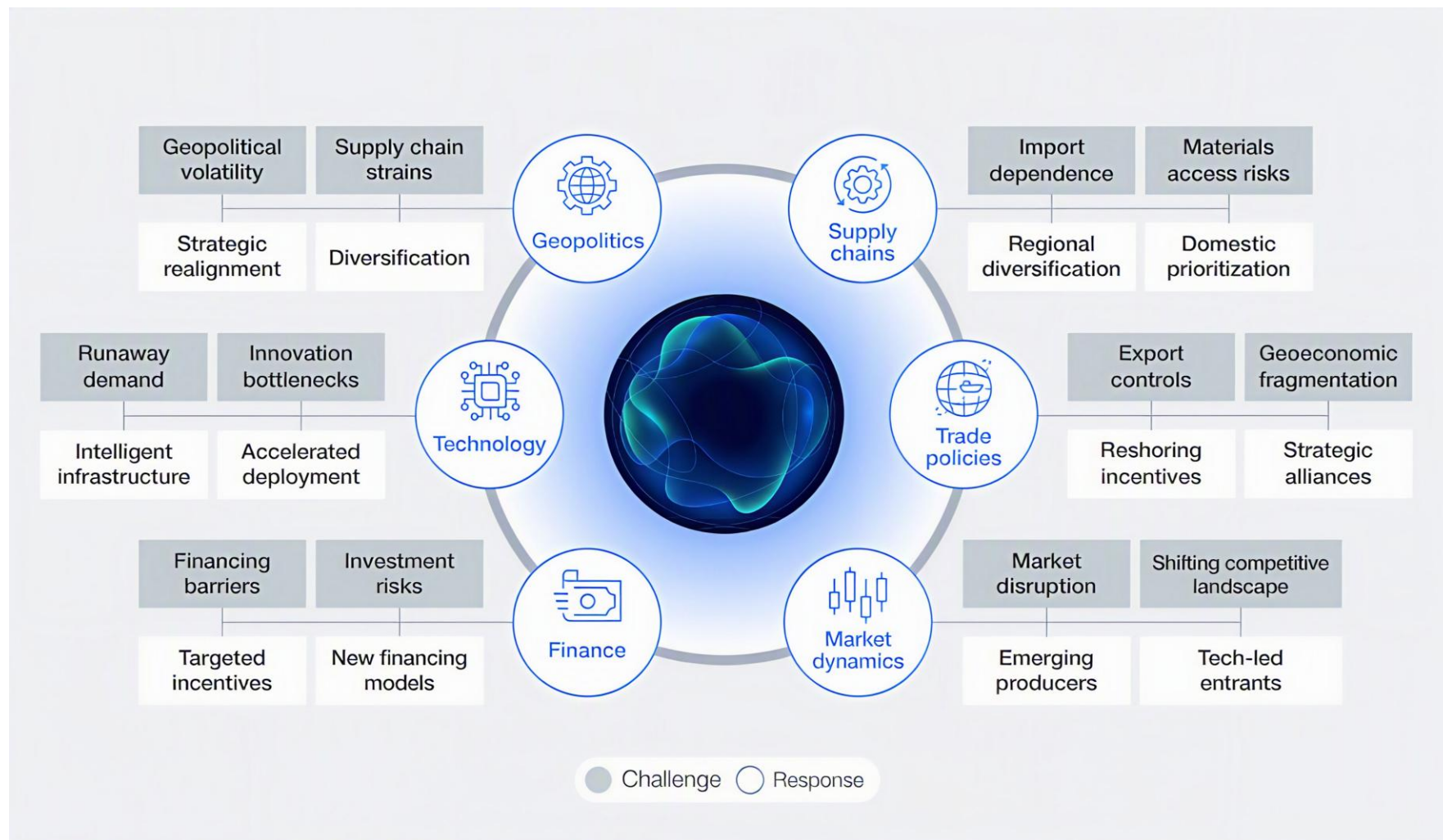




Navigating the Energy Transition

Aligning Vision. Accelerating Transformation. Leading with Purpose.

Strategic forces reshaping global energy systems



Strategic pillars of Energy reform | Best practice examples

Strategic pillar	Old paradigm	New paradigm	Geographic considerations	Best practice examples
Policy design	One-size-fits-all global policies	Context-aware policy design: region-specific energy strategies aligned with international goals, tailored to local capacities and industrial needs	Differentiated by industrial maturity – e.g. heavy industry hubs versus service economies (United Arab Emirates, Singapore)	Chile's <i>National Green Hydrogen Strategy</i> (2020): uses regional renewable strengths to design differentiated hydrogen hubs, targeting environmental safeguards, local jobs and exports ⁹⁴
Financing	Unequal capital access, market-led	Closing of the capital gap: blended finance, risk-sharing and international support mechanisms for emerging economies	Emerging economies (Africa, South Asia) facing highest capital costs	Sustainable Energy Fund for Africa (SEFA): provides blended capital and technical assistance for early-stage, high-risk clean energy projects across Sub-Saharan Africa ⁹⁵
Infrastructure	Centralized, uniform tech deployment	Localized innovation: context-specific infrastructure like decentralized grids, hydrogen hubs and AI tools adapted to national and regional conditions	Africa: decentralized grids; Europe: hydrogen hubs; Asia: AI-powered energy optimization	Denmark's energy islands: establishes artificial islands in the North Sea to centralize offshore wind generation, enabling local use, storage and cross-border clean energy exports ⁹⁶
Cooperation	Globalized trade and tech	Strategic sovereignty: national energy independence, balanced with global cooperation on trade, tech and investment frameworks	EU/US: tech alliances; MENA: interconnectors; Asia: supply chain coordination	Laos-Thailand-Malaysia-Singapore Power Integration Project (LTMS-PIP): a regional power integration project to balance supply and improve resilience ⁹⁷
Workforce	One-size-fits-all labour strategies	Targeted workforce development: inclusive, localized strategies to build adaptable talent pipelines for diverse energy systems	Fossil-heavy regions need re-skilling e.g. Gulf Cooperation Council (GCC); youth-skewed economies need up-skilling (e.g. Saudi Arabia)	Germany's Ruhr transition model: combines re-skilling, income support and innovation hubs to repurpose a former coal region into a clean technology economy ⁹⁸
Business case	Subsidy-heavy and unstable	Market-driven transition: competitive, innovation-led conditions supported by stable policies and innovation-driven incentives to ensure a strong business case for needed energy investments and make clean energy the preferred business option	Investment hubs (US, EU, United Arab Emirates) versus markets needing de-risking (Sub-Saharan Africa, Southeast Asia)	US IRA: De-risked over \$200 billion in private clean energy investment by linking subsidies to domestic manufacturing and project bankability ⁹⁹

Practical application

KSA's Energy Strategies

ENERGY TRANSITION

Instructions

Framework

1. Geopolitics
2. Supply Chains
3. Trade Policies
4. Market Dynamics
5. Finance
6. Technology

Mix & Match Quiz

Results

External Environment and the Energy Transition

Six elements → two challenges → one response to each challenge

RESET QUIZ

The Six-Element Framework

The framework shows six external forces surrounding the energy-transition environment. The grey blocks represent challenges; the white blocks represent strategic responses.



KAPSARC analysis

Enablers score

44

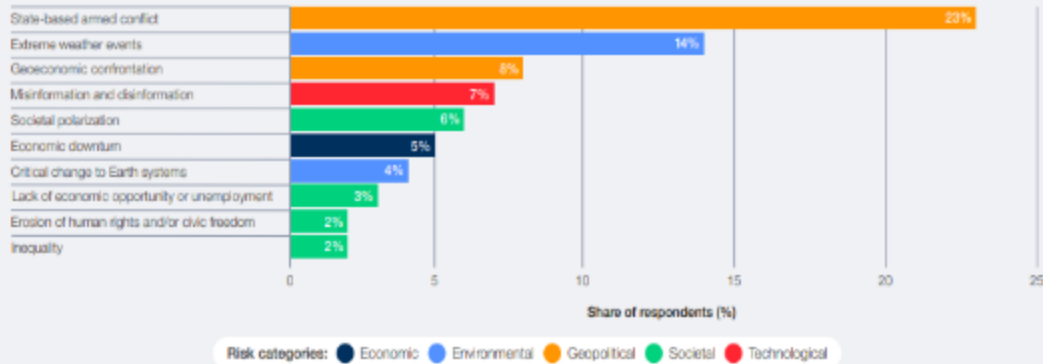
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Click on indicator name to expand

INDICATOR	2025 RANK	2025 SCORE	2024 RANK	2024 SCORE	TREND 2024 - 2025
✓ Policies and regulation	65	42.37	59	41.32	↗
✓ Technology, knowledge and innovation	52	21.28	54	19.72	↗
✓ Finance and investment	47	21.31	52	18.7	↗
✓ Business environment	11	80.42	12	79.89	↗
✓ System resilience	34	76.88	32	76.99	↘

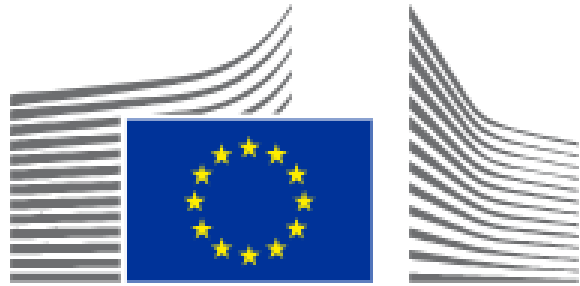
Indicators ^

World Economic Forum's global risks factors



WORLD
ECONOMIC
FORUM

- **Global energy demand surged:** Global energy demand surged by 2.2%, well above the decade's average, driven by record electricity use caused by heatwaves, electrification³ and data centre growth. Most new demand was met by renewables and natural gas, deepening energy security risks for importers and boosting revenues for exporters.
- **CO₂ emissions hit an all-time high:** The emissions impact in 2024 – the hottest year on record⁴ – was also notable. Global energy-related CO₂ emissions rose by 0.8% to 37.8 billion tonnes.⁵ While emissions continued to grow, the rate of increase slowed relative to previous years – even as the global economy expanded by 3%,⁶ and energy demand reached record levels (up 2.2%).
- **Energy prices eased but remain volatile:** Prices declined from 2023 highs. This was largely driven by falling global energy commodity prices, although regional market factors led to diverging trends. However, in most regions, prices remained well above pre-COVID-19 pandemic levels, and underlying volatility persisted due to ongoing demand pressures and supply-side uncertainties.
- **Monetary dynamics constrained investments:** While short-term rates fell, long-term capital remained expensive due to inflation and sovereign debt stress, especially in emerging markets.
- **Digital expansion reshaped energy consumption:** The AI market size surged in 2024 (+35% y-o-y),⁷ and it's projected that data centres will account for 10% of global power demand growth by 2030.⁸ While their aggregate



