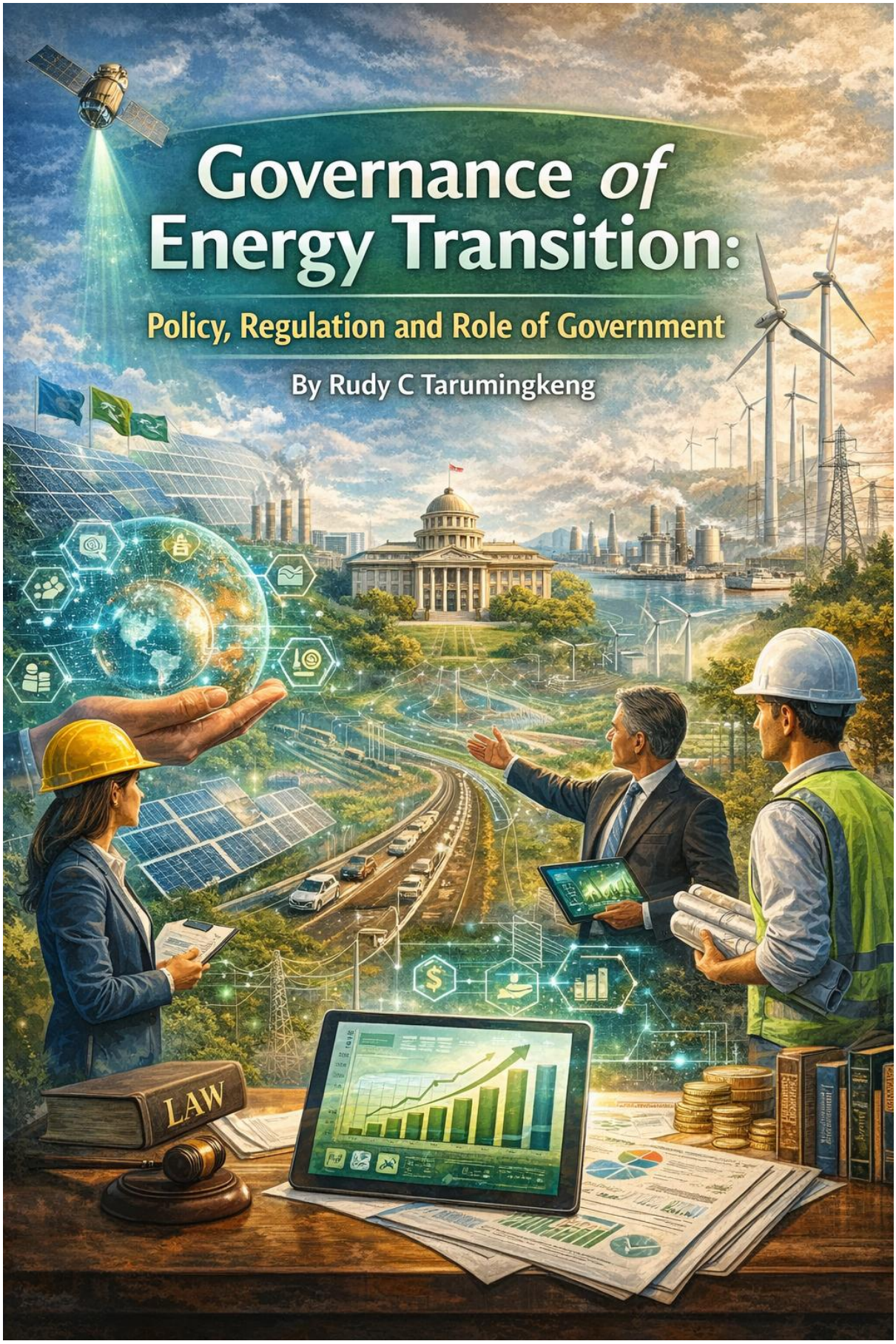
Governance of Energy Transition:
Policy, Regulation and Role of Government
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GOVERNANCE OF ENERGY TRANSITION: POLICY, REGULATION AND ROLE OF GOVERNMENT

