Insurability-A-Cross-Country-Analysis-19381>





# 3

## Net Zero Goals Face Overwhelming Permitting Obstacles

*Permitting risk is a major obstacle to clean energy.*

Most of the world's countries committed to reducing carbon emissions to "net zero" by 2050 in accordance with the goal of the Paris Agreement on Climate Change, which is to keep global temperature rise under 1.5 degrees Celsius.<sup>21</sup> Accomplishing this goal would entail replacing or offsetting nearly 90 percent of the world's current energy sources with a mix of solar, wind, nuclear, and other advanced technologies.<sup>22</sup>

Questions about whether the Paris Agreement's net-zero targets are sensible in the first place cannot be readily dismissed. Every policy must be assessed through the lens of cost-benefit analysis, and both the costs and benefits of a net-zero transition continue to elude reliable quantification. The costs could turn out to be far greater than current estimates, and there are compelling reasons to doubt that

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21 Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104, [https://unfccc.int/sites/default/files/english\\_paris\\_agreement.pdf](https://unfccc.int/sites/default/files/english_paris_agreement.pdf).

22 United Nations, Climate Action, "Renewable energy – powering a safer future," <https://www.un.org/en/climatechange/raising-ambition/renewable-energy>.

20 the benefits could ever be measured, or attributed with confidence to the policy if they could be measured.

That debate is beyond the scope of this report, which focuses instead on a different problem. Even if the net-zero targets of the Paris Agreement were advisable, they simply are not achievable under current law. That is because the process for environmental review and authorization of energy infrastructure in the major industrial economies is too burdensome, moves too slowly, imposes too much uncertainty on private investment decisions, and requires such an inordinate investment of government time and resources that total amount of renewable energy capacity that can realistically be authorized is highly constrained, and falls far short of what the major studies suggest would be needed to achieve net-zero.

Many prominent studies have laid out optimistic pathways for achieving net-zero. They generally estimate what the transition would cost, but none of them grapple with the impact that permitting risk has on capital formation for a clean energy transition. As mentioned earlier in this report, the Princeton Net Zero Study explains in a footnote that its estimates do not account for permitting costs at all. The prominent McKinsey report, *The Net-Zero Transition: What It Would Cost, What It Could Bring*, mentions the word “permitting” once in 224 pages, listing “land constraints for permitting renewables” as among the “short-term risks and challenges” of a net-zero transition in the electrical power sector.<sup>23</sup>

This section shows how permitting poses insuperable obstacles for any net-zero transition, both for the world and for America in particular.

## **The Difficult Path to Global Net Zero**

McKinsey estimates that net-zero will require an additional \$3.5 trillion in average *annual* capital investment globally through 2050.<sup>24</sup> It estimates that an additional \$100 trillion would be required to address the gap between the “current trajectory” and the trajectory of an “achieved commitments” scenario. In the renewable energy sector, McKinsey estimates that *annual solar and wind installed capacity* would need to nearly triple, from approximately 180 gigawatts (GW) of average yearly installed capacity in 2016–21 to more than 520 GW over the coming decade, with different accelerations required across global regions.<sup>25</sup>

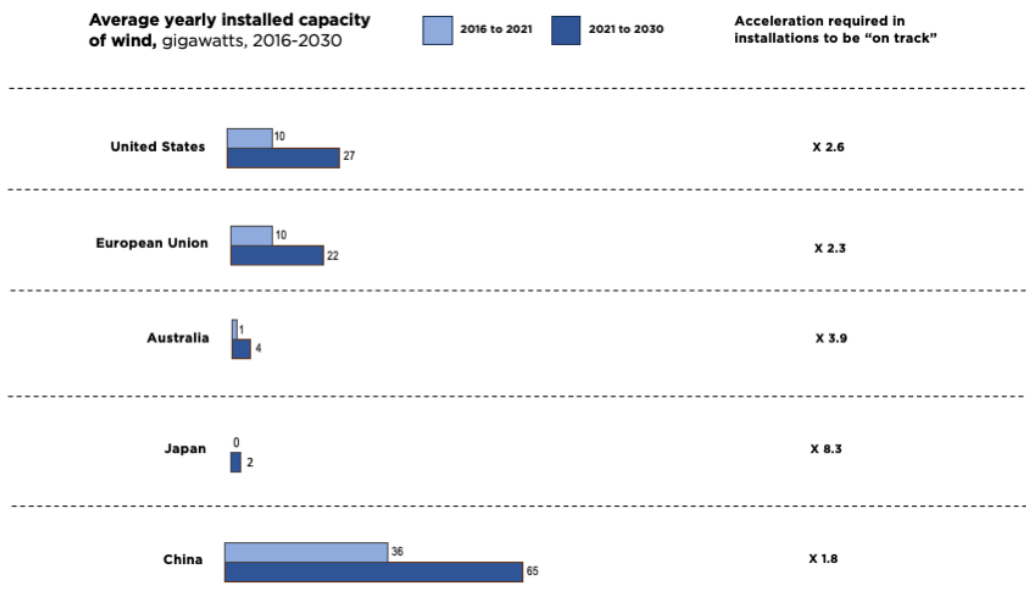
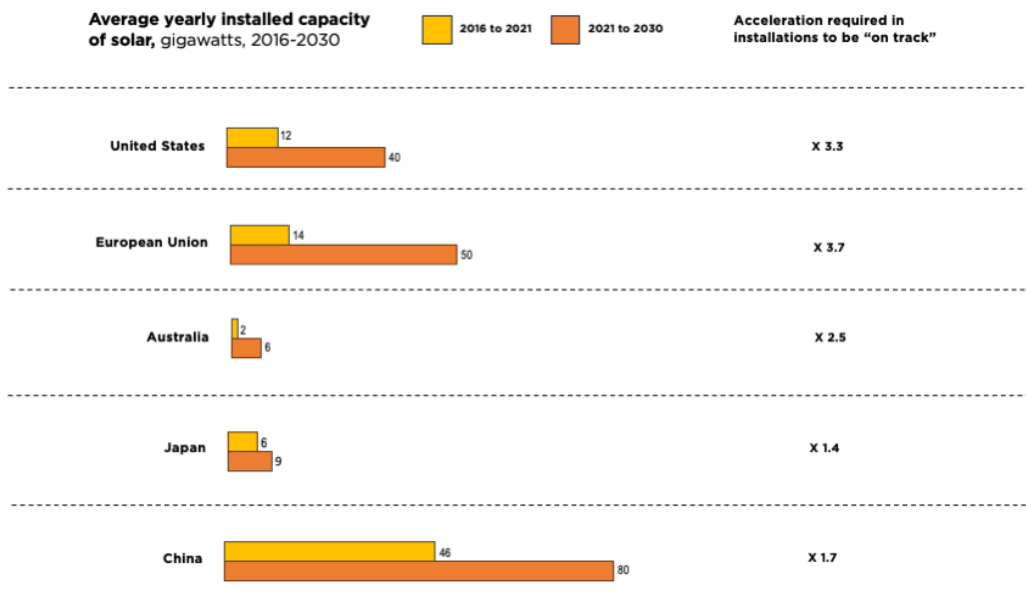
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23 McKinsey & Company, “The Energy Transition: A Region-by-Region Agenda for Near-Term Action,” December 2022, <https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-energy-transition-a-region-by-region-agenda-for-near-term-action#/>.

24 Id., p. 5.

25 Id., p. 3.

In the chart below, McKinsey estimates the multiple by which the pace of solar and wind installations would have to increase in order to achieve net-zero commitments in various countries.



Source: McKinsey & Co.

To the extent different countries and regions are “lagging” in infrastructure development, there are, to be sure, different factors at play. In the developing world, the overriding constraint on the capacity to deliver infrastructure is almost certainly a basic lack of capital: They are poor countries. But in the developed world, the constraint of inefficient permitting looms large.

It is important to understand that inefficient permitting is not merely a constraint on the investors’ ability to deliver infrastructure, but also on the government’s ability to authorize it. In the United States, the current pace of permitting for renewables is almost certainly close to federal and state agencies’ maximum capacity for processing permit applications. Even with the massive subsidies in the Inflation Reduction Act,<sup>26</sup> it is likely the case that without a doubling or tripling of the federal bureaucracy engaged in permit applications and National Environmental Policy Act (NEPA) reviews—a workforce that is currently in the thousands—it will be impossible to significantly increase the pace of permitting under current law.

## **The Difficult Path to Net Zero America**

In the United States, as in the rest of the world, a transition to net-zero or even a substantially decarbonized electricity would require a staggering amount of new clean energy infrastructure. The U.S. currently has about 1.14 terawatts (TW) of electrical generating capacity.<sup>27</sup> In 2022, about 60 percent of U.S. total electricity generation was from coal and natural gas, another 18 percent from nuclear, and most of the remainder from renewable sources: 10 percent from wind, six percent from hydropower, and three percent from solar.<sup>28</sup>

Moreover, a clean energy transition would require not just replacing the 60 percent of fossil fuel generating capacity with renewable sources, but also accommodating future demand growth entirely through renewables, including enormous additional capacity to accommodate electric vehicles.

There are many estimates of the power capacity additions that would be required for a net-zero power sector, most of which are in the same general ballpark. For example, the Electric Power Research Institute (EPRI) estimates that to achieve a zero-carbon electrical system by 2035, the grid would need to add 900 gigawatts

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26 Pub. L. 117–169 (Aug. 16, 2022).

27 Energy Information Administration, “Electricity explained: Electricity generation, capacity, and sales in the United States,” last updated July 15, 2022, <https://www.eia.gov/energyexplained/electricity/electricity-in-the-us-generation-capacity-and-sales.php>.

28 Energy Information Administration, “Frequently Asked Questions: What is U.S. electricity generation by energy source?,” February 2023, <https://www.eia.gov/tools/faqs/faq.php?id=427&t=3>.

Even if the net-zero targets  
of the Paris Agreement  
were sensible, they are not  
achievable under current law.

(GW) of new wind and solar, 80 GW of new nuclear capacity (doubling current nuclear capacity nationwide), and 280 GW of hydrogen-fueled turbines,<sup>29</sup> a technology that has not been deployed anywhere at utility scale.

Many estimates do not even consider nuclear, largely because powerful environmental advocacy groups remain adamantly opposed to it. That may also explain why Congress has put virtually no effort into advancing nuclear power. The disregard for nuclear is a major obstacle to the clean energy transition, because most scenarios

aim to replace the dispatchable baseload generation of coal and natural gas plants with intermittent wind and solar, creating significant challenges for reliability and capacity. Utility-scale batteries, smart grids, and similar technologies have come a long way, but the challenge of intermittency is why the International Energy Agency has called for a doubling and even tripling of nuclear power around the world for any chance of meeting the Paris Agreement's goal of limiting warming to no more than 1.5 degrees Celsius.<sup>30</sup>

America's nuclear generating capacity is dwindling and there are no plans to build any new nuclear plants in the United States. But even if there were, they could not be part of the clean electricity mix in EPRI's estimate. The permitting timeline for nuclear is the longest of any infrastructure sector. A pair of nuclear power reactors due to be operational by the end of 2024 in Georgia started their odyssey through the federal permitting process in 2006, after many years of project design and development.<sup>31</sup> Nuclear regulatory reform is urgently needed, but Congress has done virtually nothing about it.

Of the studies about the pathway to net-zero in the United States, perhaps the most prominent and authoritative is that led by Princeton University, *Net-Zero*

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29 Electrical Power Research Institute, "Powering Decarbonization: Strategies for Net-Zero CO2 Emissions," February 23, 2021, <https://www.epri.com/research/products/000000003002020700/>.

30 International Energy Agency, *Nuclear Power in a Clean Energy System*, May 2019, <https://www.iea.org/reports/nuclear-power-in-a-clean-energy-system>.

31 The early site permit application for the Vogtle Units 3 and 4 reactors was submitted on August 15, 2006. U.S. Nuclear Regulatory Commission, "Issued Early Site Permit – Vogtle Site," <https://www.nrc.gov/reactors/new-reactors/esp/vogtle.html>. Vogtle Unit 3 started preliminary operations in March 2023. Jeff Amy, "Georgia nuclear plant begins plitting atoms for first time," AP, March 6, 2023, <https://apnews.com/article/georgia-power-nuclear-reactor-electricity-vogtle-startup-305145dc46cc1752c2d9371fa70aea35>.

24 *America*.<sup>32</sup> The study examines the required changes in various sectors, including energy, transportation, industry, and buildings, as well as the associated costs and benefits. According to the Princeton Net Zero Study, achieving net-zero by 2050 will require a complete or nearly complete phase-out of fossil fuels and an enormous deployment of new renewable energy infrastructure, along with sweeping transformations of the transportation, industrial, and building construction sectors.<sup>33</sup>

The Princeton study suggests that achieving net-zero greenhouse gas emissions by 2050 is feasible, but it will require significant changes in various sectors, significant investments, and policy changes at all levels of government, including policies such as carbon pricing, clean energy standards, and regulations to support the deployment of renewable energy and energy-efficient technologies.<sup>34</sup> The political hurdles facing any of those policies are daunting, but even if they could all be overcome it would not make a difference without sweeping reforms of the permitting system for infrastructure.

McKinsey estimates that the investments needed for a net-zero transition are underestimated because of “complicated siting and permitting that could, according to our research, delay projects by ten years or more.”<sup>35</sup> Most estimates are far more sanguine, however. One notably optimistic review of 11 studies of non-nuclear pathways to clean electricity by 2030 and 2035, by Energy Innovation LLC, shows a consistent estimate across studies of about one terawatt of solar and wind, plus 100 GW of battery storage. That review notes that this would require an average annual deployment of new renewable energy capacity at double or triple the record rate of 31 GW of wind and solar additions in 2020, “a challenging but feasible pace of development.”<sup>36</sup>

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32 E. Larson, C. Greig, J. Jenkins, E. Mayfield, A. Pascale, C. Zhang, J. Drossman, R. Williams, S. Pacala, R. Socolow, E.J. Baik, R. Birdsey, R. Duke, R. Jones, B. Haley, E. Leslie, K. Paustian, and A. Swan, *Net-Zero America: Potential Pathways, Infrastructure, and Impacts*, Final report, Princeton University, Princeton, NJ, 29 October 2021, <https://www.dropbox.com/s/ptp92f65lgds5n2/Princeton%20NZA%20FINAL%20REPORT%20%2829Oct2021%29.pdf?dl=0>.

33 *Id.*

34 *Id.*

35 McKinsey & Company, “The Energy Transition: A Region-by-Region Agenda for Near-Term Action” (December 2022), p. 53, available at: [https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-energy-transition-a-region-by-region-agenda-for-near-term-action#](https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-energy-transition-a-region-by-region-agenda-for-near-term-action#/).

36 Energy Innovation Policy & Technology LLC, “Studies Agree 80 Percent Clean Energy by 2030 Would Save Lives and Create Jobs at Minimal Cost,” September 7, 2021, <https://energyinnovation.org/wp-content/uploads/2021/09/Studies-Agree-80-Percent-Clean-Electricity-by-2030-Would-Save-Lives-and-Create-Jobs-at-Minimal-Cost.pdf>.

The authors do not elaborate on why they think that would be “feasible,” perhaps because they have been spared the trials and tribulations of the NEPA process. But it is not remotely feasible. Since the early Obama administration, federal agencies have strained to streamline their permitting processes and increase throughput. They are virtually at the limit of the streamlining that current law will allow without leaving their permits and NEPA reviews vulnerable to court challenge.

Even if agencies’ permitting resources were doubled or tripled, there has been little recognition of the political challenge of doubling or tripling the level of local opposition to infrastructure development under a system that often seems tailor-made to empower small pockets of local opposition, to which the regional offices of federal agencies are very sensitive.

Local opposition arises from land-use impacts. To grasp the stupendous land-use requirements of a net-zero transition, consider just a few data points. McKinsey estimates that to achieve even a 50 percent reduction in CO<sub>2</sub> emissions, 75 percent of all land in the U.S. with a strong renewable potential and proximity to transmission lines would need to be developed for either solar or onshore wind power.<sup>37</sup> Deploying 500 GW of solar capacity would cover an area the size of New Jersey in solar panels. The number of new transmission-line miles required for net-zero is even more staggering: from 600,000 to one million miles of new high-voltage transmission lines, essentially doubling the number of miles in America’s current transmission network.<sup>38</sup> And over every stream, across every plain, and around every mountain, there is the potential for fierce—and highly effective—opposition.

President Trump once called climate change “a hoax” and withdrew the United States from the Paris Agreement in 2018. (The United States officially rejoined the Paris Agreement in February 2021, a month into the Biden administration.) Senior officials in the Trump administration were generally either ambivalent to renewable energy, or openly hostile, and resisted subsidies. But simply by implementing minor reforms of the permitting process, and insisting on efficient permitting across agencies, the Trump administration rapidly increased the federal government’s rate of renewable energy permits. Meanwhile the rate of permitting has fallen under the Biden administration. Permitted capacity for renewable energy in the United States was 10 percent lower in 2022 than in 2020, the last year

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37 McKinsey & Company, “The Energy Transition: A Region-by-Region Agenda for Near-Term Action” (December 2022), p. 40, available at: <https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-energy-transition-a-region-by-region-agenda-for-near-term-action#/>.

38 National Academies, *Accelerating Decarbonization of the U.S. Energy System*, 2021, <https://nap.nationalacademies.org/catalog/25932/accelerating-decarbonization-of-the-us-energy-system>.

26 of President Trump’s administration.<sup>39</sup> The lesson is clear: The major obstacles to net-zero are not a lack of political will to fight climate change, but simple bureaucratic inertia and conflicting priorities among those who are most committed to fighting climate change.

## **The Hard Lessons of Net Zero**

The uncertainty surrounding permitting risk is just one of the many obstacles facing net-zero. Perhaps even more fatal to the hopes for net-zero is the generally accepted view among proponents of renewable energy that restricting the supply of fossil fuels will facilitate a clean energy transition. Paradoxically, for a variety of physical, economic, and political reasons, reducing the supply of fossil energy is far more likely to impede a transition to clean energy than to advance it.<sup>40</sup> A study of those factors is beyond the scope of this report, but increasing attention has focused on this obstacle to net-zero, particularly outside the United States.<sup>41</sup> As one McKinsey report notes, “Industry observers remark that the energy transition is already ‘disorderly.’ It will be made even more so if the imperatives of energy resilience and affordability are not addressed in parallel to bringing about the net-zero transition.”<sup>42</sup>

In fact, dangerous grid reliability issues are appearing with greater frequency in the United States, a major sign of a “disorderly transition.” Rolling blackouts in California in 2020, and a near repeat in 2022, and the power outages of the Texas ice storm in 2021, were all the result of too much renewable capacity pushed onto the grid without enough resilient dispatchable generation (from nuclear, natural gas, or coal) to back it up. As the McKinsey report notes:

Most capacity markets allow some share of a renewable plant’s power to count as firm power that could be called on when the system is in need. However, the intermittence of renewables introduces unreliability to the objective of delivering firming capacity at every moment in time. In most

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39 <https://cleanpower.org/news/market-report-2022/>.

40 See, e.g., Mario Loyola, “Unleashing America’s Energy Abundance,” Competitive Enterprise Institute, Sept. 2022, <https://cei.org/studies/unleashing-americas-energy-abundance/>; Benjamin Zycher, “The Case for Climate Change Realism,” National Affairs, June 2021, <https://www.aei.org/articles/the-case-for-climate-change-realism>.

41 Id.

42 McKinsey & Company, “The Energy Transition: A Region-by-Region Agenda for Near-Term Action” (December 2022), p. 1, available at: [https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-energy-transition-a-region-by-region-agenda-for-near-term-action#](https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-energy-transition-a-region-by-region-agenda-for-near-term-action#/)/.



capacity markets, renewables' stated flexibility could be adjusted to reflect this reality. System operators could use a more conservative calculation to revise capacity credits for intermittent renewables and other resources—basing projections on forecasts of future resource availability in addition to taking a more stringent view of what constitutes reliable output based on historical performance.<sup>43</sup>

The “adjustment” that McKinsey calls for would mean further reducing the generation capacity factor of renewable power plants, already heavily discounted compared with their nameplate capacity. The upshot would be an upward revision of the overall grid capacity needed to keep up with demand, facing utilities with a choice between rushing to add large amounts of renewable capacity they won't need most of the time, just to make sure they can cover peak demand, or rushing to add dispatchable power generation, which in the short term means either coal or natural gas.

Despite the remarkable blind-spot for permitting risks in the most prominent studies of pathways to net-zero, it is finally dawning on key stakeholders around the world, and particularly in Europe, that a net-zero transition is simply impossible without sweeping reforms of permitting and environmental review processes.

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43      Id, p. 55.



# 4

## The Competitive Advantage of Efficient Permitting

*National prosperity depends on efficient regulation.*

In the *Harvard Business Review* article “The Competitive Advantage of Nations,” Michael Porter argued that nations create wealth the same way companies do, by innovating.