European
Commission



TCFD | TASK FORCE ON
CLIMATE-RELATED
FINANCIAL
DISCLOSURES



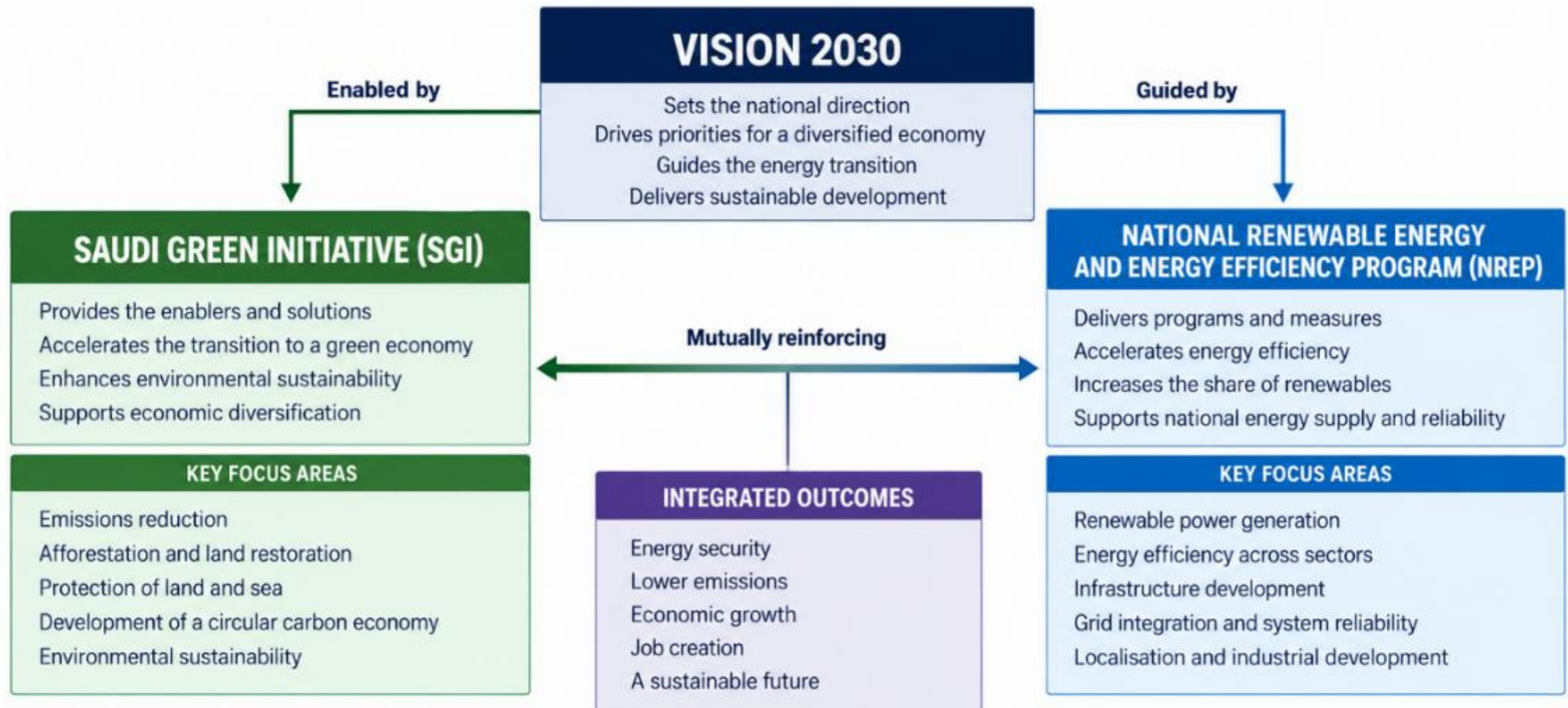
UN Sustainable Development Goals



K.A.CARE - Navigating the Energy Transition Program

Program Schedule Everyday Sunday June 14 through Thursday June 18 from 8:00 a.m. to 2:00 p.m. Lunch from 2:00 p.m. to 3:30 p.m.

DAY 1 (Sunday) Global Energy Landscape and Saudi Vision 2030	DAY 2 (Monday) Policy, Governance and Regulatory Frameworks	DAY 3 (Tuesday) Energy Security and Sustainability	DAY 4 (Wednesday) The Impact of Alternative Energy Technologies	DAY 5 (Thursday) Geopolitics and Market Dynamics
- Review global energy trends and Saudi Arabia's strategic direction. - Examine how the Kingdom's Vision 2030 blueprint drives energy sector transformation. - Link international developments and national ambitions.	- Review the policy and regulatory frameworks governing Saudi Arabia's energy transition. - Navigate policy and regulatory complexity. - Discuss solutions to drive national progress in the energy sector, from renewable energy targets and regulations to climate initiatives like the Saudi Green Initiative (SGI). - Investigate the key public sector stakeholders (regulators, government agencies, etc.) involved in driving the energy transition. - Examine tools used by government (laws, regulations, incentives, tariffs) to shape energy markets. - Understand how effective policy design can encourage renewable energy investment, ensure grid reliability, and protect consumers, thereby creating a sustainable market ecosystem.	- Explore how to balance the Kingdom's need for a reliable, affordable energy supply with sustainability and climate goals. - Review applicable frameworks such as the Circular Carbon Economy and strategies for reducing carbon emissions while maintaining energy security. - Undertake case studies (for example, integrating solar and wind projects into the national grid). - Assess how to manage the trade-offs and synergies between economic and environmental goals.	- Investigate the policy implications of technologies shaping the future of energy. (This includes renewable energy technologies (solar, wind), energy storage solutions, green and blue hydrogen, carbon capture utilization and storage (CCUS), nuclear energy, electric vehicles (EVs), energy storage and other solutions as part of the energy mix.) - Assess how emerging technologies can be integrated into Saudi Arabia's energy portfolio and what challenges and opportunities they bring. - Cultivate an innovative mindset to understand the emerging energy solutions, and technological change in their organizations. (This segment includes global best practices in renewable energy, using a simulation for maximum learning impact. MIT En-Roads and others)	- Analyze external factors influencing the energy transition, including geopolitical developments, international agreements (e.g. the Paris Agreement), global oil and gas market dynamics, and regional cooperation. - Discuss scenarios such as fluctuations in oil demand, investments by other nations in renewable energy, international pressure for decarbonization, and how these affect Saudi energy policy and projects. - Understand big-picture forces supports participants to anticipate risks and leverage opportunities. (This theme reinforces strategic thinking, enabling leaders to factor in global drivers when planning and executing domestic energy initiatives.)



The Legal and Policy Framework for SGI

The SGI was launched in 2021 as a top-down, royal-initiated environmental framework embedded in national policy.

Legal and Regulatory Foundations:

- **National Environment Law (2020):** Establishes environmental protection obligations and empowers regulatory bodies.
- **Royal Decrees and Ministerial Orders:** Guide inter-ministerial coordination and mandate policy action.
- **Climate Change Framework:** Currently under development to institutionalize long-term climate policy.

Key Policy Instruments

- **National Environment Strategy (NES),**
- **SGI Governance Framework:** Oversees implementation across 60+ initiatives,
- **Biodiversity Protection Regulations:** Enforce protected areas and species conservation under SGI.

The Legal and Policy Framework for NREP

The NREP was established under the supervision of the Ministry of Energy, with legal support from:

- **Renewable Energy Law (Draft):** Under review, to provide statutory clarity on land access, permits, and tariffs.
- **Electricity Law and its Implementing Regulations (amended 2021):** Allow for renewable energy auctions and power purchase agreements (PPAs).
- **Public-Private Partnership Law (2021):** Facilitates investment structures and risk allocation in renewable energy projects.

Regulatory and Contractual Instruments

- **Tendering Framework:** Governs the competitive bidding process.
- **Standard PPA Templates:** Ensure investor confidence and legal enforceability.
- **Environmental Licensing Requirements:** Renewable projects must comply with EIA standards enforced by the National Centre for Environmental Compliance (NCEC).

Saudi Green Initiative

Key objectives of SGI

- Reduce carbon emissions
- Expand renewable energy
- Protect and restore natural ecosystems
- Improve quality of life
- Accelerate the circular carbon economy

Key performance areas of SGI

- Emissions reduction and energy efficiency
- Renewable-energy capacity
- Afforestation and land restoration
- Biodiversity and protected areas
- Waste, water and air-quality management

Alignment with Vision 2030

- Economic diversification
- Sustainable cities and communities
- Energy-sector transformation
- Private-sector investment
- Green jobs, skills and innovation

Challenges and opportunities

- High water stress and extreme heat
- Grid, storage and infrastructure requirements
- Technology, finance and delivery capacity
- Green investment and local-content growth
- Regional leadership and energy diplomacy

GREENWASHING IN KSA

THE GAP BETWEEN APPEARANCE AND ACTION

True Energy Transition Demands Substance, Not Just Sustainability Claims

GREENWASHING

THE GREEN IMAGE

What is Shown



SUSTAINABILITY CLAIMS

Bold net-zero targets and green commitments



RENEWABLE SHOWCASE

High-profile projects and announcements



GREEN BRANDING

Marketing, reports and campaigns highlight a green future



GLOBAL POSITIONING

Presenting leadership in climate and clean energy on the world stage



ESG & DISCLOSURE

Sustainability reports and ESG ratings to build trust

VS.

THE HARSH REALITY

What is Hidden



ONGOING FOSSIL FUEL DEPENDENCE

Continued investment in oil & gas expansion and long-term assets



HIGH EMISSIONS

Rising emissions and reliance on carbon-intensive activities



LIMITED TRANSITION PACE

Renewables still small in the energy mix; slow structural change



PROFIT OVER PURPOSE

Short-term profits prioritized over long-term sustainability



LACK OF TRANSPARENCY

Selective disclosure, vague targets, and unverified claims

It's not about saying green.
It's about being green.

Common Criticisms of SGI and How to Address Them – as guided by SGI – Page 35

G. Net-zero 2060 vs. global benchmarks

Critics alleged that Most developed countries target net-zero by 2050. Saudi's 2060 target, combined with continued oil expansion, means cumulative emissions remain high even if net-zero is eventually reached later than global peers.

Response: A 2060 target is pragmatic for an economy whose core industry is oil production. Saudi Arabia committed to 2060 simultaneous to Russia and after China made similar pledges. The Energy Minister has suggested the Kingdom may achieve net-zero closer to 2050. Moreover, the net-zero pledge applies only to domestic emissions, not to oil burned overseas. Importing countries are responsible for their own emissions. On the question of Western criticism, Saudi officials note that developed countries which lecture oil producers have themselves reverted to coal, the most polluting fossil fuel, to meet energy security needs. Rapid phase-out demands that ignore different national circumstances and capabilities are inherently unfair.