Introduction

The energy transition is no longer a narrow sectoral issue about replacing one set of fuels with another. It is now a broad governance challenge involving industrial policy, public finance, market design, infrastructure planning, regulation, social protection, skills, technology, trade, and national security. The world is moving toward cleaner energy, but progress remains uneven, institutionally fragile, and politically contested. The International Energy Agency's 2024 SDG 7 report states that the current pace is still insufficient to achieve any of the 2030 SDG 7 targets, while macroeconomic instability, inflation, debt stress, supply-chain bottlenecks, and high material prices continue to impede progress. (IEA)

This makes governance central. Energy transition is not simply a technological process driven by falling costs of solar panels, batteries, or electric vehicles. It depends on whether states can set direction, build institutional credibility, align regulations with long-term goals, mobilize investment, coordinate across ministries and levels of government, and maintain social legitimacy through the transition. OECD's 2025 framework on governing for the green transition argues that governments need a comprehensive transformation of institutional, policy, and regulatory arrangements so they can design, deliver, and execute climate policies consistent with Paris Agreement and net-zero

goals. The same report emphasizes three essentials: clear institutional arrangements and direction-setting, effective policy capability, and stakeholder engagement that builds consensus. (OECD)

The energy transition is also taking place under conditions of intensified geopolitical tension. The IEA's 2025 review of Germany notes that government action is pivotal to ensuring secure and sustainable energy transitions, and that recent energy crises exposed the risks of fossil-fuel dependence. This underlines an important point: governance of energy transition is not only about decarbonization, but also about energy security, affordability, competitiveness, and resilience. (IEA)

In policy terms, the transition now has measurable global milestones. IRENA's 2024 World Energy Transitions Outlook highlights tripling installed renewable power capacity and doubling the rate of energy-efficiency improvement by 2030 as crucial milestones. Yet it also warns that achieving these goals requires overcoming structural and systemic barriers, modernizing and expanding grids, creating regulatory frameworks and market designs fit for high-renewables systems, and building institutional and human capacities. (IRENA)

This essay argues that the energy transition succeeds or fails less on abstract ambition than on governance quality. Policy matters because it sets direction and incentives. Regulation matters because it structures markets and investment behavior. Government matters because only the state can coordinate public goals, correct market failures, manage distributional conflict, and provide the long-term credibility needed for capital-intensive transformation. The discussion below explains why governance matters, what kinds of policy and regulation are required, how the role of government is changing, and what principles should guide effective transition governance.

The Energy Transition as a Governance Problem

At first glance, energy transition may appear to be a technical matter: build more renewables, electrify more end uses, improve energy efficiency, and retire high-emission assets. In practice, however, every one of those steps raises governance questions. Who pays for grids? How are tariffs designed? Which authority approves transmission lines? How are stranded assets handled? How are vulnerable households protected from higher short-term costs? Which regions receive industrial support? How are coal-dependent workers retrained? How are private investors given confidence without overburdening public budgets?

This complexity is why purely market-led narratives are inadequate. Markets can reveal prices and allocate some investment efficiently, but they do not automatically internalize carbon externalities, guarantee universal access, coordinate network expansion, or ensure a just transition. OECD's work on regulators in the green transition notes that traditional economic regulation in network sectors has often focused narrowly on pricing, investment, and market efficiency from a classic market-failure perspective, without integrating environmental externalities to the degree required by present sustainability goals. (OECD)

The transition is therefore best understood as a problem of governing structural change. It requires governments to steer a long-horizon transformation while responding to short-term political pressures around affordability and reliability. It requires balancing industrial strategy and competition policy, climate ambition and social protection, public investment and fiscal prudence, centralized coordination and local participation. In short, energy transition is not just an economic shift; it is a statecraft challenge.

