KAPSARC

مركز الملك عبدالله للدراسات والبحوث البترولية

King Abdullah Petroleum Studies and Research Center

www.kapsarc.org

King Abdullah Petroleum Studies and Research Center

2024

Annual Report


KAPSARC
مركـــزالملـــك عبـــدالله للدراســـات والبحوث البترولية
King Abdullah Petroleum Studies and Research Center

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Preface

Section No.

01

Chairman's Message

Saudi Arabia is playing a leading role in the global shift to sustainable energy, and KAPSARC is at the core of this endeavor. The year 2024 has seen energy transition once again at the forefront, and the Center's mission to share knowledge and best practices is as pressing as ever as we collectively work toward finding solutions. I am proud to say that KAPSARC rose to the occasion in 2024, with the outputs and initiatives of the internal transformation scheme, Project TASAMI, continuing to bear fruit, and that the Center is consistently demonstrating its ability to operate as a key contributor to the energy sector, reflecting our impact and alignment with national priorities. The third Organizational Health Index (OHI), conducted this year, demonstrated remarkable progress, with the Center achieving a 48-point increase compared to its 2022 score and reaching the top quartile of the index. This success is a direct result of the active engagement and commitment of our employees, who are the cornerstone of every positive transformation at the Center. Moving forward, the Center remains deeply committed to empowering its employees and fostering an environment where their contributions continue to shape the Center's success.

KAPSARC has consistently demonstrated its ability to operate as a key contributor to the energy sector, reflecting its impact and alignment with national priorities. The Center's consulting function grew significantly in 2024 in terms of both its members and the depth and breadth of advisory engagements. This has markedly increased the ability of the Center to advance the local ecosystem, enabling a growing number of clients to make informed decisions through impactful and evidence-based advisory services. This was demonstrated in 2024 through a range of key projects that tackled critical energy topics, including the development of a comprehensive institutional strategy for King Abdullah City for Atomic and Renewable Energy (K.A.CARE) and contributing to regulatory development by refining licensing methodologies in collaboration with the Saudi Electricity Regulatory Authority (SERA). KAPSARC's advisory also supported national initiatives to displace liquid fuels by evaluating alternative energy options for industries and studying the feasibility of establishing virtual LNG and CNG supply chains to serve key industrial clusters.

The Center has also continued to publish important research across a diverse range of fields in the energy landscape, assisting global policymakers to stay informed of recent developments and contributing to shaping policy in critical areas. Notable achievements in 2024 include the significant expansion of the Circular Carbon Economy (CCE) Index, which now covers 125 countries, up from 64 in 2023. Additionally, the Center advanced its work on methane emissions through a study that initially assessed methane intensity in Saudi Arabia and revealed important findings. This year, the study was expanded to include additional Gulf countries, strengthening regional insights and supporting more accurate and transparent emissions reporting.

As part of its commitment to making high-quality information accessible to a broader audience, KAPSARC continues to invest in initiatives that promote knowledge dissemination and public engagement. This year, we celebrated the third edition of the Arabic Language Award in partnership with the King Salman Global Academy for Arabic Language (KSGAAL), which focused on the theme of Environmental, Social, and Governance (ESG) standards in the energy sector. Throughout the year, KAPSARC also succeeded in forging several high-impact partnerships with esteemed entities, and one noteworthy collaboration was with Climeworks on the direct air capture (DAC) project, which reflects KAPSARC's proactive role in supporting innovative climate solutions and advancing carbon management initiatives.

In 2024, the KAPSARC School of Public Policy (KSPP) received its official establishment license from the Council of Ministers of Saudi Arabia, enabling it to operate as a graduate-level academic institution offering programs such as the Master of Public Policy Program (MPP). KSPP officially launched its academic programs in September of the same year, welcoming its inaugural MPP cohort. This milestone represents a significant step in advancing Saudi Arabia's Vision 2030 by developing a new generation of public policy and energy professionals equipped to address both national and global challenges and lead the transition toward a sustainable future.

We should be proud of our achievements in 2024. KAPSARC has made palpable advances in terms of its global reach and leadership, its output and insight, and its investment in future leaders. We should carry this momentum into 2025 as the Center continues to drive the energy transition, shaping energy solutions and paving the way for a sustainable future.

Chairman, KAPSARC |
Abdulaziz bin Salman bin Abdulaziz Al Saud

Chairman's Message

Organizational health remained a key focus in 2024, with continued progress in operational efficiency and digital transformation. The third Organizational Health Index (OHI) survey reflected significant gains in team engagement, cohesion, and overall institutional health. KAPSARC's OHI score rose from the top of the second quartile in 2022 to the top quartile in 2024, underscoring the Center's commitment to continuous improvement. The OHI also identified three priorities to further boost employee satisfaction, which will be addressed through targeted initiatives to enhance workplace culture, strengthen engagement, and drive organizational performance.

Our people remain the cornerstone of KAPSARC's success – their talent and dedication drive our impact and mission delivery. In 2024, the workforce grew from 317 to 339 employees, reflecting our commitment to attracting top-tier talent across diverse functions. The Graduate Development Program welcomed 21 participants from a pool of 3,651 applicants, while the newly launched Postdoctoral Fellowship Program brought in five researchers to contribute to policy-relevant studies. A total of 477 development opportunities – 249 external and 228 internal – were offered to strengthen internal capabilities and ensure readiness for evolving energy challenges. Together, these efforts underscore KAPSARC's growing role in shaping the next generation of energy and policy professionals, aligned with national and global priorities.

KAPSARC's consulting arm sustained strong momentum in 2024, marked by expanded capacity and more profound impact. The team grew from 37 to 53 members, supporting a 39% increase in advisory hours – from 43,000 in 2023 to 60,000 in 2024. Client organizations rose from 11 to 14, all within the energy ecosystem, reflecting continued trust in KAPSARC's advisory services. While the number of completed engagements slightly increased, the scale, complexity, and strategic significance of 2024 projects grew substantially. Key initiatives included strategy development for major energy entities, support for cleaner industrial energy adoption, and advanced decision-support tools across renewable and fuel markets, contributing directly to the Kingdom's energy transition and policy advancement. To further strengthen capabilities, the new Energy Markets Insight Department was established within the Consulting Division to provide timely, data-driven analysis that informs policymaking in a rapidly evolving global energy landscape.

KAPSARC reinforced its role as a thought leader in 2024, publishing 203 research papers across energy, sustainability, and economics. A major milestone was the expansion of its methane satellite monitoring initiative to five Gulf countries, advancing regional efforts to reduce emissions through data-driven solutions. The Center also broadened the Circular Carbon Economy (CCE) Index to 125 countries, providing a vital tool for policymakers to align sustainability with energy security and growth. Another highlight was the release of The Clean Hydrogen Economy and Saudi Arabia, a flagship publication detailing the Kingdom's global hydrogen leadership strategy. These efforts underscore KAPSARC's commitment to advancing knowledge and shaping the global energy transition.

Building on KAPSARC's growing impact, 2024 saw a significant expansion of output across both advisory and research functions, further amplified by the advancement of human capital initiatives. A major milestone was the launch of the KAPSARC School of Public Policy (KSPP), the Kingdom's first graduate institution dedicated to public policy, announced by HRH Prince Abdulaziz bin Salman during the Human Capability Initiative conference. The inaugural Master of Public Policy (MPP) program began in September, receiving 156 completed applications, conducting over 80 interviews, and accepting 23 students. On the executive education front, 36 programs were delivered in partnership with leading local and international institutions, drawing over 2,000 applicants and enrolling 857 participants across 164 training days from 78 organizations. These efforts establish KSPP as a growing hub for advanced public policy education and executive development aligned with national and global priorities.

KAPSARC significantly expanded its global engagement and thought leadership in 2024 through high-impact collaborations, strategic partnerships, and prominent participation in international forums. The Center hosted the 3rd IAEE MENA Conference in December under the theme Domestic Energy and Economic Transformations in a Transitioning World, which brought together 315 experts from 28 different countries to explore critical issues at the nexus of energy and economics. KAPSARC also contributed meaningfully to the global energy dialogue at COP29, where it participated in key deliberations alongside international climate and energy transition leaders. Moreover, KAPSARC signed nine Memoranda of Understanding (MOUs) with leading institutions such as ERCT, Sinopec EDRI, Climeworks, Petrobras, TERI, and the Oxford Institute for Energy Studies (OIES), among others. These agreements reflect a strategic focus on strengthening existing partnerships and cultivating new ones to drive joint innovation, advance impactful research, and deliver mutual value. The MOU with Climeworks exemplifies this approach, focusing on accelerating direct air capture (DAC) innovation in the Kingdom. These initiatives elevate KAPSARC's international footprint and reinforce its commitment to supporting the Kingdom's energy transition and shaping global energy futures.

As we move further into 2025, I want to express my sincere appreciation to all those who contributed to our progress in 2024. The months ahead will continue to offer both opportunities and responsibilities. Together, we will keep positioning KAPSARC as a catalyst for knowledge, innovation, and meaningful progress in the global energy transition, dynamically driving toward a sustainable energy future.

President, KAPSARC |
Fahad Alajlan

About KAPSARC

Section No.

02

About KAPSARC

King Abdullah Petroleum Studies and Research Center (KAPSARC) is an advisory think tank within global energy economics and sustainability, providing services to entities and authorities in the Saudi energy sector. Based in Riyadh, we are a community of thinkers combining human ingenuity, expertise, and research to solve pressing global energy challenges. Through our advisory services to the energy ecosystem, KAPSARC's experts provide day-to-day insights and updates using a multidisciplinary team approach to drive long-term value and deliver tangible results at scale.

Vision Statement

To be a leading advisory think tank in energy economics and sustainability.

Mission Statement

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

Based in Riyadh

Strategic Objectives

Provide advice to the Saudi energy sector using our analytical capabilities and expertise.

Produce internationally recognized research, tools, and data to impact global policymaking.

Incubate distinctive talents for the advancement of Saudi Arabia's energy sector.

Use KAPSARC's unique foundations and resources for novel initiatives to maximize institutional impact.

Our Values

Our values serve as the cornerstone of the Center. They are a set of fundamental beliefs and assumptions that guide and motivate our employees to achieve our desired culture. Our values are based on our Vision and Mission and are the driving force behind everything we do; they form the bedrock of our strategic objectives.

Upholding our values can create a workplace that encourages collaboration, creativity, and growth. Our values inspire us to be accountable, respectful, and inclusive in all our endeavors as we strive to create a culture that values diversity, promotes learning, and encourages personal and professional development.

Transparency

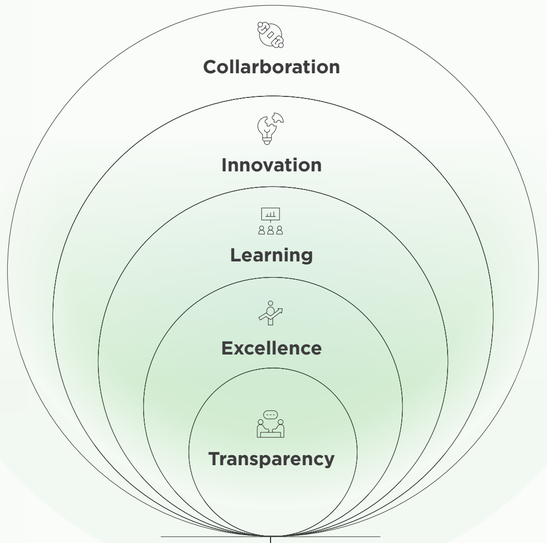
Transparency is a fundamental principle, and we believe in acting with integrity and honesty. Our teams know they can rely on each other to share information and make their actions visible. By fostering a culture of transparency, we can build trust and accountability, both within our organization and with our partners and stakeholders.

Excellence

At KAPSARC, we are dedicated to excellence, hold ourselves to the highest standards, and strive to deliver the best possible results. Our commitment to continuous improvement drives us to seek new and innovative ways to enhance our work.

Learning

A core value at KAPSARC is that every employee has the potential to grow and improve. We encourage our team members to seek new learning and development opportunities. By finding opportunities for learning in everything we do, we can continue to push ourselves to be the best we can be.



Innovation

Our employees are encouraged to generate new ideas and turn them into useful solutions that add value to KAPSARC and the energy ecosystem. By embracing innovation, we can stay ahead of the curve and continue to have a positive impact on our industry.

Collarboration

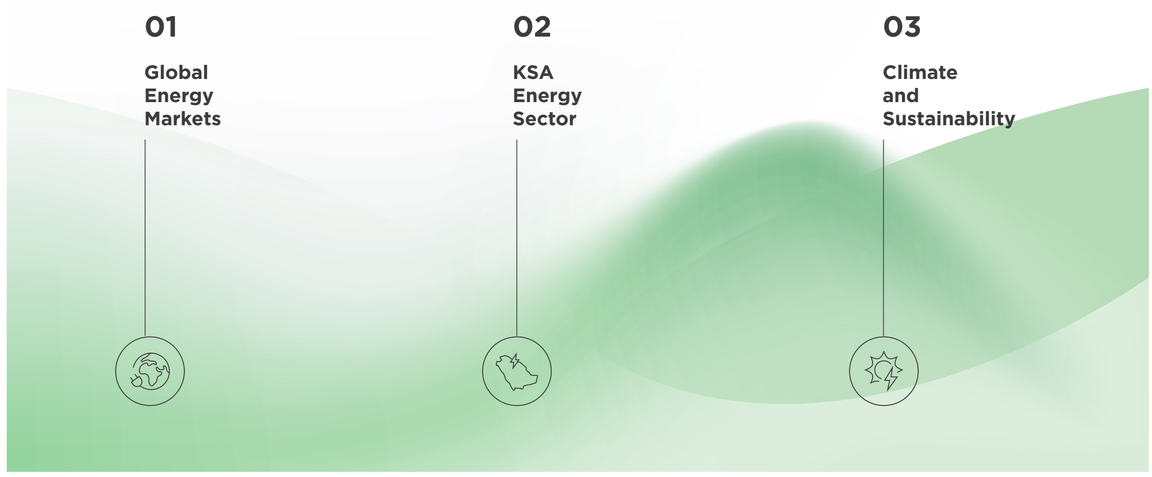
Collaboration is a key part of how we work. We understand that the best results come from people with different skills and ideas working together toward a common goal. We build strong, respectful relationships based on trust, fairness, and open communication. By working together, we can accomplish more than we could individually.