National prosperity is created, not inherited. It does not grow out of a country’s natural endowments, its labor pool, its interest rates, or its currency’s value, as classical economics insists. A nation’s competitiveness depends on the capacity of its industry to innovate and upgrade. ... Ultimately, nations succeed in particular industries because their home environment is the most forward-looking, dynamic, and challenging.<sup>43</sup>

For a nation to keep innovating, and thereby maintain its competitive advantage, it must maintain, among other things, a favorable position “in factors of produc-

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43 Michael Porter, “The Competitive Advantage of Nations,” *Harvard Business Review*, March-April 1990.

tion, such as skilled labor or infrastructure, necessary to compete in a given industry."<sup>44</sup> To illustrate, consider the roughly 1.5 million jobs that have been added to America's manufacturing sector since 2010,<sup>45</sup> largely the result of lower electricity prices that resulted from the shale boom and consequent switch from coal to natural gas as the main source of American electricity: Per kilowatt-hour, U.S. commercial electricity is almost as cheap as in China (\$0.15/kWh in the U.S. vs. \$0.09/kWh in China), and just a small fraction of what it costs in Germany (\$0.8/kWh).<sup>46</sup> With commercial electricity more than five times more expensive than in the U.S., it is a wonder that Germany maintains a competitive manufacturing industry. (Not surprisingly, BMW, which just a few decades ago manufactured exclusively in Germany, now manufactures vehicles in 15 different countries, with its largest production facility in Greer, South Carolina.)<sup>47</sup>

The shale boom was another in a long line of disruptive innovations by the American private sector, made possible by strong free-market competition under a stable and predictable rule of law. That combination has encouraged the risk-taking that is essential for innovation. Abundant natural resources, physical security, and a skilled labor force all played key roles. But a stable and predictable legal framework has proven indispensable, for without it the risks of private investment quickly become prohibitive. Then a society's potential capital remains frozen, which is a major reason why poor countries remain poor.<sup>48</sup>

Complex economies like that of the United States sometimes exhibit aspects of both situations. At the retail level, that of automobile loans and driver's licenses, the U.S. legal system protects everyday consumers efficiently and predictably. But the more heavily regulated the industry, and the more capital is at stake, the more unreliable and unpredictable the legal system becomes.

Despite the oft-repeated proposition that ever-more complex commercial arrangements require ever-more complex regulations, there are strong reasons to believe Prof. Richard Epstein's observation that "simple rules work best in a complex world."<sup>49</sup> This is especially so when the added complexity results in ev-

44 Id.

45 U.S. Bureau of Labor Statistics, "All employees, thousands, manufacturing, seasonally adjusted," available at: <https://data.bls.gov/pdq/SurveyOutputServlet>.

46 GlobalPetrolPrices.com, Electricity prices for businesses, [https://www.globalpetrolprices.com/China/electricity\\_prices/](https://www.globalpetrolprices.com/China/electricity_prices/) (accessed May 2023).

47 BMWBlog, "Where are BMW cars made?" August 9, 2022, <https://www.bmwblog.com/2022/08/09/where-are-bmw-cars-manufactured>.

48 See, e.g., Hernando de Soto, *The Mystery of Capitalism*, 2000.

49 See, Richard A. Epstein, *Simple Rules for a Complex World*, 1995.

er-greater levels of discretion in the hands of regulators and officials, as is generally the case for infrastructure delivery in both developing and developed countries.

In their groundbreaking, *Why Nations Fail*, economists Darron Acemoglu and James Robinson distinguish between inclusive and extractive political institutions. Inclusive institutions are pluralistic and designed to benefit most people, while extractive ones “are designed to extract incomes and wealth from one subset of

society to benefit a different subset.”<sup>50</sup> They go on to observe, “Extractive political institutions concentrate power in the hands of a narrow elite and place few constraints on the exercise of this power.”<sup>51</sup>

In discussing “extractive institutions” Acemoglu and Robinson focus on developing countries, but their definition applies equally well to socialist systems, which aspire to redistribute wealth to achieve equal outcomes.<sup>52</sup>

As Friedrich Hayek observes, in socialist systems

government officials charged with equalizing outcomes must be endowed with substantially arbitrary powers to mitigate the socially unequal or undesirable outcomes produced by a system of impartial justice.<sup>53</sup> This has two major consequences for the private economy under socialism: First, “to produce the same result for different people, it is necessary to treat them differently.” To accomplish that the laws must be unequally applied, so the legal system itself tends to become indeterminate and unpredictable.<sup>54</sup> Second, and relatedly, “the more the state ‘plans,’ the more difficult planning becomes for the individual.”<sup>55</sup>

## “Simple rules work best in a complex world.”

– RICHARD EPSTEIN

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50 Darron Acemoglu and James Robinson, *Why Nations Fail*, 2012, p. 76.

51 *Ibid.*, p. 81.

52 Or the even more amorphous “social justice.”


53 See generally, Friedrich Hayek, *The Road to Serfdom*, Ch. 6, 1944.

54 *Ibid.*, p. 117.

55 *Ibid.*, p. 114.

Hence in a complex mixed economy like that of the United States, one should expect regulatory risk to rise exponentially with the scale of investment.<sup>56</sup> Because regulatory risk is a major factor in cost-of-capital, one would expect such risk to be prohibitive in one or more sectors, depending on the regulatory climate in that sector. In such cases, government subsidies would be required to overcome the barrier to entry posed by regulatory and legal risk.<sup>57</sup> The most common justification for the hundreds of billions of dollars that Congress has appropriated for renewable subsidies is that they are needed to make renewable sources cost-competitive with existing fossil-fuel sources. A more prosaic explanation is likelier: a major real reason renewables need subsidies is to compensate for the permitting risk that Congress has created.

Regulatory risk is highly variable from country to country, even among countries with otherwise similar economic characteristics. In the United States for example, a transportation project with any federal funding takes an average of seven years to complete the permit process, before construction can even begin.<sup>58</sup> In Australia, by contrast, a country with similar per capita GDP, a complex highway-and-railway project like the Sydney Gateway motorway took two years to prepare and publish the required environmental and “master planning” documents and less than a year after that to obtain all necessary approvals.<sup>59</sup> That is less than half the average approval time for a transportation project in the U.S. This gives Australia’s transportation sector, and its supply chain generally, an enormous competitive



A major reason renewables  
need subsidies is to  
compensate investors for the  
permitting risk that Congress  
has created.

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56 This question deserves extensive empirical study.

57 This question also deserves empirical study. A possible indication of prohibitive regulatory risk is whether government subsidies are required for infrastructure development in a sector that is not among the usual categories of publicly funded infrastructure; e.g., non-excludable public goods (roadways), natural monopolies (ports and bridges), etc. Utility-scale power plants that can readily charge a fee-for-service are not among the kinds of infrastructure projects that would normally require public subsidy. Proponents may justify government subsidies on different grounds, such as the need to make a new technology cost-competitive with an existing efficient power source, while the technology “catches up” in efficiency. But in many or most such cases, regulatory risk is likely to be a major additional – and persistent – problem.

58 White House Council on Environmental Quality, “Environmental Impact Statement Timelines (2010-2018),” June 12, 2020, [https://ceq.doe.gov/docs/nepa-practice/CEQ\\_EIS\\_Timeline\\_Report\\_2020-6-12.pdf](https://ceq.doe.gov/docs/nepa-practice/CEQ_EIS_Timeline_Report_2020-6-12.pdf)

59 New South Wales Planning Portal, “Sidney Gateway Road Project,” <https://www.planningportal.nsw.gov.au/major-projects/projects/sydney-gateway-road-project>.

advantage. Although difficult to quantify, one would expect that competitive advantage to be reflected in greater job growth and greater wealth creation.

China is likely many decades from achieving the level of consumer protections available in the United States. The Chinese Communist Party (CCP) exerts a stifling level of ownership and control over Chinese companies. But it may have a significant advantage over the United States in the delivery of infrastructure. This is because stifling ownership does not necessarily entail stifling regulatory risks or compliance costs. U.S. companies, though privately owned, are in many instances subject to heavier and more unpredictable regulations than are Chinese companies. One insidious advantage of the dictatorship of the CCP is that the decision to invest and the decision to authorize are ultimately made by the same entity. With the “investor” in substantial control of the outcome, “Knightian uncertainty” largely disappears as a check on infrastructure. Another is China’s capacity to pursue long-range strategic planning without the constraints of democratic governance. These are dangerous competitive advantages that constitutional democracies can overcome only by being more efficient and innovative.

Another kind of comparative advantage is relevant in the context of infrastructure regulation. Porter observes that the first country to anticipate a global regulatory trend puts its companies in a position to compete sooner.<sup>60</sup> But as William Boulding and Markus Christen observed in their 2001 *Harvard Business Review* article “First-Mover Disadvantage,” being first doesn’t always confer a competitive advantage.<sup>61</sup> After examining hundreds of business units across multiple sectors, they found that “Pioneers in both consumer goods and industrial markets gained significant sales advantage, but they incurred even larger cost disadvantages.”<sup>62</sup> The cost disadvantages arise from how much more difficult it is to modify an existing system through trial-and-error than to start from scratch informed by the mistakes of others.<sup>63</sup> Something similar is readily observable in the realm of public policy. Regulatory program design is often beset by “first-mover disadvantage.” Indeed, the disadvantages are often worse because, for a variety of reasons, failing government programs are even more difficult to reform than failing business models.<sup>64</sup>

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60 Porter, *op. cit.*

61 William Boulding and Markus Christen, “First-Mover Disadvantage,” *Harvard Business Review*, October 2001, <https://hbr.org/2001/10/first-mover-disadvantage>.

62 Id.

63 William Boulding and Markus Christen, “Sustainable Pioneering Advantage? Profit Implications of the Entry Timing Decision,” INSEAD R&D Working Papers, March 2001, [https://flora.insead.edu/fichiersti\\_wp/inseadwp2001/2001-03.pdf](https://flora.insead.edu/fichiersti_wp/inseadwp2001/2001-03.pdf).

64 See generally, Peter Schuck, *Why Government Fails So Often*, 2014.





# 5

## Survey of Permitting Regimes

*Major economies are focused on permitting reform.*

The world's varied permitting systems have many features in common. In most of those in the present survey, projects are subject to regulation at multiple levels of government, and also by multiple agencies at the same level. So, for example, Australia, Germany, and the U.S. are all federal systems, with infrastructure projects subject to regulation at the national (federal) and subnational (state and local) levels. In such cases jurisdiction is usually concurrent, though local regulation is often preempted. Preemption of local regulatory obstacles can be a valuable feature of efficient permitting.

The European Union is similar in some respects to the United States, but there are notable differences. The EU's top-level of regulatory authority—the European Commission—enacts regulations with the power to preempt contrary national or local laws, much as with federal preemption in the U.S. But it also has the power to impose horizontal harmonization of regulations on subordinate units of government, which federal regulators are formally barred from doing in the United

36 States,<sup>65</sup> although a variety of fiscal and regulatory tools under the head of “co-operative federalism” are often used to achieve similar results.<sup>66</sup>

The process for obtaining government authorization to build a major infrastructure project commonly depends upon an environmental impact analysis conducted by officials. In practice, the environmental impact analysis tends to be the “long pole in the tent” that determines that cost and overall timeframe for obtaining the needed authorization.

This section begins with the world’s first comprehensive framework for environmental impact analysis, the National Environmental Policy Act of the United States. In the years since its enactment in 1970, it has been widely imitated. And while it remains an international benchmark, it also shows signs of a “first-mover disadvantage” in regulatory design, achieving similar environmental benefits less efficiently than subsequent imitators. It then surveys a number of national systems within the European Union, and their interaction with the increasingly comprehensive EU regulatory framework. The section then looks at Australia and New Zealand, and goes on to examine infrastructure delivery governance in Japan and China.

Most of the governments in this survey have remained committed in principle to achieving net-zero under the Paris Agreement on Climate Change. As the enormous permitting obstacles to any net-zero transition have become harder to ignore, many jurisdictions have enacted reforms meant to increase speed and efficiency of permitting. Many such reforms have come in recent years and more are being negotiated and enacted even as this report goes to press. This report summarizes the latest of these efforts and concludes with a look at diplomatic efforts to advance permitting reform on a broad international basis, including at the recent 2023 G7 summit in Hiroshima, Japan.<sup>67</sup>

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65 See U.S. Supreme Court anti-commandeering decisions, e.g., *New York v. United States*, 505 U.S. 144 (1992); *Printz v. United States*, 521 U.S. 898 (1997).

66 See, e.g., Mario Loyola, “EPA’s Unprecedented Power Grab,” *National Affairs*, Spring 2023, <https://www.nationalaffairs.com/publications/detail/epas-unprecedented-power-grab> (how the Environmental Protection Agency’s Clean Power Plan attempted to use the power to regulate coal plants as a lever to force states into adopting harmonized low-carbon electricity regulations outside the scope of EPA’s regulatory authority).

67 Government of Japan, Official Website of G7 Summit, <https://www.g7hiroshima.go.jp/en/>.



## PERMITTING IN THE United States

### *Legal Framework*

In the United States, the regulation of infrastructure deployment occurs under the National Environmental Policy Act (NEPA).<sup>68</sup> Passed in 1970, NEPA established the world's first comprehensive framework for environmental impact analysis of major infrastructure projects. It has been widely imitated around the world and set the benchmark for environmental impact analysis.

Weeks before the publication of this report, key provisions of the law were amended, as part of the Fiscal Responsibility Act.<sup>69</sup> Those changes are summarized at the end of this section.

NEPA requires federal agencies to evaluate the significant environmental impacts of "major federal actions," which include activities agencies conduct directly, activities funded by agencies, and activities authorized by agencies where the law requires such authorization. Any such impacts need to be evaluated in an environmental impact statement (EIS) prepared by "the responsible official."<sup>70</sup> Projects as varied as federal forest management plans, highways funded partly with federal dollars, and utility-scale solar plants on federally managed land would all trigger the requirement for an EIS.

The EIS is the largest scope study of environmental impacts under NEPA. A typical EIS takes on average 4.5 years to prepare, consumes tens of thousands of agency person-hours, and costs millions of dollars in taxpayer resources—on top of the tens of millions an EIS and related permit application can cost project proponents.<sup>71</sup>

NEPA establishes three levels of review for evaluating these impacts. Small and

68 42 USC §§ 4331 et seq. (1970). For a summary, see, A Citizen's Guide to the NEPA: Having Your Voice Heard, 2021, <https://ceq.doe.gov/docs/get-involved/citizens-guide-to-nepa-2021.pdf>.

69 Pub. L. 118-5 (June 3, 2023).

70 See, Environmental Impact Statements, <https://www.epa.gov/nepa/what-environmental-impact-statement>.


71 White House Council on Environmental Quality, "Environmental Impact Statement Timelines (2010-2018)," June 12, 2020, [https://ceq.doe.gov/docs/nepa-practice/CEQ\\_EIS\\_Timeline\\_Report\\_2020-6-12.pdf](https://ceq.doe.gov/docs/nepa-practice/CEQ_EIS_Timeline_Report_2020-6-12.pdf)

routine agency actions – such as the acquisition of office supplies by a federal agency – may be excluded from EIS requirements by a “categorical exclusion.” For projects that are not excluded from review, but whose impacts may not trigger the significance threshold for an EIS, an Environmental Assessment (EA)<sup>72</sup> may be used to preliminarily evaluate the potential environmental impacts of the project. In practice, EAs are most often used to substantiate the lack of significant environmental impacts, which may be enshrined in a “Finding of No Significant Impact” (FONSI). The FONSI may be predicated on measures meant to mitigate environmental impacts of the agency action; this is often referred to as a “Mitigated FONSI.” When the proposed federal action is a “major action” and is likely to “significantly impact” the environment, the more extensive Environmental Impact Statement (EIS) is required.

Of note, NEPA applies to “major federal actions,” such as the decision to fund or authorize an infrastructure project, and not to the project itself.

This is an important distinction because where an EIS is required, NEPA requires that the agency study “alternatives.” Alternatives to the agency action may be quite different than alternatives to the project. For example, the alternative to the proposed issuance of a permit may be simply to deny the permit, whereas alternatives to the project itself are many. Unfortunately, agencies and courts often conflate the two, and therefore agencies spend inordinate amounts of time studying impacts of alternatives that the developer can readily exclude for business reasons, which is one source of the excessive paperwork and delays associated with NEPA.<sup>73</sup>

The application of NEPA to major infrastructure projects is usually triggered by an underlying “action statute” that requires one or more “action agencies” to take some action on a permit application. A myriad of laws can apply to a single infrastructure project. Examples include the Federal Land Policy and Management



**A typical EIS takes on average 4.5 years to prepare, consumes tens of thousands of agency person-hours, and costs millions of dollars in taxpayer resources.**

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<sup>72</sup> Environmental Assessments, <https://www.epa.gov/nepa/what-environmental-assessment>.

<sup>73</sup> Mario Loyola, “Permitting reforms, finally,” CEI Study, June 15, 2023, <https://cei.org/studies/permitting-reforms-finally/>.

Act,<sup>74</sup> Federal Power Act,<sup>75</sup> Natural Gas Act,<sup>76</sup> Clean Water Act,<sup>77</sup> Endangered Species Act,<sup>78</sup> and National Historic Preservation Act.<sup>79</sup> Each of these laws can implicate one or more agencies. As a result, a single project can require permits from a dozen or more separate agencies, each operating under its own separate legal authorities.

The Federal Permitting Improvement Steering Council keeps an inventory of the permit requirements that can trigger application of NEPA.<sup>80</sup> It is reproduced in full here, for both reference and dramatic effect:

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74 43 U.S.C. §§ 1701-1787.

75 16 U.S.C. §§ 791a-828c.

76 15 U.S.C. §§ 717-717c.

77 33 U.S.C. §§ 1251-1387.

78 16 U.S.C. §§ 1531-1544.

79 54 U.S.C. §§ 300101-307108.

80 Federal Environmental Review and Authorization Inventory (last updated March 27, 2023), <https://www.permits.performance.gov/tools/federal-environmental-review-and-authorization-inventory-pdf>.