National Renewable Energy Program

Key objectives of NREP

- Diversify the national energy mix
- Scale solar and wind generation
- Reduce dependence on liquid fuels
- Attract private-sector investment
- Develop local renewable-energy capability

Key performance areas of NREP

- Renewable capacity awarded and connected
- Competitive procurement and electricity cost
- Grid readiness and project integration
- Private investment and local content
- Delivery against national energy targets

Alignment with Vision 2030

- Economic and energy diversification
- Environmental sustainability
- Private-sector participation
- Employment, skills and industrial growth
- Long-term energy security

Challenges and opportunities

- Grid expansion and system flexibility
- Intermittency and storage requirements
- Project delivery and supply-chain capacity
- Abundant solar and wind resources
- Investment, innovation and export potential

12 KEY ROLE PLAYERS IN KSA ENERGY TRANSITION

1. LEAD Ministry of Energy (MoE) Leads national energy policy and strategy, oversees the energy transition and ensures energy security and sustainability.	2. THINK KAPSARC Provides independent energy research, policy analysis and modelling to support evidence-based decision making.	3. THINK KA CARE Develops atomic, renewable and emerging energy technologies, builds national capabilities and supports research and innovation.	4. GOVERN Saudi Energy Efficiency Center (SEEC) Leads national energy efficiency programmes and promotes demand-side efficiency across all sectors.	5. GOVERN Saudi Electricity Regulatory Authority (SERA) Regulates the electricity sector, ensures fair competition and protects consumers.	6. GOVERN Nuclear and Radiological Regulatory Commission (NRRC) Provides independent regulation of nuclear and radiological activities, ensuring safety, security and environmental protection.
7. OPERATE National Grid SA Operates and develops the national transmission network, integrates renewable energy and ensures grid stability and reliability.	8. OPERATE Saudi Electricity Company (SEC/SE) Generates, distributes and supplies electricity, modernises networks and implements demand-side management initiatives.	9. OPERATE Saudi Power Procurement Company (SPPC) Leads competitive procurement of power projects and manages PPAs and offtake agreements.	10. INVEST & BUILD Public Investment Fund (PIF) Mobilises strategic capital, invests in energy transition projects and accelerates economic diversification.	11. INVEST & BUILD ACWA Power Develops, invests in and operates large-scale renewable power, water and hydrogen projects locally and globally.	12. INVEST & BUILD Saudi Aramco Reduces emissions across its operations, develops CCUS and hydrogen, and invests in lower-carbon and cleaner energy solutions.

Saudi Arabia's New Procurement Law Raises Direct Purchase to SAR1 Million

Saudi Arabia's 2026 government procurement law trades faster approvals and wider discretion for new documentation, payment and local-content controls.

Donovan Vanderbilt · Updated September 1, 2026 · 11 min read

SAUDI VISION 2030

ANALYSIS

Vision 2030	Saudi Green Initiative (SGI)	National Renewable Energy Program (NREP)
Minister of Energy's Role: • Policy Maker and Regulator: The Minister defines and implements strategic energy policies aligned with Vision 2030's economic and environmental pillars. • Vision Realisation Program (VRP) Oversight: The Minister contributes to and oversees energy components in Vision Realisation Programs such as: ○ National Industrial Development and Logistics Program (NIDLP) ○ Fiscal Balance Program ○ Quality of Life Program • Economic Diversification Champion: Leads initiatives to reduce KSA's reliance on crude oil exports by promoting downstream industries and clean energy investment.	Minister of Energy's Role: • Architect of the Energy Transition: Shapes the design of KSA's low-carbon pathway, including the SGI's energy-related targets. • CCE Leader: Leads the implementation of the Circular Carbon Economy, a Saudi-endorsed framework balancing emissions through reduction, reuse, recycling, and removal. • Emission Reduction Enforcement: Oversees major emission reduction strategies in the power, transport, and industrial sectors. • Hydrogen Development: Drives the national hydrogen strategy, including blue and green hydrogen as part of SGI's decarbonization plan.	Minister of Energy's Role: • Strategic Leadership: Defines the policy direction and regulatory framework for renewable energy development. • Oversight of SPPC in implementing tenders, auctions, and PPAs. • Investor Engagement: Facilitates an enabling environment for private investment through public-private partnerships, incentives. • Cost Competitiveness Champion: Drives KSA's strategy to achieve world-record low solar LCOEs, economical renewable energy. • Grid Integration Policy: Ensures policy alignment between renewable deployment and grid readiness, including storage and digitalization.

Ministry of Energy

MoE · Government ministry

Policy & Strategic Direction

Mandate: Leads national energy policy and strategy across hydrocarbons, electricity, renewables, energy efficiency, hydrogen and the Circular Carbon Economy.

Objective and transition responsibility: Translate national energy strategy into coordinated sector priorities: energy security, affordability, diversification, renewable and lower-carbon deployment, efficiency, localization and competitiveness. MoE sets the policy direction against which regulators, procurers, operators, investors and technical bodies align their decisions.

Decision boundary and official source

Boundary: Sets direction and coordinates the ecosystem; it is not the project regulator, power procurer or grid operator.

Ministry of Environment, Water and Agriculture

MEWA · Government ministry

Environmental & Resource Stewardship

Mandate: Leads policy and strategy for environment, water and agriculture and the sustainable management of natural resources.

Objective and transition responsibility: Set national direction for environmental and water stewardship, improve water security and resource efficiency, and integrate sustainability into development. In transition projects, MEWA provides the policy context for water use, natural-resource protection and environmental priorities while project-level compliance remains with the competent compliance authority.

Decision boundary and official source

Boundary: National policy stewardship is distinct from NCEC's project-level environmental compliance role.

Ministry of Investment

MISA · Government ministry

Investment & Project Development

Mandate: Regulates, develops and promotes domestic and foreign investment, protects investor rights and improves the investment environment.

Objective and transition responsibility: Create an investable environment for domestic and international capital by improving investor services, addressing cross-government barriers and enabling private-sector participation. For energy-transition projects, MISA helps investors navigate the investment ecosystem while technical, environmental and sector approvals remain with the responsible authorities.

Decision boundary and official source

Boundary: Enables the investment ecosystem; it does not replace sector regulators or project sponsors

Ministry of Industry and Mineral Resources

MIM · Government ministry

Policy & Strategic Direction

Mandate: Manages and develops the industrial and mining sectors, including sector policy, licensing and investment enablement.

Objective and transition responsibility: Develop competitive industrial and mining sectors and deepen local value chains. In the energy transition this includes enabling minerals, manufacturing, equipment, technology and industrial localization needed for renewables, storage, hydrogen, CCUS and other emerging value chains.

Decision boundary and official source

Boundary: Leads industry and mining matters, not electricity regulation or system operation.

King Abdullah City for Atomic and Renewable Energy

K.A.CARE · Government scientific city

Research, Innovation & Technical Advice

Mandate: Advances peaceful atomic and renewable energy through programme development, research, localization and capability building.

Objective and transition responsibility: Build the Kingdom's scientific, programme and human capability for peaceful atomic and renewable energy. K.A.CARE supports technology assessment, programme development, research, localization and capability building, while independent safety and licensing decisions remain with NRRC.

Decision boundary and official source

Boundary: Supports programme and technical capability; NRRC independently regulates nuclear safety.

[Official source](#)

King Abdullah Petroleum Studies and Research Center

KAPSARC · Independent non-profit research institution

Research, Innovation & Technical Advice

Mandate: Advisory think tank specializing in energy economics and sustainability.

Objective and transition responsibility: Provide decision-makers with independent evidence, data, modelling and applied research on energy economics, markets, climate and sustainability. KAPSARC helps test policy choices and scenarios, but its analytical role does not replace the accountable authority that must make, approve or implement the decision.

Decision boundary and official source

Boundary: Advises and analyses; it does not approve, license, procure or operate projects.

[Official source](#)

KA Care

Mission, Mandate and Technical Services

Mission

Advance nuclear and renewable energy by nurturing innovation, developing human capability and enabling sustainable energy deployment and localisation.

Build an innovative, sustainable energy future for Saudi Arabia.

Mandate

Develop national capabilities in peaceful nuclear energy and renewable energy.

Support civil nuclear infrastructure and locally developed energy technologies.

Strengthen research, knowledge transfer and the specialist energy workforce.

Technical Services

Renewable resource assessment, data and modelling.

Technology research, demonstration and performance evaluation.

Nuclear feasibility, engineering and site studies.

Technical advice, knowledge transfer and specialist training.

KA Care

Advancing Saudi Arabia's energy transition through nuclear and renewable energy innovation

Civil Nuclear Development

Support safe and economically viable nuclear infrastructure and peaceful nuclear applications.

Renewable Energy Innovation

Develop and demonstrate renewable technologies suited to Saudi conditions.

Technology Localisation

Build local capabilities, transfer knowledge and increase Saudi content in sustainable energy.

Human Capability

Develop the specialist workforce needed for nuclear and renewable energy.

Resource Data and Analysis

Provide renewable resource information, modelling and evidence for energy decisions.

Research and Technical Support

Conduct technical studies and research to support energy technology and project development.

KAPSARC

Mission, Mandate and Technical Services

Mission

To advance Saudi Arabia's energy sector and inform global policies through evidence-based advice and applied research.

Support informed decisions for a sustainable and resilient energy future.

Mandate

Institutional remit

Advise Saudi energy-sector stakeholders on energy economics and sustainability.

Produce applied research, analytical tools and data that inform policy.

Develop specialist talent and enable international knowledge exchange.

Technical Services

Energy, climate and economic modelling.

Policy scenarios, forecasts and impact assessments.

Energy data platforms and interactive analytical tools.

Tailored research, strategy advice and benchmarking.

KAPSARC

Informing the energy transition through research, policy advice and economic analysis

Energy Policy Advice

Provide evidence-based guidance on energy reform and transition strategies.

Energy Market Analysis

Assess supply, demand, investment and global market shifts.

Climate and Sustainability

Evaluate emissions pathways, climate policies and circular carbon economy options.

Power Sector Transition

Analyse renewables, electricity markets, storage and energy efficiency.

Data and Economic Modelling

Develop datasets, models and scenarios to test policy choices and their impacts.

Knowledge and Capacity

Share research, convene policy dialogue and develop energy-sector analytical talent.

Saudi Energy Efficiency Center

SEEC · Government centre

Research, Innovation & Technical Advice

Mandate: Coordinates programmes to rationalize and improve energy efficiency in production and consumption.

Objective and transition responsibility: Coordinate and strengthen energy-efficiency improvement across buildings, transport and industry through programmes, technical methods, data, capability and measurement. SEEC helps establish credible baselines and performance approaches so efficiency interventions can be designed and verified consistently.

Decision boundary and official source

Boundary: Programme coordinator and technical centre; enforcement rests with the competent authority.

Saudi Electricity Regulatory Authority

SERA · Independent electricity regulator

Regulation, Licensing & Compliance

Mandate: Regulates and licenses electricity activities, monitors reliability and quality and protects consumers.

Objective and transition responsibility: Protect the public interest by establishing and enforcing electricity-sector rules, licensing regulated activities, monitoring service quality and reliability, and supporting financial sustainability and consumer protection. SERA provides the regulatory framework within which procurement, grid operation and market participants function.

Decision boundary and official source

Boundary: Regulator—not the procurer, grid owner or environmental regulator.

Official source

SEEC

Mission, Mandate and Technical Services

Mission

Improve energy efficiency in production and consumption, conserving national resources and supporting economic and social wellbeing.

Enable Saudi Arabia's energy transition by reducing waste and improving energy productivity.

Mandate

Coordinate national energy-efficiency efforts across public and private sectors.

Develop efficiency programmes and support standards and requirements with relevant authorities.