Domains and Focus Areas

Domains are broad fields that encompass the key areas of the energy sector. These domains represent the overarching fields in which KAPSARC could engage to understand the complexities of energy markets and sustainability challenges. We identify specific focus areas within these domains that drive our yearly project selection and strategic capability planning. These focus areas are crucial in defining the scope and direction of KAPSARC's work, guiding our research and thought leadership within Saudi Arabia and the global energy ecosystem.

By homing in on these focus areas, we align our expertise and resources to address the most pressing issues in the energy sector, from global hydrocarbon markets to the Saudi energy sector and climate change. This ensures that our research is impactful, timely, and directly aligned with the energy strategies of the Kingdom and the evolving dynamics of the global energy landscape.

The Three Domains



01 | Global Energy Markets

Definition

Global demand-supply trends, policies, economics, and technological advancements related to hydrocarbons.

Identified focus areas

- Hydrocarbons
- Transportation
- Renewables
- Electricity
- Critical Minerals
- Petrochemicals
- Industrial Demand

02 | KSA Energy sector

Definition

The study of KSA's energy demand-supply trends, policies, economics, and technological advancements in power, renewables, hydrogen, and mobility.

Identified focus areas

- KSA Transport
- KSA Power and Renewables
- KSA Industry
- Infrastructure
- Energy Efficiency

03 | Climate and Sustainability

Definition

Carbon management, global energy transition, environmental and resource energy footprint, adaptation, and the resilience of energy systems.

Identified focus areas

- Hydrogen
- Storage
- Nature-Based Solutions
- Carbon Capture, Utilization, and Storage (CCUS)
- Climate and Sustainability – Targets and Financing

KAPSARC's Advisory Offerings

KAPSARC's advisory service offerings are grounded in rigorous research and supported by cutting-edge tools and methodologies.

Our advisory offerings are tailored to meet the specific needs of stakeholders in the energy sector. We empower our partners to make informed decisions in a rapidly evolving energy landscape by focusing on data-driven insights, strategy development, and knowledge sharing. Below is a list of our primary offerings:

Energy Sector Studies

- Energy sector planning and sector strategies
- Energy policy analysis and formulation
- Policy and regulatory impact assessment
- Techno-economic studies
- Business planning and financial modeling
- Cost-benefit analyses

Strategy and Operating Model Transformation

- Strategy development
- Governance and operating model transformation

Data, Models, and Tools (Analytics)

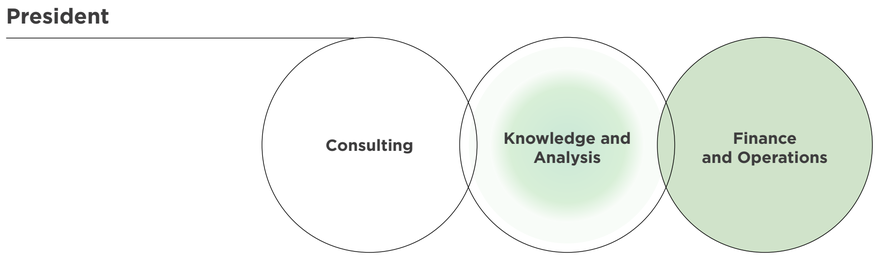
- Design of models
- Development of tools, software, and data platforms
- Analytics and data sharing

Insights and Knowledge Sharing

- Insights on energy markets
- Sector-specific outlooks
- Benchmarks
- Knowledge sharing workshops

How KAPSARC Works

KAPSARC operates with a well-defined structure that leverages the power of advisory services, research insights, and operational efficiency, enabling us to achieve our goals. Our divisions are divided into three main areas: Consulting, Knowledge and Analysis, and Finance and Operations. Additionally, we have a Management Support that provides strategic direction and encompasses strategic planning, partnerships, legal affairs, internal audit, and the KAPSARC College initiative.



01 | Consulting Division

As part of KAPSARC's operating model, the consulting division offers tailored, client-focused advisory services to the energy ecosystem. By collaborating closely with stakeholders, we understand their challenges and design solutions that leverage KAPSARC's extensive knowledge and research expertise. The consulting division brings together a team of experts to transform our services into practical solutions for our clients. Through a collaborative process, we engage with stakeholders, precisely define project requirements, set up the right team, and oversee project execution to deliver successful advisory services that meet our clients' needs.

Consulting Services

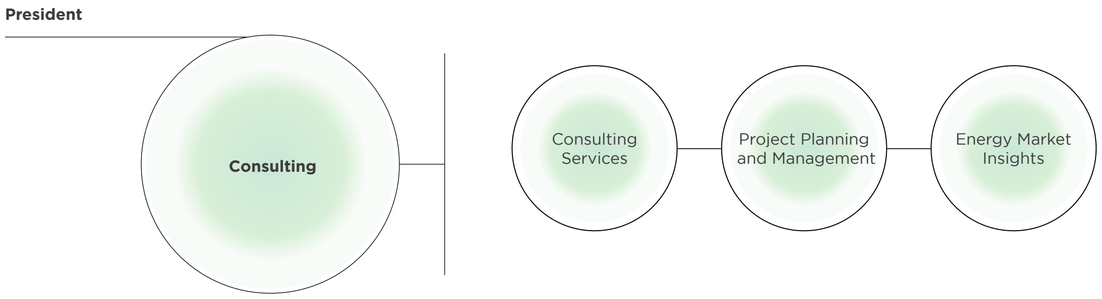
Manages projects and delivers value by leveraging KAPSARC's capabilities, expertise, and tools, as well as fostering relationships through active engagement with stakeholders across the energy ecosystem to promote our services and offerings.

Project Planning and Management

Assessing and evaluating stakeholder requests, managing the allocation of teams from Consulting, K&A, and external providers, and overseeing project progress. It ensures regular reporting to leadership, enhances visibility into Advisory and K&A activities, and establishes standardized project management procedures, methods, and guidelines.

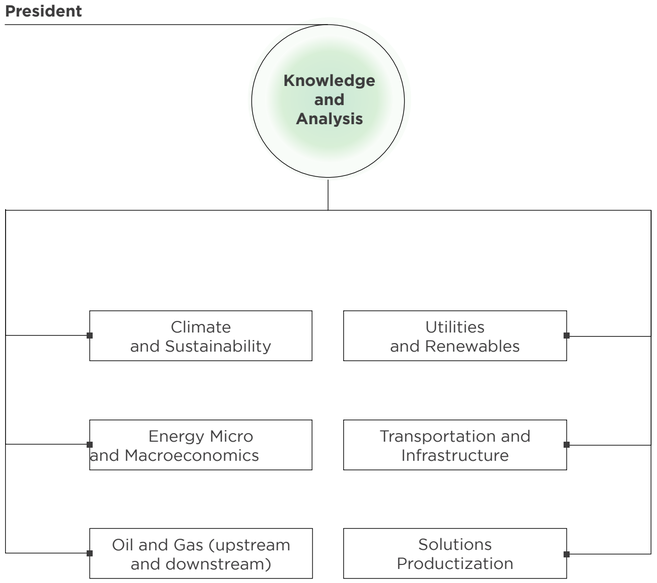
Energy Market Insights (New)

Monitors energy markets, conducts in-depth analysis, and provides insights to support policymakers. Additionally, it serves as a feedback loop for the Center's research and strategic focus areas while offering support for ongoing engagements.



02 | Knowledge and Analysis Division

K&A focuses on bridging the gap between energy economics, the environment, and policy by tackling critical local, regional, and global challenges. The experts transform these challenges into actionable research questions, employing existing or new methodologies to analyze data and generate insights. The resulting knowledge is then disseminated to inform policy and contribute to the social and economic development of the Kingdom. Below are the programs and the departments that fall under Knowledge and Analysis:



Climate and Sustainability

Creates advanced models and analyses to inform policy decisions. Key initiatives include developing net-zero strategies, expanding the Circular Carbon Economy Index, and researching energy access and finance. The program actively participates in international events to share its work.

Utilities and Renewables

Tackles key issues facing the energy sector, including integrating renewable energy, achieving net-zero goals, and navigating changing regulations. The program uses advanced modeling to deliver practical solutions to help the electricity industry overcome these challenges and move toward a sustainable future.

Energy Micro and Macroeconomics

Articulates how energy markets and economies influence each other. It tackles policy issues in the energy sector and builds models to assess the economic impact of energy market changes. These models are used to understand how economic policies affect energy and to guide sustainable development decisions.

Transportation and Infrastructure

Analyzes how technological advancements, policy, and investment affect transportation systems. It focuses on roads, rails, aviation, and maritime transport and assesses their impact on global and local oil demand. In short, the T&I program examines how changing transportation landscapes influence our reliance on oil.

Oil and Gas

Analyzes trends and guides the energy sector. It addresses current and future industry challenges through research projects in key areas like crude oil and natural gas. Its data-driven insights inform economic and policy recommendations, shaping a more secure and adaptable energy landscape.

Solutions Productization

Uses KAPSARC's resources to transform complex energy data into usable products. Its mission is to create a sustainable and informed energy sector in Saudi Arabia. It achieves this by developing innovative data analysis tools, improving the KAPSARC open data portal, and building web-based policy simulators. This combination helps stakeholders gain valuable policy insights from KAPSARC's data, models, and simulators.

03 | Finance and Operations Division

The Finance and Operations division at KAPSARC is crucial for ensuring the smooth and efficient operation of the organization. It provides support across various areas essential to achieving KAPSARC's objectives, encompassing departments responsible for managing resources, infrastructure, and staff.

Procurement

Handles acquiring essential supplies and services to ensure KAPSARC's operational needs are met, focusing on transparency, efficiency, and ethical standards in procurement processes.

Human Capital

Attracts, develops, and retains talented employees by managing recruitment, training, and performance management to nurture a positive organizational culture and a skilled workforce.

Communications and Public Relations

Builds and maintains KAPSARC's public image through strategic communication initiatives. Manages internal and external communications to ensure consistent messaging and promote KAPSARC's work to diverse audiences.

Finance

Oversees KAPSARC's financial health, managing budgeting, forecasting, and financial practices. Ensures compliance with standards and regulations, manages cash liquidity, and maximizes the efficient use of funds.

Facilities Management

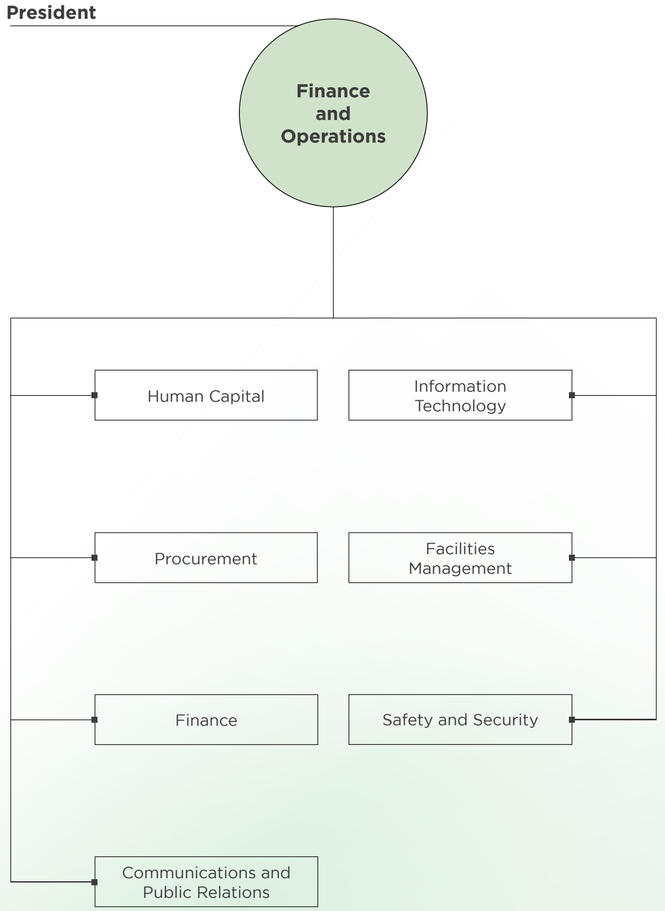
Maintains a well-functioning environment by overseeing the upkeep and functionality of KAPSARC's physical infrastructure, ensuring all facilities meet international standards, and providing a comfortable and practical workspace.

Information Technology

Fosters innovation by driving digital transformation initiatives and maintaining the organization's IT infrastructure. Delivers software solutions and ensures reliable network connectivity to support KAPSARC's growth and modernization.

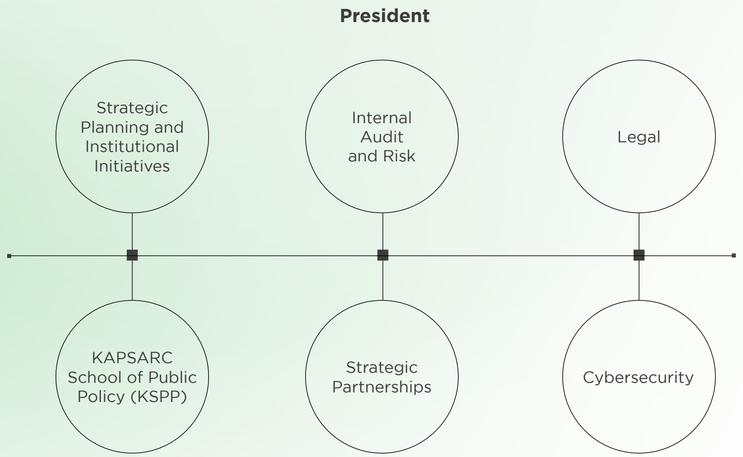
Safety and Security

Prioritizes the safety of employees and assets by establishing robust safety protocols and providing efficient transportation solutions. Manages security measures to maintain a safe working environment.



Management Support

KAPSARC's Management Support Departments operate under the direct oversight of the President, providing strategic direction and specialized support across several key areas. This includes the KAPSARC School of Public Policy (KSPP), Legal, Internal Audit and Risk, Strategic Planning, and Strategic Partnerships. These departments maintain independent mandates to uphold governance, drive strategic alignment, and enable cross-functional collaboration. Through legal guidance, institutional planning, partnership development, and academic innovation, they collectively support KAPSARC's long-term mission and organizational excellence.