Why Policy Is Foundational

Policy provides the strategic architecture of transition. Without a clear policy framework, investors face uncertainty, regulators lack direction,

infrastructure planning becomes fragmented, and citizens struggle to understand why change is necessary. OECD stresses that clear policies and regulations provide the foundation for long-term planning and help align budgeting, procurement, investment decision-making, and operational resources with climate objectives. (OECD)

Effective transition policy normally includes at least five interrelated elements. First, it sets long-term targets, such as renewable energy shares, emissions reduction pathways, efficiency objectives, clean-cooking access, or phase-down schedules for high-emission technologies. Second, it establishes credible implementation mechanisms, not merely aspirational goals. Third, it aligns national development and energy planning rather than treating climate policy as a separate agenda. IRENA explicitly notes that better integration between energy planning and climate strategy is needed in many countries to reduce uncertainty for stakeholders and investment decisions. (IRENA)

Fourth, policy must sequence reforms. The transition cannot be managed by announcing end-state ambitions without attending to institutional readiness. Grid expansion, market reform, flexibility mechanisms, permitting systems, industrial capability, and labor-market transition need to evolve in a coordinated order. Fifth, policy must be adaptive. Because technology costs, geopolitical risks, and financing conditions change, policy frameworks must allow revision without destroying investor confidence.

The energy-efficiency dimension illustrates this well. The IEA's 2025 Energy Efficiency Policy Toolkit emphasizes that effective policy packages combine regulation, information, and incentives, and it outlines ten strategic principles including public-sector leadership, finance mobilization, behavioral insight, and digital innovation. That is significant

because it shows that policy is not a single instrument but a structured mix of tools aimed at changing both supply and demand. (IEA)

Regulation as the Operating System of Transition

If policy sets the destination, regulation functions as the operating system. Regulation determines how markets actually work, how networks are priced, how generators connect, how tariffs are structured, how balancing and flexibility are rewarded, how standards are enforced, and how consumers are protected.

In traditional energy systems dominated by centralized fossil-fuel generation, regulatory models evolved around cost recovery, dispatchability, and stable monopoly or semi-competitive structures. High-renewables systems challenge these assumptions. Variable renewable energy requires greater flexibility, faster interconnection, storage, demand response, improved forecasting, and different investment signals. IRENA's 2024 outlook states that outdated power-sector regulatory structures can obstruct the deployment of flexibility solutions, and that policymakers must update electricity market structures and rules to enable greater flexibility and electrification. (IRENA)

This is why regulatory design is now central to transition outcomes. A country may have strong renewable targets, but if grid codes are outdated, tariff systems discourage storage, permitting is slow, and interconnection procedures are opaque, investment stalls. Similarly, if building codes, appliance standards, and vehicle regulations are weak, energy demand becomes harder to decarbonize. IRENA's 2024 survey of NDC implementation found that improving policies and regulations was widely seen as necessary by participating members, with frequent emphasis on energy-efficiency standards, storage policies, carbon-pricing instruments, and electric-mobility regulations. (IRENA)

OECD's 2024 report on economic regulators also highlights an institutional gap: based on survey results covering 184 regulatory authorities in 42 countries, 36% of regulators had no objectives relating to environmental sustainability of their sector, while 22% were guided only by broad public-sector objectives rather than sector-specific sustainability mandates. That matters because regulators cannot support transition effectively if their statutory objectives remain tied only to price or competition in narrow terms. (OECD)

Thus, transition governance increasingly requires "green regulation," meaning regulation that still protects efficiency and consumers but also explicitly incorporates decarbonization, resilience, innovation, and environmental performance.

The Strategic Role of Government

The role of government in energy transition is broader than rule-making. Government acts as strategist, legislator, regulator, financier, market shaper, owner of assets, convenor of stakeholders, and guarantor of social legitimacy. The IEA notes that government action is pivotal because energy policy is critical not only for the energy sector but also for environmental, economic, and social goals. (IEA)

As strategist, government defines national direction. It decides whether the transition will be led primarily by renewables, nuclear, efficiency, hydrogen, bioenergy, carbon capture, grid regionalization, or some combination. As legislator, it passes framework laws that stabilize expectations. As regulator, it oversees system operation and market fairness. As financier, it supports infrastructure and de-risks early-stage technologies. As owner, it may reform state-owned utilities and transmission companies. As social actor, it designs compensation, labor-market support, and place-based transition programs. As diplomatic actor, it negotiates international finance, technology partnerships, and critical-mineral arrangements.