Promote energy management, professional capabilities and public awareness.

Technical Services

Energy management guidance and 50001 Ready tools.

Licensing of energy service providers and independent energy auditors.

Technical guidance for measuring and verifying energy savings.

Professional training and energy-efficiency information.

SEEC

Advancing Saudi Arabia's energy transition by improving efficiency and reducing energy waste

National Coordination

Coordinate government and industry efforts to improve energy efficiency across the Kingdom.

Industrial Efficiency

Promote energy management and better energy performance in industrial facilities.

Buildings and Appliances

Support efficient buildings and equipment through standards, programmes and awareness.

Transport Efficiency

Work with relevant authorities to improve vehicle fuel economy and transport energy performance.

Energy Services Market

License energy service providers and independent auditors to strengthen the efficiency market.

Skills and Awareness

Develop professional capabilities and encourage energy-saving behaviour.

SERA

Mission, Mandate and Technical Services

Mission

Regulate electricity activities fairly and proactively.

Support reliable, efficient and sustainable electricity services while protecting consumers and enabling sector development.

Mandate

Regulate electricity generation, transmission, distribution, trading and retail supply.

License activities, issue regulatory rules and monitor service-provider compliance.

Protect consumers and support fair investment and competition within national energy policy.

Technical Services

Regulatory and compliance services

Licence and permit application services.

Grid-code and renewable connection requirements.

Service-quality monitoring and compliance assessment.

Complaint escalation, consumer guidance and tariff information.

SERA

Enabling a reliable and sustainable electricity sector through fair regulation

Electricity Licensing

License electricity activities and monitor compliance with regulatory requirements.

Reliability and Quality

Set service standards and oversee electricity supply performance.

Consumer Protection

Protect consumer rights, resolve escalated complaints and oversee service compensation.

Tariff Oversight

Regulate tariff frameworks and service charges to balance consumer and sector interests.

Renewable Integration

Establish regulatory requirements for renewable self-consumption and grid connection.

Investment and Competition

Provide clear sector rules that support investment, fair competition and efficient services.

Saudi Power Procurement Company

Principal Buyer · Single buyer and procurer

Procurement & Offtake

Mandate: Pre-develops and competitively tenders generation projects, awards contracts and purchases electricity under long-term agreements.

Objective and transition responsibility: Translate system capacity requirements into bankable competitive procurement. The Principal Buyer pre-develops and tenders projects, evaluates bids, contracts generation and purchases electricity under long-term arrangements, creating the revenue certainty needed for project financing while remaining separate from regulation and grid operation.

Decision boundary and official source

Boundary: Procures and buys electricity; it does not regulate the sector or operate the grid.

Saudi Energy / National Grid SA

National Grid SA · National utility and transmission subsidiary

System & Infrastructure Operation

Mandate: Plans, operates and maintains the national transmission network and integrates generation and demand.

Objective and transition responsibility: Plan, operate, maintain and strengthen the transmission system so electricity can move reliably between generators and demand centres. National Grid SA performs connection studies, integrates new generation and storage, manages system needs and supports modernization required for increasing renewable penetration.

Decision boundary and official source

Boundary: Operates infrastructure; SERA regulates and the Principal Buyer procures generation.

National Grid SA

Mission, Mandate and Technical Services

Mission

Develop the electricity transmission sector and deliver smart service solutions.

Support safe, reliable and efficient transmission as Saudi Arabia's energy mix evolves.

Mandate

Transmission and system operation

Plan, develop, operate and maintain Saudi Arabia's electricity transmission network.

Connect generators and major customers under applicable licences and grid rules.

Coordinate reliable system operation and support national energy-transition infrastructure.

Technical Services

Grid-connection applications and technical studies.

Network planning, power-flow and stability analysis.

Protection, control, monitoring and transmission maintenance.

Connection agreements and grid-code compliance coordination.

National Grid SA

Enabling Saudi Arabia's energy transition through a reliable, connected and modern transmission grid

Transmission Planning

Plan and expand high-voltage networks to meet future demand and connect new generation.

Renewable Connections

Assess and connect renewable generation while maintaining grid-code requirements.

System Stability

Coordinate system operation to manage electricity flows, frequency and voltage.

Reliability and Resilience

Maintain transmission assets, manage outages and restore supply after disturbances.

Grid Modernisation

Deploy digital monitoring, automation and advanced technologies to improve network performance.

Regional Interconnections

Develop and operate transmission links that support regional electricity exchange and supply security.

SEC / Saudi Energy

Mission, Mandate and Technical Services

Mission

Deliver excellent customer experience and stakeholder value through reliable electricity services.

Invest in people, protect the environment and advance digitalisation across the power sector.

Mandate

Operational role

Generate, transmit and distribute electricity through the company and its subsidiaries.

Develop and maintain infrastructure to meet growing national electricity demand.

Support renewable integration, supply reliability and the Kingdom's energy transition.

Technical Services

Electricity connections, metering and customer service.

Grid planning, connection studies and network operation.

Asset maintenance, fault response and supply restoration.

Engineering and project management through specialist subsidiaries.

SEC / Saudi Energy

Powering Saudi Arabia's energy transition through reliable grids and sustainable electricity services

Transmission Expansion

Expand and strengthen the national grid through National Grid SA to connect generation and demand centres.

Renewable Integration

Connect renewable projects and develop grid flexibility and storage to support a changing energy mix.

Generation Transition

Improve generation efficiency and support the shift from liquid fuels towards cleaner electricity production.

Distribution Reliability

Modernise distribution networks and maintain dependable electricity supply to customers.

Smart Grids and Digitalisation

Use smart meters, automation and digital systems to improve network visibility and performance.

Customer and Demand Services

Provide connections, consumption information and digital services that support efficient electricity use.

National Center for Environmental Compliance

NCEC · Environmental compliance centre

Environmental & Resource Stewardship

Mandate: Conducts environmental permitting, monitoring, inspection and enforcement for activities with environmental impact.

Objective and transition responsibility: Protect environmental quality through project permitting, compliance requirements, monitoring, inspection and enforcement. NCEC translates environmental requirements into project-level obligations and evidence, helping ensure transition projects control pollution and environmental impacts throughout their life cycle.

Decision boundary and official source

Boundary: Project-level compliance authority, distinct from MEWA's national policy role.

Nuclear and Radiological Regulatory Commission

NRRC · Independent nuclear regulator

Regulation, Licensing & Compliance

Mandate: Regulates nuclear and radiological activities and establishes safety, security, safeguards and waste requirements.

Objective and transition responsibility: Maintain independent nuclear and radiological oversight through safety, security, safeguards, licensing and waste requirements. NRRC protects people and the environment and must remain institutionally independent from organisations promoting, financing, developing or operating nuclear programmes.

Decision boundary and official source

Boundary: Must remain independent from the nuclear programme promoter and developer.

NRRC

Mission, Mandate and Technical Services

Mission

Regulate nuclear and radiological activities effectively to protect people and the environment from harmful radiation effects.

Ensure safety, security and safeguards in the peaceful use of nuclear technology.

Mandate

Regulate nuclear and radiological practices, activities and facilities in Saudi Arabia.

Issue requirements, licences and permits; inspect compliance and enforce regulatory obligations.

Implement relevant international commitments and oversee nuclear and radiological emergency preparedness.

Technical Services

Regulatory and compliance services

Licensing and permit services for facilities, practices and materials.

Technical safety reviews and regulatory inspections.

Radiation protection officer licensing and examinations.

Regulatory guidance on safety, security and safeguards.

NRRC

Protecting people and the environment through nuclear safety, security and safeguards

Licensing and Oversight

Authorise nuclear and radiological activities and inspect compliance with regulatory requirements.

Nuclear Safety

Set and enforce safety requirements for nuclear facilities throughout their lifecycle.

Radiation Protection

Protect workers, the public and the environment from harmful radiation exposure.

Nuclear Security

Regulate the protection of nuclear and radioactive materials against malicious acts.

Nuclear Safeguards

Oversee nuclear material accounting and fulfil the Kingdom's safeguards obligations.

Emergency Preparedness

Set preparedness requirements and coordinate nuclear and radiological emergency arrangements.

Acwa

Acwa · Project developer and operator

Investment & Project Development

Mandate: Develops, invests in and operates power, renewable-energy, storage, green-hydrogen and desalination projects.

Objective and transition responsibility: Develop, finance, construct and operate utility-scale power, renewable-energy, storage, green-hydrogen and desalination assets. ACWA Power converts policy and procurement opportunities into investable projects and is accountable for delivery and operating performance under its contracts and permits.

Decision boundary and official source

Boundary: Competitive developer and operator; not the procurer, regulator or system operator.

GCC Interconnection Authority

GCCIA · Regional interconnection authority

System & Infrastructure Operation

Mandate: Owns and operates the GCC interconnection and enables cross-border system support and electricity exchange.

Objective and transition responsibility: Operate the GCC interconnection to strengthen regional electricity security, emergency support and cross-border exchange. GCCIA provides a regional resilience layer that complements—rather than replaces—Saudi Arabia's domestic transmission-system responsibilities.

Decision boundary and official source

Boundary: Regional role; it does not operate Saudi Arabia's internal grid.

[Official source](#)

SPPC

Mission, Mandate and Technical Services

Mission

Role summary

Secure electricity supply through competitive procurement and effective commercial agreements.

Support an optimal energy mix, renewable deployment and efficient use of generation resources.

Mandate

Act as the Principal Buyer for Saudi Arabia's electricity sector.

Competitively procure renewable and conventional generation to meet electricity demand.

Manage power purchase and sale agreements and fuel-supply arrangements.

Technical Services

Procurement and commercial services

Project tendering and bidder qualification.

Technical and commercial bid assessment.

Power purchase agreement structuring and administration.

Project-delivery and contractual-performance monitoring.

SPPC

Enabling Saudi Arabia's energy transition through competitive power procurement and long-term purchase agreements

Competitive Procurement

Tender renewable and conventional generation projects to secure capacity at competitive cost.

Renewable Energy Delivery

Procure solar and wind projects under the National Renewable Energy Program.

Power Purchase Agreements

Contract long-term power purchases that support investment in new generation.

Capacity Development

Develop procurement pipelines and monitor project delivery to meet growing electricity demand.

Commercial Management

Manage power purchase and sale agreements and monitor contractual performance.

Fuel and Efficiency

Arrange fuel supply for contracted generation and support efficient fuel use.

ACWA Power

Mission, Mandate and Technical Services

Mission

Purpose and strategic direction

Deliver reliable, responsible and cost-efficient power, desalinated water and green hydrogen.

Create long-term value for communities, partners and investors while advancing the energy transition.

Mandate

Commercial role

Develop, invest in and operate power, water and green hydrogen projects.

Deliver contracted output under long-term purchase agreements with public and industrial customers.

Support Saudi Arabia's energy transition and expand sustainable infrastructure in growth markets.

Technical Services

Project development and engineering oversight.

Technology selection, integration and commissioning oversight.

Operations and maintenance through specialist operating companies.

Asset optimisation, reliability and performance management.