Strategic Planning and Institutional Initiatives

Develop long-term strategic plans, including institutional and operational Key Performance Indicators (KPIs). Monitors and reports on progress to ensure KAPSARC remains aligned with its objectives while adapting to emerging opportunities.

KAPSARC School of Public Policy (KSPP)

Offers public policy, leadership, and management training programs for professionals across sectors. Through partnerships with global and local educational institutions, it empowers stakeholders with the knowledge and skills to navigate the energy sector.

Internal Audit and Risk

Reviews internal controls and risk management practices to proactively identify and mitigate potential risks. This function safeguards KAPSARC's financial health and operational integrity.

Cybersecurity

Protects KAPSARC's data and systems against cyber threats by implementing robust security measures. It maintains constant vigilance against potential attacks and ensures the resilience of the organization's digital infrastructure.

Strategic Partnerships

Foster valuable collaborations that enhance KAPSARC's success. By working with key stakeholders, they strengthen the organization's global influence and impact.

Legal

Provides comprehensive legal guidance across the organization, ensuring compliance with applicable laws and protecting KAPSARC from potential legal risks.

Section No.

2024 Key Milestones

03

The launch of KAPSARC's School of Public Policy

His Royal Highness Prince Abdulaziz bin Salman bin Abdulaziz Al Saud, Minister of Energy and Chairman of the Board of Trustees at King Abdullah Petroleum Studies and Research Center (KAPSARC), officially launched the Kingdom's first School of Public Policy, a graduate educational institution – the KAPSARC School of Public Policy (KSPP).

"Will provide continuing opportunities through professional development programs"

The announcement took place during the Human Capability Initiative (HCI) Conference, on February 28, 2024, held in Riyadh under the patronage of His Royal Highness Prince Mohammed bin Salman bin Abdulaziz Al Saud, Crown Prince, Prime Minister, and Chairman of the Human Capability Development Program Committee. During the launch ceremony, His Royal Highness expressed appreciation to the Custodian of the Two Holy Mosques, King Salman bin Abdulaziz Al Saud, and His Royal Highness the Crown Prince for their steadfast support in advancing the Kingdom's energy and education sectors. He affirmed that KSPP will provide continuing education opportunities through professional development programs tailored to the needs of government institutions in the Kingdom.

A Commitment to Sustainability and Innovation

In line with Saudi Arabia's sustainability goals, the new KSPP building will operate entirely on solar energy, integrating the latest advancements in green technology to support the Kingdom's ambition of achieving net-zero emissions.

Inaugural Master of Public Policy (MPP) Program

The Master of Public Policy (MPP) program at KSPP was officially launched on September 2, 2024, with an orientation day marking the commencement of its first academic year. The program received 545 applications, of which 81 candidates were interviewed. A total of 25 students were admitted,

25

Students Admitted

Representing a Diverse and Highly Qualified Cohort

%24
Female Representation

%6
International students

%38
Hold additional master's degrees

The student body primarily comprises individuals from engineering backgrounds and representation from medical, IT, linguistics and translation, science, finance, and political science fields.

The launch of KSPP marks a significant milestone in advancing public policy education in the Kingdom, equipping future leaders with the skills and knowledge needed to drive impactful policy design, analysis, execution, and evaluation in alignment with Vision 2030.

The launch of KSPP marks a significant milestone in advancing public policy education in the Kingdom

The 3rd IAEE MENA

KAPSARC hosted and played a pivotal role in the 3rd IAEE MENA Conference, which focused on “Domestic Energy and Economic Transformations in a Transitioning World.” The event served as a key platform for addressing critical energy challenges and opportunities, both regionally and globally.

Through its active participation, KAPSARC provided an in-depth analysis of the MENA region’s unique position in the energy transition, showcasing how the region adapts to a rapidly evolving energy landscape and responds to shifting global energy demand.

The conference emphasized the interdependence of a clean, stable, and sustainable energy future with the need for strategic investments in emerging industries. These themes shaped discussions across plenary and concurrent sessions, where KAPSARC’s expert insights contributed to thought leadership and meaningful dialogue on the future of energy in the region and beyond.

Domestic Energy and Economic Transformation in a Transitioning World

315 Attendees

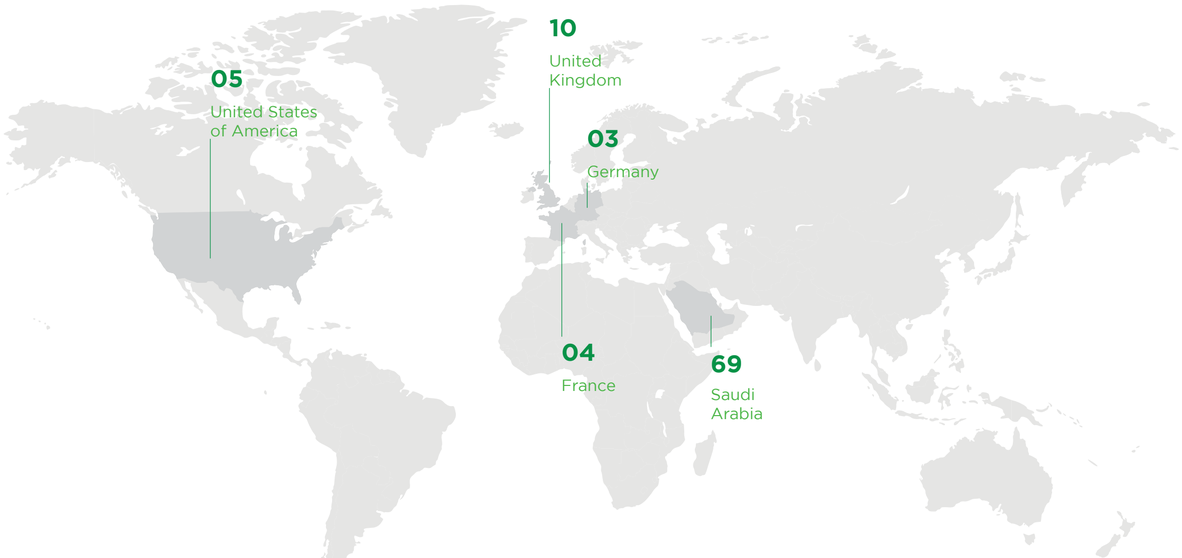
28 Countries

106 Organizations

Concurrent Session Presentations from Saudi Arabia

25	13	8

Concurrent Session Presentations by Country



Best Student Paper Award at the Conference

01 Khalifa University

02 KAPSARC School of Public Policy

03 King Fahd University of Petroleum and Minerals

Arabic Language Award

The KAPSARC Arabic Language Award, in collaboration with the King Salman Global Academy, promotes Arabic scientific content in energy, economics, and environmental studies. Now in its third edition, the 2024 award recognized contributions to high-quality scientific writing and translation across three tracks:

01

Authorship

Recognizes original works in energy-related fields.

02

Translation

Encourages the translation of key scientific texts into Arabic.

03

Enrichment

Supports academic and professional contributions to Arabic energy discourse.

For

2024

The focus was on Environmental, Social, and Governance (ESG) sustainability standards in the energy sector, particularly their role in corporate success, risk management, and investment appeal.

Winners of the Translation Track for 2024

Authorship

Article Writing

Dr. Abdullah Muhana Almuhana

Imam Mohammad Ibn Saud Islamic University

Dr. Ahmad Abdulrahman Aljabr

Majmaah University

Ms. Eman Abdullah Aman

Ministry of Energy

Translation

Summary of a Book

Eng. Zeyad Mohammad Alghamdi

Ministry of Energy

Dr. Amer Abdullah Qobti

King Khalid University

Mr. Hisham Alsawi Alameen

KAPSARC

Enrichment

Authored Book in the Field of Energy

Mr. Bandar Mohammad Alharbi

Ministry of Energy

The award ceremony took place, with His Royal Highness Prince Abdulaziz bin Salman, Chairman of the KAPSARC Board of Trustees, in attendance.

December 18

KAPSARC and Climeworks Partner

Advance Direct Air Capture in Saudi Arabia

KAPSARC, with Climeworks – a global leader in carbon dioxide removal technology – signed a Memorandum of Understanding (MoU) to jointly explore and advance Direct Air Capture (DAC) technologies in Saudi Arabia.

This strategic partnership, conducted under the guidance of His Royal Highness Prince Abdulaziz bin Salman Al Saud, Minister of Energy and Chairman of the Board of Trustees at KAPSARC, was signed during the 4th Saudi Green Initiative (SGI) Forum on December 3, held under the patronage of His Royal Highness Mohammed bin Salman, Crown Prince and Prime Minister. This partnership aims to evaluate resources such as:

- Underground CO_2 storage
- Analyze economic and environmental impacts
- Foster local workforce development in carbon removal initiatives

Launch of Book: *The Clean Hydrogen Economy and Saudi Arabia*

As part of a panel discussion titled

A Global Hydrogen Future: Saudi Arabia and Beyond

The book launch held in collaboration with the Saudi Association for Energy Economics (SAEE), KAPSARC, in partnership with King Abdullah University of Science and Technology (KAUST), officially launched the co-edited book, *The Clean Hydrogen Economy and Saudi Arabia: Domestic Developments and International Opportunities.*

The book provides a comprehensive analysis of Saudi Arabia's strategic vision for becoming a global leader in the hydrogen industry, highlighting key domestic advancements and international opportunities shaping the future of clean hydrogen.

The Kingdom's goal is to produce a substantial amount of clean hydrogen annually by 2030

Launch of KAPSARC's Futures Magazine

KAPSARC launched its first edition of ***Futures*** magazine in collaboration with Springer Nature. *Futures* serves as a platform to summarize and enhance KAPSARC's research, ensuring it is rigorous, accessible, and impactful. By presenting complex energy issues clearly and engagingly,

The magazine extends its reach beyond the research community to a broader audience, including:

01
Policymakers

02
Industry Professionals

03
Public Audience

The magazine achieves this by featuring localized content and simplified language, making critical energy topics more relatable and actionable. It provides valuable insights to inform future policies and decision-making.

Futures is published annually in English and Arabic, available in print and digital formats. Additionally, new articles are released online every week, keeping readers informed on emerging energy trends and developments.

Section No.

Forging Meaningful Connections

04

Expanding Partnerships: Selected MoUs Signed in 2024

Sinopec Economics and Development Research Institute

Sinopec is one of the three largest hydrocarbon companies in China. Its focus is on refining, petrochemicals, oil and gas exploration, and offshore production. EDRI is its in-house think tank. The Memorandum of Understanding (MoU) will facilitate joint research, open their potential support to KAPSARC Advisory, and provide the basis for a comparison between KAPSARC's upcoming Global Energy Outlook and Sinopec EDRI's Energy Outlook, as well as a mutual peer review of these products.

The Energy and Resources Institute (TERI)

At COP29, KAPSARC formalized its collaboration with TERI through a MoU, strengthening joint research on energy and sustainability. The partnership addresses critical energy and climate issues relevant to Saudi Arabia and India.

KAPSARC formalized its collaboration with TERI through a MoU at COP29

Strengthening Bonds with International Entities

China Development Institute (CDI)

KAPSARC hosted the leadership of CDI, a Shenzhen-based think tank specializing in economic policy, economic development, Renewable Energy, and Overseas Development, which is ranked among the top 25 think tanks in China in 2023. The two entities shared views on sustainable finance, electric vehicles, investment in renewables, and the Chinese economic outlook.

Oxford Institute for Energy Studies (OIES)

KAPSARC expanded its collaboration by assigning a Joint Fellow for gas markets and hydrogen. This Fellow will work with the Knowledge and Analysis division on medium and long-term gas market fundamentals, the role of gas in the energy transition, and benchmarking/pricing hydrogen in international trade.

The US House Committee on Ways and Means

Jason Smith (R-MO), Chairman of the Committee on Ways and Means in the United States House of Representatives, visited KAPSARC with a team of experts from the Committee and the U.S. Embassy. The discussion highlighted various key topics, including the dynamics of the oil and gas industries in both countries.

Jason Smith, accompanied by a team of experts, visited KAPSARC to discuss key energy topics

Energy Aspects

KAPSARC hosted a team from Energy Aspects to discuss reports of interest, future research opportunities, and the use of subscription services. During the visit, Energy Aspects presented its short-term outlook for the oil market and refined products. The session emphasized the importance of international cooperation, a fair global trading system, and technological innovation for a successful energy transition. It also highlighted the risks of protectionism and underscored the need for diversified and inclusive approaches to global energy challenges.

Energy Aspects presented its short-term outlook for the oil market and refined products

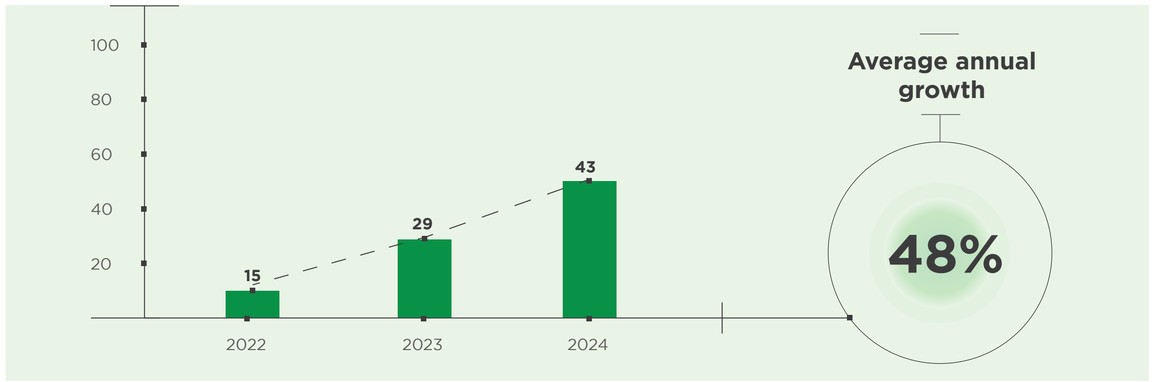
Section No.