Required Permit	Agency	Office	Project Type
Authorization for Liquefied Natural Gas Terminal Facilities, Onshore or in State Waters	Federal Energy Regulatory Commission (FERC)	Office of Energy Projects and Office of Energy Market Regulation	Liquefied Natural Gas Terminal Facilities (Onshore or in State Water), and associated Natural Gas Pipelines
Bald and Golden Eagle Protection Permit	Interior	FWS	All
Business Resource Lease	Interior	BIA	Wind: Other than Federal Offshore Wind: Federal Offshore Solar Geothermal
Certificate of Public Convenience and Necessity for Interstate Natural Gas Pipelines	FERC	Office of Energy Projects and Office of Energy Market Regulation	Interstate Natural Gas Pipelines
Clean Water Act Section 402 Permit, National Pollutant Discharge Elimination System (EPA)	Environmental Protection Agency (or a State under CWA Section 404(b).	EPA Region (or a State regulatory agency)	All
Commercial Use Permit	Interior	BLM	Geothermal
Conditional Letter of Map Revision	Homeland Security	FEMA	All
Construction and Operations Plan	Interior	BOEM	Wind: Other than Federal Offshore Wind: Federal Offshore
Development and Production Plan	Interior	BOEM	Offshore Oil & Gas
DOD Military Mission Impact Process	Defense	DOD	All
DOD Mission Compatibility Evaluation Process, Part 211 of Title 32 CFR	Defense; Transportation	DoD Siting Clearinghouse	All
Easement Administrative Action (USDA - NRCS)	Agriculture	NRCS	All
Endangered Species Act Consultation (DOI-FWS)	Interior	FWS	All
Endangered Species Act Consultation (NOAA-NMFS)	Commerce	NOAA - NMFS	All
Fish and Wildlife Coordination Act Review (DOI - FWS)	Interior	FWS	All
Fish and Wildlife Coordination Act Review (NOAA)	Commerce	NOAA - NMFS	All
Floodplain Assessment	All	All	All
Form 3200-9, Notice of Intent to Conduct Geothermal Resource Exploration Operations	Interior	BLM	Geothermal
Geothermal Drilling Permit (GDP)	Interior	BLM	Geothermal
Geothermal Exploration Bond	Interior	BLM	Geothermal
Geothermal Lease	Interior	BLM	Geothermal
Geothermal Project Utilization Plan, Facility Construction Permit, and Site License	Interior	BLM	Geothermal
Geothermal Sundry Notice	Interior	BLM	Geothermal
Lease of Power Privilege (DOI-BOR)	Interior	BOR	Federal Hydropower Non-Federal Hydropower - Leases
Loan Guarantee Program, Title XVII of EP Act 2005	Energy	Loan Program Office	Renewable Energy Production (all)
Loan Program, Advanced Technology Vehicle Manufacturing	Energy	Loan Program Office	Manufacturing (all)
Magnuson-Stevens Fishery Conservation and Management Act, Section 305 Essential Fish Habitat (EFH) Consultation	Commerce	NOAA - NMFS	All
Marine Mammal Protection Act (MMPA) Incidental Take Authorization	Commerce	NOAA - NMFS	All
Migratory Bird Treaty Act permits	Interior	FWS	All

Required Permit	Agency	Office	Project Type
National Marine Sanctuaries Act, Issuance of a General Permit or Authorization of a Permitted Activity	DOC	NOAA - National Ocean Service	All
National Marine Sanctuaries Act, Section 304(d) Consultation	Commerce	NOAA - National Ocean Service	All
National Marine Sanctuaries Act, Special Use Permit, as defined in Section 310	Commerce	NOAA - National Ocean Service	Offshore Broadband Infrastructure
Native American Graves Protection Act Compliance	All	All	All
Natural Gas Export Authorization	Energy	Office of Regulation and International Engagement	Liquefied Natural Gas Terminal Facilities - Onshore or in State Water Liquefied Natural Gas Terminal Facilities - Offshore
Non-Federal Hydropower Licenses	FERC	Office of Energy Projects	Non-Federal Hydropower - Licenses (including Non-Federal Marine and Hydrokinetic Projects)
Non-Impairment Determination (separate from NPS permit)	Interior	NPS	All
Notice of Proposed Construction - Form 7460	Transportation	FAA	All
NPS Permit	Interior	NPS	All
Nuclear Power Plant – Combined (construction and operating) License	Nuclear Regulatory Commission	Office of New Reactors	Nuclear Power Plant - Combined (construction and operating) license
Nuclear Power Plant – Construction Permit	Nuclear Regulatory Commission	Office of Nuclear Reactor Regulation	Nuclear Power Plant - Construction Permit
Oil and Gas Sundry Notice for Surface Disturbing Activity	Interior	BLM	Land-based Oil & Gas - Production/Extraction
Oil Spill Response Plan (DOI - BSEE)	Interior	BSEE	Offshore Oil & Gas
Outer Continental Shelf (OCS) Air Permit	Environmental Protection Agency	EPA Region	Any equipment, activity or facility which: (1) Emits or has the potential to emit any air pollutant; (2) Is regulated or authorized under the Outer Continental Shelf Lands Act ("OCSLA") (43 U.S.C. §1331 et seq.); and (3) Is located on the OCS or in or on waters above the OCS
Outgrant Administrative Action	Defense	USAF, USN, USACE	All, with exception for Wind: Federal Offshore
Operations Plan / Surface Use Plan	Interior	BLM	Geothermal
Right-of-way Authorization (DOI--BIA)	Interior	BIA	Electricity Transmission "Rural Energy" Projects Surface Transportation (all) Broadband (all)
Right-of-Way Authorization (DOI-BLM)	Interior	BLM	- Wind energy: Other than Federal Offshore - Electricity Transmission (all) - Surface Transportation (all) - Broadband (all) - Water Resource Projects (all)
Right-of-Way Authorization (DOI-FWS)	Interior	FWS	All
Section 10 of the Rivers and Harbors Act of 1899	Defense	USACE	All
Section 103 of the Marine Protection, Research, and Sanctuaries Act	Defense	USACE District Office -- Regulatory	All

Required Permit	Agency	Office	Project Type
Section 106 Review	Advisory Council on Historic Preservation	ACHP	All
Section 1222 Project	Energy	DOE	Electric Transmission
Section 404 Clean Water Act	Defense	USACE - Regulatory	All
Section 408 Permit	Defense	USACE	All
Service Line Agreement	Interior	BIA	All
Site License (DOI - BLM)	Interior	BLM	Geothermal
Special Use Permit (BLM)	Interior	BLM	Geothermal
Special Use Permit (FS)	Agriculture	FS	All
State, Local Tribal, or Other Non-Federal Action	All	All	All
USCG Bridge Permit	Homeland Security	USCG - Office of Bridge Programs	Bridges
USCG Letter of Recommendation for Marine Operations	Coast Guard	USCG Captain of the Port (COTG)	Liquefied Natural Gas Terminal Facilities
Use Authorization (DOI-BOR)	Interior	BOR	Federal Hydropower Non-Federal Hydropower - Leases Non-Federal Hydropower - Licenses (including Non-Federal Marine and Hydrokinetic Projects)
Wild and Scenic Rivers Act Determination/Coordination	Interior	BLM, FWS, NPS, or USFS	Hydropower (all) Surface Transportation (all) Electricity Transmission (all) Water Resource Projects (all)
Wind Energy Evaluation Lease - Indian Lands	Interior	DOI - BIA	Wind: Other than Federal Offshore

There is no statutory framework for integrating these processes, which largely operate independently of each other. This is true even when federal law requires extensive interagency coordination, as with Section 7 consultation under the Endangered Species Act.

The interagency NEPA process is conducted loosely under a series of presidential orders that have been issued by the White House Council on Environmental Quality in the guise of "regulations" (CEQ NEPA Regulations).<sup>81</sup> In the case of multiagency NEPA review, the Regulations provide for a "lead agency" and one or more "cooperating agencies" who team up to prepare a single EIS for their several agency "actions," with the lead agency traditionally taking on the main effort of preparing the EIS. Infrastructure project permit applications almost invariably trigger multiple permit requirements from multiple agencies. Hence there is almost always a "lead agency" for a major infrastructure project.

The NEPA process is often a Homeric odyssey of trials and tribulations for project developers, but like the voyage of Odysseus it follows a certain general sequence. Once the agency determines that an EIS is necessary, it publishes a "notice of in-

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81 40 C.F.R. parts 1500-1508.



ment” (NOI) to prepare an EIS in the *Federal Register*. At this point the “scoping” process begins. This process involves extensive opportunity for public input, for the purpose of bringing potential environmental impacts to light. The agency also begins to develop a range of alternatives to the proposed agency action, and prepares a comparison of impacts across alternatives, commonly including a “no action” alternative. Beneficial impacts are supposed to be included, but the study typically consists mainly of negative impacts, including, for example, impacts to protected species and habitat, impacts to protected wetlands, “viewshed” impacts, modification of land use under federal land use planning, and impacts to cultural heritage sites.

The public scoping process lends itself to controversy, and often the issues raised lead eventually to litigation, creating significant barriers at the “front end” and “back end.”<sup>82</sup> Linear projects such as pipelines and transmission lines are particularly prone to such problems, as they create new opportunities for local opposition, and additional permitting requirements, along their entire length. Renewable energy projects such as wind and solar also tend to be controversial because of their impact on natural habitat.<sup>83</sup> That impact is particularly pronounced given the significantly greater amount of land required per unit of renewable electrical capacity compared with natural gas and nuclear.<sup>84</sup>

After scoping, the lead agency proceeds to prepare a draft EIS, which analyzes the potential impacts of the proposed project and of the alternatives before the agency. There is a public review and comment period, during which interested parties can provide feedback on the Draft EIS (DEIS). The agency then prepares the Final EIS (FEIS), which takes into account the comments received during the public review period and identifies any changes to the project or its impacts. The FEIS is the agency record for the “Record of Decision” (ROD), which memorializes the agency’s decision on the permit application and specifies any monitoring and mitigation efforts. Under Sec. 706 of the Administrative Procedure Act, the sufficiency of the permit rests on the completeness of the agency record, in this case the FEIS.<sup>85</sup> Hence any omission could lead to vacatur of the permit.

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82 For a good overview, see William Murraby Tabb, “The Role of Controversy in NEPA: Reconciling Public Veto with Public Participation in Environmental Decisionmaking,” 21 *William & Mary Environmental Law and Policy Review* 175 (1997).

83 See, e.g., Dai, K., Bergot, A., Liang, C., Xiang, W-N., and Hunag, Z., “Environmental issues associated with wind energy: A review,” 75 *Renewable Energy* 911 (2015).

84 World Economic Forum, “Energy: Which electricity source uses the most land?” <https://www.weforum.org/agenda/2022/06/energy-electricity-sources-land> (June 30, 2022).

85 5 U.S.C. Sec. 706.

Throughout the NEPA process, the lead agency is required to consult with other agencies, as well as with the public and stakeholders, to ensure that potential environmental impacts are properly considered and addressed. State and local governments also have their own regulations and requirements for infrastructure projects. Unless preempted by federal law, a project will typically require construction and land-use permits under the ordinances of the local government. State laws may also require permits and those laws often trigger state-level environmental review procedures. Many state laws, most notably the California Environmental Quality Act (CEQA),<sup>86</sup> require environmental impact assessments and are generally patterned after NEPA.

### *Assessment of the American System*

The U.S. system for federal permits and environmental reviews for major infrastructure projects is extraordinarily difficult, time-consuming, and uncertain for any project that is subject to the process. It also takes so much agency time and resources to process each permit application that the permitting process creates a significant bottleneck for infrastructure deployment at a national scale. The entire federal government produces at most 75 or 80 final EISs every year.<sup>87</sup> Because the largest projects tend to require EISs, that pace is far short of what is needed to keep American infrastructure modern and reach any net-zero goal.

The risk associated with the costs, delays, and uncertainties of these processes lead many investors and developers to abandon projects or avoid them altogether, creating a need for massive public subsidies to overcome the risk barrier to investment. The federal and state processes for authorization and environmental review are often cited as the main barriers to renewable energy development.<sup>88</sup>

The risk of litigation is the main source of cost, delay, and uncertainty in the NEPA permitting process. Federal courts hold agencies to such high standards when

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86 Cal. Pub. Res. Code §§ 21000-21177.

87 See, Environmental Protection Agency, Environmental Impact Statement (EIS) Database, <https://cdxapps.epa.gov/cdx-enepa-ll/public/action/eis/search>.

88 See, e.g., Lawrence Susskind and Ryan Cook, "The Cost of Contentiousness: A Status Report on Offshore Wind in the Eastern United States," *Va. Envtl. L. J.* 204 (2015).

applying NEPA that compliance is all but impossible to achieve with confidence.<sup>89</sup> Agencies spend thousands of staff hours and millions in taxpayer resources trying to get every detail of an EIS right, but when challenged in court, only prevail in about 70 percent of cases. When they do not prevail, the permit and EIS upon which the permit rests are often vacated, and construction or operation of the project must be postponed.

The statutory purpose of NEPA is to inform agency decision makers. Yet, litigation risk compels agencies to conduct environmental reviews that are significantly more detailed than necessary or helpful to inform agency decision makers. There is no substantial performance standard for agencies that got nearly everything right. The omission of one paragraph that a court might like to have seen in a 1,000-page document could be deemed “arbitrary and capricious” under the Administrative Procedure Act.

Litigation is often driven by local opposition to projects. As a result, national policy priorities are routinely subordinated to small pockets of local opposition. Whether the goal is infrastructure modernization or net-zero, the U.S. system erects major barriers to the rapid deployment of infrastructure at scale.

Another major problem with the permitting process is the hydra-headed nature of agency permitting authorities. Efforts by multiple administrations to establish a coordinated process quickly run up against the reality of statutory structure, a problem that only Congress can fix. The CEQ Regulation’s provisions on a “lead agency” to prepare a single NEPA document in coordination with “cooperating agencies” does not relieve the project developer of having to create an inter-agency process from scratch among a bunch of agencies that often couldn’t care less what the developer has to say on any subject.

A related problem is that agencies take it on themselves to prepare environmental documents that the developer could prepare instead, much faster and just as well, subject to agency verification and approval. That is one of the most important changes in the 2020 Trump administration revisions to NEPA, which were partly pulled back by the Biden administration to placate environmental advocacy

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<sup>89</sup> The problem started in the 1970s, with the development of “hard look” review as the standard of review for agency actions, a standard embraced by the Supreme Court in *Motor Vehicle Manufacturers Association v. State Farm Mutual Automobile Insurance Co.*, 463 U.S. 29 (1983). Section 706 of the Administrative Procedure Act provides that federal courts may set aside agency actions that are “arbitrary and capricious,” a standard of review that was supposed to be highly deferential to executive branch policy priorities and agencies’ expertise in technical matters. But *State Farm* turned that logic on its head, instructing courts to set aside agency actions as “arbitrary and capricious” if the agency failed to consider even one factor or issue the court would have preferred that the agency discuss.

groups despite the fact that renewable energy companies were the disproportionate beneficiaries of the Trump-era reform.

A 2020 report by the White House CEQ found that the average time for completion of an EIS was 4.5 years, and the median time 3.5 years, with Final EISs running to 661 pages on average.<sup>90</sup> Completion times varied significantly among agencies, however, with federally funded transportation projects taking an average of nearly seven years to complete the NEPA process.

### *Recent Developments*

The major problems of the NEPA process arise from its statutory structure and that of related action statutes, as well as federal court interpretations of those statutes. Consequently, any major changes would have to come from Congress or the courts, where change occurs at a glacial pace if at all. In the United States, the federal executive branch is designed to act with much greater alacrity than the other two branches, but is confined to administrative powers, including implementing guidance and regulatory changes, within the structural “guard rails” defined by Congress and the courts. Hence the changes that come more easily tend to be more marginal.

The effort to streamline the NEPA process within the executive branch goes back at least to the administration of George W. Bush and is likely to continue in future administrations. Executive Order 13212 (2001) instructed agencies to “expedite their review of permits or take other actions necessary to accelerate the completion of” energy projects. This directive was expanded in the Energy Policy Act of 2005, which called for permitting improvements with respect to a wide variety of energy infrastructure categories.<sup>91</sup>

With renewable energy subsidies a major part of Congress’s response to the 2008 world financial crisis, federal agencies of the Obama era soon found themselves facing a bumper crop of renewable energy project applications. As it became clear that the new project applications would run into the same permitting bottleneck that had existed for years prior, the Obama administration began exploring ways to speed up the process. One result of these efforts was the 2012 “Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States” (2012 Solar PEIS) and the related “Approved Resource Management Plan Amendments/Record of Decision for Solar Energy Development

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90 White House Council on Environmental Quality, “Environmental Impact Statement Timelines (2010-2018),” June 12, 2020, [https://ceq.doe.gov/docs/nepa-practice/CEQ\\_EIS\\_Timeline\\_Report\\_2020-6-12.pdf](https://ceq.doe.gov/docs/nepa-practice/CEQ_EIS_Timeline_Report_2020-6-12.pdf)

91 Energy Policy Act of 2005, Pub. L. No. 109-58 (Aug. 8, 2005).

in Six Southwestern States” (Solar PEIS Record of Decision).<sup>92</sup>

The six states—California, Arizona, New Mexico, Nevada, Utah and Colorado—were chosen because they contain the vast majority of the high-capacity-factor land for solar energy in the U.S., and because the great majority of that land is managed by a single agency, the Bureau of Land Management in the U.S. Department of Interior. Within that vast land area, the Solar PEIS Record of Decision identified 17 “Solar Energy Zones” designated as high-priority areas for utility-scale solar energy development; “variance areas” outside of SEZs where solar development could be approved under certain circumstances; “high potential resources conflict areas,” where solar development would pose a high potential conflict with natural, cultural, or visual resources; and 32 categories of land excluded from solar development.

The SEZs are generally “in the middle of nowhere” and far from the nearest transmission interconnection; consequently, SEZs have seen relatively few permit applications in the decade since. Most permit applications have been for development in “variance areas” nearer to existing or planned transmission routings; not surprisingly, these also tend to be nearer major population centers, where the cultural and other resource conflicts generate greatest local opposition. In Fiscal Year 2021, BLM approved 10 utility-scale solar projects totaling nearly 2.8 GW of nameplate capacity,<sup>93</sup> which was more than 20 percent of the total solar capacity additions nationwide in 2021.<sup>94</sup> BLM is currently considering a revision to the Solar PEIS which would add an additional five states of the Pacific Northwest to the program: Oregon, Idaho, Wyoming, Washington, and Montana. BLM has asked for a significant increase in staff to keep pace with the increase in permit applications. Similar issues have faced other kinds of energy projects on federal land and offshore, from wind projects to fossil energy leasing programs.

In 2015, Congress created an expedited permitting procedure in the FAST

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92 U.S. Department of Interior, Bureau of Land Management and U.S. Department of Energy, <https://solareis.anl.gov/>. While the proposed Solar Energy Program will further the BLM’s ability to meet the goals of E.O. 13212 and the Energy Policy Act of 2005, it also has been designed to meet the requirements of Secretarial Order 3285A1 (Secretary of the Interior 2010) regarding the identification and prioritization of specific locations best suited for utility scale solar energy development on public lands.

93 U.S. Dept. of Interior – Bureau of Land Management, “Public Land Renewable Energy – Fiscal Year 2021 Report to Congress,” March 2022, [https://www.blm.gov/sites/blm.gov/files/docs/2022-04/BLM%20Public%20Land%20Renewable%20Energy%20FY21%20Report%20to%20Congress%20v4%20508\\_0.pdf](https://www.blm.gov/sites/blm.gov/files/docs/2022-04/BLM%20Public%20Land%20Renewable%20Energy%20FY21%20Report%20to%20Congress%20v4%20508_0.pdf).

94 U.S. Energy Information Administration, “Today in Energy,” September 1, 2022. <https://www.eia.gov/todayinenergy/detail.php?id=53679#:~:text=The%20United%20States%20added%2013.2,our%20Annual%20Electric%20Generator%20Report>.

Act.<sup>95</sup> Title 41 of the Act (also known as “FAST-41”) requires agencies to post major infrastructure projects covered by the law on a public website (the Permitting Dashboard<sup>96</sup>) along with a “coordinated project plan” for all required agency authorizations and a timetable of milestones for the various permits to be issued (“permitting timetable”).<sup>97</sup> The law creates the Federal Permitting Improvement Steering Council (FPISC), made up of senior officials from the main permitting agencies, supported by an executive director and a small staff. The Permitting Dashboard is supposed to be updated in real time, so the public can track progress on the permit applications and related NEPA review. The law also created certain limits on legal challenges, including a two-year statute of limitations.

Under President Trump, an array of deregulatory efforts was aimed at reducing environmental permitting requirements. The “One Federal Decision” policy aimed to streamline the environmental review and permitting process for major infrastructure projects.<sup>98</sup> It required agencies to review and revise their permitting procedures as directed by the White House Council on Environmental Quality (CEQ), which oversees implementation of NEPA, and required CEQ to review and if necessary, revise its NEPA Regulations.

On July 16, 2020, the Trump administration published a significant revision of the CEQ Regulation, the first time since 1978 that there has been a significant revision to the Regulation.<sup>99</sup> The revision implemented page- and time-limits on the NEPA process, clarified key terms, made the process more inclusive of stakeholder views, and sought to make the process more predictable for agencies and project proponents. The changes were meant to benefit virtually all stakeholders, including taxpayers, agencies, project proponents, local residents, renewable energy producers, and environmental advocacy groups. However, resistance from vested interests has been significant, and the Biden administration has repealed many of the changes.<sup>100</sup>

The U.S. Congress has tended so far to see infrastructure challenges as a matter of

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95 Fixing America’s Surface Transportation (FAST) Act, Pub. L. No. 114-94 (Dec. 4, 2015).

96 The Permitting Dashboard may be found at: <https://www.permits.performance.gov/>.

97 42 U.S.C. §§ 4370m–4370m-12.

98 Executive Order 13807 (Aug. 15, 2017).

99 Council on Environmental Quality, “Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act,” 85 Fed. Reg. 43,304.

100 Council on Environmental Quality, “National Environmental Policy Act Implementing Regulations Revisions”, 87 Fed. Reg. 23,453 (April 20, 2022) (“Phase 1’ NEPA Rule”).

inadequate funding rather than inadequate regulation. Since the start of the Biden administration in January 2021, two key fiscal initiatives have sought to accelerate infrastructure deployment, including clean infrastructure supporting a net-zero transition: The Infrastructure Investment and Jobs Act (IIJA) of 2021,<sup>101</sup> which appropriated \$1.2 trillion,<sup>102</sup> and the Inflation Reduction Act (IRA) of 2022,<sup>103</sup> which appropriated as much as another \$1.2 trillion, according to Goldman Sachs.<sup>104</sup>

It is far from clear that the subsidies can be spent before they expire or are repealed. As of January 31, 2023, more than a year after passage of the IIJA, only about \$43 billion of the \$1.2 trillion has been awarded.<sup>105</sup> The subsidies in the IRA, which consist mostly of income tax credits (ITCs) and production tax credits (PTCs), will materialize only when the projects are in service and generating revenue against which the credits can be claimed. No authoritative assessment has been made of what fraction of the potential aggregate total of ITCs can be permitted over time.

Several bills have been filed in Congress that would streamline different aspects of the NEPA process, but these have encountered obstacles that have thus far proven insurmountable. In the 117<sup>th</sup> Congress (the first two years of the Biden administration, during which Democrats controlled both the House of Representatives and Senate as well as the White House), the main effort at streamlining the permitting process was filed by Senator Joe Manchin (D-WV), the powerful chairman of the Energy and Natural Resources Committee.

As a side agreement to the IRA, Senator Manchin secured agreement from the Democrat leadership in the Senate to bring up a permitting reform package. The

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101 Infrastructure Investment and Jobs Act, Pub. L. 117–58 (Nov. 15, 2021).

102 Clark Hill, “Infrastructure Investment and Jobs Act (IIJA),” <https://www.clarkhill.com/infrastructure-investment-and-jobs-act-iija/>.