This combination is especially important in developing and emerging economies, where markets often remain incomplete, capital costs are high, utilities are financially constrained, and access challenges coexist with decarbonization demands. The World Bank's Accelerating Sustainable Energy Transition Program explicitly frames policy reform, institutional strengthening, utility performance, and private-sector enabling conditions as core pillars of transition support. It also notes that, in Indonesia, policy work under the Just Energy Transition Partnership has focused on renewable scale-up, coal phase-down, and improving the financial viability of the state utility PLN. (World Bank)

In other words, government is not an external referee standing outside the market. In the energy transition, government is often a co-architect of the market itself.

Governing the Trade-offs: Security, Affordability, Sustainability

One reason transition governance is difficult is that governments must manage three pressures at once: security, affordability, and sustainability. These goals often reinforce one another over the long term, but they can conflict in the short term. For example, accelerated renewable deployment can reduce import dependence and emissions, yet grid bottlenecks or rushed cost recovery can create affordability concerns. Fossil-fuel subsidies may ease political pressure temporarily, but they distort long-term incentives and strain budgets.

The post-2022 energy crisis made this triad impossible to ignore. The IEA's Germany review notes that the energy crisis reinforced the urgency of transition by revealing dependence risks associated with fossil fuels. This demonstrates that clean-energy governance cannot be reduced to climate policy alone; it must be embedded in broader national resilience strategy. (IEA)

Good governance does not eliminate trade-offs, but it makes them visible and manageable. Regulatory impact assessment, which OECD highlights as a useful tool, can reveal trade-offs and help identify solutions with the greatest net benefit. Likewise, green budgeting and climate-sensitive public-finance tools help governments align fiscal choices with transition goals. (OECD)

An effective government therefore does not ask only, "How do we decarbonize fast?" It also asks, "How do we maintain reliability, avoid regressive burden-shifting, and preserve industrial competitiveness while decarbonizing?"

State Capacity and Institutional Coordination

Ambitious targets without institutional coordination often fail. Energy transition cuts across ministries responsible for energy, finance, industry, labor, environment, transport, housing, mining, trade, and regional development. It also spans national, provincial, municipal, and regulatory authorities. Coordination failures can delay projects, produce inconsistent incentives, and weaken credibility.

OECD's 2025 governance framework places strong emphasis on the "centre of government" and on formal mechanisms that mainstream climate and resilience objectives across sectors. It argues that strong institutional coordination and direction-setting are foundational to effective green public governance. (OECD)

This is particularly important because infrastructure systems are interdependent. Electrification of transport and heating affects grid planning. Renewable deployment interacts with land-use regulation and environmental approvals. Hydrogen strategies involve industry, ports, power markets, and trade policy. If ministries operate in silos, the transition becomes slower and more expensive.

State capacity also includes technical competence. Governments need economists, engineers, planners, procurement specialists, social-policy experts, data analysts, and legal drafters who understand transition dynamics. IRENA stresses that institutional and human resource capacities are required to support the transition, alongside infrastructure and regulatory modernization. (IRENA)

Therefore, governance reform is not only about changing laws. It is about building administrative capability to use those laws effectively.

Public Finance, Investment, and the Enabling Environment

The transition is capital-intensive. Large amounts of investment are needed for generation, grids, storage, efficiency, electrification, clean cooking, and industrial decarbonization. IRENA's 2024 outlook associates the 1.5°C pathway with the need for policy support, investment at scale, and rapid project development, while also identifying major investment needs in renewable power, grids, and flexibility. (IRENA)

Governance matters here because the investment challenge is not purely about total global capital availability. Much of it is about risk allocation and policy credibility. Where policy changes abruptly, utilities are financially weak, tariff regimes are unclear, or permitting takes too long, capital becomes expensive. Conversely, stable governance lowers financing costs.

The World Bank's sustainable energy transition program stresses that private capital mobilization will be critical, but also notes that little current investment in some regions supports the transition because enabling environments remain weak. The program therefore emphasizes policy reform, de-risking, utility reform, and supportive institutional frameworks. (World Bank)

This suggests a broader lesson: the role of government is not to replace private investment in most areas, but to organize the conditions under

which private investment becomes viable and socially useful. That can include auctions, contracts for difference, guarantees, public development banks, concessional finance, taxonomy rules, and transmission planning. But these tools only work if governance is coherent.