Advising the Saudi Energy Sector

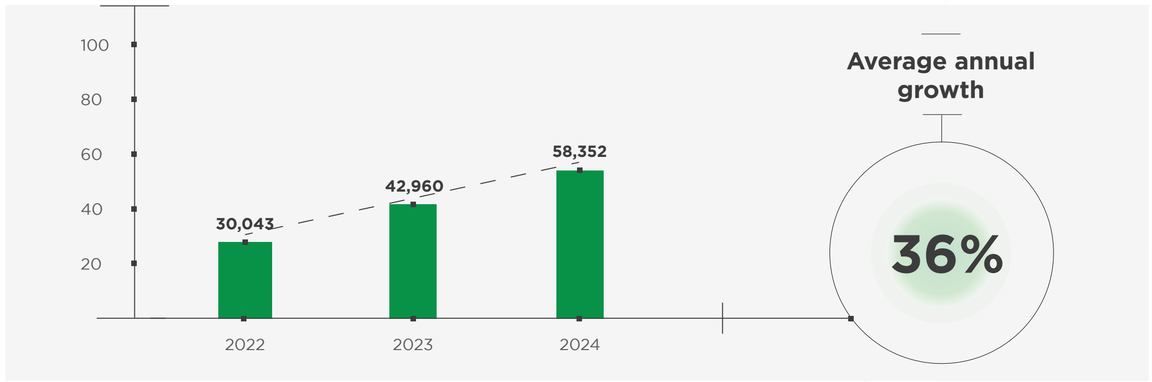
05

Charting the Path of Advisory Excellence

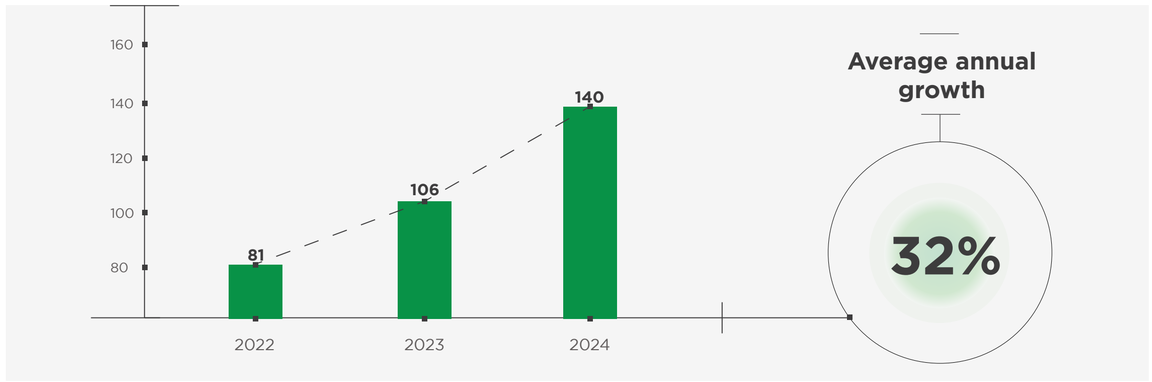
Consulting Team



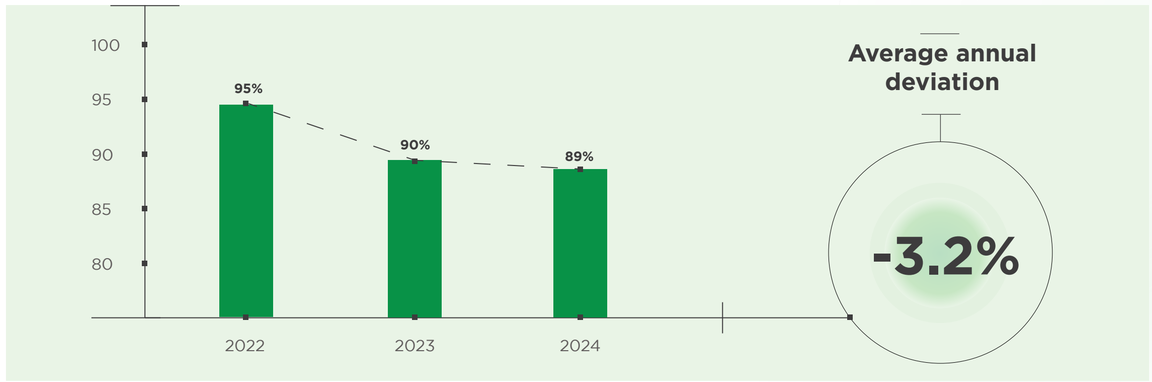
Hours Dedicated to Advisory Projects and Activities



Ad Hoc Requests



Client Satisfaction



Section No.

Producing Internationally Recognized Research

06

KAPSARC's Efforts to Produce Internationally Recognized Research, Tools, and Data for Global Policymaking

Expanding Intellectual Frontiers: Thought Leadership Through Publications

In 2024, KAPSARC demonstrated its thought leadership through a robust output of diverse research materials, contributing to the global discourse on energy and sustainability. The Center's publications spanned various formats, reflecting KAPSARC's comprehensive research approach:

203

Research Papers

were published, showcasing the depth and breadth of the Center's analytical work across multiple facets of energy research.

42

Journal Articles

were contributed to the academic community, making KAPSARC's research findings globally accessible to scholars and industry experts alike.

68

Discussion Papers

KAPSARC produced policy and economic analyses relevant to policymakers, industry analysts, and academia

11

Methodology Papers

introduced new research approaches, improving the rigor and relevance of studies in the energy field

39

Commentaries

Through 39 commentaries, KAPSARC experts shared insights and analyses, engaging with current trends and developments within the energy sector.

9

Instant Insights

KAPSARC delivered new perspectives on emerging energy trends, news and events.

5

Data Insights

were published, offering timely and data-driven analysis pertinent to contemporary energy challenges.

14

Workshop Briefs

The Center produced workshop briefs, summarizing critical discussions, findings, and recommendations from various workshops, ensuring knowledge sharing and collaborative learning.

Books, Chapters and Reports:

KAPSARC released "*The Clean Hydrogen Economy and Saudi Arabia*", a book co-edited by KAPSARC. Additionally, the Center contributed two chapters to other books, published ten reports offering comprehensive insights into various energy and sustainability topics, and produced three policy briefs for the T7 process.

- **Think20**
  KAPSARC contributed three policy briefs during Think7 in Italy:
  - *Fueling Clean Energy Transitions: Addressing Value Chain Polarization in Critical Minerals*
  - *Energizing the Future: A Holistic Approach to Global Sustainability*
  - *Advancing G20's Climate Agenda Coordination and Collaboration through the Circular Carbon Economy Index*

Workshops Hosted or Co-Hosted by KAPSARC in 2024

In 2024, KAPSARC hosted a series of high-impact workshops, assembling more than 660 attendees to discuss key energy topics. With an average satisfaction rate exceeding 90%, these events reinforced KAPSARC's role in shaping policy, advancing sustainability, and fostering global collaboration.

660
attendees

90%
satisfaction

Strategic Impact
Events That Shaped the Year

01 UN Climate Change Conference in Baku (COP 29)

KAPSARC actively contributed to the global climate dialogue by organizing and participating in impactful events. Below is a summary of KAPSARC's key activities at the event:

Carbon Removals in International Carbon Markets

In collaboration with the European Roundtable on Climate Change and Sustainable Transition (ERCST), KAPSARC hosted a session on carbon removals in international carbon markets.

Experts shared insights and engaged in discussions on the role of carbon removals in enhancing global carbon market mechanisms.

A Global Snapshot of Net-Zero Progress: Insights from the 2024 Circular Carbon Economy Index

This session unveiled findings from the 2024 Circular Carbon Economy (CCE) Index, offering a comprehensive overview of global net-zero progress.

It highlighted advancements in climate action and addressed critical "zero gaps" that require urgent attention to achieve climate goals. market mechanisms.

Empowering Energy Efficiency in the GCC Built Environment

KAPSARC presented key findings from a collaborative report on energy efficiency in the GCC-built environment.

In partnership with 13 international organizations, the session explored innovative strategies to enhance energy efficiency and promote regional sustainability.

Decarbonization of the Transport Sector and the Role of Alternate Fuels

KAPSARC explored strategies for achieving carbon neutrality in the transport sector.

The session focused on the potential of alternative fuels, including e-fuels, hydrogen, and biofuels, as complementary solutions to electrification efforts in the energy transition.

Improving the Measurement of Methane Emissions Using Satellite and Other Technologies

Hosted at Saudi Arabia's Pavilion, this session showcased an expanded study on methane emissions monitoring.

Using satellite and other advanced technologies, the analysis covered Saudi Arabia, the UAE, Iraq, Kuwait, and Oman, providing actionable insights to improve methane management.

Energy and Transport at a Critical Juncture

In collaboration with the Institute of Energy Economics in Japan (IEEJ) and the World Energy Council (WEC), KAPSARC hosted an off-site COP29 roundtable on Energy and Transport at a Critical Juncture.

This event examined pathways for transitioning to low-carbon energy sources. Global indices were presented to highlight decarbonization achievements and challenges, emphasizing the importance of sustainable urban transport infrastructure.

02 Participation in the 26th World Energy Congress (WEC)

During the 26th World Energy Congress (WEC), KAPSARC participated in a series of informative presentations in Saudi Arabia's Pavilion and presented in three side events.

The presentations focused on

01

Planning Energy, covering blue hydrogen certification and H_2 and net-zero papers.

02

Decarbonizing Energy, including the paper on satellite GHG monitoring.

03

The Circular Carbon Economy: Decarbonization with Circularity?

03 The Role of Carbon Markets in Transitions – IEF-KAPSARC High-Level Roundtable

The IEF-KAPSARC High-Level Roundtable on Carbon Markets and the Circular Carbon Economy (CCE) explored how newly evolving carbon markets and greenhouse gas crediting mechanisms could provide reliable market incentives for scaling investment in CCE technologies, including carbon capture, utilization and storage (CCUS), bioenergy with CCS (BECCS), and direct air capture and storage (DACS). The three-session roundtable featured multiple speakers from key organizations, such as: The Supreme Carbon Bonds Committee, Iraq, Saudi Aramco, IEF Foundation, ACWA Power, The African Energy Chamber, Kayrros, and others.

04 2024 ONS

KAPSARC contributed during the biennial conference by speaking at the "Envisioning the Future" parallel session, which presents a valuable opportunity to engage in a forward-looking discussion about the future of energy. In addition, KAPSARC hosted a side event titled "What Are the Impacts of Climate Policies on Energy and Trade? Sharing Insights, Experiences, and Strategies for Carbon Competitiveness." Panelists addressed the challenges of balancing domestic and global objectives, such as economic growth, job creation, energy security, and climate goals. They highlighted the importance of international cooperation, a fair global trading system, and technological innovation for a successful transition.

05 A Focus on GCC-China Industrial Supply Chains

KAPSARC and the Institute of World Economics and Politics in the Chinese Academy of Social Sciences jointly organized a workshop with participants and speakers from international and public institutes such as:

UNIDO / PIF / Jadwa Investment / Renmin University of China / Rocky Mountain Institute

the Chinese Center for International Knowledge on Development / industrial representatives-

from the wind, solar, and electric vehicle sectors

The workshop covered multiple topics, including:

- The outlook for economic growth in the GCC & China
- The impact of industrial policies on clean energy technology supply chains
- The rising role of GCC states in reconfiguring global supply chains to support the energy transition

06 Building Bridges: Partnering for Energy Transition and Economic Resilience

KAPSARC organized a joint workshop in Brussels with the European Roundtable on Climate Change and Sustainable Transition (ERCST).

The workshop brought together key experts from both regions to explore critical topics, including energy transitions and how local contexts can drive global emission reductions. It also delved into potential net-zero pathways, examining the opportunities and challenges for Europe and Saudi Arabia in achieving climate neutrality.

Other Notable Activities and Partnerships

The Circular Carbon Economy from Concept to Realization

Experts from KAPSARC and various organizations, including the Institute of Energy Economics Japan and the European Commission, explored the Circular Carbon Economy (CCE) concept in detail.

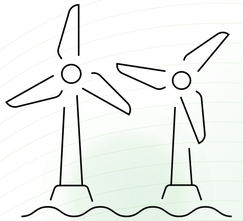
The discussions covered national policy, the economic implications of implementing CCE, and the technologies required to bring it to life.

Notably, CCE aligns with Mission Innovation's (MI) focus areas. MI member governments are collaborating to develop critical technologies such as carbon capture, clean hydrogen, sustainable shipping solutions, and bio-based alternatives for fuels, chemicals, and materials.

This ongoing dialogue through the MI Think Tank will expedite technological advancements and solidify the policy, programming, and financial structures needed to support a successful CCE transition.

Global Energy Model Overview Workshop

KAPSARC hosted a workshop, "**Global Energy Model**," which provided an in-depth showcase of the set of the Center's modeling tools. This technologically detailed model is designed to generate long-term global energy forecasts under various policy assumptions related to energy and the environment. During the workshop, KAPSARC experts presented the model's functionalities and capabilities, leading to insightful discussions and valuable feedback from the participants.



Shell Workshop

Shell visited KAPSARC to discuss releasing the newest version of Shell's Energy Security Scenarios.

The session provided a platform to analyze its implications, particularly for Saudi Arabia, through an expert-driven discussion.

Geothermal Webinar

KAPSARC and the International Renewable Energy Agency (IRENA) organized a webinar to explore financial instruments, legal frameworks, and policies to accelerate geothermal development.

The discussions covered best practices, investment strategies, and emerging technologies in geothermal power generation.

The Role of Sustainable Finance – Bridging the Gaps for an Orderly Energy Transition

A joint KAPSARC and PwC event convened key stakeholders shaping Saudi Arabia's sustainable finance market. This event facilitated an exchange of ideas among policymakers, market participants, and knowledge institutions on this emerging topic. Recognizing Saudi Arabia's critical role in global energy transitions, the event fostered productive discussions among stakeholders in the country's energy transition and climate finance sectors, incorporating regional, local, and global perspectives.

Facilitating Low-Carbon Hydrogen Market: Opportunities, Challenges, and Pathways

A workshop was convened, allowing policymakers to discuss the growing momentum around low-carbon hydrogen as a key tool for achieving climate neutrality.

Attendees focused on identifying effective policy and regulatory frameworks to navigate the uncertainties of hydrogen demand and draw on successful market designs from other sectors in order to pave the way for a thriving hydrogen economy.

From the Gulf to Europe: Greening Energy Relations

This event, held with the Italian Institute for International Political Studies, examined the prospects of building a green energy backbone between the Arabian Gulf and Europe, discussing sustainable supply chains and trade relations.