103 Inflation Reduction Act of 2022, Pub. L. 117–169 (Aug. 16, 2022).

104 *Wall Street Journal*, “The Real Cost of the Inflation Reduction Act Subsidies: \$1.2 Trillion,” (March 24, 2023), <https://www.wsj.com/articles/inflation-reduction-act-subsidies-cost-goldman-sachs-report-5623cd29>.

105 Government Services Administration, “Bipartisan Infrastructure Law (BIL) Maps Dashboard,” data file, <https://d2d.gsa.gov/report/bipartisan-infrastructure-law-bil-maps-dashboard>. As of March 2023, about \$180 billion had been provisionally “allocated.” Vanessa Barrios & Jazmyn Blackburn, “Federal Dollars for Local Infrastructure: Tracking IIJA Funding in Our Region,” Regional Planning Association, April 6, 2023, <https://rpa.org/latest/lab/tracking-iija-funding>.

“Manchin bill”<sup>106</sup> that ultimately emerged would have created largely voluntary time-limits for agency permitting processes and would have significantly amended the process for permitting linear projects such as natural gas pipelines and transmission lines that have faced persistent delays from state misuse of water-quality certification authority under Sec. 401 of the Clean Water Act. The bill would have provided for the designation of nationally important transmission projects and would have empowered the Federal Energy Regulatory Commission (FERC) to socialize project costs among consumers of electricity.

The bill had to be pulled when Republican leaders (who objected to the transmission-related provisions) and the Progressive Caucus (who objected to the natural gas pipeline provisions) combined in opposition to it, and it became clear that Senator Manchin didn’t have the votes to pass the measure.

Stakeholders interested in infrastructure development across the political spectrum, including proponents of both clean energy and fossil energy, continued to call for sweeping reforms to America’s system of permitting and environmental reviews.<sup>107</sup> Their calls were finally heeded, at least in part, in the bipartisan agreement to raise the national debt ceiling.

### *Permitting Reforms in the Debt Ceiling Compromise*

After several attempts to enact permitting reform, significant reforms were finally enacted on June 3, 2023, as part of the compromise to raise the “debt ceiling” of the U.S. government.<sup>108</sup> The most significant of those changes is a set of amendments to NEPA itself—the first time in its history that NEPA has been significantly amended. The legislation also included congressional approval of the Mountain Valley Pipeline, a study on integration and cross-subsidization of electrical dispatch and transmission, and inclusion of energy storage among the sectors eligible for expedited permitting process under Title 41 of the FAST Act (“FAST-41”).

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106 U.S. Senate Energy and Natural Resources Committee, “Manchin Releases Comprehensive Permitting Reform Text To Be Included In Continuing Resolution,” Press Release, September 21, 2022, <https://www.energy.senate.gov/2022/9/manchin-releases-comprehensive-permitting-reform-text-to-be-included-in-continuing-resolution>.

107 See, e.g., Rayan Sud and Sanjay Patnaik, “How does permitting for clean infrastructure work?” Brookings Institution (September 8, 2022), <https://www.brookings.edu/research/how-does-permitting-for-clean-energy-infrastructure-work/>; Sen. Shelley Moore Capito, Sen. John Barrasso, “Genuine permitting reform is long overdue,” *West Virginia News* (April 11, 2023), [https://www.wvnews.com/prestoncountyjournal/opinion/genuine-permitting-reform-is-long-overdue/article\\_14ac0450-d7c9-11ed-866f-7b06bddcab68.html](https://www.wvnews.com/prestoncountyjournal/opinion/genuine-permitting-reform-is-long-overdue/article_14ac0450-d7c9-11ed-866f-7b06bddcab68.html).

108 Fiscal Responsibility Act, Pub. L. 118-5 (June 3, 2023).



The inclusion of permitting reforms in the debt ceiling legislation is a significant step towards addressing the inefficient systems that have hindered infrastructure development in the United States. The amendments to the NEPA aim to streamline the process by focusing on the lead agency, establishing a reasonably foreseeable standard for impacts, and limiting the alternatives that must be considered. Empowering the lead agency, implementing time limits, and allowing project proponents to draft their own Environmental Impact Statements (EISs) further expedite the process. These reforms offer a promising framework for balancing environmental stewardship with the need for modern infrastructure.



## PERMITTING IN THE **European Union**

In the European Union, national governments have their own laws providing for permits and environmental review procedures for infrastructure projects. Since 1985, there have been standards that harmonize national laws on environmental impact assessments (EIAs) particularly with respect to the categories of projects that require them, and minimum requirements for EIAs.

Across Europe, infrastructure development has been hampered by problems that would be familiar to American developers and agency officials: inordinate paperwork burdens, endless delays, and great uncertainty impacting capital formation.

In recent years, an increasing sense of urgency about climate change has led to an increasing consensus that renewable energy infrastructure needs to be delivered faster and at greater scale. This has led to major reforms by both the EU and national governments that have created accelerated procedures for renewable energy, particularly wind and solar. In reaction to the energy crisis that resulted from Russia's invasion of Ukraine and its weaponization of energy supplies in response to EU sanctions, reforms have also provided for acceleration of natural gas pipelines and liquefied natural gas (LNG) import facilities, though these reforms have tended to be controversial.

As the following summaries make clear, these reforms are being enacted at an increasing pace as of the date of this report, making this area a rapidly moving target. Despite that rapidly moving target, however, and despite the heavy concentration of reform efforts in the renewable energy sector, many good ideas and "best practices" have come to light to overcome the problems associated with permitting.

### *Legal Framework*

A review of permitting in the European Union must start with a look at the institutional distribution of legislative and regulatory functions among EU organs and those of its Member States. The EU's legislative process begins with the European Commission, which is the rough equivalent of the executive branch of government in the U.S. The Commission proposes laws to the two legislative bodies that must concurrently debate, amend, and pass all original legislation, namely the European Parliament and the Council of Ministers (also known as the "Council of the European Union," or just "the Council," and not to be confused with the European Council or the Council of Europe).

Laws may take the form of “regulations” or “directives.” In general, according to Article 288 of the Treaty on the Functioning of the European Union, “A regulation shall have general application. It shall be binding in its entirety and directly applicable in all Member States.”<sup>109</sup> By contrast, “A directive shall be binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods.” Hence, as with federal law in the United States, EU “regulations” are the supreme law of the land and operate directly on individuals, while lower levels of government (national and local government in the EU, state and local government in the U.S.) are shielded to some extent from the direct operation of “regulations.” Unlike the U.S., however, “directives” operate directly on lower levels of government. Hence, at least in a formal sense, U.S. states have more autonomy from federal government than national governments in Europe have from the governing organs of the EU.

In the European Union, national laws respecting environmental impact assessments of major infrastructure projects were subsumed within a directive of the European Commission in 1985 that established standards for environmental impact assessments (EIAs).<sup>110</sup> That directive was superseded by a new directive in 2011, which was further amended in 2014 (EIA Directive).<sup>111</sup> The EIA Directive establishes harmonized minimum standards for “development consent” (i.e., project authorizations) that are mandatory for EU Member States. Article 2(1) states: “Member States shall adopt all measures necessary to ensure that, before development consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects on the environment.”<sup>112</sup>

In keeping with the general norm for EU directives, the EIA Directive affirms

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109 Consolidated Versions of the Treaty on the Functioning of the European Union, 2012 O.J. (C326), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12012E%2FTXT>.

110 Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31985L0337>.

111 Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02011L0092-20140515>.

112 This is another way to state the basic requirement of NEPA Sec. 102(2)(C), which requires “the responsible official” to prepare an environmental impact statement for “every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human environment.”

that Member States may set thresholds or criteria for the purpose of determining which projects should be subject to assessment based on the significance of their environmental effects, in accordance with selection criteria set forth in the Directive. The Directive provides for exceptions to the EIA requirement in the case of national security projects, projects “the details of which are adopted by a specific act of national legislation,” and other “exceptional cases.”

Annex I of the Directive lists project categories that require environmental impact assessment under Article 4(1). These include large power plants, nuclear plants, large oil and gas extraction projects, large pipeline projects, transmission projects, and large-scale carbon capture and storage (CCS). Annex II lists project categories as to which Member States are required, under Article 4(2), to determine whether the project should be subject to environmental impact assessment, either through a case-by-case examination based on the selection criteria listed in Annex III, or through thresholds or criteria set by the Member State, or both. The Annex II list is extensive and includes most categories of major infrastructure projects not listed in Annex I. When the case-by-case screening procedure is required to determine whether a project will require an EIA, the developer must submit certain information about the likely environmental impacts of the project,<sup>113</sup> and the competent authority then has 90 days to make its determination. The selection criteria in Annex III mirror the significance factors (context and intensity) listed in the original CEQ Regulation of NEPA (before the definition of “significantly” was deleted in the 2020 revision).<sup>114</sup> The EIA Directive’s scheme of project categories (divided into different annexes that determine whether EIA is mandatory or case-by-case on the basis of specific factors) has been incorporated into the national laws of virtually all EU Member states.

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113 Annex II.A. of the EIA Directive lists the following:

1. A description of the project, including in particular:
  - (a) a description of the physical characteristics of the whole project and, where relevant, of demolition works;
  - (b) a description of the location of the project, with particular regard to the environmental sensitivity of geographical areas likely to be affected.
2. A description of the aspects of the environment likely to be significantly affected by the project.
3. A description of any likely significant effects, to the extent of the information available on such effects, of the project on the environment resulting from:
  - (a) the expected residues and emissions and the production of waste, where relevant;
  - (b) the use of natural resources, in particular soil, land, water and biodiversity.

114 Sec. 1508.27 of the pre-2020 CEQ Regulation of NEPA. See, CEQ, “July 2020: Proposed and Final Rule Redlines of 1978 CEQ Regulations,” <https://www.regulations.gov/document?D=CEQ-2019-0003-720630>.

Article 5 of the EIA Directive establishes standards for the EIA, which in all cases is prepared by the developer. (In the U.S., agencies were required to prepare EISs using their own staff until the 2020 revision of the CEQ Regulation of NEPA allowed developers to prepare EISs for the first time, a change that has been retained by the Biden administration.) The EIA must include a description of the project (including size, design, and location) and a description of its likely significant effects on the environment. The report must describe measures the developer plans to take to “avoid, prevent or reduce, and if possible offset” any adverse environmental effects, the EU’s equivalent of the “avoid, minimize, and mitigate” policy in America.

Some other features of the EU’s EIA Directive bear mentioning. If requested by the developer, the competent authority must issue an opinion on the scope and level of detail of the information to be included in the environmental impact assessment report. When an opinion is issued regarding the project, the EIA report must be based on that opinion, and the developer must take into account other relevant assessments to avoid duplication. The competent authority must consult other relevant authorities before issuing its opinion. To ensure the completeness and quality of the report, the developer must use competent experts to prepare the report. The competent authority must have sufficient expertise to examine the report and may request supplementary information from the developer as necessary to reach a reasoned conclusion on the significant effects of the project on the environment.

In 2001, the EU reinforced the EIA regime through the enactment of the Strategic Environmental Assessment (SEA) Directive.<sup>115</sup> The SEA Directive provides a framework for assessing and mitigating the potential environmental impacts of national and regional policies, in order to facilitate the delivery of infrastructure that advances broader policy priorities.<sup>116</sup> The directive requires Member States to conduct a comprehensive environmental assessment during the early stages of plan and program development, considering factors such as biodiversity, climate change, and land use. The purpose is to ensure sustainable development, promote transparency, and enable public participation in decision-making processes.

The SEA Directive requires assessment of potential significant environmental effects of plans and programs. It requires Member States to provide opportunities for public consultation while integrating environmental considerations into poli-

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115 European Union, Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, 2001 O.J. (L 197) 30.

116 European Commission - Environment: Strategic Environmental Assessment (SEA): <https://ec.europa.eu/environment/eia/sea-legalcontext.htm>.

cymaking decisions. It emphasizes the need for strategic environmental assessments to be conducted during the early stages of plan formulation to maximize the effectiveness of the assessment and enable proper integration of environmental considerations into the decision-making process.<sup>117</sup>

### *The European Green Deal and European Climate Law*

The European Green Deal is a comprehensive set of policies and strategies aimed at reaching net-zero by 2050.<sup>118</sup> It was launched in December 2019 by the European Commission and includes a range of initiatives relating to energy, agriculture, transport, and industry. The main objectives of the plan are to reduce greenhouse gas emissions, promote sustainable energy, protect biodiversity and the environment, and ensure a just transition to net-zero. At its launch in December 2019, the European Commission pledged that it would mobilize more than €1.8 trillion in “investments” from public and private sources.

As part of the Green Deal, the EU enacted a European Climate Law on June 2021, setting a legally binding target for the EU to become climate-neutral by 2050.<sup>119</sup> The Climate Law sets an intermediate target of reducing greenhouse gas emissions by at least 55 percent by 2030 compared with 1990. It establishes a system of five-year carbon budgets, setting out the maximum amount of greenhouse gas emissions that the EU can produce during a given period. It requires Member States to develop and implement national climate and energy plans, outlining their strategies and measures for reaching the climate targets, and establishes an independent European Climate Change Council to monitor and advise on their progress.

On July 14, 2021, also as part of the Green Deal, the European Commission

117 Id.

118 Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, The European Green Deal, Com/2019/640 Final (December 11, 2019), <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1588580774040&uri=CELEX%3A52019DC0640>. See also, European Commission, The European Green Deal (2019), [https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en); European Parliament, The European Green Deal (2021), <https://www.europarl.europa.eu/factsheets/en/sheet/191/the-european-green-deal>; European Environment Agency, European Green Deal (2021), <https://www.eea.europa.eu/themes/climate/european-green-deal>.

119 Regulation (EU) 2021/1119 Of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R1119>.

adopted the “Fit for 55” package, which adapts existing climate and energy legislation to meet the new EU objective of a minimum 55 percent reduction in greenhouse gas emissions by 2030. A key element in the “Fit for 55” package is a revision of the Renewable Energy Directive,<sup>120</sup> which established a renewable energy mandate of 40 percent by 2030, a threshold that has since been further increased as explained below.<sup>121</sup>

The Russian invasion of Ukraine in February 2022 brought home Europe’s critical dependency on Russia for energy. The EU Commission responded in May 2022 with the REPowerEU initiative, “a plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition.”<sup>122</sup> As part of REPowerEU, the Commission proposed to further raise the Renewable Energy Directive’s target.

In recognition of the enormous challenge of deploying so much renewable infrastructure in such a short time, the REPowerEU package of recommendations included a recommendation on “speeding up permitting-granting procedures for renewable energy projects and facilitating Power Purchase Agreements” (Accelerated Permitting Recommendation).<sup>123</sup> As the Commission stated in the REPowerEU communication:

Slow and complex permitting processes are a key obstacle to unleashing the renewables revolution and for the competitiveness of the renewable energy industry. Obtaining a permit can take up to 9 years for wind projects, and up to 4.5 years for ground-mounted solar projects. Varying permitting times between Member States demonstrate

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120 Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast) (Text with EEA relevance). [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L\\_.2018.328.01.0082.01.ENG](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG).

121 For a summary and timeline of the EU’s Renewable Energy Directive, see [https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive\\_en](https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en).

122 European Commission, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and The Committee Of The Regions, REPowerEU Plan, COM/2022/230 (May 18, 2022), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483>.

123 Commission Recommendation on speeding up permit-granting procedures for renewable energy projects and facilitating Power Purchase Agreements, C(2022) 3219, SWD(2022) 149, (May 18, 2022). <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H0822>.

that national rules and administrative capacities complicate and slow down permitting.<sup>124</sup>

The Accelerated Permitting Recommendation proposed measures to streamline procedures at national level, including:

- Faster and shorter procedures for renewable energy infrastructure projects, which should be “presumed as being in the overriding public interest and in the interest of public safety.” These procedures should include accelerated and binding maximum deadlines for all the steps in the permitting process (including a maximum of three months for permitting “solar energy equipment in artificial structures”) and a “single unified application process for the entire administrative permit application and granting process.”
- Facilitating citizen and community participation.
- Improving internal coordination, including a “one-stop-shop for granting permits for renewable energy projects.”
- Digitized procedures.
- Sufficient human resources and skills.
- Better identification and planning of locations for projects.
- Easier grid connection.<sup>125</sup>

On May 30, 2022, the EU adopted the revised regulation on guidelines for trans-European energy infrastructure (TEN-E Regulation),<sup>126</sup> replacing earlier rules promulgated in 2013 which were aimed to improve security of supply, market integration, competition, and sustainability in the energy sector. The revised TEN-E Regulation established new rules for cross-border energy infrastructure and entered into force on June 23, 2022. The new rules aim to modernize, decarbonize, and interconnect Member States’ cross-border energy infrastructures. They estab-

124 European Commission, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and The Committee Of The Regions, REPowerEU Plan, COM/2022/230 (May 18, 2022), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483>.

125 Commission Recommendation on speeding up permit-granting procedures for renewable energy projects and facilitating Power Purchase Agreements, C(2022) 3219, SWD(2022) 149, (May 18, 2022). <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H0822>.

126 Regulation (EU) 2021/1114 of the European Parliament and of the Council of 30 June 2021 on trans-European networks for energy, amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009 and repealing Regulation (EU) No 347/2013



lish priority corridors for transboundary projects, which must be given priority to ensure rapid administrative and judicial treatment. Priority projects are eligible for EU and Member State subsidies.

On December 29, 2022, in response to the ongoing energy crisis, the European Union enacted a temporary emergency regulation to expedite the deployment of renewable energy sources.<sup>127</sup> The main purpose of the proposal was to counter Russia's weaponization of energy supply by using renewables to reduce dependence on Russian energy. The measure, which will sunset in December 2023 unless renewed, addresses administrative hurdles and streamlines permitting procedures, particularly for solar energy installations and the repowering of existing renewable energy projects. It introduced simplified assessments, shorter deadlines, and exemptions from certain environmental assessments to facilitate faster deployment of renewables.

The emergency measure targeted renewable resources that could be deployed in weeks or months at a micro level, solar installations up to 50kW as an example, a capacity which would be typical for the rooftop solar array of a large commercial building. Of note, projects of that size or smaller are deemed automatically authorized if the relevant Member State's agency fails to act on the permit application: Article 3(2) provides that in such cases, "the lack of reply by the relevant authorities or entities within one month following the application shall result in the permit being considered as granted."

On March 30, 2023, the European Parliament and the Council reached a provisional agreement to strengthen the Renewable Energy Directive, advancing the "Fit for 55" legislation and the REPowerEU goals.<sup>128</sup> The agreement increases the EU's binding 2030 renewable target to a minimum of 42.5 percent, almost doubling the current share of renewable energy, while "aiming for" 45 percent renewables by 2030. The agreement designates renewable energy as "an overriding public interest" for purposes of applicable law that requires balancing competing interests; simplifies permitting procedures and establishes acceleration areas for renewables; and promotes cross-border cooperation. It sets targets and measures for renewables in heating, cooling, buildings, industry, and transport, including renewable hydrogen targets. As of the date of publication of this report, the legislation had not been enacted in final form, but is expected to pass in substantially

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127 Council Regulation (EU) 2022/2577 laying down a framework to accelerate the deployment of renewable energy, <https://www.europeansources.info/record/proposal-for-a-council-regulation-laying-down-a-framework-to-accelerate-the-deployment-of-renewable-energy/>

128 European Commission, "European Green Deal: EU agrees stronger legislation to accelerate the rollout of renewable energy," Press Release (March 30, 2023), [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_23\\_2061](https://ec.europa.eu/commission/presscorner/detail/en/ip_23_2061).

the form recommended by the Commission, described above.

### *Assessment of the EU's Permitting and Environmental Review Regime*

According to McKinsey, despite the European Green Deal and REPowerEU targets, European power sector emissions have decreased at less than half the rate necessary to stay on track with the 1.5°C pathway.<sup>129</sup>

One prominent study commissioned by the European Commission (RES Simplify Report) highlighted a variety of obstacles to the deployment of renewable energy infrastructure.<sup>130</sup> According to the report, the most common barriers to the deployment of renewable energy infrastructure were bureaucratic burdens, non-transparent processes, a lack of legal coherence, and conflicting interpretations of existing legislation by relevant agencies.

Conflicting public policy priorities were another main obstacle cited in the RES Simplify Report. The most prominent conflicts involved environmental regulations (biodiversity and protection of endangered species and protection of water bodies), land use conflicts, and national defense issues. Moreover, the conflicts involved environmental groups, individuals, and government authorities at different levels. Stakeholders consistently criticized the processes by which public policy priorities were balanced.<sup>131</sup>

The RES Simplify Report concluded that the paucity of data about project authorizations made it difficult even to conduct a comprehensive and reliable evaluation. It noted the imperative of establishing a statistical foundation encompassing the quantity and categories of EIAs performed. It recommended that the European Commission actively promote and facilitate the adoption of measures that foster coordinated implementation of the EIA process across the Member States. The Report recommended establishment of a network database system to collect and

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129 McKinsey & Company, "The Energy Transition: A Region-by-Region Agenda for Near-Term Action" (December 2022), p. 76, available at: [https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-energy-transition-a-region-by-region-agenda-for-near-term-action#/,](https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-energy-transition-a-region-by-region-agenda-for-near-term-action#/) quoting Charles Moore, "European electricity review 2022," *Ember*, <https://ember-climate.org/insights/research/european-electricity-review-2022/> February 1, 2022.