ACWA Power

Accelerating the energy transition through renewable power, green hydrogen and sustainable water solutions

Renewable Power Development

Develop and invest in utility-scale solar and wind projects that expand clean electricity supply.

Project Investment and Finance

Structure partnerships and secure financing to deliver major energy-transition projects.

Storage and Flexibility

Develop battery storage and flexible generation to support reliable renewable integration.

Green Hydrogen

Develop renewable-powered hydrogen and derivative fuels for industrial decarbonisation.

Efficient Desalination

Deliver desalinated water using efficient technologies and cleaner energy solutions.

Operations and Performance

Operate and maintain assets to improve reliability, efficiency and long-term performance.

Public Investment Fund

PIF · Sovereign wealth fund

Investment & Project Development

Mandate: Drives economic transformation and sustainable returns through strategic investments and national ecosystems.

Objective and transition responsibility: Use strategic investment to build national capabilities, create new sectors and catalyse large-scale infrastructure and clean-energy ecosystems. PIF can anchor investment, establish or scale portfolio companies and crowd in private capital, while project delivery and statutory approvals remain with the relevant entities.

Decision boundary and official source

Boundary: Strategic investor; portfolio companies deliver projects and authorities retain approvals.

Saudi Aramco

Aramco · Integrated energy and chemicals company

Investment & Project Development

Mandate: Develops and operates energy assets and lower-carbon solutions including CCUS, hydrogen and operational emissions initiatives.

Objective and transition responsibility: Operate and develop globally significant energy and industrial assets while improving efficiency and advancing lower-carbon solutions such as CCUS, hydrogen and emissions-reduction initiatives. In transition projects Aramco acts as a commercial developer/operator and technology implementer within national policy and regulatory frameworks.

Decision boundary and official source

Boundary: Commercial developer and operator, not the national policymaker or regulator.

PIF

Mission, Mandate and Technical Services

Mission

Invest for sustainable long-term returns and enable Saudi Arabia's economic development and diversification.

Build strategic partnerships and develop new sectors that create lasting economic value.

Mandate

Act as Saudi Arabia's sovereign investment fund and a driver of economic transformation.

Develop strategic industries and national companies while investing domestically and internationally.

Support sustainable energy growth through capital, partnerships and portfolio companies.

Technical Services

Investment and portfolio support

Investment appraisal and project financing support.

Portfolio governance, risk oversight and performance monitoring.

Partnership structuring and technology-localisation support.

Green finance frameworks and impact reporting.

PIF

Accelerating Saudi Arabia's energy transition through strategic investment and industrial development

Renewable Investment

Support large-scale solar and wind development through portfolio companies and partners.

Capital Mobilisation

Deploy long-term investment capital and attract co-investors to scale energy-transition projects.

Technology Localisation

Develop local renewable manufacturing, supply chains and technology partnerships.

New Energy Industries

Invest in emerging sectors such as green hydrogen, storage and electric mobility.

Green Finance

Raise green financing for eligible projects and report on allocation and environmental impact.

Infrastructure and Growth

Support energy infrastructure, private-sector participation, jobs and economic diversification.

Saudi Aramco

Mission, Mandate and Technical Services

Mission

Corporate mission summary

Deliver shareholder value through leadership in oil and gas production and chemicals.

Capture value across the energy chain and grow a profitable, resilient portfolio.

Mandate

Commercial and operational role

Develop and operate integrated oil, gas, refining and chemicals businesses.

Support reliable energy supply and Saudi Arabia's economic development.

Invest in efficiency, emissions reduction and lower-carbon energy solutions.

Technical Services

Operational and technology capabilities

Reservoir modelling and subsurface assessment.

Engineering, asset integrity and operational optimisation.

Carbon capture, storage assessment and monitoring.

Research and technology development for lower-carbon fuels and processes.

Saudi Aramco

Supporting the energy transition through reliable supply, emissions reduction and lower-carbon technologies

Energy Security and Gas

Provide reliable energy and expand natural gas supply to support displacement of liquid fuels.

Operational Emissions

Improve energy efficiency and reduce methane emissions and routine flaring.

Carbon Capture and Storage

Develop carbon capture, utilisation and storage projects with industrial partners.

Lower-Carbon Hydrogen

Develop hydrogen and ammonia pathways supported by carbon management and certification.

Renewable Investment

Invest with partners in renewable power and integrate renewables into operations.

Technology and Innovation

Develop and invest in technologies that improve efficiency and reduce energy-related emissions.

Designated National Authority (DNA) / National Committee for Clean Development Mechanism

DNA / CDM · National climate and carbon-market authority

Environmental & Resource Stewardship

Mandate: Coordinates Saudi Arabia's designated national authority functions for international climate mechanisms and supports national carbon-management, crediting and offsetting arrangements.

Objective and transition responsibility: Coordinate Saudi Arabia's international climate reporting and carbon-governance functions, including national communications and transparency reporting, NDC coordination, greenhouse-gas mitigation mechanisms and carbon-market development. The DNA helps ensure credible measurement, reporting and verification and alignment with Paris Agreement obligations.

Decision boundary and official source

Boundary: Climate-mechanism and carbon-governance functions do not replace sector regulators, environmental permitting authorities or project developers.

HIET – Energy & Water capability platform

HIET · Energy and water capability-development institution

Research, Innovation & Technical Advice

Mandate: Develops human and technical capability relevant to the energy and water sectors through specialist learning and applied sector development.

Objective and transition responsibility: Build the skills and technical capability needed to support reliable, efficient and sustainable energy and water transformation.

Decision boundary and official source

Boundary: A capability-development role supports implementation but does not replace policy, regulatory, procurement or system-operation authorities.

Official source

Saudi Aramco Jubail Refinery Company

SASREF · Integrated refining company

Investment & Project Development

Mandate: Operates a major Jubail refinery and pursues operational excellence, value creation, energy efficiency and decarbonization within its refining operations.

Objective and transition responsibility: Produce refined and petrochemical products safely and efficiently while reducing CO2 emissions through energy efficiency and sustainable energy sources.

Decision boundary and official source

Boundary: Industrial operator and investor; it does not set national energy policy or perform independent regulatory functions.

[Official source](#)

Yanbu Aramco Sinopec Refining Company

YASREF · Integrated refining company

Investment & Project Development

Mandate: Operates the Yanbu full-conversion refinery, producing transportation fuels and high-value refined products through the Saudi Aramco–Sinopec partnership.

Objective and transition responsibility: Deliver reliable and efficient refining performance while improving environmental performance, technology and human-capital capability.

Decision boundary and official source

Boundary: Commercial refinery operator; it does not regulate the energy sector, procure national generation or operate the national grid.

[Official source](#)

Rabigh Refining & Petrochemical Company

Petro Rabigh · Integrated refining and petrochemicals company

Investment & Project Development

Mandate: Operates an integrated refining and petrochemicals complex and supplies fuels and petrochemical feedstocks that support downstream industrial development.

Objective and transition responsibility: Operate sustainably and competitively, add value to Saudi resources and enable downstream manufacturing, skills and economic development.

Decision boundary and official source

Boundary: Industrial developer and operator; national policy, regulation and environmental approvals remain with the competent authorities.

Official source

Stakeholders

Simulator: Stakeholder Mapping and Regulatory Governance

SAUDI ENERGY TRANSITION

Role-Player Collaboration Lab

Learn institutional mandates, then design a coordinated pathway for ten transition projects.

Learning progress

3%

1. LEARN

2. COMPARE

3. QUIZ

4. APPLY

5. RESULTS

Learn the roles

Saved locally

SAVE

RESET CURRENT

RESET EVERYTHING

☐ Facilitator: reveal answers

Role-Player Collaboration Lab

Explore institutional mandates, compare lifecycle roles, then design a coordinated pathway for ten transition projects.

Learning progress 0%



1. EXPLORE

2. COMPARE

3. QUIZ

4. APPLY

5. RESULTS

Apply · Utility-Scale Solar Portfolio

Saved locally — register team + cohort to sync

SAVE

RESET CURRENT

RESET EVERYTHING

FACILITATOR VIEW

Build the collaboration pathway

Diagnose and frame the project, assign lead responsibility across seven delivery stages using focused role-specific choices, respond to disruption and assess collaboration.

1. UTILITY-SCALE SOLAR PORTFOLIO

2. ONSHORE WIND PROGRAMME

3. NATIONAL BATTERY STORAGE PROGRAMME

4. GREEN HYDROGEN

1. Diagnose and frame the project

Use the four variables below to frame the project before assigning institutional responsibility.

Primary barrier

The main constraint preventing the project from progressing or achieving its intended outcome.

Economic instrument

The commercial, financial or policy mechanism that can address the barrier and improve project bankability or behaviour.

Accountable institution

The role player that should own the principal decision or coordinate delivery of the response—not every organisation that participates.

Monitored outcome

The measurable result that demonstrates whether the intervention is working, such as reliability, verified emissions reduction or deliverability.

Choose barrier

Weak price discovery
Revenue or demand uncertainty
Cost recovery and weak price signals
Affordability pressure
Capital or risk gap
Capability and local-content gap
Unpriced environmental value
Coordination and ownership uncertainty

Choose instrument

Competitive auction
Long-term PPA or offtake agreement
Tariff and subsidy reform
Targeted consumer or project support
Public equity, development finance or guarantee
Tax, customs or investment incentive
Green bond or sukuk
Carbon credit or environmental market

Choose an institution

MoE
MEWA
MISA
MIM
K.A.CARE
KAPSARC
SEEC
SERA
Principal Buyer
National Grid SA
NCEC
NRRC
PIF
Aramco

Choose outcome

Competitive price and deliverability
Revenue certainty
Reliability and flexibility
Capital mobilisation
Verified emissions reduction
Safety and compliance
Data and model assurance
Verified energy savings
Charging and network performance
Water-energy efficiency

2. Assign lead responsibility across the delivery pathway

Use your Step 1 diagnosis as the basis for these decisions. The barrier and economic instrument shape the intervention and bankability; the accountable institution anchors ownership; and the monitored outcome determines what delivery, compliance and assurance must demonstrate.

1. Policy direction	Choose a relevant option
2. Approval and licensing	Choose a relevant option
3. Procurement and contracting	Choose a relevant option
4. Finance and financial close	Choose a relevant option
5. Connection and commissioning	Choose a relevant option
6. Operation and performance	Choose a relevant option

7. Performance, Compliance & Assurance

Different institutions monitor different dimensions of project performance. Answer each question separately; choose **Not materially applicable** where that dimension does not have a substantive role in the selected project.

3. Respond to three disruption triggers

These same three trigger types apply to all ten projects. For each event, identify the role player that should lead the immediate institutional response. The lead must then coordinate the supporting entities needed to resolve the disruption.

1. Critical approval or infrastructure delay

A critical approval, connection, enabling-infrastructure or delivery milestone slips materially, threatening the project schedule and financial case.

Lead responding role player

Choose an institution



2. Material cost or financing shock

Capital cost, financing cost or contracted economics deteriorate materially after the project pathway has been agreed.

Lead responding role player

Choose an institution



3. Performance, compliance or reliability failure

New evidence shows that the project may not meet an important technical, environmental, safety, reliability or contracted-performance requirement.