ISPI
ITALIAN INSTITUTE FOR INTERNATIONAL POLITICAL STUDIES

Additional Participations

45th International Association for Energy Economics (IAEE) Conference

KAPSARC strengthened its position as a prominent influencer in the global energy discourse through active engagement in the 45th International Association for Energy Economics (IAEE) Conference held in Istanbul during the second quarter of 2024.

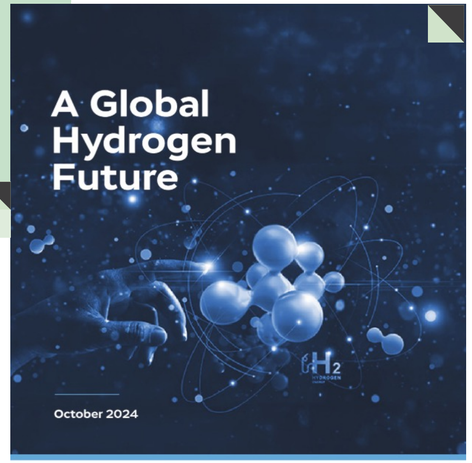
The Center showcased its expertise through the presentation of 21 published research papers by KAPSARC experts at the conference. These papers addressed a diverse range of crucial energy topics, delivering valuable insights into long-term strategies for greenhouse gas (GHG) emissions reduction, the evolving gas and oil market, and the potential of hydrogen and hydrocarbons in the energy mix, as well as the future of electricity and transportation.

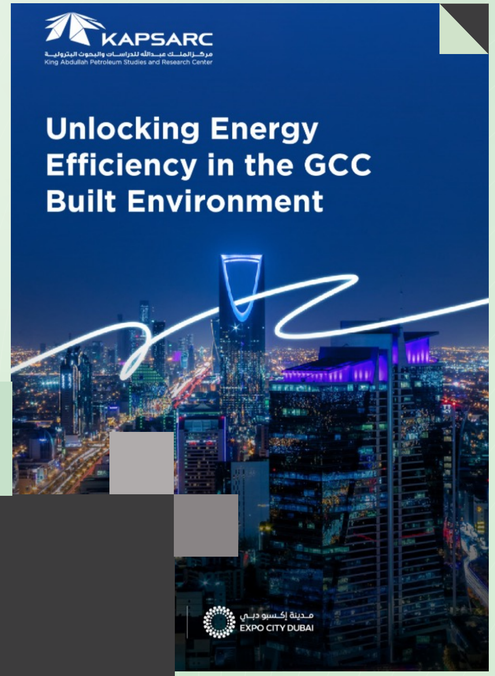
Special Reports:

A Global Hydrogen Future

KAPSARC, co-authored with Energy Futures Initiative (EFI), *A Global Hydrogen Future,* a comprehensive report analyzing hydrogen's role in accelerating the global energy transition.

The report explores hydrogen's potential as a key enabler of decarbonization, examining market dynamics, policy frameworks, and technological advancements that drive its adoption worldwide.





Unlocking Energy Efficiency in the GCC Built Environment

KAPSARC's research piece, *Unlocking Energy Efficiency in the GCC Built Environment,* examines strategies to enhance energy performance and sustainability across the region's rapidly growing urban landscape.

Given the GCC's high energy consumption in buildings, the report explores policy mechanisms, technological innovations, and market incentives that can drive efficiency improvements while maintaining economic growth.

Thought Leadership Selected Key Projects

01 | Electric Vehicle Battery Chemistry Evolutions Critical Mineral Implications

Overview

This project developed the literature on key questions surrounding the supply and demand of the minerals and materials that are required for the energy transition, both in the Kingdom and globally.

The study was a collaboration between KAPSARC and The Institute of Energy Economics (IEEJ) in Japan, and it examined the demand and supply of critical minerals and related implications from the ongoing shift in lithium-ion battery chemistry for electric vehicles.

Objectives

- To analyze implications for governments, consumers, battery and car manufacturers, and miners and refiners of critical minerals.
- To illustrate potential changes in battery technology and their different impacts on each critical mineral.
- To understand the role of, and demand for, critical minerals for EV batteries.

Methodology

The study modeled future critical mineral demand at global and regional levels under a range of future battery chemistry and electric vehicle deployment scenarios up to 2040.

These demands were then compared to regional supply patterns, with key implications drawn from an analysis of critical mineral markets.

Findings

The study highlighted that:

Global electric vehicle deployment aspirations translate to the need for lithium supply to at least double by 2040 to even meet the demand for batteries for passenger electric vehicles.

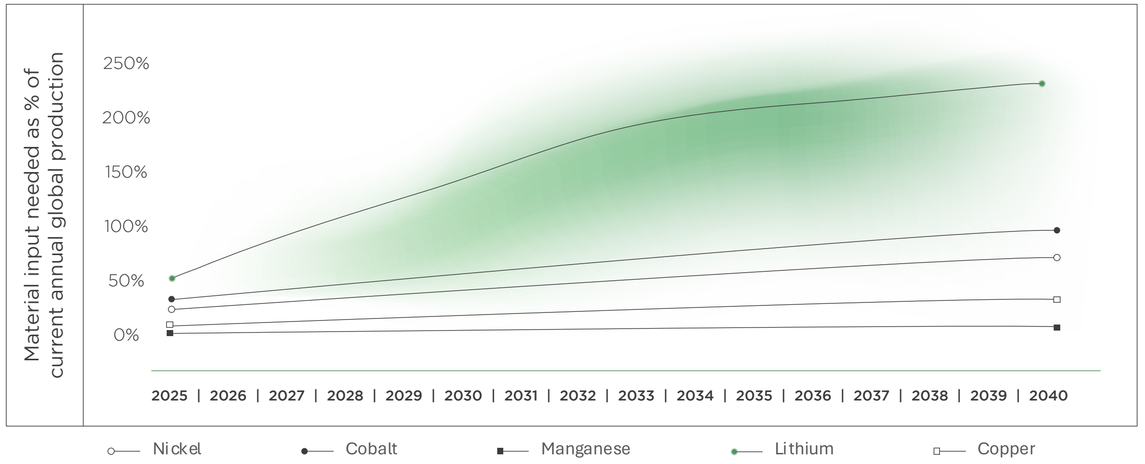
Sufficient global reserves are available to meet demand up to 2040, but there is a regional disconnect between battery material demand and regional supply as well as a challenge in increasing production capacity.

Rapid shifts in battery chemistry have implications for which minerals should be prioritized.

Graph

Option 1.

Material input requirements for batteries for passenger electric vehicles compared to current production.



02 | KAPSARC Oil Value Chain Analyzer (KOVA)

Overview

The project develops a global crude oil value chain model for identifying latent opportunities in the market for value recovery.

Oil market decisions, global energy transition policies, and their effects on oil products' demand evolution are essential for harnessing opportunities in the global market.

This is of interest to both producers and consumers in the market.

Objectives

Questions such as the following are being addressed:

- What are the latent market opportunities for Saudi crude oil in the global market?
- How do crude oil sanctions impact regional and global energy affordability?
- Do phantom oil flows affect value recovery for producers?
- What is the role of petrochemicals and plastics for sustainability amid the global energy transition?
- How can Saudi Arabia maximize the value of each barrel of its supplies?

Methodology

A model of global crude oil refineries is embedded in a global oil value-chain optimization model, including a realistic oil shipping component using up-to-date market information on production, supply, demand, and pricing of both feedstocks and final products.

Various policy and business relevant questions can be posed as the modeling objective to generate insights on likely outcomes in the market.

Outcomes

The global refinery model has been developed into a user-friendly application, which became available on the KAPSARC website in 2024.

The model was the first to be used for investigating the market impacts of the new Dangote Refinery in Nigeria. Other results from the project will be presented in a series of research publications (e.g., the forthcoming report, "The Role of the GCC in the Future Plastics Economy: Opportunities and Challenges").

03 | KAPSARC Global Energy Model

Overview

The future of energy faces significant uncertainties, including rapid technological advances, evolving environmental policies, and global macroeconomic shifts. Addressing these issues demands a comprehensive analysis of energy policy given the complexity of sectoral and regional interactions.

This project examines the challenges and opportunities in the global energy market, with particular attention paid to the distinct energy landscape, policy frameworks, and economic dynamics of the region in focus.

Objectives

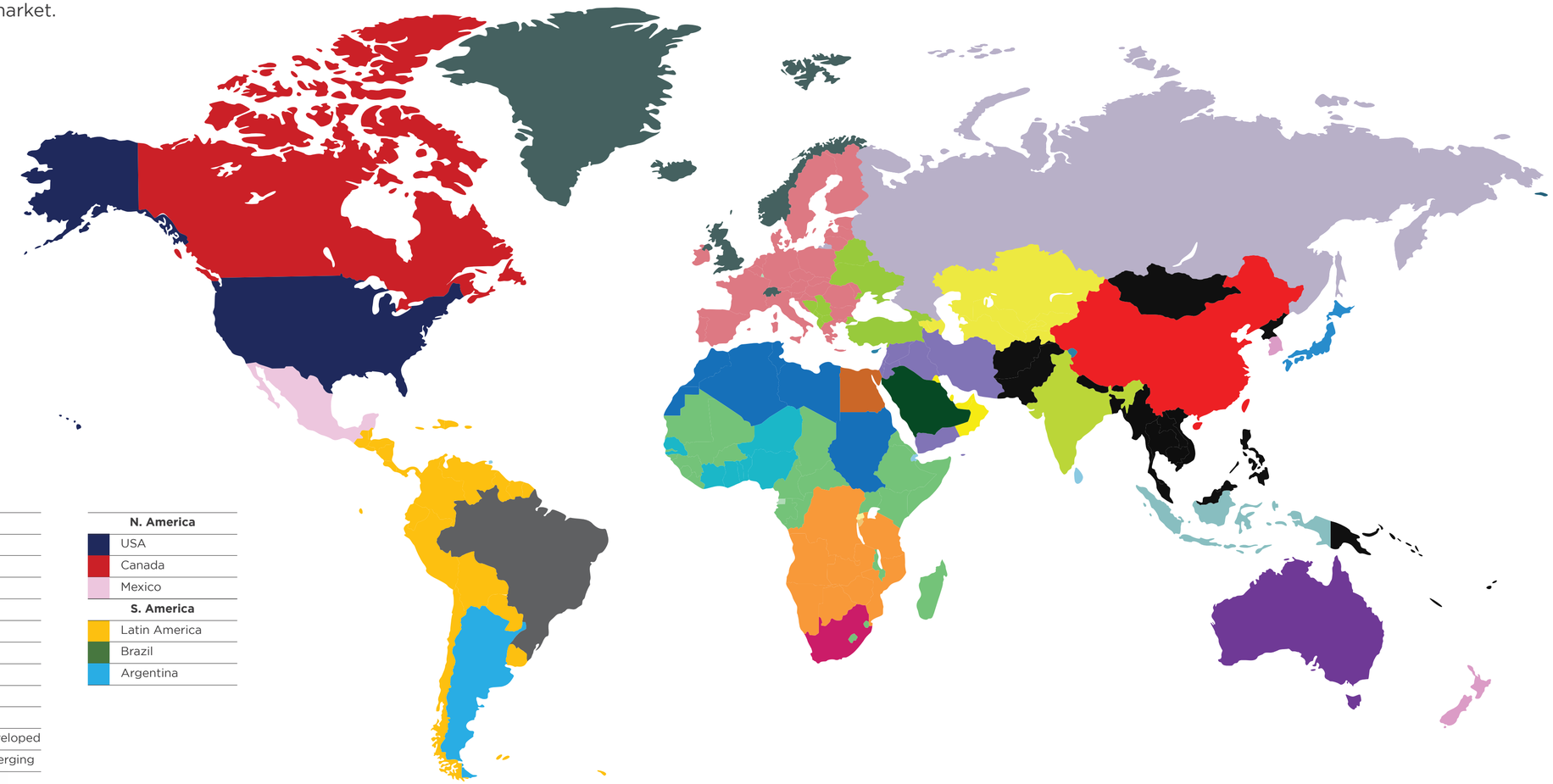
The project aims to build comprehensive long-term scenarios (to 2050) that explore the major challenges and opportunities in the energy transition for both the MENA region and the global market.

Central to this effort is a robust model of market fundamentals that encompasses regional and international energy supply and demand, technology costs, key activity drivers, and relevant policies.

By capturing these elements, the project seeks to provide insights that will guide policymakers, industry stakeholders, and researchers in planning for a secure, affordable, and sustainable energy future.

Outcomes

- Long-term global energy scenarios.
- A series of model-based studies that explore challenges and opportunities in the energy market.