130 European Commission, Directorate-General for Energy, Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify) Interim Report, July 2021, <https://op.europa.eu/en/publication-detail/-/publication/0e9db9fa-d653-11ec-a95f-01aa75ed71a1/language-en>.

131 *Id.*

### *Centralized Reporting*

Under the EIA Directive, every six years EU Member States must provide statistics to the Commission on how the Directive is implemented in their countries.<sup>133</sup> This includes the number of projects assessed under the two annexes of the Directive, the average length of time the EIA process takes, and the costs involved. The first reporting exercise is due in 2023. The text contains several questions related to the environmental impact assessment (EIA) process, including how many authorization decisions were made on infrastructure projects during the reporting period; how many involved EIAs and how many did not; what were the average, minimum, and maximum durations of the individual processes for different stages of the EIA process in different project categories; sources of significant delay; and estimates on direct costs of the EIA process to both government and project proponents.

The EU's increased focus on centralized reporting of data related to infrastructure authorization will prove a significant advantage both for infrastructure policy and infrastructure investment.

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132 Id.

133 [https://environment.ec.europa.eu/law-and-governance/environmental-assessments/environmental-impact-assessment\\_en](https://environment.ec.europa.eu/law-and-governance/environmental-assessments/environmental-impact-assessment_en).



## PERMITTING IN Germany

In Germany the basic environmental protection statute is the Federal Immission Control Act (*Bundes-Immissionsschutzgesetz*).<sup>134</sup> It establishes the basic requirement of an environmental impact assessment (EIA) for projects that require permits. The purpose of the Act is to protect human beings, animals, and the environment as well as cultural assets and other material goods against harmful environmental impacts.<sup>135</sup> It also applies environmental protection standards to facilities subject to licensing, to protect from hazards, nuisance, and other significant negative impacts.<sup>136</sup> The Act applies to the construction and operation of facilities, the manufacture, import, and sale of combustibles and propellants, and the construction of transportation infrastructure.<sup>137</sup>

The Environmental Impact Assessment Act (*Umweltverträglichkeitsprüfungsgesetz*) further regulates the EIA process in Germany.<sup>138</sup> It outlines the criteria for determining when an assessment is required and the scope of the assessment, within the framework of the EU's EIA Directive. It provides for public participation and ensures that potential environmental impacts of proposed projects are assessed and considered during decision-making. It specifies the types of projects, such as industrial facilities, infrastructure developments, and large-scale construction projects, that fall under its scope. It sets out the procedures for conducting an environmental impact assessment and defines the scope of the assessment to include environmental impacts on ecosystems, landscape, air, water, and human health. It also specifies the requirements for baseline studies, impact prediction, and assessment methodologies. The comprehensive EIA report, equivalent to the American EIS, provides the basis for decision-making and enables authorities to consider alternatives and mitigation measures.

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134 Law on protection against harmful environmental effects caused by air pollution, noise, vibrations and similar processes (*Gesetz zum Schutz vor schädlichen Umwelteinwirkungen durch Luftverunreinigungen, Geräusche, Erschütterungen und ähnliche Vorgänge*) (*Bundes-Immissionsschutzgesetz - BImSchG*) (March 15, 1974, as amended Sept. 24, 2021) <https://www.gesetze-im-internet.de/bimschg>.

135 *Ibid.*, Sec. 1(1).

136 *Ibid.*, Sec. 1(2).

137 *Ibid.*, Sec. 2.

138 Environmental Impact Assessment Act (*Gesetz über die Umweltverträglichkeitsprüfung*) (Feb. 12, 1990, as amended March 22, 2023).

The Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (*Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz*) is Germany's main environmental ministry, with jurisdiction over the German Environment Agency (*Umweltbundesamt*) among other environment-related agencies. They coordinate the environmental review processes for proposed projects, provide recommendations, and contribute to decision-making.

In 2005, the scope of application of environmental assessments was expanded through the introduction of the Strategic Environmental Assessment (SEA), to include the early phases of plans and programs. Analogous to a programmatic EIS or EA in the United States, SEAs are increasingly widely used around the world, as they allow the integration of project-level considerations into broader policy planning.

In Germany, the law requires mitigation of impacts and "offsets" for impacts to protected species and habitats. This is akin to compensatory mitigation in the United States, but in Germany the mitigation requirement is more formal and more strict. The impact mitigation regulation and biodiversity offsets are parallel to the EIA but are a separate process. The requirement of mitigation arises under Germany's equivalent of interagency consultation under Section 7 of the U.S. Endangered Species Act. Germany's Federal Nature Conservation Act (*Bundesnaturschutzgesetzes*), which went into force in 2010, requires the action agency to consult with the relevant environmental agency.<sup>139</sup> That law gave rise to the so-called "encroachment regulation" (*Eingriffsregelung*), which provides for the requirement of avoidance, minimization, and mitigation, including compensatory mitigation.<sup>140</sup>

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139 *Bundesnaturschutzgesetzes (BNatSchG) sowie §§ 1a und 35 des Baugesetzbuches (BauGB).*

140 Also translated as "Intervention Regulation," the main components are summarized at: <https://www.bfn.de/ingriffsregerung>.

The German EIA Act entails significant planning among multiple levels of government. The federal states (*Bundesländer*), first need to designate priority areas in accordance with their internal land use regulations.<sup>141</sup> In these zones, infrastructure projects may be developed in accordance with applicable federal law. German federal law in turn must be harmonized to EU regulations and directives, such as the EIA Directive.

### *Recent Reforms*

In Germany, an independent advisory body known as the National Regulatory Control Council (*Nationaler Normenkontrollrat* or NKR) was established in 2006 with the mission of streamlining administrative processes and reducing the regulatory burdens of new and existing rules. Its role is somewhat akin to that of the U.S. Office of Information and Regulatory Affairs (OIRA), which reviews all federal executive branch regulations before they are published. In 2021, the NKR published an advisory in which it stressed the importance of “measures to speed up planning and approval procedures” for energy infrastructure projects:

The National Regulatory Control Council still considers it necessary to implement measures to speed up planning and approval procedures. The projects often focus on measures that directly, or at least indirectly, serve to protect the climate. If the climate protection goals are to be achieved, then the procedures and their acceleration potential must also be examined with a different degree of seriousness. Delays in approval procedures as a reason for missing the climate protection goals are no longer acceptable, especially after the judgment of the Federal Constitutional Court on the Climate Protection Act. That is why the acceleration measures cannot be postponed.<sup>142</sup>

As a result, Germany has enacted multiple laws to dramatically speed up energy infrastructure permitting, including Amendment to the Offshore Wind Energy Act, the Law on Increase and Acceleration and Expansion of Onshore Wind Farms,<sup>143</sup>

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141 TU Berlin, 2011, German legislation and planning process for solar and wind energy, [http://lehre.umweltpruefung.tu-berlin.de/wiki\\_mw/doku.php?id=german\\_legislation\\_and\\_planning\\_process\\_for\\_solar\\_and\\_w\\_ind\\_energy](http://lehre.umweltpruefung.tu-berlin.de/wiki_mw/doku.php?id=german_legislation_and_planning_process_for_solar_and_w_ind_energy).

142 National Regulatory Control Council, “Planning approval and court procedures for effective climate protection,” June 2021, (translated by Google), <https://www.normenkontrollrat.bund.de/Webs/NKR/SharedDocs/Downloads/DE/Positionspapiere/Klimaschutzfreundliche.pdf>.

143 German Federal Government. “More Wind Energy at Sea,” Press Release, April 6, 2022, <https://www.bundesregierung.de/breg-en/issues/offshore-wind-energy-act-2024112>.

and – controversially – the Act on the Acceleration of the Use of LNG.<sup>144</sup>

The cabinet passed a further resolution on September 28, 2022. The draft law made changes to the Regional Planning Act and the EIA Act. On January 30, 2023, the government passed a further amendment to the Regional Planning Act and other regulations. The Bundestag and Bundesrat passed the amendment to the Regional Planning Act and other regulations on March 3, 2023.<sup>145</sup> Under the reforms, regional planning is to be modernized and made more flexible. Investment security is to be increased and approval procedures are to be accelerated. In addition, a binding time frame for the regional planning procedure is to be introduced.

In sum, these changes modernized the planning processes, streamlined and accelerated the permit process (including by limiting public participation), and provided that planning procedures for studying alternative locations for major projects can no longer delay the start of a permit process.

### *Auctions for Renewable Energy Projects*

Germany began auctioning off renewable energy projects in 2017.<sup>146</sup> The previous feed-in tariff (FIT) system guaranteed a fixed price for renewable energy generated by private projects, fostering investment but contributing to high electricity prices. The auction system, on the other hand, introduced competition among renewable energy providers, allowing utilities to select the lowest-priced contracts for energy generation.

The auction system was supposed to offer several advantages over the FIT system.<sup>147</sup> It was expected to result in lower electricity prices as competition drives providers to offer more competitive rates. The auction system promotes a more efficient allocation of resources, ensuring renewable energy is generated where it is most needed. Lastly, utilities gain flexibility in choosing renewable energy

144 German Act on the Acceleration of the Use of LNG, 24 May 2022, <https://perma.cc/2EYN-AJSL>.

145 German Federal Government, Ministry for Economic Affairs and Climate Action, “Stepping up the expansion of renewable energy and the grids,” Press Release, March 3, 2023, <https://www.bmwk.de/Redaktion/EN/Pressemitteilungen/2023/03/20230303-mehr-tempo-beim-ausbau-der-erneuerbaren-energien-und-der-stromnetze.html>.

146 German Federal Ministry for Economic Affairs and Energy, The Auction for Renewable Energy Support: Design and Initial Experiences, 2017, <https://www.bmwk.de/Redaktion/EN/Artikel/Energy/national-auctions.html>

147 C. Lorenz, et al, “From feed-in tariffs to auctions: Progress in renewable energy support mechanisms,” *Energy Policy*, 128, 476-481, 2019, doi:10.1016/j.enpol.2019.01.003

providers that align with their specific requirements.

### *Quick Permit for Wind Power and Power Lines*

In addition to the general reforms described in the immediately preceding sections, on January 30, 2023, the government further amended the Regional Planning Act and other regulations in compliance with EU requirements on an accelerated expansion of renewable energies and grids.<sup>148</sup> The EU regulation allows the Member States to dispense with an EIA and species-protection assessment in the approval process for renewable energy plants and for the necessary power grids, as long as a site has been designated for this purpose as part of regional planning and an SEA. Species mitigation requirements are eased: Minimization and avoidance are still required, but compensatory mitigation is not automatically required.

In Germany, onshore wind expansion has slowed in recent years because of planning and permitting bottlenecks.<sup>149</sup> Offshore wind projects, by contrast, have benefited from a series of recent reforms that have significantly streamlined the permitting process. Site selection and consideration of public subsidies have been integrated into a national planning process under the Federal Network Agency (*Bundesnetzagentur*). A new German Offshore Wind Act was approved by the European Commission in December 2022.<sup>150</sup> It provides even faster planning and approval processes for offshore wind. Under the new law, the national maritime agency (*Bundesamt für Seeschifffahrt und Hydrographie*) is a one-stop-shop for offshore wind energy, with a single authorization process.

The German Renewable Energy Act requires the federal states to report to the federal government on the status of renewables. This includes permitted renewable energy and the area of land which is available for further wind energy deployment according to regional and urban land-use plans. If the available area is not sufficient, reasons and proposals for improvement must be provided.

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148 Reuters, "German cabinet approves EU emergency measures to push renewables expansion," January 30 2023, <https://www.reuters.com/business/energy/german-cabinet-approves-eu-emergency-measures-push-renewables-expansion-2023-01-30>.

149 <https://windeurope.org/newsroom/news/new-german-government-to-speed-up-wind-energy-expansion>.

150 <https://www-bundesregierung-de.translate.goog/breg-de/suche/planungs-genehmigungsverfahren-2129628>.



The 2022 European Commission survey “RES Simplify”<sup>151</sup> quotes one expert’s assessment that, thanks to the preliminary field analyses (*Flächenvoruntersuchungen*) conducted after the area development plan (*Flächenentwicklungsplan*) by the national marine authority BSH, the risk of a permit application is considerably lowered. Apart from the wind park’s individual technical specifications, more general suitability criteria such as environmental aspects or shipping safety have already been assessed by the competent authority

As in other renewable energy sectors in the countries surveyed in this report, German offshore wind deployment has become increasingly constrained by the lag in developing transmission. Recent reforms attempt to address this issue. Area development plans serve as central reference for the regional development of German offshore capacities and interconnection planning. According to the RES Simplify, this will essentially lead to a synchronization of wind park and grid development as the FEP provides grid operators with a more long-term planning basis, while wind park developers have a shorter, yet sufficiently long realization period after a successful bid in the auction.<sup>152</sup>

### *Litigation Reform*

On March 14, 2023, the Bundestag enacted sweeping reforms of the process for litigation related to key categories of infrastructure projects, with the purpose of accelerating legal challenges to permits and EIAs.<sup>153</sup> The law provides that a court “may disregard a defect in the contested administrative act” (i.e., the permit being challenged) “if it is obvious that this will be remedied in the foreseeable future.” Such defects can include violations of procedural or formal requirements or defects in the planning process, and may be remedied by orders short of halting construction. Enforcement measures must take into account the importance of projects that federal law establishes as being in the “overriding public interest.” The law provides that significant infrastructure projects should be given priority in the docket of administrative courts. It requires the court to convene a hearing soon after the initial pleadings and propose an amicable settlement, and otherwise establish an expedited timetable for quick resolution of the case.

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151 Technical support for RES policy development and implementation – simplification of permission and administrative procedures for RES installations (RES Simplify) <https://op.europa.eu/en/publication-detail/-/publication/949ddae8-0674-11ee-b12e-01aa75ed71a1>.

152 Id.

153 Law to accelerate administrative court proceedings in the infrastructure sector, Deutscher Bundestag, March 14, 2023, published in the Federal Law Gazette 2023 Part I No. 71 (March 20, 2023), <https://www.recht.bund.de/bgbl/1/2023/71/regelungstext.pdf>.



PERMITTING IN  
**Denmark**

Like other small European countries, Denmark has a long tradition of strong local government, characterized by comprehensive local land-use planning. Hence, the EU's 1985 EIA Directive faced initial resistance in Denmark, as another mandate from Brussels that threatened long-established local traditions. Denmark implemented the Directive in phases, and the system for authorization and environmental review of major infrastructure projects has evolved considerably, involving multiple levels of government—national, county, and municipal—in addition to multiple agencies.<sup>154</sup>

The process begins with the project proponent submitting a permit application to the relevant agencies.<sup>155</sup> Depending on the nature and scope of the project, the application may be reviewed by several agencies, including the Environmental Protection Agency, the Danish Energy Agency, and the Danish Transport Authority. The environmental review process assesses the potential impact of the project on the environment, including air and water quality, noise levels, and biodiversity. The review also includes consultations with stakeholders, including local communities, interest groups, and relevant authorities.

Following the environmental review, the authorities make a decision on whether to approve the project and under what conditions, which may include mitigation measures to minimize any negative impacts. The decision can be appealed by interested parties, including the project proponent and affected stakeholders.

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154 Danish Planning Act No. 746 of 16 August 1994, Order No. 847 of 30 September 1994 on supplementary provisions in pursuance of the Planning Act (combined Order), Order No. 848 of 30 September 1994 amending the Order on the approval of the listed enterprises, Order No. 849 of 30 September 1994 on the licensing, etc. of installations subject to environmental impact assessments in accordance with the Planning Act (EIA), Order No. 379 of 1 July 1988 on the environmental assessment of installations at sea, Guideline No. 182 of 17 October 1994 for evaluating whether an installation or project is subject to the provisions of the Plan Act on environmental impact assessments (EIA).

155 Government of Denmark, Act on Environmental Impact Assessment of Certain Plans and Programmes and of Certain Projects (EIA Act), 2017.

### *Integration with Regional Planning*

The first step in the infrastructure authorization process is finding a suitable site. If no areas have been pre-designated in the municipal plan, the project developer will conduct a screening. When a suitable site has been found, the developer will notify the municipality of the project and request the required spatial planning processes be initiated. Simultaneously, a Strategic Environmental Assessment (SEA) of the plan proposals and an Environmental Impact Assessment (EIA) of the specific project is conducted, if required. For some projects, the project developer will also host an obligatory public meeting on project acceptance measures.

With the planning and EIA in place, as a next process step the project developer must obtain a range of different administrative authorizations depending on the project. These authorizations may include a rural zone permit, a dispensation from the local plan, a license to establish a power plant, an attestation or dispensation regarding aviation marking (wind turbines only), permits and dispensations depending on site and surroundings, a noise notification (wind turbines only), a building permit, and finally an electricity production license. After the rural zone permit has been granted, all of these can in principle be processed in parallel. However, the building permit may not be finally granted until all other permits and licenses are in place.<sup>156</sup>

When establishing a renewable energy project, the initial procedure foreseen by the Planning Act is a municipal pre-selection of areas for technical plants, to be designated as suitable for specific kinds of facilities. This designation is to be done either in connection with the ordinary review of the municipal plan, or in a special amendment to the municipal plan.<sup>157</sup>

The process of changing the municipal plan begins with a so-called pre-public phase, where the municipality invites the public to submit ideas and proposals. Often the municipality will host public hearings where different options can be presented and debated, but there are no formal requirements to the activities. The municipality will then draft a plan proposal balancing all relevant interests, including the protection of landscapes and the expansion of renewable energy. The municipal council is by and large free to decide which areas to designate.

Simultaneously, a Strategic Environmental Assessment (SEA) of the plan proposal will be conducted, including consultation of affected agencies and stakeholders. Finally, the plan proposal and the SEA study are submitted for an eight-week pub-

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156 Denmark Energy Agency, Denmark's Climate and Energy Outlook 2020. [https://ens.dk/sites/ens.dk/files/Basisfremskrivning/deco\\_2020\\_27082020.pdf](https://ens.dk/sites/ens.dk/files/Basisfremskrivning/deco_2020_27082020.pdf).

157 DLA Piper, Legislation and planning/zoning controls, Denmark, April 3, 2023, <https://www.dlapiperrealworld.com/law/index.html?c=DK&t=zoning>.

70 lic consultation, after which the plan proposal is adopted by local government.<sup>158</sup>

### *One Stop Shop: The Danish Energy Agency and Danish Environmental Portal*

As one-stop-shop, the Danish Energy Agency (DEA) appears efficiently designed and is explicit about its purpose: “The concept of a single point of access—a so-called one-stop-shop—is an important organisational setup mitigating this regulatory risk.”<sup>159</sup> The DEA coordinates all the permitting decisions for energy projects in its jurisdiction with other authorities, resulting in comprehensive licenses. The system eases the process for developers, and also provides more certainty that the project can be established, as all relevant authorities have cleared the project on a harmonized set of conditions.

The DEA has long been a one-stop-shop for permitting oil and gas licenses in the North Sea. This concept has now been extended to offshore wind farms. The one-stop shop significantly reduces the regulatory risk and eases communication, since the developer does not have to approach all relevant authorities to get the individual permits required for the development of the project. After consultation, the DEA conveys relevant and reliable information about the energy projects, thereby mitigating potential conflicts from the outset.

The online platform The Danish Environmental Portal (*Danmarks Miljøportal*)<sup>160</sup> is a joint public partnership owned by the state, the municipalities, and the regions. Covering the entire country, the portal includes area-specific data on the environment, water, nature, and land use. It enables authorities to update and access data across administrative units, sectors, and geographical areas. This gives developers visibility on most of the restrictions in different areas through the same databases that are used by agencies.

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158 Id.

159 Danish Energy Agency, “The Danish Energy Agency as a one-stop-shop authority,” October 2020, <https://miljoportal.dk/english>.

160 Danish Energy Agency, “The Danish Energy Agency as a one-stop-shop authority,” October 2020, <https://miljoportal.dk/english>.



## PERMITTING IN Spain

In Spain, the system for authorization and environmental review of major infrastructure was established by Legislative Royal Decree (*Real Decreto Legislativo*) 1302 of 28 June 1986 on Environmental Impact Assessment and 1131 of 30 September 1988, which approved the enforcement regulation.<sup>161</sup>

The environmental review process begins with the project proponent submitting an environmental impact assessment (EIA) report to the competent authority, which may be the central government or a regional authority. The EIA report assesses the potential impact of the project on the environment, including air and water quality, noise levels, and biodiversity. The competent authority then reviews the EIA report and conducts consultations with stakeholders, including local communities, interest groups, and relevant authorities. Based on the review and consultations, the competent authority makes a decision on whether to approve the project and under what conditions, which may include mitigation measures to minimize any negative impacts. The decision can be appealed by interested parties, including the project proponent and affected stakeholders.<sup>162</sup>

### *Innovative Spatial (Regional) Mapping*

After Spain's adoption of ambitious national energy and climate plans (NCEPs), the Ministry for the Ecologic Transition and the Demographic Challenge created a tool to help in strategic decision-making on the location of renewable energy projects. According to the RES Simplify Report, the initiative focused on these projects because they involve significant use of land and can generate significant

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161 Legislative Royal Decree No 1302/1986 of 28 June 1986 on the assessment of environmental impact (BOE No 155 of 30 June 1986, p. 2195) and Royal Decree No 1131/1988 of 30 September 1988 approving the regulation implementing Legislative Royal Decree No 1302/1986 (BOE No 239 of 5 October 1988, p. 28911).