4. Rate collaboration and record the key action

Role clarity

Choose 1–5

▼

Data sharing

Choose 1–5

▼

Escalation

Choose 1–5

▼

Decision timing

Choose 1–5

▼

One action to improve collaboration

ECONOMIC INSTRUMENTS SHAPING KSA'S ENERGY MARKETS



Alignment with Vision 2030 and SGI Goals

Instrument	Alignment with Vision 2030 / SGI / NREP
PPAs via competitive bidding	Achieves cost-efficient renewable deployment and market liberalization
Tax and customs relief	Attracts green investment and lowers barriers to entry
Tariff reform	Ensures energy price rationalization and sustainability
Subsidy reallocation	Redirects state support to strategic, socially equitable outcomes
Green financing and PIF support	Crowds in private capital and supports localization

PRICING REFORMS

PAST

- Prices below cost
- High consumption and waste
- High fiscal cost to government
- Limited opportunity for efficiency and investment

FUTURE

- Prices reflect true value and cost
- Efficient consumption and resource conservation
- Reduced fiscal burden
- Increased investment in clean energy and infrastructure

PRICING REFORMS

EXAMPLES

- Electricity tariff adjustments
- Water tariff adjustments
- Fuel price liberalisation

PRINCIPLES

- Fairness
- Efficiency
- Sustainability
- Competitiveness
- Accountability

Challenges and Policy Considerations

Challenge	Policy Recommendation
Need for permanent tax relief on green tech	Establish clear and codified green tax regime
Investor concern over PPA currency terms	Provide hedging mechanisms or dollar-denominated options
Grid constraints limiting project bankability	Link financial incentives to smart grid investment
Need for small-scale solar incentives	Introduce net metering and rooftop solar subsidies for homes and SMEs

FEED-IN TARIFFS AND POWER PURCHASE AGREEMENTS

FEED-IN TARIFFS (FIT)

INSTRUMENT DESCRIPTION

Government sets a guaranteed price (per kWh) for eligible renewable electricity supplied to the grid for a defined term. Funding covers the difference between the tariff and the market value of the electricity.

HOW IT WORKS

- Fixed tariff published by government
- Applies to all eligible renewable generators
- Payment for each unit of electricity delivered to the grid
- Long-term revenue certainty

EXAMPLES OF APPLICATION

- Early-stage renewable energy markets
- Small and medium scale projects
- Technologies requiring initial support (e.g., solar, wind, biomass)

POTENTIAL IMPACTS

- Accelerates renewable energy deployment and attracts investment
- Cost support requires transparent funding mechanisms and periodic adjustment to remain cost-effective

POWER PURCHASE AGREEMENTS (PPA)

INSTRUMENT DESCRIPTION

A long-term agreement between a power producer and an off-taker (utility or private buyer) to purchase electricity at an agreed price and volume for a defined period (e.g., 15–25 years).

HOW IT WORKS

- Projects selected through competitive bidding
- Long-term contract negotiated with agreed price and volume
- Off-taker purchases the electricity delivered
- Contracted revenue provides certainty and supports project finance

EXAMPLES OF APPLICATION

- Utility-scale solar, wind, and other renewable projects
- Storage-linked renewable projects
- Corporate power purchase agreements for clean energy procurement

POTENTIAL IMPACTS

- Improves project bankability and accelerates renewable deployment
- Requires a credible off-taker and appropriate risk allocation between parties

Feed-in Tariffs and Power Purchase Agreements

Instrument	Description	Impacts:
Feed-in Tariffs (FiTs)	While feed-in tariffs have been widely used in other countries, KSA has not adopted a conventional FiT model. Instead, it relies on long-term Power Purchase Agreements (PPAs) awarded through competitive bidding under the NREP.	KSA has achieved record-low solar prices, e.g., \$0.0104/kWh (Sakaka Solar Project)
Competitive PPA Model	REPDO structures projects under the Independent Power Producer (IPP) model, where developers compete to offer the lowest cost of electricity over a fixed longer term.	Ensures price certainty for consumers and viability for developers
<u>Features of KSA's PPA Framework:</u> • Fixed-tariff structure (lowest bid wins) • Guaranteed offtake by SPPC (Saudi Power Procurement Company) • Payment denominated in SAR or USD (with optional hedging) • No inflation indexation (contracts are fixed price) • Government-backed guarantees, increasing investor confidence		Replaces the need for open-ended feed-in tariffs with market-competitive outcomes

Tax Incentives and Exemptions

Instrument	Description	Impacts
VAT and Import Duty Relief	To support renewable energy deployment and reduce project costs, KSA offers import duty exemptions and VAT reductions on specific clean energy equipment, including: • Solar PV panels and inverters • Wind turbine components • Energy-efficient HVAC systems and insulation materials • These exemptions are administered in collaboration with: • Zakat, Tax and Customs Authority (ZATCA) • Saudi Standards, Metrology and Quality Organization (SASO) for equipment eligibility	Reduces upfront capital expenditure for developers Supports localization and technology transfer
Corporate Tax Relief for Renewable Projects	Although not universally implemented, the Ministry of Investment offers special economic zone incentives for renewable energy manufacturers and developers: • Corporate tax holidays (for qualified green tech firms) • Accelerated depreciation for renewable plant assets Capital investment deductions	Attracts FDI and joint ventures in renewable energy manufacturing
Green Industry Support via NIDLP	The National Industrial Development and Logistics Program (NIDLP) provides soft loans and preferential tax treatment for companies producing solar modules, batteries, EV components, and hydrogen infrastructure	

Subsidies and Tariff Reforms

Instrument	Description	Impacts
Electricity Subsidies (Pre-Reform)	Historically, electricity in KSA was heavily subsidized, resulting in: • Inefficient consumption • Budgetary burdens on the government • Disincentives for renewable deployment	Promotes demand-side efficiency Creates a level playing field for renewable energy competitiveness Supports financial sustainability of the Saudi Energy Co. (SE)
Tariff Reform under Vision 2030	As part of the Fiscal Balance Program, the government undertook gradual reforms starting in 2016: • Increased electricity prices for higher consumption tiers • Unified tariffs across residential, commercial, and industrial segments • Introduced time-of-use tariffs for large consumers • Aimed to reflect true cost of electricity production and distribution	
Direct Consumer Protection Measures	To mitigate social impacts of subsidy reforms: • The Citizen's Account Program provides cash transfers to low-income households • Industrial tariffs remain partially subsidized for energy-intensive sectors until transition strategies are fully implemented	

Auction-Based Pricing Mechanisms (Reverse Auctions)

A reverse auction is a procurement method where sellers (e.g., power producers) compete to offer the lowest price at which they are willing to deliver a product or service—typically, electricity from renewable sources. Unlike traditional auctions where buyers compete by bidding higher prices, in a reverse auction the lowest bidder win.

Instrument	Description	Impacts
NREP's Competitive Bidding Process	KSA's preferred pricing mechanism is the reverse auction model, managed by REPDO and SPPC. Auction Structure: - Pre-qualified bidders submit price offers (in SAR/MWh or USD/MWh) - The lowest tariff is selected for PPA signing - Contracts awarded include land access, grid connectivity, fixed offtake Advantages Over FiTs: - Drives price discovery and efficiency - Avoids overpayment or long-term subsidy lock-in - Reduces risks of regulatory capture or price distortions	Solar and wind prices in KSA are among the lowest globally Promotes fiscal responsibility and consumer affordability



 Lowest price bids up to the required capacity win the auction.

KEY FEATURES

	Encourages intense competition among developers
	Delivers lowest possible price for the buyer
	Transparent, fair, and non-discriminatory process
	Supports efficient allocation of resources
	Long-term PPAs ensure bankability and investment certainty

Public Financing and Government Guarantees

Instrument	Description
Loan Facilities	The Saudi Industrial Development Fund (SIDF) and National Development Fund (NDF) offer: • Concessional loans for project developers • Bridge financing and working capital support • Credit lines for renewable equipment manufacturers
Sovereign Guarantees	For utility-scale projects, the government may offer: • Sovereign payment guarantees through SPPC • Support for foreign exchange hedging in PPA contracts • Land access and permitting streamlining
PIF as Strategic Investor	The Public Investment Fund (PIF): • Co-develops mega renewable projects (e.g., Sudair, NEOM) • De-risks projects through equity investment and blended finance • Supports ESG-aligned projects through its Sustainability Fund

PUBLIC FINANCING AND GOVERNMENT GUARANTEES

PUBLIC FINANCING

Providing capital to de-risk and catalyze energy projects and markets.

Lower Cost of Capital

Reduces financing cost and improves project bankability.

Catalyzes Private Investment

Crowds in private capital and expands financing capacity.

Supports Strategic Priorities

Directs capital to priority sectors and regions.

Accelerates Energy Transition

Enables faster deployment of clean and efficient energy solutions.

Creates Economic & Social Value

Drives job creation, local development, and technology transfer.

GOVERNMENT GUARANTEES

Mitigating risks to enhance bankability and attract private investment.

Mitigates Key Risks

Shields investors and lenders from specific project or market risks.

Improves Financing Terms

Leads to lower interest rates, longer tenors, and higher leverage.

Unlocks Private Investment

Enables participation of global investors and financiers.

Enhances Market Confidence

Strengthens credibility of projects and policy frameworks.

Supports Large-Scale Deployment

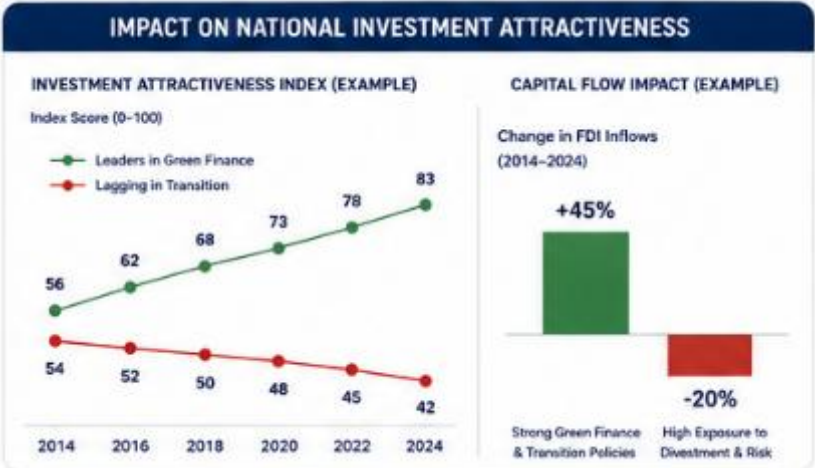
Facilitates bankability of complex, first-of-a-kind projects.

THE POWER OF CHOICE: DIVESTMENT PRESSURES MEET GREEN FINANCE SOLUTIONS

Shaping Capital Flows. Strengthening Nations. Building a Sustainable Future.

Divestment campaigns increase financial and reputational risks for carbon-intensive economies.
Green finance tools unlock new capital, lower costs, and boost national investment attractiveness.

The transition is clear. The choice is ours.