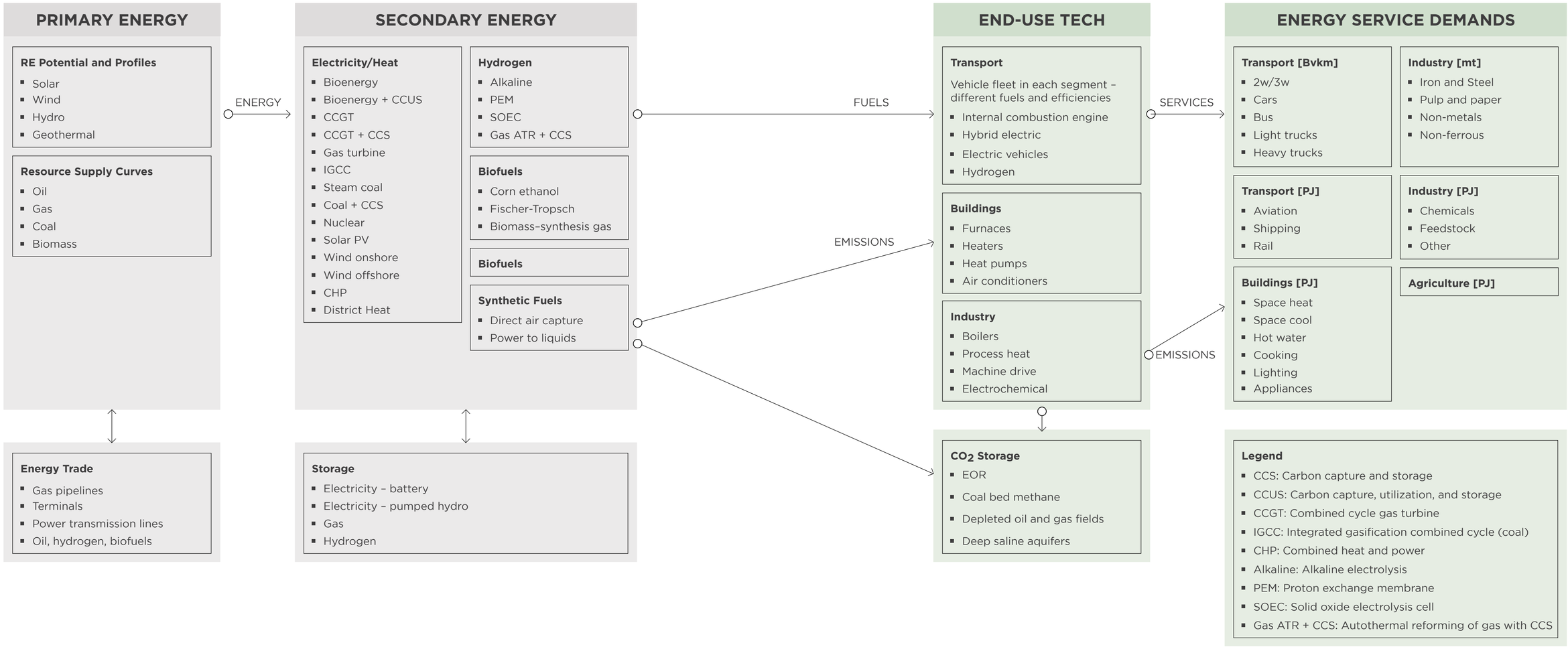


Asia/Oceania
Saudi Arabia
Other GCC
Other Mid East
India
China
Japan
Indonesia
Asia Emerging
Asia Developed
Asia Central
Australia

Africa
Egypt
South Africa
North Africa
West Africa
South Africa
Other Africa
Europe
Russia
EU28
Europe - Developed
Europe - Emerging

N. America
USA
Canada
Mexico
S. America
Latin America
Brazil
Argentina

Exogenous Drivers: Sector GDP and Population



04 | Regional Electricity Trading in the GCC Countries, Egypt, Iraq, and Jordan

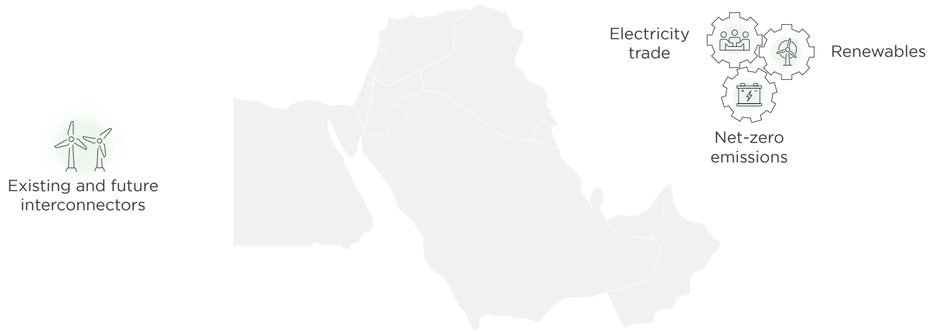
Overview

This project examines cross-border electricity trading in the region, specifically between Saudi Arabia and its interconnected neighboring countries – namely, the GCC countries, Iraq, Jordan, and Egypt.

Several projects of interconnectors are ongoing or under consideration in the region, which necessitates developing and analyzing appropriate contractual schemes for electricity trading.

Figure

Context and geographic perimeter under consideration



Objectives

- To quantify the benefits of an hourly electricity market among the interconnected GCC countries, Egypt, Jordan, and Iraq by 2030 in terms of costs and emissions, among other parameters.
- To assess long-term bilateral electricity trade arrangements that could emerge in the region.

Methodology

The model is a network-constrained hourly economic dispatch, specifically designed and customized for the region. It incorporates a scenario analysis approach to account for hourly variations in electricity generation from wind and solar. The model is implemented and executed using PLEXOS, a commercially available power system optimization software.

Outcomes

The project and its outcomes highlight the following key insights:

- By 2030, regional electricity trading could reduce variable generation costs by $1 billion annually across the nine interconnected countries. In the long term, further cost savings would emerge from optimized regional investments.
- In 2030, regional electricity trading would cut CO_2 emissions by 8 $MtCO_2$ and reduce curtailment of solar PV and wind by 35%.

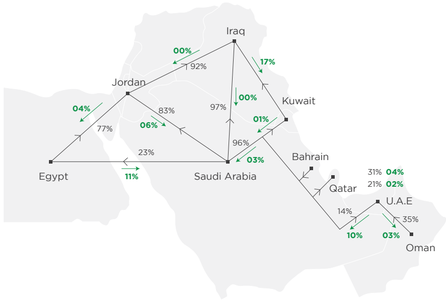
-8,000,000 $MtCO_2$

35% Reduced

- Saudi Arabia is projected to be the region's largest electricity exporter, with 28 TWh of exports in 2030.
- Hourly cross-border electricity flows reveal strong complementarities between Saudi Arabia and Egypt. Various long-term trading arrangements between the two countries were tested and analyzed. The daily profile contract, which follows a daily pattern with an hourly timestep, emerges as the most beneficial for the region.

Figure

Annual loading (in both directions) of interconnectors in 2030.



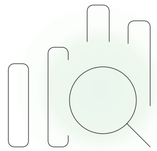
05 | Impact of Financial Oil Markets on Price Behavior

Overview

The project provides an assessment of physical versus financial oil markets. The subject has gained special significance in recent years as oil prices have appeared at times to have been disconnected from market fundamentals.

Questions such as the following are being addressed:

- Who are the players involved in oil market speculation and what are the latest strategies they employ?
- What makes the oil market exceptional compared to other commodities?
- Who are the winners in oil speculation?
- How can the strategies of speculators be anticipated, mitigated, or replicated?
- Does the behavior of speculators actually affect prices, and can that behavior help predict the prices?



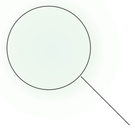
Methodology

The main methods include quantitative analysis on the impact of trading techniques and investor participation on prices, focusing on recent events in the oil market but also on historical experience and perspectives for the future.

Main Methods of Analysis in Energy Markets

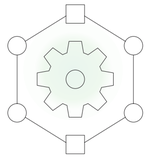
01 — **Quantitative Analysis Focused On**

- Impact of trading techniques
- Role of investor participation
- Influence on market prices



02 — **Application Focus**

- Recent developments in the oil market
- Historical experience
- Future outlook and projections



Outcomes

Findings and conclusions are being presented in the form of research papers. Some are written in a general style and accessible to non-specialists (e.g., the forthcoming paper “Myths and Mysteries About Speculation in the Oil Market”), while others are technical and suited to academic journals.

06 | Circular Carbon Economy Index (CCE Index)

Overview

The 2024 Circular Carbon Economy (CCE) Index provides a multidimensional view of the current state of net-zero transitions worldwide, covering 125 countries globally. It is based on the holistic, technology-neutral, and flexible concept of the CCE, where a complete CCE is understood as the equivalent of net-zero emissions. The resulting CCE Index is a composite indicator that measures various dimensions of the CCE and net-zero transitions in a national context across countries. Its main foci are current performance and enabling factors for future progress.

The first edition of the CCE Index, published in November 2021, covered 30 countries. The 2022 and 2023 editions covered 64 major economies and oil- and gas-producing countries. From the 2024 edition onwards, the index includes 125 countries. The countries were selected using rigorous criteria, providing broad representation of all world regions and accounts for 96% of global greenhouse gas (GHG) emissions.

125

countries globally

30 (2021) **64** (2022 and 2023) **125** (2024)

Outcomes

The Circular Carbon Economy (CCE) Index project expands and adds rigor to the conceptual basis of the CCE concept, as well as its practical operationalization, by providing a robust quantitative framework to measure countries' performance and their progress toward CCEs, or net-zero emissions. The index is intended as a tool for climate and energy policy stakeholders worldwide in order to benchmark countries and inform policy discussions on net-zero transitions and their enablers.

Methodology

The CCE Index has been designed following international best practice in the development of composite indicators for country comparisons.

Key steps in the development of a composite indicator include:

- Development of a conceptual framework
- Data processing; data analysis
- As a crosscutting element, stakeholder engagement
- Presentation of the results and effective use
- Data selection and preparation

The index follows an 80% threshold requirement for the inclusion of both data and indicators. All missing values are imputed. All methodological choices and full indicator details are documented, and all underlying data and final results are made available for free, via the CCE Index web portal: https://cceindex.kapsarc.org/.

Key Finding

The 2024 CCE Index results deliver major insights, which reflect the need to accelerate the global net-zero transition, doubling down on sustained progress, and ensuring just transitions worldwide. These can be summarized into four headline policy messages:

01 The world remains fragmented

The world's largest economies, which are also responsible for the majority of GHG emissions, are performing comparatively better than the global average and have the potential to do more. A significant share of the world's population, however, lives in countries that are falling behind in the transition. While all regions have more work to do, Sub-Saharan Africa needs urgent global support.

02 There is a divergence in pace

The global pursuit of net-zero emissions continues, though progress has slowed. A closer look reveals that top performers in the CCE Index are accelerating their transitions significantly more than countries in the middle and bottom of the distribution. Meanwhile, countries at the bottom are stalling.

03 Gaps in enablers are not closing

Enabling environments for the net-zero transition among middle- and low-performing countries need to be urgently brought up to speed with those in top-performing countries. In critical enabling dimensions – finance, technology, and policy – countries in the middle and the bottom of the CCE Index ranking consistently fall below the global average scores, with the observed gaps showing no signs of closing over time.

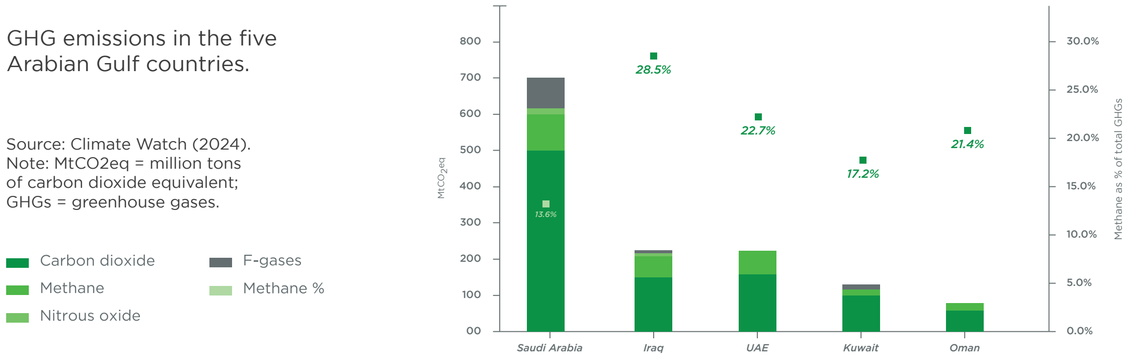
04 Policies are stronger but still volatile

On a positive note, there has been commendable progress in policies and regulations, led by countries scoring in the middle of the CCE Index. Yet, changes in long-term policy are a source of volatility in countries' net-zero policy and regulatory frameworks, and more stable targets and clear pathways are needed for consistent signaling and sustained implementation.

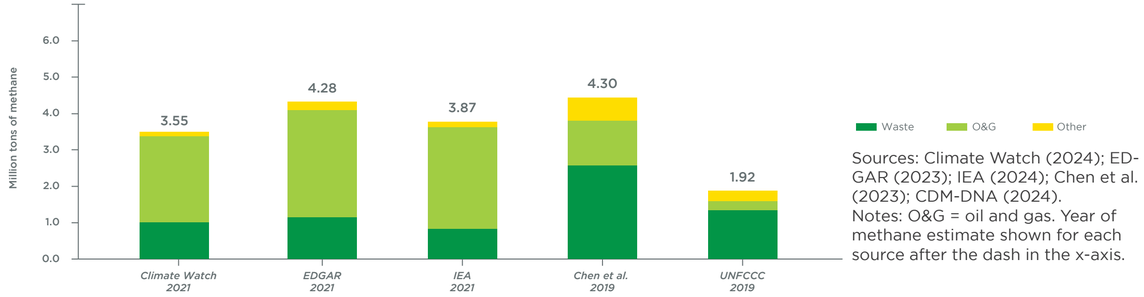
Visuals

GHG emissions in the five Arabian Gulf countries.

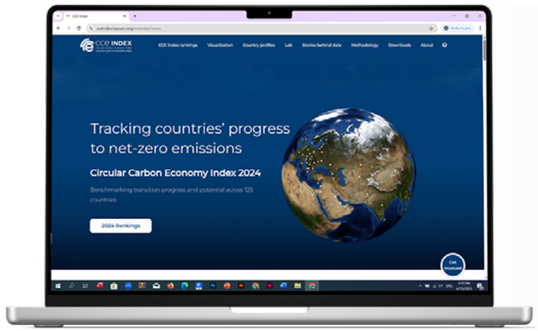
Source: Climate Watch (2024).
Note: MtCO2eq = million tons of carbon dioxide equivalent; GHGs = greenhouse gases.



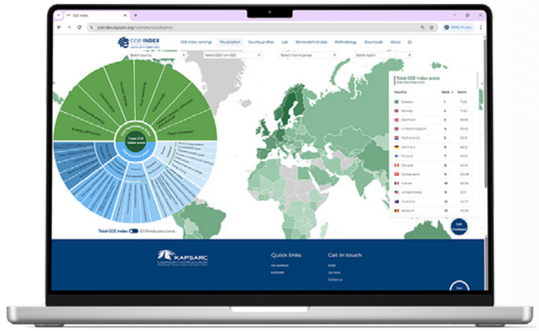
Methane emissions in Saudi Arabia across five different data sources.



Sources: Climate Watch (2024); EDGAR (2023); IEA (2024); Chen et al. (2023); CDM-DNA (2024).
Notes: O&G = oil and gas. Year of methane estimate shown for each source after the dash in the x-axis.