Utilities, State-Owned Enterprises, and Transition Governance

In many countries, state-owned utilities remain central actors. Even where private generation has expanded, public entities often control transmission, distribution, dispatch, and retail structures. Their financial health, governance quality, and investment discipline can determine the pace of transition.

Weak utilities can become bottlenecks. If they lack cost recovery, face political tariff suppression, or have poor procurement practices, they may delay grid upgrades, resist renewable integration, or accumulate arrears that scare investors. The World Bank explicitly links energy-transition reform in countries such as Indonesia and Viet Nam with improving utility performance and financial viability. (World Bank)

This means transition governance must include public-enterprise reform. Utilities need clearer mandates, stronger governance, and pricing frameworks that protect vulnerable users while ensuring operational sustainability. Otherwise, governments may set ambitious decarbonization goals that cannot be operationalized by the very institutions expected to deliver them.

The Just Transition and Political Legitimacy

No energy transition can be durable if it is perceived as socially unjust. That is why governance must address distributional effects. Coal-dependent regions, low-income households, informal workers, and energy-intensive industries do not experience transition in the same way as investors or urban middle classes.

Although decarbonization can create large employment opportunities, transition losses can be geographically concentrated and politically explosive. IRENA's recent work on just transition emphasizes governance, investment, and innovation as collective-action needs in emerging markets and developing economies, and highlights the importance of institutional capacity and social alignment. (IRENA)

A just transition does not simply mean compensation payments. It means designing policies that anticipate who bears costs, who gains, when those gains arrive, and how transitional burdens are distributed. It involves labor-market policy, regional redevelopment, retraining, targeted cash support, tariff design, and stakeholder participation. It also involves procedural justice: people are more likely to accept change when they believe decision-making is transparent and inclusive.

This is one reason stakeholder engagement is so central in OECD's governance framework. Building consensus is not a rhetorical add-on; it is part of implementation capacity. (OECD)

International Governance and the Global Dimension

The energy transition is national in implementation but international in context. Technology supply chains, critical minerals, investment flows, interconnection, carbon rules, and climate finance all cross borders. As a result, transition governance increasingly has a diplomatic dimension.

The COP28 outcome gave renewed visibility to the goals of tripling renewables and doubling energy-efficiency improvement by 2030. IRENA notes that more than 130 countries endorsed this direction, but also warns that current NDC commitments are still less than half of what would be required to triple renewable power capacity. (IRENA)

International governance matters in at least four ways. First, it affects finance, especially for lower-income countries facing high capital costs. Second, it affects technology transfer and standards. Third, it affects

cross-border electricity trade and regional integration. Fourth, it affects resource geopolitics, especially around critical minerals and manufacturing concentration.

Governments therefore need transition strategies that are not only domestically coherent but internationally positioned. Energy transition governance today includes negotiation, alliance-building, standard-setting, and institutional cooperation.

Access, Inclusion, and Developmental Governance

The energy transition cannot be governed responsibly if it neglects energy access. IRENA's 2024 outlook states that around 685 million people still lack access to electricity and 2.1 billion still rely on polluting fuels and technologies for cooking, with the world off track to achieve universal access by 2030. The SDG 7 report similarly warns that current progress is inadequate to meet 2030 goals. (IRENA)

This has major governance implications. In many developing countries, the transition is dual: they must decarbonize where possible while also expanding access and affordability. Renewable energy can help by enabling distributed systems, mini-grids, and off-grid solutions. But these still require governance: licensing rules, tariff frameworks, service standards, subsidy targeting, and integration with broader development planning.

The World Bank's RISE framework is useful here because it tracks policy and regulatory support for sustainable energy across access, clean cooking, renewable energy, and efficiency, explicitly treating governance quality as a measurable variable rather than an abstract principle. (Open Knowledge Portal)

Thus, the role of government is not only to decarbonize wealthy consumers and industrial systems. It is also to ensure that the transition expands inclusion rather than deepening energy inequality.

Industrial Policy and the New Developmental State

A defining feature of the current transition is the return of industrial policy. Governments are no longer merely correcting market failures at the margins; many are actively shaping domestic manufacturing, supply chains, innovation ecosystems, and strategic industries linked to batteries, solar, wind, hydrogen, heat pumps, and grid equipment.