HOW EFFECTIVE POLICY DESIGN DRIVES A SUSTAINABLE ENERGY FUTURE



ENCOURAGES RENEWABLE ENERGY INVESTMENT



Clear long-term targets
Provide certainty and direction



Stable policy & regulatory framework
Reduces risk and builds investor confidence



Financial & economic incentives
Improve project visibility and returns



Competitive markets & transparent processes
Ensure efficiency and fair competition



More investment in renewable energy
Lower costs, more capacity, innovation and jobs



ENHANCES GRID STABILITY AND RELIABILITY



Integrated grid planning
Aligns generation, transmission and demand



Investment in grid infrastructure
Strengthens transmission, distribution and flexibility



Enables energy storage and flexibility solutions
Balances supply and demand



Smart systems & forecasting tools
Improve reliability and operational efficiency



A stable, resilient and efficient grid
Ready for today and tomorrow



CREATES A SUSTAINABLE MARKET ECOSYSTEM



Open and competitive market structures
Attract diverse players and encourage innovation



Effective pricing reforms
Reflect true value of energy and resources



Strong institutions and governance
Ensure transparency, accountability and trust



Stakeholder engagement and social inclusion
Builds public support, and shared value



A thriving, sustainable energy market
Resilient, inclusive and future-ready

KEY BENEFITS



Accelerates clean energy transition and Net Zero 2050 goals



Strengthens energy security and reduces emissions



Drives economic growth and job creation



Enhances investor confidence and global competitiveness



Improves quality of life for current and future generations

SUSTAINABLE ENERGY FUTURE FOR KSA



ENABLERS OF EFFECTIVE POLICY DESIGN



Evidence-based policy making



Consistent and long-term vision



Cross-sector coordination



Adaptive and flexible frameworks



Monitoring, evaluation and continuous improvement

Green finance policies, institutions, tools and governance

Addressing climate change, as well as biodiversity and other environmental goals, will require an unprecedented acceleration of investment and financing towards climate-friendly, nature-positive and sustainable pathways, and a shift away from harmful activities. Policies, public financial institutions, and a whole-of-government approach will need to be further leveraged to drive transformation of the financial system, along with a focus on environmental integrity and outcomes.



KEY INVESTMENT AND FINANCING TOOLS

EQUITY INVESTMENTS	DEBT FINANCING	BLENDED FINANCE	GUARANTEES & RISK MITIGATION	GREEN & SUSTAINABILITY BONDS	PUBLIC - PRIVATE PARTNERSHIPS (PPPs)
Direct investment in projects or companies in exchange for ownership stakes.	Loans and credit facilities to fund projects and assets.	Use of concessional capital to mobilize private investment at scale.	Tools that reduce financial risk and enhance bankability of projects.	Debt securities issued to raise capital for eligible green and sustainable projects.	Collaboration between public and private sectors to finance, build and operate projects.
Typical Use • Project development • Greenfield projects • Strategic platforms • Growth capital	Typical Use • Project finance • Refinancing • Working capital • Asset finance	Typical Use • Early-stage projects • High-risk projects • Technology demonstration • Infrastructure	Typical Use • Political risk • Offtaker risk • Currency risk • Credit enhancement	Typical Use • Renewable energy • Energy efficiency • Clean infrastructure • Green hydrogen	Typical Use • Large infrastructure • Long-term services • Energy projects • Utilities

GREEN FINANCE TOOLS

GREEN BONDS & GREEN LOANS

Green bonds

Debt securities to raise capital for projects with positive environmental benefits.

Best For:

Large-scale renewable energy & infrastructure.

Green loans

Loans with favorable terms for green or climate-friendly projects.

Best For:

Corporate & project financing needs.

SUSTAINABILITY-LINKED LOANS (SLLs)

Loans where terms are linked to the borrower's ESG performance.

Best For:

Companies with strong ESG improvement targets.

GREEN EQUITY & CLIMATE FUNDS

Equity investments in green businesses and climate-focused funds.

Best For:

Early-stage, high-growth or innovative green ventures.

GREEN PROJECT FINANCE

Long-term financing structured around the cash flows of green projects.

Best For:

Large-scale renewable, hydrogen, storage & infrastructure projects.

BLENDED FINANCE & GUARANTEES

Blending public & private capital or using guarantees to reduce risk and attract investment.

Best For:

De-risking projects in emerging markets or first-of-a-kind initiatives.

CARBON FINANCE & MARKETS

Financing through carbon credits, offsets and emissions trading mechanisms.

Best For:

Emission reduction projects & compliance strategies.

TRIGGER QUESTIONS

MINISTER OF ENERGY

What policy reforms will unlock more private green capital?

How can we align energy transition goals with fiscal and economic priorities?

What international partnerships and funding opportunities should we pursue?

KA CARE

How can we better coordinate stakeholders to de-risk and scale investments?

What capacity building is needed to strengthen green finance readiness?

How can we improve transparency and track the impact of green investments?

KAPSARC

What are the most cost-effective pathways for our energy transition?

Which sectors and technologies offer the highest investment potential?

How can data and analytics improve investment decisions and policy design?

SEEC

Which projects in our pipeline are most attractive to investors?

How can we improve the bankability and risk profile of our projects?

What financing structures and partners can help us close more deals?

SERA

How can we activate more private capital and local investors?

What market barriers are limiting growth and how can we remove them?

How can we foster innovation and new green business models?

NRRC

What financing solutions can support the development of nuclear projects?

How can we manage long-term risks and ensure cost competitiveness?

What collaborations can accelerate safe and sustainable nuclear deployment?

Green Certificates | Renewable Energy Attributes

Instruments can enable corporate green energy claims, be traded in voluntary or compliance markets and/or support renewable energy tracking and disclosure.

KSA's Current Position

KSA now effectively has an emerging national renewable energy certificate / green certificate market, although it is not yet as mature or standardized as markets in Europe or some U.S. states. The market today is mainly based on I-RECs (International Renewable Energy Certificates) rather than a fully standalone domestic Saudi-only certificate regime. KSA has:

- renewable energy projects generating tradable certificates
- active issuance and trading of solar I-RECs
- growing corporate demand for renewable electricity claims
- price reporting and market assessments
- registry infrastructure through the I-TRACK / I-REC ecosystem

Regional and Global Alignment

Driver	Implication
International buyers of Saudi clean power (e.g., hydrogen, aluminium)	Demand for traceable green energy attributes
Voluntary disclosure initiatives (RE100, CDP, GRI)	Corporates operating in KSA seek to prove renewable consumption
Carbon border adjustment mechanisms (CBAM)	Require evidence of low-carbon input energy for export products

Carbon Pricing and Market Instruments

Carbon pricing assigns a monetary cost to greenhouse gas (GHG) emissions to incentivize emissions reduction, encourage clean technology adoption and create economic value for low-carbon activities

KSA has launched a voluntary carbon market, driven by the Public Investment Fund (PIF) in partnership with Tadawul Group. Key features include:

- Regional platform: Regional Voluntary Carbon Market Company (RVCMC)
- First auction in 2022: over 1.4 million tons of CO₂ offsets sold
- Projects sourced from nature-based solutions and industrial reduction
- Buyers: Aramco, NEOM, SABIC, and other leading firms

KSA is studying long-term options for carbon pricing, including:

- Sector-specific cap-and-trade mechanisms
- Carbon taxes on high-emitting sectors

Policy Instruments

Simulator: Policy Instruments – Shaping Energy Markets

SAUDI ENERGY TRANSITION

Economic Instruments Awareness Exercise

Learn why each instrument is used, then assemble practical financing packages for Saudi energy-transition projects.

Learning progress **35%**

☐ **Facilitator mode**

1. LEARN

2. COMPARE

3. APPLY

4. QUIZ

5. RESULTS

Learn

SAVE PROGRESS

RESET CURRENT ACTIVITY

RESET EVERYTHING

Auto-save active

Reverse / competitive auctions

Price discovery and competition

Competitive tenders allocate projects or capacity through transparent qualification and bid evaluation.

Strategic use, authority and limits

Legal or policy basis: NREP procurement; Principal Buyer tendering; Ministry of Energy supervision.

Key institutions: Ministry of Energy; SPPC / Principal Buyer; SERA and grid entities within their mandates.

Strategic objective: Deliver competitive, transparent and disciplined renewable deployment.

Specific use: Select developers and discover prices for utility-scale solar, wind and selected flexibility services.

Design boundary: A low bid is not automatically deliverable. Site, grid, contract and qualification design matter.

Evidence: Bid tariff; qualified bids; award-to-close time; completion rate

[Official source 1](#) · [Official source 2](#)

Long-term PPAs and offtake agreements

Revenue certainty and project bankability

A long-term contract defines the buyer, payment basis, performance obligations and allocation of commercial risks.

Strategic use, authority and limits

Legal or policy basis: Electricity-sector framework, Principal Buyer procurement and project-specific executed contracts.

Key institutions: SPPC / Principal Buyer; project company; lenders; SERA and system operator where applicable.

Strategic objective: Create bankable revenue certainty and allocate construction performance, dispatch and payment risks.

Specific use: Support project finance for generation, storage, hydrogen derivative desalination and contracted outputs.

Design boundary: Bankability depends on the actual credit support, indexation, curtailment and termination terms.

Evidence: PPA tenor; contracted volume; debt-service coverage; curtailment settlement

[Official source 1](#)

Electricity tariff and subsidy reform

Cost recovery and fiscal sustainability

Tariff and subsidy structures are adjusted to improve economic signals, revenue sufficiency and efficient consumption.

Strategic use, authority and limits

Legal or policy basis: Electricity-sector regulation; SERA revenue requirements; national fiscal and structural reform policy.

Key institutions: SERA; Ministry of Energy; Ministry of Finance; electricity service providers.

Strategic objective: Strengthen sector financial sustainability and efficiency while managing distributional consequences.

Specific use: Improve cost recovery, shape demand and create transparent funding for network and service investment.

Design boundary: Reform can burden households or exposed industries unless sequencing and targeted protection are designed together.

Evidence: Revenue sufficiency; collection rate; subsidy cost; affordability indicators

[Official source 1](#) · [Official source 2](#)

Targeted subsidies and consumer support

Consumer affordability and social protection

Time-bound or eligibility-based support protects priority consumers or technologies without a blanket price subsidy.

Strategic use, authority and limits

Legal or policy basis: Budget and social-protection decisions; programme-specific eligibility and administrative rules.

Key institutions: Ministry of Finance; relevant social-policy authorities; Ministry of Energy; SERA.

Strategic objective: Preserve affordability and acceptance during reform while focusing public resources on defined beneficiaries.

Specific use: Protect vulnerable households, support adoption or bridge justified early-stage cost gaps.

Design boundary: Poor targeting, weak exit rules or opaque funding can increase fiscal cost and distort behaviour.

Evidence: Eligible beneficiaries; support per beneficiary; energy burden; leakage; sunset compliance

[Official source 1](#)

Public equity, development finance and guarantees

Risk sharing and capital mobilisation

Public institutions provide equity, loans, guarantees or credit enhancement to address scale and risk barriers.

Strategic use, authority and limits

Legal or policy basis: PIF, NDF and sector-development-fund statutes and strategies; transaction-specific approvals.