Landing page from the CCE Index web portal



Visuals page of the CCE Index web portal

07 | Satellite Technology for Measuring Greenhouse Gas (GHG) Emissions

Overview

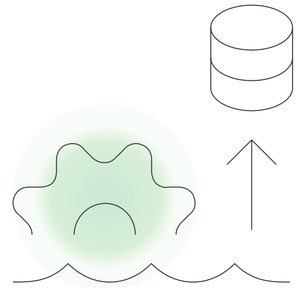
This project leverages advanced satellite remote sensing technology to estimate greenhouse gas (GHG) emissions, with a focus on methane – a potent GHG that is particularly difficult to measure. Sectoral coverage includes methane emissions from oil and gas and from other activities like waste. Geographically, the project covers Saudi Arabia and other countries in the Middle East and North Africa (MENA).

Objectives

- Provide accurate measurements of methane emissions.
- Compare the satellite measurements to established data sources like the IEA and EDGAR, and explain the discrepancies in methane emissions for countries.
- Evaluate the maturity and potential of satellite technology for measuring emissions, and update the method and estimates as the technology and processing approaches improve.

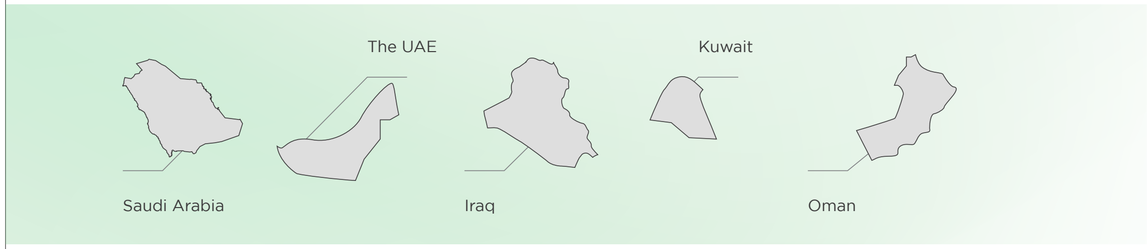
Methodology

The project utilized satellite imagery from two public satellites: Sentinel-5P and Sentinel 2. Images were collected for each year and aggregated. The satellite imagery was then processed to quantify the annual volume of methane emissions. Different processing approaches were used, including the wind-rotated method and the basin inversion model.



Outcomes/Key Findings

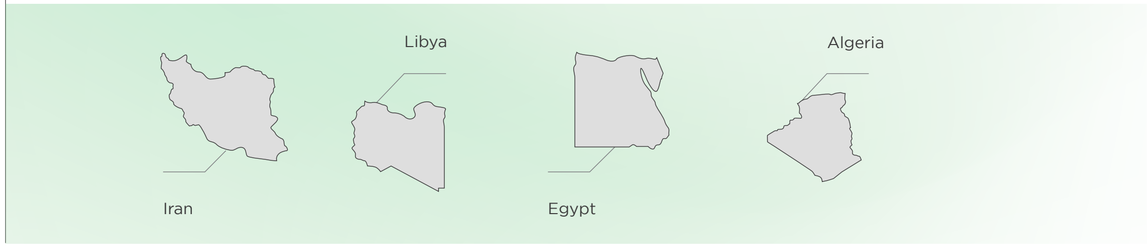
- Used satellites to estimate methane emissions between 2019 and 2023 for five countries: Saudi Arabia, United Arab Emirates, Oman, Kuwait, and Iraq.



- Demonstrated that organizations like the IEA have been overestimating methane emissions for the oil and gas sectors of Gulf countries.

- Demonstrated Saudi Arabia's top performance, with the lowest methane intensity among the analyzed countries.

- Initiated the expansion of the satellite analysis to four other MENA countries: Iran, Egypt, Libya, and Algeria.



Visuals

Figure Option 1.

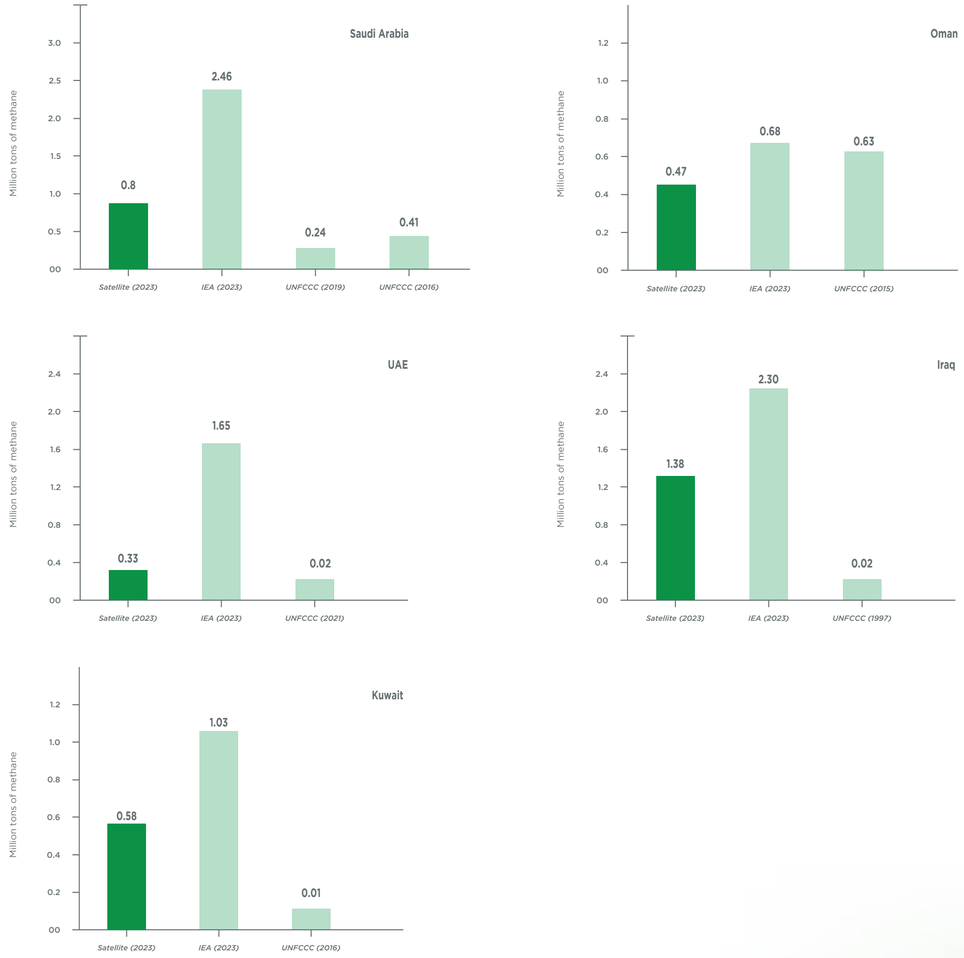


Figure Option 1 notes

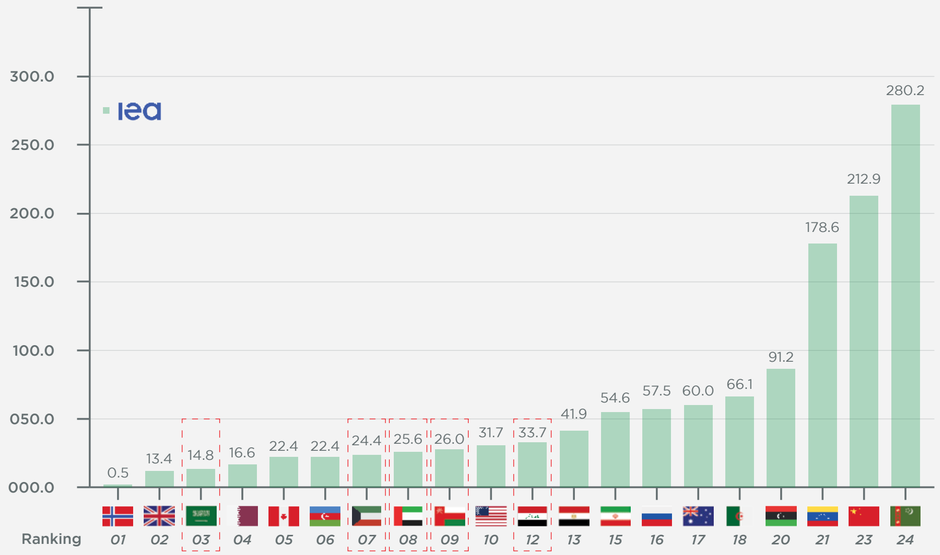
Data shown in absolute terms for each country's oil and gas sector only.

Data estimation year is shown in parentheses.

The latest national GHG inventories submitted by each government to the UNFCCC were used in the comparisons for each country.

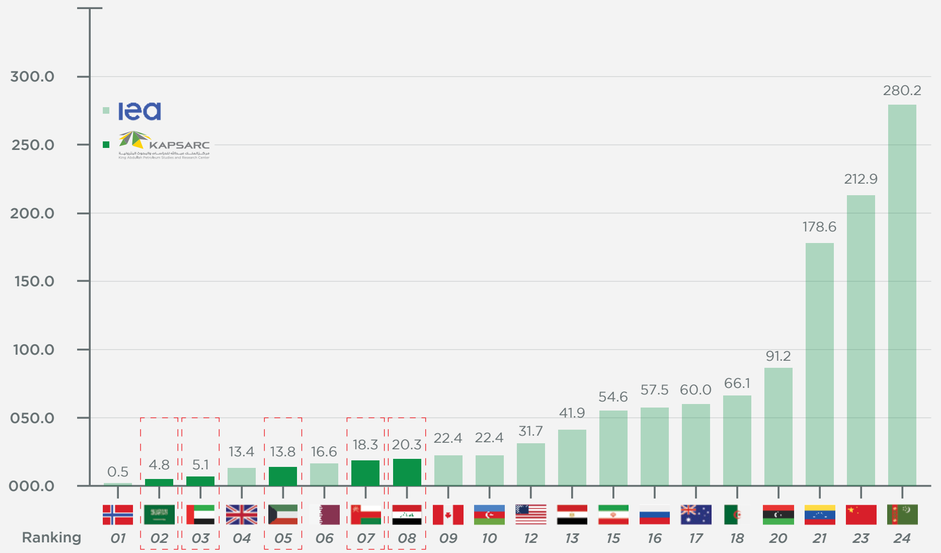
Figure Option 2.

Selected countries ranking by methane intensity
(kilograms of CO_2 equivalent per barrel of oil equivalent)



Notes: IEA data only for all countries

Selected countries ranking by methane intensity
(kilograms of CO_2 equivalent per barrel of oil equivalent)



Notes: Satellite data for Saudi Arabia, UAE, Oman, Kuwait, and Iraq. IEA data for all remaining countries.

08 | Are There Adequate Materials and Land Resources for the Saudi Power Sector to Achieve Net Zero by 2060?

Overview

The study aims to assess the feasibility, technological pathways, resource constraints, and economic implications of achieving a net-zero power sector in Saudi Arabia by 2060 using an integrated modeling framework.

Detailed Objectives

- Assess the feasibility of a net-zero power sector in Saudi Arabia by 2060 by employing a comprehensive modeling framework that integrates generation and transmission capacity expansion, land-use constraints, and critical mineral availability.
- Analyze the optimal deployment of 18 electricity generation and storage technologies using a state-of-the-practice capacity expansion model with hourly temporal resolution, ensuring co-optimization of generation and transmission while maintaining system reliability.
- Evaluate resource constraints, including the sufficiency of land and the availability of 38 critical minerals required for the energy transition, identifying potential bottlenecks and mitigation strategies.
- Quantify economic trade-offs by comparing cost trajectories across multiple decarbonization scenarios, including pathways with zero gross emissions and net-zero emissions with carbon dioxide removal options, to inform strategic policy and investment decisions.

Methodology

The study employs a comprehensive approach by combining four interlinked models to assess the feasibility of a net-zero power sector, ensuring a holistic evaluation of electricity demand, generation expansion, land availability, and critical mineral constraints. These models are:

01 Regional demand model

This projects electricity consumption at a regional level based on economic and demographic factors under different electrification scenarios.

02 Generation and transmission capacity expansion model

This optimizes power generation and transmission expansion using hourly temporal resolution, incorporating 18 candidate technologies, operational constraints, and emission reduction pathways.

03 Land-use GIS model

This assesses the spatial feasibility of renewable energy deployment using GIS-based multi-criteria decision analysis to evaluate land availability and constraints.

04 Minerals model

This evaluates the demand for 38 critical materials, comparing projected requirements with global supply constraints to identify potential resource bottlenecks.

Demand model

- Socioeconomic and environmental considerations
- Electric vehicle fleet and industrial electrification assumptions

→ Annual and hourly regional electricity demand estimation

Power model

- 18 generation and storage technologies and transmission
- Hourly temporal resolution
- Capacity and operating reserve requirements

→ Total system costs
→ Energy mix
→ Carbon emissions

Minerals model

- Minerals projected global production
- Recycling rates
- Annual material requirements for technologies

→ 38 minerals demand for the power sector
→ Potential risks and mitigation strategies

Land-use model

- Restrictive area exclusion
- Orographic, climatic, and locational suitability criteria

GIS-based MCDM techniques visualized

→ Feasibility verification of suitable regional areas for the required capacity mix

Key Findings

- Achieving a net-zero power sector by 2060 in Saudi Arabia is technically feasible but costlier than business-as-usual, requiring substantial investments in renewables, energy storage, and transmission expansion. Allowing limited emissions with carbon dioxide removal reduces costs by up to 16% compared to full decarbonization.

16%

- The transition is dominated by onshore wind (~55%), supported by solar photovoltaics, battery storage, and hydrogen-based power-to-hydrogen-to-power systems. Land availability is generally not a constraint, except in the northeastern region, where transmission expansion is necessary.

55%

- Shortages of seven critical minerals, particularly rare earth elements for wind turbines, could pose challenges. These risks can be mitigated through :
  - technological substitution
  - supply diversification
  - recycling initiatives

09 | The Circular Carbon Economy Index 2024 – Results

Overview

The 2024 Circular Carbon Economy Index evaluates the net-zero transition progress of 125 countries, representing 96% of global greenhouse gas emissions. The findings underscore the urgency of accelerating global efforts toward decarbonization.

The results are distilled into four key policy messages: global fragmentation in climate action, varying speeds of transition across countries, persistent gaps in enabling conditions, and increasing volatility in policy environments.