162 See, Ministry for the Ecological Transition and the Demographic Challenge. (n.d.). Environmental Impact Assessment, <https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/evaluacion-ambiental>. Spanish Government. (2013). Law 21/2013, of 9 December, on Environmental Assessment. <https://www.boe.es/buscar/act.php?id=BOE-A-2013-12887>, Spanish Government. (2008). Law 9/2006, of 28 April, on the Evaluation of the Effects of Certain Plans and Programs on the Environment. <https://www.boe.es/buscar/act.php?id=BOE-A-2006-7892>, Spanish Government. (n.d.). National Strategic Environmental Assessment. <https://www.miteco.gob.es/es/ceneam/es/evaluacion-ambiental/evaluacion-ambiental-estrategica/default.aspx>.

environmental impacts.<sup>163</sup> The tool consists of a zoning of the environmental sensitivity of the territory. Hence, it identifies the areas of the national territory that present the greatest environmental conditioning factors for the implementation of renewable energy projects. The tool includes two maps showing the territory classified into one of five classes of environmental sensitivity for each type of project analyzed.

The Autonomous Community of Castilla-La Mancha has a website dedicated to “Information system on Sensitive Spaces in Environmental Impact Assessments” (*Sistema de Información de espacios sensibles de evaluación ambiental de Castilla-La Mancha*) (INES) which allows developers and the public to analyze the environmental effects of plans, programs, and projects.<sup>164</sup> It layers geographic information on protected natural spaces, sensitive areas, public forests, and livestock trails. In addition, the Autonomous Community offers two additional sources (online maps) to observe in greater detail protected areas and livestock trails and public forests.

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163 Technical support for RES policy development and implementation – simplification of permission and administrative procedures for RES installations, 2022, p. 112, <https://op.europa.eu/en/publication-detail/-/publication/949ddae8-0674-11ee-b12e-01aa75ed71a1>.

164 <https://datosabiertos.castillalamancha.es/dataset/sistema-de-informaci%C3%B3n-dse-espacios-sensibles-en-evaluaci%C3%B3n-de-impacto-ambiental-de-0>.



## PERMITTING IN THE **Netherlands**

In the Netherlands, the Environmental Management Act (EMA) is the main law governing environmental protection.<sup>165</sup> It establishes basic environmental policy and provides for environmental impact assessments (EIAs). Along with the Environmental Impact Assessment Decree 1994 (EIA Decree), which provides detailed rules on how to conduct EIAs, the EMA implemented the EU's EIA Directive.<sup>166</sup> These laws specify the types of projects that require an EIA, the content of an EIA report, and the procedures for public participation in EIAs. Additional regulations require developers of certain types of projects to notify the government of their intentions before starting work.<sup>167</sup> This allows the government to review a project to ensure that it complies with environmental law. The EMA requires that all infrastructure projects that are likely to have a significant impact on the environment be subject to an EIA. The EIA process is overseen by the Ministry of Infrastructure and Water Management.

The EMA provides for two types of environmental assessment processes: a simplified process and an extensive or "full-fledged" process. The simple process is provided for relatively simple, straightforward permits, such as those related to the Environmental Management Act and the Mining Act. The extensive process is required for strategic environmental assessments (SEAs), complex projects, projects in which the government is the project sponsor, and where otherwise required by the Dutch Nature Conservation Act. Moreover, the Spatial Planning Act gives the government the power to designate certain areas as "nationally important"; infrastructure projects which are in those areas are subject to a more rigorous planning process than projects located in other areas.

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<sup>165</sup> Environmental Management Act (Bulletin of Acts, Orders and Decrees 99, 1994).

<sup>166</sup> Environmental Impact Assessment Decree 1994 (Bulletin of Acts, Orders and Decrees 540, 1994), <https://www.government.nl/documents/regulations/2018/01/05/environment-and-planning-act>.

<sup>167</sup> Notification of Intent Regulations 1993 (Netherlands Government Gazette, 29 November 1993).

An independent advisory body, the Netherlands Commission on Environmental Assessment (NCEA), renders advisory opinions on different stages of the environmental review process, including the sufficiency of the EIA report (also called ESIA, for “Environmental and Social Impact Assessment”). In the simplified process, the NCEA’s advisory opinion is optional, and may be requested by the applicant or the competent authority. In the extensive process, it is also generally voluntary, except that NCEA review is mandatory for all EIA (and SEA) reports in the extensive process.<sup>168</sup> When NCEA review of an EIA (or SEA) is mandatory, the NCEA is required to complete its advisory report within six weeks from the date that the EIA or SEA is available for public comment.

The table below summarizes the differences between the two procedures at each step in the EIA process.<sup>169</sup>

Step	Simplified Procedure	Full Procedure
Screening	The competent authority decides on the applicability of an EIA in cooperation with relevant administrative bodies.	The competent authority must publish a starting document and solicit public comments. The competent authority must also consult with designated authorities.
Scoping	The competent authority may request a recommendation from the NCEA on the scope and detail level of the investigation to be performed.	The competent authority may request a recommendation from the NCEA on the scope and detail level of the investigation to be performed.
Assessment	The EIA report is carried out under the responsibility of the initiator. The NCEA may review the EIA report and provide recommendations.	The EIA report is carried out under the responsibility of the initiator. The NCEA may review the EIA report and provide recommendations.
Review	The competent authority reviews whether the quality of the assessment is sufficient.	The NCEA reviews the EIA report and provides a mandatory review advice. The competent authority must consider the NCEA’s advice in making a decision.
Decision	The competent authority makes a decision on the project.	The competent authority makes a decision on the project. The decision must consider the environmental impacts of the project, as well as the views of the public and the NCEA.
Evaluation	The competent authority may evaluate the effectiveness of the EIA process.	The competent authority must evaluate the effectiveness of the EIA process. The evaluation must consider the environmental impacts of the project, as well as the views of the public and the NCEA.

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168 Netherlands Commission on Environmental Assessment, How the NCEA Operates? <https://www.commissiener.nl/english/our-services/how-the-ncea-operates>.

169 Source: Netherlands Commission for Environmental Assessment, ESIA Profile (Environmental and Social Impact Assessment), August 1, 2019, [https://www.eia.nl/en/countries/netherlands+\(the\)/esia-profile](https://www.eia.nl/en/countries/netherlands+(the)/esia-profile).



Over the last decade, the Netherlands undertook a sweeping consolidation of its laws related to environment and regional planning. The consolidated Environment and Planning Act (*Omgevingswet*), which goes into effect January 1, 2024, is designed to facilitate infrastructure deployment. It consolidates and updates 26 laws related to housing, infrastructure, environment, nature, and water, and harmonizes both substantive law and compliance procedures.<sup>170</sup>

The Environment and Planning Act aims to foster stronger connections among various projects and activities related to regional planning, the environment, and nature, as well as sustainable developments such as wind farms. By improving links between different sectors and regions, the Act seeks to promote comprehensive and efficient decision-making processes. It also aligns with European regulations and provides greater flexibility for private initiatives. The Act will lead to a reduction in regulations and alleviate the burden of conducting extensive studies, allowing for faster and more informed decisions on projects and activities.

The Act introduces a single environmental planning regime to replace the myriad of land-use plans currently in place across municipalities.<sup>171</sup> This consolidation of plans will result in fewer regulations and improved coherence in regional planning. This is in keeping with the increased integration of infrastructure permit decisions, regional planning, and strategic environmental assessment.

Under the Act, developers seeking needed authorization for infrastructure projects will be able to apply for permits through a streamlined “one-stop-shop” process.<sup>172</sup> Instead of multiple authorities being responsible for the decision, a single municipality or province will make the determination.

Moreover, project developers will only need to submit one application for all of the necessary permits, including local and national permits.<sup>173</sup> The Act establishes a unified permit system, with one application, one set of requirements,

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170 For a summary explanation of the consolidated law, with relevant legal texts, see Government of the Netherlands, Living Environment Information Point (*Informatiepunt Leefomgeving*), Consolidated texts Environmental Act, <https://iplo.nl/regelgeving/omgevingswet/geconsolideerde-teksten-omgevingswet/> (machine translated by Google).

171 Government of the Netherlands, Revision of Environment and Planning Laws, Explainer, 2022, <https://www.government.nl/topics/spatial-planning-and-infrastructure/revision-of-environment-planning-laws>.

172 Id.

173 Government of the Netherlands, Ministry of Infrastructure and Water Management, An All-in-one Permit for Physical Aspects, <https://rwsenvironment.eu/subjects/general-provisions-0/all-one-permit>.



and one legal remedies procedure, all overseen by a single competent authority. Applicants have the flexibility to decide whether to apply for a permit covering all activities at once or in stages. The Act promotes coordination among government authorities involved in the application to ensure a harmonized decision.<sup>174</sup>

Under the Act, a centralized Online Portal (OLO) allows applicants to submit electronic applications at any time. The portal serves as a one-stop-shop, providing information on whether permission is required for proposed work and activities. The application form is standardized and automatically generated based on the applicant's answers. It can be submitted digitally, along with relevant attachments. The competent authority, usually the mayor and aldermen, reviews the application, provides information on the process, decision-making, and costs, and ensures efficient routing of the application.<sup>175</sup>

The new law accelerates the permit issuance process and reduces administrative burdens for applicants. In most cases, according to the Dutch government, project applications that qualify for the simplified procedure will be processed in eight weeks (extendable by six weeks) instead of the current 26 weeks,<sup>176</sup> If the authority fails to make a decision within the deadline, a permit is automatically issued (*lex silencio positivo*). By contrast, those that require the "extensive procedure" are guaranteed a decision within six months, extendable by up to 6 weeks, but the permit is issued automatically only when all appeals have been exhausted.<sup>177</sup>

Legal remedies include objections, judicial review, and appeals to ensure transparency and accountability. The authority responsible for issuing the all-in-one permit is also responsible for enforcement, with specific provisions to promote quality enforcement, overseen by the Minister.

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174 Id.

175 Id.

176 Netherlands Chamber of Commerce, Netherlands Enterprise Agency, et al, Business.gov.nl. (the Dutch Single Point of Contact for Entrepreneurs), The Environment and Planning Act (*Omgevingswet*): What does it mean for you? <https://business.gov.nl/running-your-business/business-location/building-rebuilding-or-renovating/the-environment-and-planning-act-omgevingswet-what-does-it-mean-for-you/>.

177 Government of the Netherlands, Ministry of Infrastructure and Water Management, An All-in-one Permit for Physical Aspects, <https://rwsenvironment.eu/subjects/general-provisions-0/all-one-permit/>.

78 The Act will also reduce the burden of studies required as part of permit applications.<sup>178</sup> Research data will have an extended validity, enabling easier data reuse and reducing costs associated with repetitive studies. Additionally, certain research obligations will be eliminated, further alleviating the financial burden on companies and expediting project implementation.

The Dutch government plans to rely heavily on technology to streamline the authorization process under the new law. For example, the government is using online portals to allow project developers to submit applications and track the progress of their applications.

According to the Dutch government, "The new Act will result in fewer regulations and will reduce the burden of conducting studies. At the same time, decisions on projects and activities can be made better and more quickly. Moreover, the Act is more in line with European regulations and allows more room for private initiatives."<sup>179</sup>

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178 Government of the Netherlands, Revision of Environment and Planning Laws, Explainer, 2022, <https://www.government.nl/topics/spatial-planning-and-infrastructure/revision-of-environment-planning-laws>.

179 Id.



PERMITTING IN  
**Norway**

The Norwegian Planning and Building Act of 2008 (*Plan- og bygningsloven*) is the primary legislation governing infrastructure projects.<sup>180</sup> It provides the framework for regional land-use planning at all levels of government, from national to local, and clarifies the roles and responsibilities of competent authorities. It also sets out the requirements for land-use plans, including environmental impact assessment. It provides for regulation of zoning, construction permits, and enforcement, including the basic health, safety, and environmental standards that infrastructure and other construction projects must meet.

Chapter VII-A of the Act<sup>181</sup> contains the general requirement for environmental impact assessment, but grants the government wide latitude in defining virtually every aspect of the process through regulation: “The King may in regulations issue provisions concerning plans and projects that are covered by this chapter as well as supplementary provisions concerning environmental impact assessments.”<sup>182</sup> By Royal Decree of 21 June 2017, the government of Norway promulgated detailed regulations governing the EIA process (Norwegian EIA Regulations).<sup>183</sup>

Norway is not a Member State of the EU. But as a member of the European Economic Area (EEA), it is subject to directives of the EU designated as having application to the EEA. These include both the EU’s EIA Directive and its SEA Directive.<sup>184</sup>

Therefore, Norwegian infrastructure governance has been shaped in accordance with EU directives. The Norwegian EIA Regulations reflect this by dividing projects up into Annex I and Annex II, like the EU’s EIA Directive, and assigning a spe-

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180 Act of June 27, 2008, No. 71, relating to Planning and Building Applications (the Planning and Building Act) (Norway).

181 *Id.*

182 *Id.*, Section 33-5.

183 Royal Decree of 21 June 2017 pursuant to Act of 27 June 2008 no. 71 relating to the Planning and the Processing of Building Applications (the Planning and Building Act) sections 1-2, 4-2, 14-6 and 32-8a, (Norway), <https://www.regjeringen.no/en/dokumenter/regulations-on-impact-assessments/id2573435>.

184 See discussion of EU EIA Directive and SEA Directive, in EU section.

80 cific “competent authority” for each category of project.<sup>185</sup> Like the Planning and Building Act, the Norwegian EIA Regulations distinguish between “plans” and “initiatives.” These categories correspond to land-use plans and project proposals, respectively. The process is generally the same for both, with the difference that in the case of land-use plans, the “proposer” is always a government authority, whereas the “proposer” of an “initiative” may be a public or private entity.

The EIA process begins with a preliminary assessment by the proposer of the plan or initiative.<sup>186</sup> The proposer must consider the characteristics of the plan or initiative, its location, and the potential environmental impacts. If the proposer believes that the plan or initiative may have significant environmental impacts, they must prepare an EIA report. The EIA report must describe the potential environmental impacts of the plan or initiative and propose measures to mitigate those impacts. The EIA report is then submitted to the competent authority for review. As explained above, the competent authority is the government agency responsible for approving or disapproving the plan or initiative, as specified in the Annexes.

The competent authority must consider the EIA report and other relevant information when making a decision on the plan or initiative.<sup>187</sup> If the competent authority approves the plan or initiative, the proposer must implement the measures in the EIA report to mitigate the plan or initiative’s environmental impacts. Other environmental laws come into play, such as the Norwegian Pollution Control Act (*Forurensningsloven*) and the Nature Diversity Act (*Naturmangfoldloven*), which add requirements that must be satisfied subject to verification in the EIA report.<sup>188</sup>

### *Streamlined Process for Hydropower Licenses*

Norway is the only country in the world to rely on renewable sources for virtually all its electricity. The vast majority of its electricity, 92 percent, is hydro power.<sup>189</sup> As hydropower projects vary significantly in size and configuration, a special streamlined process is in place for such projects.

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185 Norwegian EIA Regulations, op cit., Annexes.

186 Id.

187 Id.

188 Norwegian Environment Agency (Miljødirektoratet). (n.d.). Environmental Impact Assessment (EIA). Retrieved from <https://www.miljodirektoratet.no/en/topics/environmental-impact-assessment>.

189 International Energy Agency, “Norway 2022 Energy Policy Review,” 2023 <https://iea.blob.core.windows.net/assets/de28c6a6-8240-41d9-9082-a5dd65d9f3eb/NORWAY2022.pdf>.

The principal regulatory agency for hydropower projects is the Norwegian Water Resources and Energy Directorate (*Norges vassdrags- og energidirektorat*) (NVE). The NVE regulates the country's water resources and energy supply and falls under the Ministry of Petroleum and Energy. It is responsible for managing Norway's water and energy resources.

The NVE and the national grid operator Statnett coordinate the licensing process and the assessment of grid capacity for hydropower projects. The hydropower license, processed and granted by the NVE (or processed by NVE and granted by a Royal Decree) is an all-in-one permit that consolidates a number of authorizations that are normally granted separately and subject to separate processes in other countries, including operating permits, environmental permits, construction permits, and so on. Hence, the NVE serves as a one-stop-shop for hydropower licensing.

This has a number of important benefits. The applicant is able to consult a single agency about most questions and issues that might arise. As NVE staff asserted in the European Commission's RES Simplify report, the one-stop-shop model also has positive effect on the NVE's internal functioning as it is home to most all the hydropower permitting expertise and experience in Norway.<sup>190</sup> The NVE can combine all possible aspects of permitting into the same decision-making "table," which allows it to acquire a comprehensive picture of the potential hydropower projects, and to assess an assembled impact of the project at hand. According to the European Commission RES Simplify report, considering all possible impacts and features at the same time is time-consuming, but NVE staff claim that it enables them to take "balanced and sustainable decisions" by pooling their expertise.

According to the RES Simplify report (Norway), an electricity sales license is typically the last step in the permitting process for a hydropower project, and functions as a "green light" to go operational.<sup>191</sup> The process for the electricity sale license is also streamlined, with an online application portal (Atlinn) and approval in 2-4 weeks.<sup>192</sup>

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190 <https://op.europa.eu/o/opportal-service/download-handler?identifier=0e9db-9fa-d653-11ec-a95f-01aa75ed71a1&format=PDF&language=en&productionSystem=cellar>.

191 [https://www.eclareon.com/sites/default/files/res\\_simplify\\_national\\_report\\_no.pdf](https://www.eclareon.com/sites/default/files/res_simplify_national_report_no.pdf).

192 Id.



## PERMITTING IN **Australia**

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) governs the environmental assessment process in Australia.<sup>193</sup> The EPBC Act requires that any act that is likely to have a significant impact on the national environment and requires authorization under the Act (controlled action) must undergo environmental assessment as specified under the Act. Controlled actions include infrastructure projects such as roads, railways, airports, and power plants authorized by the government.

The EPBC Act is a sweeping environmental statute, designed to protect the Australian environment, including threatened species and ecological communities, and natural and culturally significant places. The Act provides for protection of the country's important environmental ecosystems against the impacts of any new developments and changes in land use, including agricultural development, urban expansions, and mining.

The EPBC Act includes an offsets (mitigation) policy, which was implemented in 2012.<sup>194</sup> The policy enables developers to compensate for unavoidable environmental impacts by protecting areas of habitat similar to areas to be impacted.

### *Centralized Process and Timelines for Authorization Process*

Nationally significant infrastructure projects must be "referred" to Australia's principal environmental regulator, the Department of Climate Change, Energy, the Environment and Water (DCCEEW). DCCEEW is a one-stop shop for authorization of infrastructure projects with respect to "controlled actions" that are prohibited under the EPBC Act unless authorized. (Other authorizations may be required by national, territory, or state law.)

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193 Environment Protection and Biodiversity Conservation Act 1999 (Cth. Austl.), <https://www.legislation.gov.au/Details/C2016C00777>.

194 Australian Government, Department of Sustainability, Environment, Water, Population and Communities, Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy, October 2012, [https://www.dcceew.gov.au/sites/default/files/documents/offsets-policy\\_2.pdf](https://www.dcceew.gov.au/sites/default/files/documents/offsets-policy_2.pdf).



DCCEEW has a website for “Referral applications and proposals” that serves as a convenient first stop in the “referral,” or permit application, process.<sup>195</sup> It has several tools to help applicants determine whether their proposed projects might impact matters, species, or habitats protected under the EPBC Act, including a “Protected Matters Search Tool”<sup>196</sup> and a “Species Profiles and Threats Database.”<sup>197</sup> The website provides a “self-assessment” tool<sup>198</sup> and encourages prospective applicants to seek a pre-referral meeting with Department staff. As part of the “self-assessment,” project applicants are also encouraged to check whether the proposed location or project type is covered by a “strategic assessment,” which is the Australian equivalent of a “programmatic” NEPA document in the U.S.

Once the project applicant submits a preliminary permit application (referral), the Minister of the DCCEEW has a short time, usually just 20 business days (including 10 days for comment by other government agencies and the public), to decide whether the project needs an assessment under EPBC, and, if so, what assessment method is most appropriate. At the discretion of the Minister, and as required by law, actions can be assessed using one of the following assessment methods:

- Accredited assessment (i.e., assessments by territory or state governments that have been accredited by the Minister);
- Assessment on referral information (assessment done solely on the information provided in the initial referral form);
- Assessment on preliminary documentation (referral form and any other relevant material identified by the minister as being necessary to adequately assess a proposed action);
- Assessment by environmental impact statement (EIS) or public environment report (PER); or
- Assessment by public inquiry.