Key institutions: PIF; NDF ecosystem; SIDF and other development funds; Ministry of Finance where applicable.

Strategic objective: Catalyse strategic sectors, localise value chains and crowd in commercially disciplined private investment.

Specific use: Fund first-of-a-kind, infrastructure-heavy or strategically important projects and mitigate defined risks.

Design boundary: Support should be additional, transparent and risk-priced to avoid crowding out or hidden contingent liabilities.

Evidence: Private capital mobilised; leverage ratio; loss rate; local value; follow-on finance

[Official source 1](#) · [Official source 2](#)

Tax, customs and investment incentives

Technology, innovation and local-content development

Defined exemptions, allowances, customs relief or investment facilitation reduce eligible cost or friction.

Strategic use, authority and limits

Legal or policy basis: Investment Law; ZATCA rules; industrial exemptions and programme-specific decisions.

Key institutions: MISA; ZATCA; Ministry of Industry and Mineral Resources; Ministry of Finance.

Strategic objective: Attract incremental investment, localise supply chains and accelerate priority technology capability.

Specific use: Reduce qualifying import or establishment costs and reward additional local manufacturing, R&D or employment.

Design boundary: Eligibility must be legally confirmed for each transaction; broad assumptions about exemptions are unsafe.

Evidence: Incremental investment; local content; jobs; tax expenditure; additionality

[Official source 1](#) · [Official source 2](#)

Green bonds, sukuk and sustainable finance

Risk sharing and capital mobilisation

Debt or sukuk finances eligible green expenditure under a framework with allocation and impact reporting.

Strategic use, authority and limits

Legal or policy basis: Saudi Green Financing Framework; CMA rules; issuer framework and offering documents.

Key institutions: Issuer; CMA; arrangers; external reviewers; investors and project owners.

Strategic objective: Broaden the investor base and connect capital raising to credible environmental expenditure and reporting.

Specific use: Finance or refinance eligible renewable, efficiency, clean-transport, water and waste assets.

Design boundary: The label does not create viability; taxonomy, proceeds governance and impact reporting must be credible.

Evidence: Allocation rate; financed impact; eligible spend; reporting timeliness; investor demand

[Official source 1](#) · [Official source 2](#)

Carbon credits and market mechanisms

Emissions reduction and environmental value

Verified emission reductions or removals become transferable units or incentives under defined standards.

Strategic use, authority and limits

Legal or policy basis: Voluntary Carbon Market Company rules and selected crediting standards; project-specific MRV.

Key institutions: Market operator; project developers; validation and verification bodies; buyers and national authorities.

Strategic objective: Create environmental value signals and channel finance toward credible reductions or removals.

Specific use: Monetise eligible mitigation outcomes, support climate strategies and develop market infrastructure.

Design boundary: Credits do not replace direct reduction; integrity depends on additionality, baselines, permanence and no double counting.

Evidence: Credits issued and retired; price; verification findings; permanence risk

[Official source 1](#)

THE ENERGY TRILEMMA FOR SAUDI ARABIA

Balancing today's energy needs and tomorrow's sustainable future

Saudi Arabia's energy trilemma is about simultaneously delivering reliable and affordable energy, enabling economic growth, and reducing environmental impact for a prosperous and sustainable future.

WHAT IS THE ENERGY TRILEMMA?

The energy trilemma represents the complex balance between three critical and interdependent dimensions of energy policy.



These goals must be pursued together.



Improving one dimension can impact the others.



The right balance today ensures a better future for all.



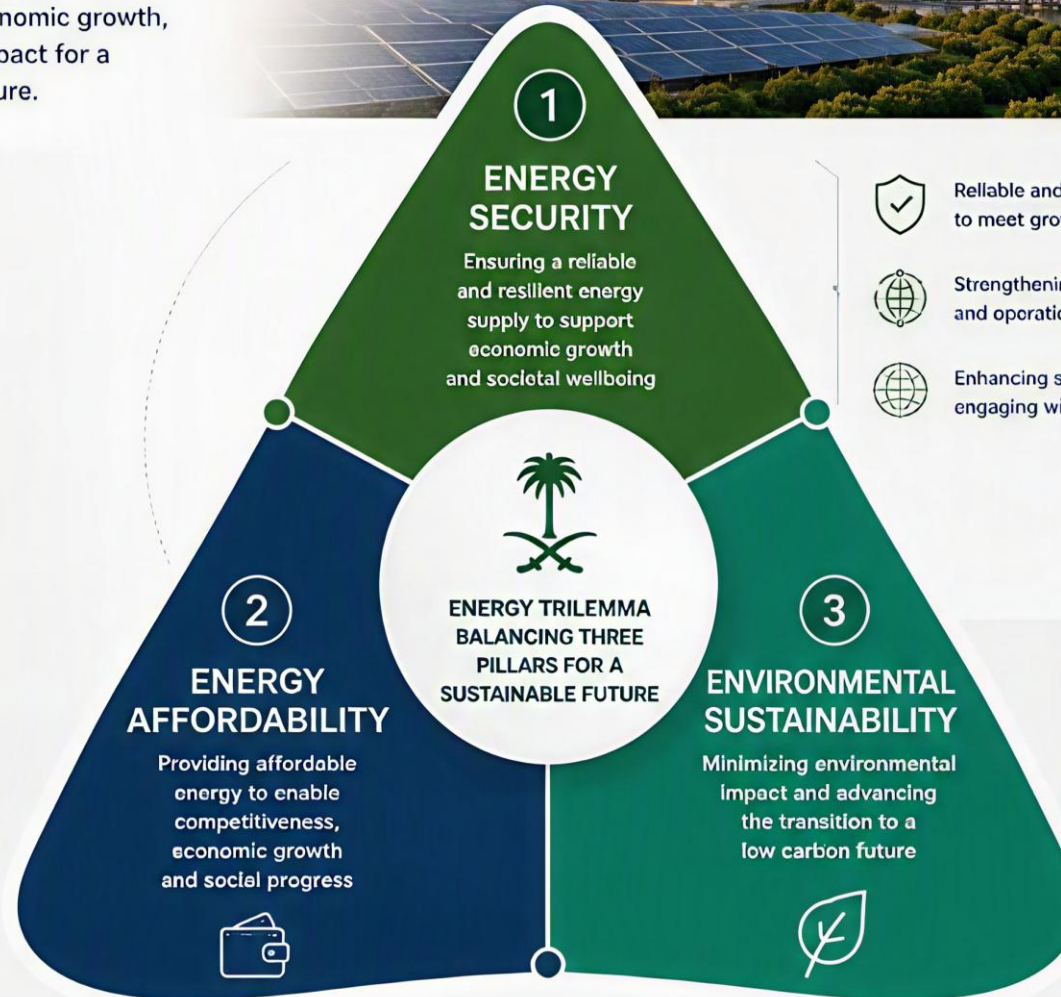
Keeping energy costs competitive for industries and consumers



Driving economic diversification and job creation



Ensuring energy accessibility and inclusivity



Reliable and diversified energy supply to meet growing demand



Strengthening energy infrastructure and operational resilience



Enhancing self-reliance while engaging with global markets



Reducing emissions and advancing cleaner energy solutions



Conserving natural resources and biodiversity



Supporting global climate goals and Net Zero by 2060

Q

ENERGY DILEMMA IN KSA

FOUR OPTIONS. ONE CRITICAL DECISION.



THE CHALLENGE

It's mid-July in Riyadh. Temperatures reach 45°C. Air conditioning loads spike. Renewable energy supply is intermittent due to a low wind period.

KSA MUST DECIDE HOW TO MEET PEAK ELECTRICITY DEMAND.

48°C
Extreme Heat

High AC Demand

Low Wind Generation

Grid Under Pressure

Riyadh KSA

EVALUATE EACH OPTION USING THE THREE TRILEMMA LENSES



ENERGY RELIABILITY

Can it keep the lights on when needed?



ENVIRONMENTAL FOOTPRINT

What is the impact on emissions and air quality?



PUBLIC & INDUSTRIAL COST

What are the economic impacts on society and industry?

FOUR SOLUTIONS – CHOOSE YOUR PATH

1 INCREASE FOSSIL FUEL-BASED GENERATION TO MEET PEAK DEMAND



SOLUTION

Dispatch additional natural gas and oil-fired power plants at maximum capacity to quickly meet demand.

IMPACT ON THE THREE LENSES

ENERGY RELIABILITY	★★★★★	Very High
ENVIRONMENTAL FOOTPRINT	★☆☆☆☆	High Emissions
PUBLIC & INDUSTRIAL COST	★★★☆☆	Medium-High

KEY CONSIDERATIONS

- Fastest and most controllable response
- Increases emissions and fuel consumption
- May impact long-term sustainability goals



BEST USE CASE:
Short-term emergency with high reliability priority

2 IMPLEMENT CONTROLLED LOAD-SHEDDING WITH REAL-TIME UPDATES



SOLUTION

Temporarily reduce electricity supply in selected areas based on real-time system conditions with user notifications.

IMPACT ON THE THREE LENSES

ENERGY RELIABILITY	★★★★★	Medium
ENVIRONMENTAL FOOTPRINT	★★★★★	Low
PUBLIC & INDUSTRIAL COST	★★★☆☆	Low-Medium

KEY CONSIDERATIONS

- Protects grid stability and prevents blackouts
- Direct impact on household and business comfort
- Requires strong communication and transparency



BEST USE CASE:
Balanced approach during high but manageable stress

3 ACTIVATE BACKUP DIESEL GENERATORS AND IMPORT POWER FROM NEIGHBORS



SOLUTION

Use backup diesel generation and import electricity from neighboring countries at high cost to meet demand.

IMPACT ON THE THREE LENSES

ENERGY RELIABILITY	★★★★★	High
ENVIRONMENTAL FOOTPRINT	★☆☆☆☆	High Emissions
PUBLIC & INDUSTRIAL COST	★☆☆☆☆	High

KEY CONSIDERATIONS

- Ensures supply when internal capacity is constrained
- Very high operational cost
- Higher emissions from diesel generation



BEST USE CASE:
Last-resort option for critical reliability needs

4 INCENTIVIZE INDUSTRIAL DEMAND REDUCTION THROUGH DYNAMIC PRICING



SOLUTION

Apply dynamic pricing and incentives to encourage industries to reduce or shift electricity use during peak hours.

IMPACT ON THE THREE LENSES

ENERGY RELIABILITY	★★★★★	Medium-High
ENVIRONMENTAL FOOTPRINT	★★★★★	Low
PUBLIC & INDUSTRIAL COST	★★★☆☆	Medium

KEY CONSIDERATIONS

- Engages industry as part of the solution
- Requires effective pricing signals and participation
- Supports long-term demand-side management



BEST USE CASE:
Strategic response to reduce peak demand sustainably



“Great leaders do not create followers — they create owners.”



Deon van der Westhuizen

Integrated Governance and Risk | Integrated Reporting |
Psychological safety | Oil and gas and ESG | Supply Chain
Sustainability | Artificial Intelligence | | Leadership Development and
Coaching |

agile Agile Group of Companies



University of Stellenbosch



0027 83 999 7955

deon@next-agile.co.za