This raises difficult governance questions. How much support should be targeted? How should local-content ambitions be balanced against cost and trade rules? When does strategic support become inefficient protectionism? How can industrial policy promote resilience without fragmenting the global transition?

Governance here requires discipline. Industrial policy should be transparent, time-bound where appropriate, linked to learning and competitiveness, and coordinated with energy-system needs. Otherwise, governments may subsidize politically attractive technologies that do not fit infrastructure realities or comparative advantage.

The key point is that industrial policy is not separate from energy policy anymore. It has become one of the ways governments govern transition itself.

Regulatory Independence and Democratic Accountability

Another tension in transition governance concerns the relationship between regulatory independence and democratic control. Independent regulators are often valued because they create credibility, reduce political interference, and support investment stability. Yet the energy transition involves distributional choices and strategic direction that cannot be delegated entirely to technocratic bodies.

OECD's work on economic regulators suggests that regulators remain important but often underused in environmental governance, and that their mandates may need revision to reflect transition goals. (OECD)

A good governance model does not abolish independence, but clarifies roles. Elected governments set strategic goals, pass laws, and define public priorities. Regulators implement within those mandates using transparent processes, technical judgment, and due process. Courts and audit institutions provide oversight. Civil society and stakeholders contribute scrutiny. This layered system helps balance long-term credibility with democratic legitimacy.

Data, Monitoring, and Adaptive Governance

Because the transition is dynamic, governance must be data-rich. Governments need real-time or near-real-time information on energy demand, grid congestion, outage risks, emissions, investment pipelines, permitting delays, public spending, affordability impacts, employment transitions, and infrastructure readiness.

OECD points to monitoring progress as an important part of green governance, while IRENA and the World Bank increasingly emphasize data systems and centralized databases that support planning, including GIS and social data. (OECD)

Adaptive governance uses such information not merely for reporting but for correction. If renewable deployment outpaces transmission expansion, the state must respond with planning reform. If efficiency programs underperform, incentive design may need adjustment. If rural households remain excluded from clean cooking, targeted subsidy structures may need revision.

In this sense, good energy-transition governance behaves like a learning system: it sets direction, measures results, identifies bottlenecks, and revises implementation without losing credibility.

Common Governance Failures

Many transition failures are not failures of ambition but failures of governance. One common failure is policy volatility: sudden reversals,

retroactive rule changes, or inconsistent signals that raise risk and slow investment. Another is fragmented authority: different ministries or local bodies pursuing inconsistent objectives. A third is infrastructure misalignment: renewable targets without transmission plans, or electrification targets without distribution-system upgrades. A fourth is weak utility reform. A fifth is social neglect: treating justice as a communications issue rather than a material policy issue.

A further failure is regulatory inertia. IRENA warns that current technological and regulatory contexts still constrain high shares of renewables, while OECD observes that many economic regulators still lack clear sustainability objectives. (IRENA)

These failures reinforce a central lesson: governance of energy transition is not just about having more policy, but about having the right institutions, mandates, sequencing, and implementation discipline.

Principles for Effective Energy Transition Governance

Several principles emerge from current international evidence.

First, credibility matters. Targets should be linked to institutions, budgets, and legal instruments. Second, coordination matters. Transition requires whole-of-government and often whole-of-society approaches. Third, regulation must evolve with technology. Rules designed for fossil-era systems cannot simply be stretched to govern high-renewables systems. Fourth, justice matters. The transition must be politically and socially bearable if it is to endure. Fifth, state capacity matters. Technical expertise, administrative quality, and data systems are not optional. Sixth, investment frameworks matter. De-risking and financial viability are governance questions, not merely financial ones. Seventh, international cooperation matters, particularly for access, finance, supply chains, and resilience.

These principles are consistent with the OECD emphasis on commitment, capability, and consensus; with IRENA's emphasis on regulatory modernization, infrastructure, and institutional capacity; with the IEA's emphasis on strategic policy packages; and with the World Bank's emphasis on enabling environments and institutional strengthening. (OECD)

Conclusion

The governance of energy transition is ultimately about how states manage structural change under conditions of uncertainty. Policy gives direction. Regulation gives operational effect. Government provides coordination, legitimacy, and the ability to act where markets alone cannot. The transition therefore depends not only on cheaper technologies or stronger climate rhetoric, but on the quality of institutions that convert goals into durable outcomes.