The Minister makes the decision to approve, approve with conditions, or not approve the proposed action. The process can be complex and time-consuming, particularly for EISs and PERs, but it is largely applicant-driven, and bookended by specific timelines for ministerial decision. Depending on the assessment method, a decision must be made within 40 days or less of receiving finalized documentation from the proponent.

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195 <https://www.dcceew.gov.au/environment/epbc/advice/referral-applications-and-proposals>.

196 <https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool>.

197 <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>.

198 <https://www.dcceew.gov.au/environment/epbc/advice/self-assessments>.

As part of the authorization, the proponent may be required to prepare a plan for monitoring and managing or mitigating the project's impact on the environment.

In addition to the EPBC Act, and other national laws, each state and territory has its own legislation governing environmental assessments. These laws may have additional environmental assessment requirements or impose additional conditions on the project.

### *Infrastructure Australia*

The Infrastructure Australia Act of 2008 created a commission, known as "Infrastructure Australia," to expedite approval, funding, and construction of nationally significant infrastructure. Infrastructure Australia advises governments, industry, and the community on the investments and reforms needed to deliver better infrastructure.

Infrastructure Australia sets out an assessment framework used to consider projects for inclusion on an Infrastructure Priority List (IPL).<sup>199</sup> The assessment framework provides guidance for proponents to submit infrastructure proposals through an objective and structured process. Proponents of potential infrastructure solutions are encouraged to use the Infrastructure Australia checklists and templates in the assessment framework, including all available supporting material such as any related studies and reports.<sup>200</sup>

The Infrastructure of Australia Act 2008 defines nationally significant infrastructure as transportation, energy, communications, or water infrastructure "in which investment or further investment will materially improve national productivity."<sup>201</sup> An infrastructure investment is nationally significant if, based on the evidence presented, the Infrastructure Australia Board expects the investment to have a material impact on national output by (1) addressing a problem that would otherwise impose economic, social and/or environmental costs; (2) providing an opportunity for realizing economic, social or environmental benefits; or (3) both addressing a problem and providing an opportunity. To certify a proposed project as nationally significant, Infrastructure Australia applies a threshold of AU\$30 million in net benefits per annum.

The Infrastructure Priority List serves as a tool for directing national policy priorities and public funds toward projects that address the most pressing infrastruc-

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199 <https://www.infrastructureaustralia.gov.au/infrastructure-priority-list>.

200 Infrastructure Australia, Assessment Framework, March 2018, [https://www.infrastructureaustralia.gov.au/sites/default/files/2019-06/infrastructure\\_australia\\_assessment\\_framework\\_2018.pdf](https://www.infrastructureaustralia.gov.au/sites/default/files/2019-06/infrastructure_australia_assessment_framework_2018.pdf).

201 Infrastructure Australia Act 2008 (Cth. Australia).

ture needs. The analysis, which includes a “business case” assessment based on “benefit-cost-ratio,” is conducted independently using Infrastructure Australia’s assessment framework, which serves as a guide for understanding the problem or opportunity that a given project is trying to solve and whether it represents a worthwhile investment. The process promotes long-term, integrated land use planning.

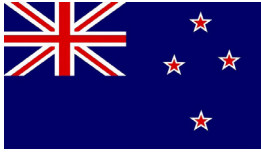
In addition to their prioritization efforts, Infrastructure Australia conducts research and provides advice on broader opportunities for infrastructure reform. It also publishes updated and interactive data to facilitate informed decision-making regarding infrastructure development.

Infrastructure Australia’s main policy publications include the Australian Infrastructure Audit,<sup>202</sup> which offers a forward-looking perspective on the country’s infrastructure needs, the Australian Infrastructure Plan,<sup>203</sup> which outlines policy responses to address these needs, and the Infrastructure Reform Series, which provides guidance on the implementation of these policy responses.

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202 <https://www.infrastructureaustralia.gov.au/node/674>.

203 [https://www.infrastructureaustralia.gov.au/sites/default/files/2021-09/2021%20Master%20Plan\\_1.pdf](https://www.infrastructureaustralia.gov.au/sites/default/files/2021-09/2021%20Master%20Plan_1.pdf).



## PERMITTING IN New Zealand

In New Zealand, project proponents whose proposals might adversely or disproportionately affect the environment must obtain prior consent from government authorities, either on a national or local level.<sup>204</sup> The Resource Management Act (RMA) is the primary legislation governing the environmental assessment process for major infrastructure projects in New Zealand.<sup>205</sup> It requires that all applications for “Resource Consents” (authorization) for major infrastructure projects be accompanied by an “Assessment of Environmental Effects” (AEE).<sup>206</sup>

The environmental assessment process is overseen by the New Zealand Environmental Protection Authority (EPA). The EPA also consults with other government agencies, local authorities, and stakeholders to ensure that all potential environmental effects are identified and evaluated.<sup>207</sup> Once the EIA has been completed, the EPA prepares a report that includes recommendations on whether to grant the necessary authorizations for the project.

The report is submitted to the relevant decision-making authority, which may be a local council or a board of inquiry appointed by the Minister for the Environment. The authorization process involves public consultation and may include a hearing. The decision-making authority must take into account all relevant information, including the EIA report and any submissions received during public consultation, before making a decision on whether or not to grant the Resource Consent.

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204 New Zealand Ministry for the Environment, A Guide to Preparing a Basic Assessment of Environmental Effects, 2006, <https://environment.govt.nz/publications/a-guide-to-preparing-a-basic-assessment-of-environmental-effects>.

205 Resource Management Act 1991 (N.Z.), <https://www.legislation.govt.nz/act/public/1991/0069/latest/whole.html>.

206 Id.

207 New Zealand Association for Impact Assessment, “Environmental Impact Assessment” NZAIA, <https://www.nzaia.org.nz/environmentalimpactassessment.html>.

New Zealand long had disparate laws regulating various aspects of the environment. The resulting delays and uncertainty were often discouraging to investors.<sup>208</sup> The situation improved significantly with the 1991 enactment of the RMA. The RMA consolidated most of New Zealand's environmental laws into one act, harmonizing the disparate requirements and processes. It also streamlined the EIA process.

Under the RMA as amended, national environmental regulation in New Zealand falls within the jurisdiction of two separate entities, the New Zealand EPA and the New Zealand Ministry for the Environment. The New Zealand EPA is an independent Crown entity, run by a board, that is responsible for administering and enforcing environmental regulations in New Zealand. It is responsible for overseeing the environmental impact assessment process for major infrastructure projects. The Ministry for the Environment, by contrast, is a government agency under the control of a minister who is responsible for developing and implementing national environmental policies and regulations. The two agencies work closely together to ensure that environmental regulations are enforced and that the environmental assessment process is carried out effectively.

The environmental assessment process is usually managed at the local council level. But the Environmental Protection Authority Act 2011 empowered the New Zealand EPA to process permit applications for Resource Consents of national significance.<sup>209</sup> The law, and regulations issued under it, created an expedited process for such nationally significant proposals, consisting of an independent application system and a streamlined process for public participation, evaluation of the AEE, and appeals. A qualified project may be designated as having "national significance" by the project proponent filing the application with the New Zealand EPA, or by referral from the Ministry for the Environment or a local council.<sup>210</sup>

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208 Montz, B.E., "From Law to Practice: EIA in New Zealand," *Environmental Impact Assessment Review* 13, 89-108, 1993.

209 Environmental Protection Authority Act 2011 (N.Z.).

210 Resource Management Act Sec. 142-145 (N.Z.).

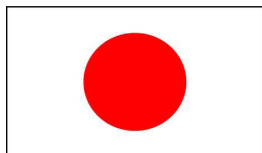
Proposals of national significance are big infrastructure plans or public works such as major new roads and wind farms that may require applications for Resource Consent; preparation of a regional plan (other than a regional coastal plan); a change to a district or regional plan; an application for a change to or cancellation of conditions of a Resource Consent; a notice of a requirement for a designation or to alter a designation; or a notice of requirement for a heritage order or to alter a heritage order.<sup>211</sup>

The decision-making process for proposals of national significance is managed under part 6AA of the RMA. The EPA assesses the proposal for completeness, provides a recommendation to the Minister about whether it is a proposal of national significance, and advises whether the matter should be referred to a board of inquiry or to the Environment Court. The application is then sent to the Minister who must decide whether the application is a proposal of national significance. If the Minister does not agree that it is a proposal of national significance, the application is sent to the relevant council to deal with it in the usual manner.

If it is a proposal of national significance, the Minister may refer it to a board of inquiry or to the Environment Court. If the matter is heard by a board of inquiry, the New Zealand EPA continues to support the application process, including with any public hearings the board may want to convene. Where the matter is to be heard by the Environment Court, the Court holds hearings and sets timeframes and procedural requirements. Either way, a decision can only be appealed to the High Court on questions of law. Otherwise, the competent authority must implement the decision.

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211 New Zealand Environmental Protection Authority, Proposals of national significance, <https://www.epa.govt.nz/industry-areas/rma-proposals/proposals-national-significance/>.



## PERMITTING IN Japan

Japan's environmental regulations are built upon the "Basic Environmental Law" (BEL) of 1993.<sup>212</sup> Art. 20 of the BEL required enactment of a law on environmental impact assessment, which happened in 1997 with the Environmental Impact Assessment Act (Japanese EIA Act).<sup>213</sup> As in other countries, the Japanese EIA Act grew out of guidelines and Cabinet Decisions adopted in the wake of NEPA's enactment in the United States.

The EIA Act prescribes the obligations and procedures of EIA on the listed projects (certain construction projects and land-use changes) and requires the authorities to consider the assessment results in their decisions.<sup>214</sup> Unlike NEPA, which is nominally focused on the impacts of "federal actions," and the EU EIA Directive, which is in effect similarly focused on the impacts of government decisions, the Japanese EIA Act requires project proponents to assess and consider environmental impacts of their own actions, including impacts not regulated by other laws.<sup>215</sup>

Thirteen types of projects are subject to the Japanese EIA Act, including the construction of roads, dams, railways, airports, and power plants.<sup>216</sup> Among them, large-scale projects that could have a serious impact on the environment are categorized as "Class-1" projects and are required to follow the procedure established under the Act. As with the EU EIA Directive, a second class of projects, "Class-2" projects, are subject to criteria for determining whether an EIA is required on a case-by-case basis based on a screening of socio-environmental, economic, and other factors.<sup>217</sup>

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212 Basic Environmental Act (Kankyō kihonhō), Law No. 91 of 1993, art. 37 (Japan), transl. at <https://www.env.go.jp/en/laws/policy/basic/index.html>.

213 Environmental Impact Assessment Act (Kankyō eikyō hyōka hō), Law No. 97 of 1997, art. 17 (Japan), transl. in 7 EHS Law Bull. Ser. no. 7800 (1996).

214 Masuzawa, Y., Koyano, M., Toi, A., & Kubo, H. Strength and weakness of Japanese EIA law, IAIA19 Conference Proceedings, 2019, <https://conferences.iaia.org/2019/uploads/edited-presentations/Strength%20and%20weakness%20of%20Japanese%20EIA%20law.pdf>.

215 Id.

216 Japan Ministry of Environment, Environmental Impact Assessment," <https://www.env.go.jp/en/policy/assess/pamph.pdf>.

217 Id. at 4.

90 Project proponents implement EIA themselves.<sup>218</sup> As the Japanese Ministry of the Environment explains:

This is because EIA is the process for putting environmental considerations into the project design through exchange of views and information among the entities concerned and because project proponents know best about proposed project and have the best position to modify/adjust the project. By considering all environment-related issues and necessary measures in advance through information gathering and disclosure on possible impacts of the project, environmental issues are better addressed during the construction and operational phase of the project.<sup>219</sup>

The Ministry of Environment manages EIA projects in conjunction with other ministries, depending on the project category, but the process remains fragmented and hydra-headed, as in the United States. The first step in the authorization and EIA process is the filing of an application with the Ministry of the Environment, which renders an advisory opinion after consultations with other agencies that have jurisdiction by law, the public, and local authorities. With respect to most categories of major infrastructure, the ultimate decisionmaker is the powerful Ministry of Economy, Trade and Industry (METI).

In addition, as in the U.S., a myriad of other laws may be implicated in the approval and EIA process, and local governments can create additional regulatory hurdles.

### *Recent Reform Efforts*

Of the countries studied in this report, Japan's EIA process is perhaps the most similar to the U.S., creating similar problems for the nation's infrastructure, and efforts to reform it have met with similarly little success. In its most recent Japan Energy Policy Review, the International Energy Agency (IEA) notes that in 2019, Japan enacted a series of measures to accelerate renewable energy deployment, particularly offshore wind.<sup>220</sup> The IEA notes that, while the government's involvement in defining development areas is expected to facilitate the process, long environmental impact assessment process remains a key challenge for wind onshore

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218 Id. at 5.

219 Id.

220 IEA, 2021 Japan Energy Policy Review, [https://iea.blob.core.windows.net/assets/3470b395-cfdd-44a9-9184-0537cf069c3d/Japan2021\\_EnergyPolicyReview.pdf](https://iea.blob.core.windows.net/assets/3470b395-cfdd-44a9-9184-0537cf069c3d/Japan2021_EnergyPolicyReview.pdf).



and offshore wind.<sup>221</sup>

The EIA Act was amended in 2011 to improve monitoring, accountability, and public participation. The amendments added procedural steps to precede and follow the EIA process, equivalent to the emphasis in the U.S. and other countries on preapplication processes and “mitigation & monitoring” issuance of the permits necessary for construction and operation.

Further reform efforts, including shortened timelines, were subsequently introduced but did not come to fruition. Commentators have noted the lack of a legal framework for Strategic Environmental Assessment as a significant gap in Japan’s EIA process, and others have called for the establishment of a “one stop shop” for permitting as in other ASEAN countries as is increasingly the case in the EU.<sup>222</sup>

These efforts have so far been unsuccessful. In one study based on interviews with anonymous Japanese experts and officials, Prof. Kim Schumacher of the University of Kyushu reported skepticism that a one-stop-shop process can or even should be implemented, even for defined categories such as renewable energy projects.<sup>223</sup> One Japanese expert expressed the opinion that because the ultimate decisionmaker for energy project authorizations is METI, a one-stop-shop approach would put that agency at the center of the EIA process in Japan, and as METI is concerned with economic, industrial, and energy policy rather than environmental priorities, streamlining “might not be in the best interest of overall conservation efforts.”<sup>224</sup> Another Japanese expert was skeptical of lowering environmental standards to facilitate renewable energy deployment.

These insights highlight two challenges faced by Japan, the United States, and other countries. First is the difficulty of creating a coherent process for environmental impact assessment when permitting is distributed and entrenched within a myriad of unrelated agencies. Second is the virtually inescapable tension between local ecological concerns that militate against rapid deployment of large-scale energy infrastructure, and the perceived need to deploy large-scale renewable energy infrastructure to address long-term climate challenges.

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221 *Id.* at 105.

222 Masuzawa, Y., Koyano, M., Toi, A., & Kubo, H. “Strength and weakness of Japanese EIA law,” IAIA19 Conference Proceedings, 2019, <https://conferences.iaia.org/2019/uploads/edited-presentations/Strength%20and%20weakness%20of%20Japanese%20EIA%20law.pdf>.

223 Schumacher, Kim, “Large-scale Renewable Energy Project Barriers: Environmental Impact Assessment Streamlining Efforts in Japan and the EU,” March 2017, <https://doi.org/10.1016/j.eiar.2017.05.001>.

224 *Id.* at 15.

According to Schumacher's 2017 article, at the time of publication METI was undertaking a comprehensive database with the aim of streamlining the pre-application process. This database was envisioned as a centralized repository for survey data collected by both regulators and private developers. The idea was to reduce the costs and administrative burdens associated with conducting repetitive surveys for future project proponents. The initiative was reportedly based on the German system of officially designating pre-approved zones for renewable energy development and applying streamlined procedures for the government to conduct studies and environmental surveys prior to projects being proposed. A similar idea was the U.S. Bureau of Land Management's Solar PEIS for Six Southwestern States, with its designation of Solar Energy Zones in which development would be favored. A search of relevant METI annual energy reports could uncover no further information about this initiative.

METI has formed a study group that meets regularly to discuss "Ideal Approaches to Assessment of Environmental Impacts for Appropriate Introduction of Renewable Energy."<sup>225</sup> Japan's Renewable Energy Institute recently called for sweeping reforms to regional planning and infrastructure authorization, with a view to facilitating the deployment of renewable energy infrastructure at the speed and scale necessary to meet Japan's international decarbonization commitments.<sup>226</sup>

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225 Japan Ministry of Economy, Trade and Industry, "FY2020 Study Group on Ideal Approaches to Assessment of Environmental Impacts for Appropriate Introduction of Renewable Energy to Hold its First Meeting," press release, January 19, 2021, [https://www.meti.go.jp/english/press/2021/0119\\_003.html](https://www.meti.go.jp/english/press/2021/0119_003.html).

226 Renewable Energy Institute, "Recommendations on Accelerating the Offshore Wind Power in Japan to Create a Fair and Transparent Competitive Environment," Japan, August 2022, [https://www.renewable-ei.org/pdfdownload/activities/REI\\_AcceleratingOSW\\_Japan.pdf](https://www.renewable-ei.org/pdfdownload/activities/REI_AcceleratingOSW_Japan.pdf).



## PERMITTING IN China

China's system for authorization and environmental impact assessment (EIA) of large infrastructure projects is overseen by the State Environmental Protection Administration (SEPA). Since enactment of a comprehensive new EIA law in 2002, all large construction projects undergo an EIA before they can be approved.<sup>227</sup> As in other countries, the EIA requirement applies to both project proposals and land-use plans.

The law requires extensive public participation, as amended by a provisional regulation put in place by SEPA after a series of high-profile scandals involving violations of the EIA Law.<sup>228</sup> SEPA initiated the first "environmental storm" (a wave of new environmental regulations) in 2005, after dozens of major projects were accused of starting construction before their EIA reports had been approved. SEPA halted construction on the projects. The following year, SEPA named and shamed another 11 companies. In January 2007, SEPA announced that no new projects would be approved in four cities with low environmental capacities to handle more pollutants. In July 2007, SEPA decided not to approve any new industrial projects in six cities, two counties, and five industrial parks along the four major river systems (the Yangtze, Yellow, Huaihe, and Haihe rivers) to prevent further contamination. Public opinion was further inflamed when it was discovered that in shooting the film *The Promise* extensive environmental damage was caused in a nature preserve at Bigu Lake in Shangrila Yunnan in 2006.<sup>229</sup> These scandals have led to greater environmental protection in China, at least on paper.

The global trend towards increased reliance on Strategic Environmental Assessment is reflected in China with the adoption of the "Three Lines One Permit" (TLOP) policy by the Ministry of Ecology and Environment.<sup>230</sup> The policy

227 Law of the People's Republic of China on Environmental Impact Appraisal (Oct. 28, 2002) [https://english.mee.gov.cn/Resources/laws/environmental\\_laws/202012/t20201204\\_811509.shtml](https://english.mee.gov.cn/Resources/laws/environmental_laws/202012/t20201204_811509.shtml).

228 Yang, Shanshan. "Public Participation In The Chinese Environmental Impact Assessment (EIA) System," *Journal of Environmental Assessment Policy and Management*, Vol. 10, No. 1, March 2008, pp. 91-113, <https://www.jstor.org/stable/enviassepolimana.10.1.91>.

229 Id.

230 Huanzhi Wang, Xueyan Guo, Ting Liu, He Xu, Framework and function of "Three Lines and One Permit": A preemptive and integrated policy for the environmental impact assessment system in China, *Environmental Impact Assessment Review*, Vol. 94, 2022, 106763, <https://doi.org/10.1016/j.eiar.2022.106763>.

arose from China's adoption in 2015 of a cross-region SEA for three major city clusters—Beijing-Tianjin-Hebei, Yangtze River Delta, and Pearl River Delta. The SEA proposed limits to the ecological areas that could be developed, limits for pollution amount, and limits on resource use designed to promote economic development while protecting resources.

The TLOP policy divides regions into spatial control units and includes a list of environmental permits that specify restrictions on spatial layout, pollution control, environmental risk prevention, and resource utilization efficiency. TLOP serves as a foundation for decision-making and provides independence from local governments' influence. According to proponents, it helps control disorderly expansion, supports decision-making, limits arbitrary approvals, and expedites approvals for specific projects.<sup>231</sup>

Within the top-down strictures of the TLOP policy, the EIA process consists of several bottom-up stages. First, the project proponent is required to submit an application to the relevant environmental protection bureau, which includes a preliminary EIA report. This report contains a description of the project and its potential environmental impact. Next, the bureau reviews the preliminary report and determines whether a full EIA is required. If a full EIA is required, the proponent must conduct a comprehensive study of the project's potential environmental impact and submit a detailed EIA report. The EIA report should include information on the project's potential impact on the environment, such as air and water pollution, land use, and biodiversity.