Recent international evidence is clear. The world is still off track on SDG 7, despite progress in several areas. Tripling renewables and doubling energy-efficiency improvement by 2030 require far stronger policy support, regulatory reform, infrastructure development, and institutional capacity. Many regulators still lack explicit sustainability mandates. Many developing countries still face weak enabling environments and high capital costs. Millions remain without electricity or clean cooking. (IEA)

This means the central question is no longer whether governments should intervene. They already do, and they must. The real question is how they should govern: with what degree of clarity, coherence, fairness, flexibility, and competence. The best transition governance does not treat policy, regulation, finance, and justice as separate domains. It integrates them into a credible public strategy.

In that sense, energy transition is a test of the modern state. It asks whether governments can do five things at once: plan long term, act

across sectors, regulate intelligently, protect the vulnerable, and mobilize investment without losing public trust. Countries that can do this will not only decarbonize more effectively. They will also build more resilient, competitive, and inclusive energy systems for the decades ahead.

Glossary

Affordability
The ability of households, firms, and public institutions to pay for energy services without undue financial hardship. In energy-transition governance, affordability matters because decarbonization policies can lose legitimacy if costs are shifted regressively onto consumers. OECD treats the green transition as a governance challenge that intersects with public trust, social resilience, and prosperity. (OECD)

Carbon pricing
A policy instrument that assigns a cost to greenhouse-gas emissions, usually through a carbon tax or an emissions trading system. Its governance significance lies in shaping incentives across the economy while requiring careful design to avoid unfair distributional effects and competitiveness concerns. OECD's recent work on better regulation for the green transition treats tools like this as part of a broader regulatory architecture. (OECD)

Centre of government
The core executive institutions that coordinate cross-ministerial policy, align priorities, and monitor implementation. In green-transition governance, the centre of government is important because energy

transition cuts across energy, finance, industry, labor, transport, and environment. OECD identifies strong institutional coordination and direction-setting as foundational for effective green governance. (OECD)

Decarbonization
The process of reducing carbon dioxide and other greenhouse-gas emissions from energy systems, industry, transport, buildings, and related sectors. In governance terms, decarbonization is not only a technical shift but also a matter of policy sequencing, regulatory reform, and institutional capacity. IRENA frames the global transition around concrete milestones such as tripling renewable power capacity and doubling the rate of energy-efficiency improvement by 2030. (IRENA)

Demand response
The adjustment of electricity consumption by users in response to price signals, system conditions, or incentives. It is increasingly important in high-renewables systems because it helps provide flexibility and system balance. The IEA's work on digital, demand-driven electricity networks links demand-side tools to affordability, renewable integration, and resilience. (IEA)

Economic regulator
A public authority that oversees pricing, market behavior, network access, service standards, or investment frameworks in regulated sectors such as electricity and gas. OECD finds that many regulators still lack explicit environmental-sustainability objectives, which can limit their contribution to the green transition. (OECD)

Electrification
The shift from direct fossil-fuel use toward electricity in sectors such as transport, heating, and industry. Electrification is a core transition pathway, but it requires governance support through grid planning, tariff reform, standards, and market design. IRENA stresses that electrification

must be matched by regulatory and infrastructure modernization. (IRENA)

Energy access
The availability of affordable, reliable, sustainable, and modern energy services. It remains a central development issue: the IEA reports that 750 million people worldwide still lacked electricity access in 2023. Transition governance must therefore balance decarbonization with inclusion. (IEA)

Energy efficiency
The use of less energy to deliver the same or better service. In governance terms, energy efficiency relies on policy packages involving standards, incentives, public-sector leadership, finance, and behavior change. IRENA identifies doubling the rate of energy-efficiency improvement by 2030 as a key global milestone. (IRENA)

Energy security
The uninterrupted availability of energy sources at an affordable price. The IEA's recent country analysis emphasizes that secure and sustainable transitions are linked, especially after recent energy crises exposed the vulnerabilities of fossil-fuel dependence. (IEA)