Once the EIA report is complete, it is reviewed by a panel of experts who are independent of the project. The panel will assess the potential environmental impact of the project and make recommendations on whether the project should be approved, rejected, or modified. Based on the recommendations of the expert panel, the environmental protection bureau will make a decision on whether to approve the project. If approved, the proponent must comply with the conditions and requirements outlined in the EIA report, including measures to minimize and mitigate the project's environmental impact. The proponent must also establish a plan for monitoring and reporting on the project's environmental impact.

The Environmental Protection Law (EPL) serves as the foundation for environmental legislation in China. It is supported by specific laws related to atmospheric, water, and noise pollution prevention and control. Additionally, a set of laws and regulations govern the implementation of EIA. The most important ones include the EIA Law, Regulations on Environmental Protection Management of Construction Projects REPMCP, and Regulations on Planning EIA. These laws and regulations,

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231 Id.

collectively known as the “One Law and Two Regulations,” outline the procedures and requirements for conducting EIA.<sup>232</sup>

In broad outlines, China follows a similar EIA process to other industrial economies.<sup>233</sup> Screening and scoping are used to categorize projects and assess existing environmental conditions to identify potential environmental impacts. The significance of the impact determines the level of scrutiny. Based on that scoping, an Environmental Impact Assessment report is compiled. For low-impact projects, developers can submit registration forms online. High-impact projects necessitate detailed reports. These studies are then submitted to the competent authority for review and final approval, which typically includes conditions that must be followed through the entire life cycle of the project.<sup>234</sup>

In China, there has been a shift in focus from project-level EIA to policy-level SEA.

### *EIA Reforms in the 13<sup>th</sup> Five-Year Plan (2015-2020)*

As in the Soviet Union, China’s economic policy revolves around the implementation of “five-year plans.” In use by the Chinese Communist Party (CCP) since 1953, the Five-Year Plans are a strategic blueprint for the country’s development in every five-year period. The plan covers all aspects of development, including economic, social, and environmental pillars.

As part of the study cycle for the upcoming Five-Year Plan, a government “inspection team” in 2015 identified six severe problems in China’s EIA system: (1) some developers proceed with construction projects before getting EIA approval; (2) some leading cadres and their relatives illegally intervene in the EIA approval process or set up agencies to undertake EIA; (3) a large number of EIA agencies are government-affiliated, and practically play a dual role of both evaluators and reviewers; (4) some EIA agencies get licenses through bribes; (5) some government departments give EIA approval leniently or neglect the post-event supervision; and (6) some local environmental protection departments are prone to corruption during the EIA approval process.<sup>235</sup>

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232 Yang, Y, “Reformed Environmental Impact Assessment in China: An Evaluation of Its Effectiveness,” *Journal of Environmental Protection*, 11, 889-908, 2020, <https://doi.org/10.4236/jep.2020.1110056>.

233 Id.

234 Id.

235 Yang, Y, “Reformed Environmental Impact Assessment in China: An Evaluation of Its Effectiveness,” *Journal of Environmental Protection*, 11, 889-908, 2020, <https://doi.org/10.4236/jep.2020.1110056>.

The identification of these problems led to a “reform storm” in the 13<sup>th</sup> Five-Year Plan, the central animus of which was to centralize control of the EIA process at the top of the CCP. The Plan established the Ministry of Ecology and Environment to replace the former Ministry of Environmental Protection, taking over responsibility for environmental management and environmental protection responsibilities formerly dispersed across multiple agencies and among multiple levels of government.<sup>236</sup> The new “super-ministry” now oversees environmental protection and is responsible for implementation of the EIA Law. Enforcement is devolved to the local level, a clever distribution of accountability. Companies can now prepare their own EIA, after doing a fully online registration and permit application.<sup>237</sup>

### *EIA Reforms in the 14<sup>th</sup> Five-Year Plan (2020-25)*

China is currently in its 14<sup>th</sup> Five-Year Plan.<sup>238</sup> The Plan emphasizes expanding the state’s role in the economy, advancing national economic security interests, and boosting self-sufficiency in agriculture, energy, technology, and industry. China is also prioritizing efforts to obtain foreign technology through global pathways that are not yet restricted. The plan aims to create closer ties between academia and industry and improve evaluation of the results of such collaborations.

The 14<sup>th</sup> Five-Year Plan makes potentially significant changes to China’s environmental and industrial policy with respect to infrastructure.<sup>239</sup> There are major shifts in regional development strategies for the major urban-industrial areas, with increasingly widespread use of industrial parks. The Plan prioritizes high-quality industrial development, emphasizing innovation, coordination, and green practices.<sup>240</sup>

There are notable changes in China’s planning system framework, including the need for better integration of industrial park planning, clarifying the position of industrial park development within the planning system, and establishing a standardized management system for the EIA process for industrial park planning. Additionally, the environmental management system is being reconstructed, emphasizing the reform of the whole process, source prevention, and emission

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236 Id.

237 Id.

238 Congressional Research Service, “China’s 14th Five-Year Plan: A First Look – Congress,” January 2021, <https://crsreports.congress.gov/product/pdf/IF/IF11684>.

239 Lihua Huang 2021 IOP Conf. Ser.: Earth Environ. Sci. 651 042038.

240 Id.

permit systems.<sup>241</sup> As China faces complex environmental challenges, the Plan calls for shifting the focus of environmental impact assessment from addressing pollution at a micro-level to considering both macro and micro perspectives.

These are among the policy priorities that the Chinese Communist Party highlights to demonstrate its supposed commitment to sustainable development and environmental improvement. One pro-CCP journal article celebrates the Three Lines One Permit policy as an example of the comparative advantage of “socialism with Chinese characteristics” over the “neo-liberal model”:

TLOP is a compulsory integrated policy that includes ecological, environmental, and resource management against the background of intervention in the free-market economy. This mandatory policy is preemptive and independent of EIA. Therefore, local governments need to strictly abide by the boundaries formulated by the central government when implementing EIA instead of blindly pursuing development and construction that directly degrades the environment. One of the major advantages of socialism with Chinese characteristics is that political goals can be effectively communicated from the central government to local governments, which is the institutional guarantee for TLOP to function. Meanwhile, it is inseparable from the complementarity of the central and local governments in guaranteeing the implementation of policies for such a huge management system with all elements in the entire domain. Central government policies cannot cover all objectives and situations; therefore, the role of local policies is irreplaceable. In most conditions, local governments have a better understanding of their unique circumstances, such as geographic features, economic conditions, and demographic conditions. On this basis, they can more effectively carry out policy design and implementation. TLOP is prepared by the local government and approved by the Ministry of Ecology and Environmental Protection. In other words, the formulation of TLOP employs a bottom-up approach and is combined with the top-down transmission of the national ecological and environmental protection goals and development strategies. This process could reinforce the efficiency of the complementarity of central and local government policies.<sup>242</sup>

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241 Id.

242 Huanzhi Wang, Xueyan Guo, Ting Liu, He Xu, “Framework and function of ‘Three Lines and One Permit’: A preemptive and integrated policy for the environmental impact assessment system in China,” *Environmental Impact Assessment Review*, Vol. 94, 2022, 106763, <https://doi.org/10.1016/j.eiar.2022.106763>.

A review of Chinese EIA reform efforts, and commentary about them by sources sympathetic to the CCP, shows that China recognizes the political significance of environmental protection, and is willing to impose significant restrictions on economic development to create at least the appearance of good environmental stewardship.

But the CCP clearly recognizes the importance of infrastructure to national power. There are currently more new coal plants *under construction* in China than are in operation in the entire United States. China's infrastructure push dwarfs U.S. infrastructure spending, with one recent push channeling \$2.3 trillion into mostly energy and manufacturing.<sup>243</sup> Since 2008, China has built around 26,000 miles of dedicated high-speed railways, a figure that could nearly double by 2035. Meanwhile, the United States has just 375 miles of railway track approved for high-speed operation in the entire country.

In China, the struggle is to protect individuals and communities from the heavy hand of the state. But China has discovered that by mollifying significant pockets of local opposition, it can vigorously advance national policy priorities. Compared with the United States, where national priorities are usually paralyzed by small pockets of local opposition, that is a dangerous competitive advantage.

## **International Permitting Reform Efforts**

The G7 Summit of 2016, which met at Ise-Shima in Japan, issued an important statement regarding infrastructure delivery. The G7 Ise-Shima Principles for Promoting Quality Infrastructure Investment stated in Principle 5:

Enhancing effective resource mobilization including through PPP Quality infrastructure investment should effectively mobilize resources including from the private sector through PPP and other forms of innovative financing, including through MDBs. To this end, joint efforts among stakeholders including host country governments to strengthen the enabling investment environment at national and sub-national government levels, as well as to enhance due process and transparency are essential.<sup>244</sup>

This was reinforced by the Leaders statement at the G20 Hangzhou Summit in

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243 Hancock, Tom, "China's \$2.3 Trillion Infrastructure Plan Puts America's to Shame," Bloomberg, August 6, 2022, <https://www.bloomberg.com/news/articles/2022-04-06/china-infrastructure-push-dwarfs-u-s-spending>.

244 G7 Ise-Shima Principles for Promoting Quality Infrastructure Investment, June 2016. MDBs are Multilateral Development Banks.



September 2016 that affirmed the concept of quality infrastructure investment.<sup>245</sup> The Leaders recognized the importance of investing in infrastructure projects that prioritize quality, sustainability, and long-term benefits. They emphasized the need for infrastructure development that adheres to high standards of environmental, social, and governance considerations, and highlighted the importance of transparent and accountable project governance.

The G20 formed the Global Infrastructure Hub,<sup>246</sup> a not-for-profit non-governmental organization (NGO) that advances the delivery of sustainable, resilient, and inclusive infrastructure. The Global Infrastructure Hub's mission is to collaborate with the public and private sectors, acting as a knowledge sharing hub, to produce data, insights, knowledge tools, and programs that inform both policy and infrastructure delivery. The organization collects valuable data on country-level infrastructure policies, which it publishes on a period basis, and maintains "country pages" that summarize country-level infrastructure policies, initiatives, and projects.

The governments of the world's leading economies are increasingly committed to international cooperation and collaboration in promoting infrastructure investment. They increasingly recognize the importance of sharing of best practices, knowledge, and experiences among countries to make infrastructure governance more effective and efficient. The United States should build on such efforts as momentum for permitting reform continues to build.

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245 The OECD approach to sustainable/quality infrastructure is comprehensive and incorporates features and concepts such as usefulness, openness, efficiency, stability, financial sustainability, integrity, governance, transparency, resilience, connectivity, environmental, social and governance (ESG) objectives, and sustainable development goals (SDGs). It is also fully consistent with G7, G20, and APEC approaches including the G7 Ise-Shima Principles for Promoting Quality Infrastructure Investment (2016), the G20 Roadmap to Infrastructure as an Asset Class (2018), the G20 2016 Leaders declaration, and the G20 Principles for Quality Infrastructure Investment (2019).

246 See, <https://www.gihub.org/about/about>.



# 6

## Best Practices and Recommendations

*In the years ahead many of the best ideas on permitting reform will come from abroad.*

The present survey uncovered multiple examples of innovative ideas for streamlining the permitting process for major infrastructure projects. In many cases, the main driver of these innovations has been concern over climate change. Hence, many of the “best practices” highlighted in this report reflect a conscious policy choice to favor renewable energy sources over fossil sources.

When the government picks winners and losers in the private economy, the result is invariably a misallocation of resources, with the attendant social losses. The most efficient regulations are those that preserve a level playing field among competitors, and the energy sector is no exception. That said, many regulatory innovations emerge as narrowly tailored solutions for the problems of specific sectors, reflecting a general pattern of innovative reforms being introduced where they are perceived to be most urgently needed. In the U.S., for example, many innovative ideas have arisen within the jurisdiction of the Department of Transportation, where permitting times are nearly twice the national average for infrastructure

generally.<sup>247</sup> This report commends such “best practices” to policymakers with the strong recommendation that they be adopted generally for all classes of infrastructure.

Many of the “best practices” cited in this report have something else in common: They seek a seamless integration of authorities and processes that are distributed among different levels of government. The most salient of these problems arise in the context of federalism. Germany, for example, is a federal republic that is also beholden to the regulations and directives of the European Union, which erects yet another level of federalism on top of the national one. The regulation of major infrastructure projects is consequently the source of serious coordination problems.

The solution, as the experience of the United States has shown, is a combination of subsidiarity and federal supremacy: Let the lowest level of government that can effectively regulate an issue regulate it, while ensuring that the top-level authority has the power to advance national policy priorities, impose uniform rules where necessary, and limit the propensity of local governments to create anti-competitive cartels and monopolies for favored constituents.<sup>248</sup>

### *One-Stop Shop: Single Agency and Single Application Process for Major Infrastructure Projects*

Major infrastructure projects should have access to a single “one-stop-shop” agency and single application process to obtain all needed permits under a single environmental review document. The “one-stop-shop” can either grant authorizations or act as a coordinator to facilitate the interagency process with directive authority. The Permitting Council created by FAST-41 could be the foundation for such an agency. The EU’s REPowerEU Recommendations include a recommendation that Member States establish one-stop shops for granting permits. Notable examples of the “one-stop shop” model include the Danish Energy Agency and Danish Environmental Portal;<sup>249</sup> the Netherlands under the consolidated Environment and Planning Act coming into force in January 2024;<sup>250</sup> Australia’s

247 For example, several general expedited procedures have been adopted from “MAP-21”, the Moving Ahead for Progress in the 21st Century Act, Pub. L. No. 112-141, (2012).

248 For more on the important relationship of subsidiarity, competition, and national policy priorities, see Richard A. Epstein and Michael S. Greve, eds., *Federal Preemption: States’ Powers, National Interests*, American Enterprise Institute (2007), and Michael S. Greve, *Real Federalism: Why It Matters, How It Could Happen*, American Enterprise Institute (1999).

249 See notes 161 et seq. and accompanying text.

250 See notes 174 et seq. and accompanying text.

Department of Climate Change, Energy, the Environment, and Water;<sup>251</sup> and the New Zealand EPA.<sup>252</sup> In Norway, the NVE serves as “one-stop shop” for hydro-power projects.<sup>253</sup>

### *Centralized data collection on infrastructure projects*

A central data collection platform that longitudinally tracks projects from pre-application to completion or abandonment, on a sector-wide basis, could vastly improve access to financing. The proposed information platform could target all parties involved, including authorities, project developers, and external stakeholders. In the U.S., such information exists only for EISs, which comprise a tiny fraction of infrastructure projects.<sup>254</sup> A comprehensive database should cover all major infrastructure projects, federal and state. It should be designed in such a way as to serve as a common basis for official environmental assessment and authorization decisions, private investment decisions, and public comment. The data should be detailed enough to allow private companies to provide “predictive project analytics” to potential developers and investors.<sup>255</sup> Notable examples include the EU’s periodic report on EIAs completed across Member States.<sup>256</sup>

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251 See notes 196 et seq. and accompanying text.

252 See notes 212 et seq. and accompanying text.

253 See notes 191 et seq. and accompanying text.

254 The U.S. Environmental Protection Agency serves as “last stop” in the NEPA process before publication of the Final EIS and keeps a public database of its EIS reviews. Furthermore, the publication of every EIS is accompanied by a “notice of availability” of the EIS that is published in the Federal Register. While these resources allow for tracking many major infrastructure projects as they go through the process of authorization and environmental review, only a fraction of large infrastructure projects require federal permits, and only a fraction of those require full EISs. While only 70 or 80 EISs are published every year, there are hundreds or thousands of environmental assessments, and no central repository to keep track of them. The U.S. should establish a central repository for all NEPA determinations, including EAs and infrastructure projects permitted through categorical exclusions, as well as EISs.

255 See, e.g., Deloitte, “Predictive Project Analytics: Indispensable tooling for large infrastructure projects,” (machine translated) <https://www2.deloitte.com/nl/nl/pages/publieke-sector/articles/predictive-project-analytics-is-onmisbare-tooling-voor-grote-infrastructuure-projecten.html>.

256 See notes 134 et seq. and accompanying text; see also, EU’s Collection of information and data to support the impact assessment study of the review of the EIA directive (2010), Sept. 15, 2022, <https://circabc.europa.eu/ui/group/3b48eff1-b955-423f-9086-0d85ad1c5879/library/27a69f55-bf82-4e47-8700-1e6305abbb18/details>.

### *Central Online Database and Maps, Including Administrative Restrictions and Other Relevant Parameters*

A key element of good practice recommendations is the introduction of an on-line database which can ideally be accessed as a set of GIS maps. These would more easily allow project developers to assess how suitable specific areas and sites are for their project and what restrictions they must anticipate. The maps should include information on administrative restrictions, existing environmental assessments and data, aviation and military interests, and grid availability. The introduction of such a GIS map would allow planners to focus on promising areas. This would lead to higher efficiency of planning procedures and accordingly lower cost of infrastructure deployment.

### *Planning, Environmental Preassessment, and Programmatic Environmental Reviews*

Authorities can undertake environmental scoping and gather information on possible environmental impacts in advance of permit applications. Existing information could be widely shared and help point potential developers and investors toward the projects most likely to be expeditiously approved. Denmark is a standout in integration of regional planning and Strategic Environmental Assessments.<sup>257</sup>

### *Recognize That Major Infrastructure Projects Are in the Overriding National Interest*

Too often in the United States, special interests and local interests are prioritized over the national interest. This may be seen not just in agency processes but also in how federal courts deal with such things as petitions for injunctions to stop construction on a project. Property rights should always be respected, but federal courts and federal agencies should be required to take account of the overriding public interest in efficient agency action on permit applications and environmental reviews of major infrastructure projects. The Infrastructure Australia program<sup>258</sup> and Germany's National Regulatory Council are standouts in this respect.<sup>259</sup>

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257 See notes 157 et seq. and accompanying text.

258 See notes 201 et seq. and accompanying text.

259 See notes 142 et seq. and accompanying text.

### *Litigation Reform*

Germany has enacted perhaps the most sweeping litigation reform of all major economies aimed at expediting legal challenges to permits and environmental impact assessments for infrastructure projects.<sup>260</sup> The law allows courts to overlook defects in the contested administrative act, such as procedural or formal violations, if they are likely to be rectified in the near future. Measures for enforcing the law must consider the projects' significance to the "overriding public interest." The reform also prioritizes challenges to infrastructure projects in the schedule of administrative courts, requiring prompt hearings and proposing amicable settlements to accelerate the resolution of cases.

### *Ensure That Agencies Have the Resources to Expeditiously Process Permit Applications and Environmental Reviews*

Pouring more resources into an inefficient system is not a lasting solution and does not serve the public interest. The first step towards ensuring that agencies have sufficient resources to process permit applications quickly is to make the process itself far more efficient. Once this has been accomplished, however, it is important to make sure that agencies have the institutional capacity to keep the system running efficiently. Agency staffing needs should be assessed on a regular basis to ensure that agencies have sufficient staff to process the volume of permit applications and environmental reviews expeditiously. Furthermore, responsible staff must be trained to have a sufficient level of expertise to evaluate permit applications and related environmental reviews.

### *Cooperative Monitoring Mechanism for the Identification and Removal of Regulatory Barriers*

Congress should create a process for identifying regulatory barriers to infrastructure deployment and develop appropriate solutions.

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<sup>260</sup> See notes 154 et seq. and accompanying text.





# Conclusion

Infrastructure is part of the bedrock of economic prosperity. Hence the delays, costs, and uncertainties of the permitting and environmental review process leave virtually everyone worse off. The lack of data about permitting risks makes the problem worse, undermining infrastructure investments and resulting in an infrastructure deficit, which restricts supply and raises prices across the economy. To address these challenges, comprehensive permitting reform is urgently needed, prioritizing efficiency to ensure competitive advantage and sustainable development.

It is evident that where local priorities align with national objectives, countries find themselves in a relatively favorable position. However, in cases where local interests supersede national concerns, such as in the United States, the effort to modernize infrastructure must fight strong headwinds.

Presidential administrations from both parties have attempted to streamline the permitting process. However, the fundamental inefficiencies stem from structural issues deeply entrenched in existing statutes. As a result, presidential efforts have only tinkered at the margins of a problem that only Congress can solve.

Within Congress, the debate on permitting reform has been disjointed and slow-moving. Many proposed legislative reforms consist of superficially attractive ideas intertwined with extensively detailed provisions driven by narrow special interest agendas. Regrettably, few proposals have prioritized advancing the national interest in permitting reform. The current discourse surrounding permitting reform in the United States is predominantly dominated by parochial interest group client politics, with limited representation of voices advocating for the national interest. This skewed focus hampers meaningful progress and inhibits the comprehensive reform required to address the inefficiencies in the permitting process.

To remain competitive in the global arena and effectively address the challenges posed by climate change and other environmental risks, the United States must prioritize permitting reform. This necessitates a shift towards a more streamlined, efficient, and nationally-oriented approach to permitting that aligns with the broader objectives of delivering the modern infrastructure that American families and communities deserve.





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