Energy transition
The long-term restructuring of energy systems away from high-emission fossil fuels toward cleaner, more efficient, and more resilient energy sources and uses. It includes not only technology substitution but also governance reform, institutional coordination, infrastructure expansion, and social adjustment. OECD and IRENA both frame the transition as a whole-of-government challenge. (OECD)

Enabling environment
The policy, legal, regulatory, financial, and institutional conditions that make investment and implementation possible. In transition governance, an enabling environment lowers risk, strengthens credibility, and

mobilizes capital. The World Bank's transition-support framework emphasizes policy reform and institutional strengthening to create such conditions. (OECD)

Flexibility
The ability of an energy system to respond to variability and uncertainty in supply and demand. It can come from storage, demand response, interconnection, flexible generation, digital controls, and market design. IRENA notes that current regulatory structures often obstruct the deployment of flexibility solutions in high-renewables systems. (IRENA)

Green budgeting
The integration of climate and environmental objectives into public budgeting and fiscal planning. Its role in energy-transition governance is to align public spending with long-term transition goals rather than treating climate action as separate from core state finance. OECD includes such alignment within wider green-governance reforms. (OECD)

Grid modernization
Upgrading transmission and distribution networks so they can accommodate variable renewables, digital monitoring, storage, electric vehicles, and two-way power flows. IRENA identifies grid expansion and modernization as essential to any credible transition pathway. (IRENA)

Industrial policy
Government action to shape industrial structure, innovation, supply chains, and strategic sectors. In the energy transition, industrial policy is increasingly used to support clean manufacturing, critical technologies, and domestic value creation. Its success depends on governance discipline, transparency, and alignment with system needs. OECD's green-governance work supports this broader state-shaping role. (OECD)

Just transition
A transition that manages the social and regional consequences of decarbonization fairly, especially for workers, low-income households, and fossil-fuel-dependent communities. Governance for a just transition includes compensation, retraining, regional development, and inclusive participation. OECD emphasizes stakeholder engagement and consensus-building as key to durable implementation. (OECD)

Market design
The rules governing how electricity and related services are priced, traded, dispatched, balanced, and compensated. In transition governance, market design must evolve so that high shares of renewables, storage, and flexibility can be integrated efficiently. IRENA links market reform directly to the success of decarbonization and electrification. (IRENA)

Net zero
A condition in which anthropogenic greenhouse-gas emissions are balanced by removals over a given period. In public governance, net-zero targets matter only when translated into policy, regulation, budgets, and implementation pathways. OECD's 2025 green-governance framework is explicitly oriented toward enabling net-zero-consistent public institutions. (OECD)

Policy credibility
The degree to which investors, citizens, and institutions believe that government commitments will be sustained over time. In energy transition, credibility affects financing costs, infrastructure planning, and the pace of private investment. Clear, stable regulation is therefore a governance asset. (OECD)

Regulatory impact assessment
A structured process for evaluating the likely effects of proposed regulation, including costs, benefits, trade-offs, and implementation

risks. OECD promotes it as a useful tool for managing the green transition because it helps policymakers surface trade-offs and improve rule design. (OECD)

Stakeholder engagement
The process of involving affected groups such as communities, firms, workers, civil society, and subnational governments in policy design and implementation. OECD treats this as central to building consensus and maintaining legitimacy during the green transition. (OECD)

State capacity
The ability of public institutions to plan, coordinate, regulate, finance, implement, and monitor complex change. Energy-transition governance depends heavily on state capacity because the transition spans multiple sectors, long time horizons, and politically contested trade-offs. OECD highlights institutional capability as one of the core pillars of successful green governance. (OECD)

Stranded assets
Assets that lose economic value prematurely because of policy, market, technological, or environmental change. In energy transition, coal plants, pipelines, and carbon-intensive industrial assets may become stranded. Their management is a governance issue because it affects utilities, investors, workers, and public budgets. IRENA's transition outlook situates these risks within broader structural adjustment needs. (IRENA)

Utility reform
Changes to the governance, finances, incentives, and operating models of utilities, especially where they remain state-owned or heavily regulated. Utility reform matters because financially weak or poorly governed utilities can obstruct renewable integration and grid investment. This is a recurring theme in international transition support programs. (OECD)

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