Key Policy Messages from the 2024 CCEI

- Global Fragmentation in Climate Action
- Varying Speeds of Transition
- Persistent Gaps in Enabling Conditions
- Increasing Volatility in Policy Environments

Sweden, Norway, Denmark, the United Kingdom, and the Netherlands lead the global rankings. Among oil and gas-producing countries, Saudi Arabia ranked first in the 2024 CCE Index's Oil Producers Lens, which assesses carbon circularity performance based on the average of five key metrics: carbon intensity of crude oil and gas production, flaring intensity of oil production, intensity of fugitive methane emissions from fossil fuel production, carbon intensity of manufacturing value added, and the value added of the chemical industry.

10 | Expanding Satellite Methane Monitoring Coverage in 2024

Overview

KAPSARC has significantly expanded its satellite-based methane emissions analysis to encompass a broader regional scope, including Saudi Arabia, the United Arab Emirates, Iraq, Kuwait, and Oman. This expansion marks a significant step forward in enhancing transparency, improving emissions inventories, and supporting evidence-based policymaking across key oil- and gas-producing nations.

By leveraging advanced satellite technology, in partnership with Kayyros, KAPSARC is providing more accurate and independent methane emissions data, helping to bridge gaps in existing global inventories. This initiative enables policymakers to develop more targeted mitigation strategies, supports regulatory frameworks, and strengthens regional collaboration on emissions reduction efforts.

The expanded study also contributes to international climate goals by offering a clearer picture of regional methane emission trends. By equipping stakeholders with reliable data, KAPSARC is playing a critical role in guiding more effective climate policies, reinforcing the region's commitment to sustainability, and supporting global efforts to reduce methane emissions in line with the Global Methane Pledge.

11 | The State of Net-Zero Progress Across Countries

The Circular Carbon Economy Index 2024

Circular Carbon Economy Index 2024

—

A tool for policymakers, researchers, and stakeholders, helping identify progress areas and potential improvements in the journey towards a circular carbon economy.

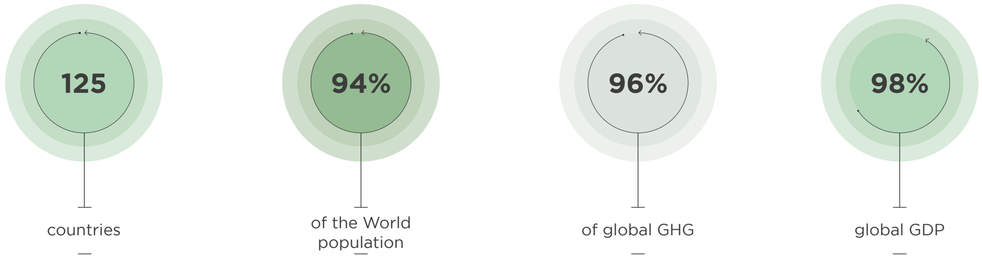
Scoring System – how does it work?

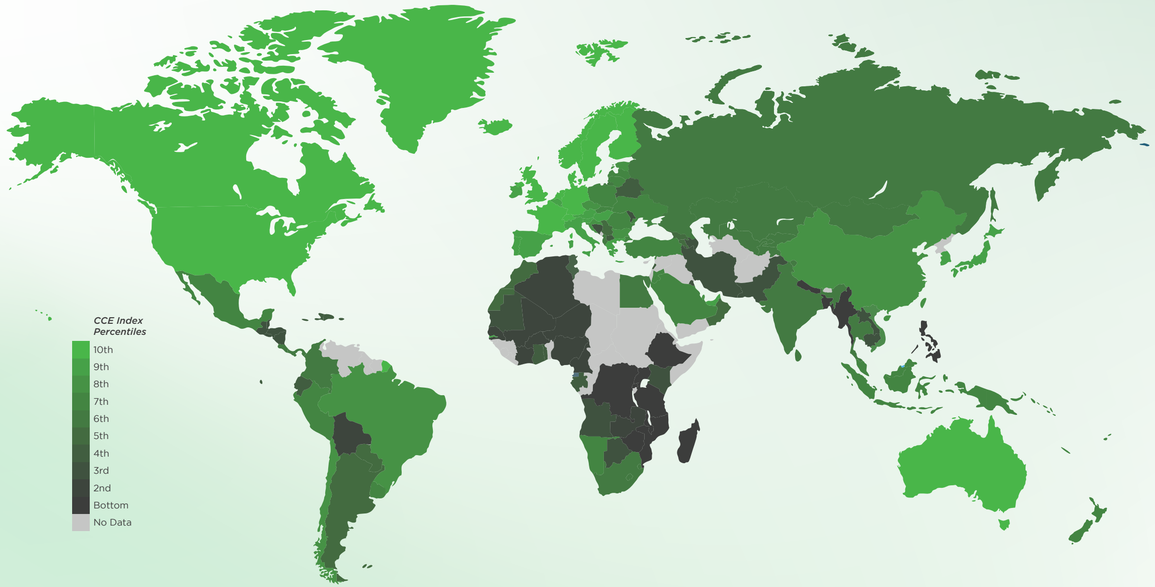
01 — The index uses a scale of 100-0 for each indicator and for the total index and its sub-indices.

02 — It consists of two main sub-indices:

- CCE Performance score:
  Measures current performance on various CCE activities
- CCE Enablers score:
  Gauges how countries are positioned to make progress toward CCE

03 — The total CCE Index score is calculated by aggregating these two sub-index scores.





Countries ranked in the top 10 for CCE performance

Country	CCE	Rank
Sweden	75.81	1
Norway	71.62	2
Denmark	69.05	3
United Kingdom	66.63	4
Netherlands	66.21	5
Germany	66.12	6
Finland	66.01	7
Canada	66.12	8
Switzerland	64.08	9
France	62.38	10

Countries ranked in the bottom 10 for CCE performance

Country	CCE	Rank
Mozambique	21.19	116
Niger	21.07	117
Ethiopia	20.46	118
Tanzania	20.35	119
Zimbabwe	19.93	120
Burkina Faso	18.38	121
Uganda	18.30	122
Mali	17.33	123
Congo, Dm. Rep	16.30	124
Madagascar	14.49	125

Section No.

KAPSARC School of Public Policy

07

About KAPSARC School of Public Policy

Inspired by the passion of His Royal Highness Prince Abdulaziz bin Salman Al Saud, the Minister of Energy, the KAPSARC School of Public Policy (KSPP) was founded as the first institution of its kind in the Kingdom of Saudi Arabia.

KSPP Vision

To be a world-class education and research institution for the next generation of public policy leaders and professionals within the Kingdom of Saudi Arabia and globally.

KSPP Mission

Enable and empower

future policy leaders and professionals within the Kingdom of Saudi Arabia and globally to positively inform socio-economic choices.

Focus

on the most pressing public policy challenges and their solutions.

Create

a bridge between academia, industry, and government in the public policy sphere so that knowledge and best practices can be shared and applied.

KSPP Programs

Master of Public Policy

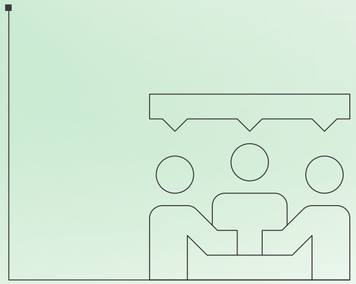
The KSPP's Master of Public Policy is a two-year, full-time program that aims to equip and empower future policy leaders and professionals within the Kingdom of Saudi Arabia and globally by providing them with the analytical and leadership skills necessary to address the most pressing domestic and international public policy challenges.

In 2024, KSPP welcomed the first cohort of its Master of Public Policy (MPP) program. This inaugural cohort, consisting of 23 students, was selected from a competitive pool of 156 completed applications. The selection process included more than 80 interviews conducted by the academic team, ensuring a diverse and highly qualified group of future public policy leaders.

The cohort began their academic journey on September 2, 2024, representing various sectors across the Kingdom. The MPP program spans two academic years and provides a solid foundation in public policy, allowing students to choose from three concentrations:

- Management and Leadership
- Data Analytics
- Energy and Climate Policy

with concentration courses starting in the second semester. During orientation, students met the dean, faculty, and KSPP team, familiarizing themselves with the campus before commencing their official lectures.



Program Concentrations

Public Sector Management and Leadership

- Strategic Management for Public Policy
- Problem Solving and Decision Making in Public Institutions
- Managing Policy Implementation

Energy and Climate Policy

- Climate Science and Policy
- Understanding Energy Markets and Climate Finance
- Creating Sustainable Energy Systems

Data Analytics

- Introduction to Data Analytics for Public Policy
- Data Visualization and Applied Analytics
- Introduction to Data Security, and Database Design and Management

Executive Education Programs

The School offers executive education programs that build policy analysis, leadership, economics, and energy sustainability skills. Designed for professionals, these programs equip participants to lead strategically and make informed decisions in complex policy environments.

Building on this foundation, KSPP has made significant strides in advancing public policy education and leadership development, marking a year of achievements. Throughout the year, the school delivered 36 open-enrollment and customized programs, enhancing the skills and knowledge of professionals across various sectors. This diverse range of offerings reflects the school's commitment to providing impactful learning opportunities for participants from different educational and professional backgrounds.

+2,000
Applicants

875
Accepted

164
Training Days

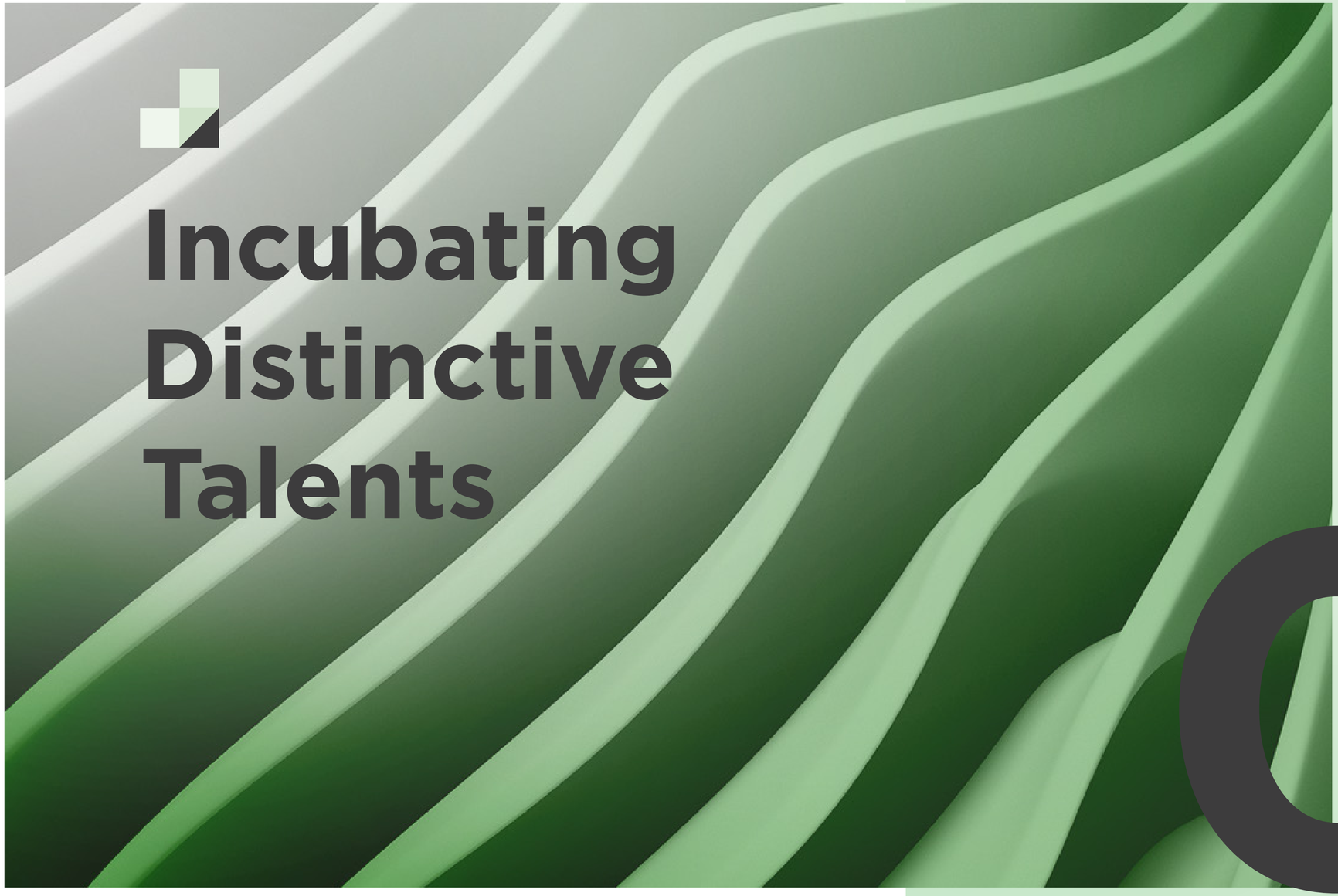
KSPP attracted more than 2,000 applicants; of them, 875 individuals were accepted to participate, collectively benefiting from 164 days of intensive training.

Open-Enrollment Programs Conducted in KSPP in 2024

Program Title	Participants	Satisfaction Rate	Provider	Program Title	Participants	Satisfaction Rate	Provider
Global Energy Sector and Business Management	40	90%	TEXAS A&M University	Negotiating Success	28	99%	Matthew Mulford
Public Leadership	35	90%	IMD and Hertie School	Evidence-Based Policymaking	39	91%	Ammar Malik
Emerging Leaders Executive Program – First Cohort	42	87%	IMD and Hertie School	Energy Diplomacy Program	32	93%	Sara Vakhshouri
Principles of Microeconomics and Public Policy	30	82%	Harris Public Policy, University of Chicago	Project Finance Modeling	21	87%	Edward Bodmer
Renewable and Sustainable Energy Policy	38	88%	TEXAS A&M University	KAPSARC Acceleration Program	40	91%	Luiss Executive Management Education

Open-Enrollment Programs Conducted in KSPP in 2024

Program Title	Participants	Satisfaction Rate	Provider
Climate Law	25	92%	Fullbridge
Summer Policy Immersion	120	96%	KSPP faculty, Prof. Rafeal Arcas
The Public Policy Innovation in the New Energy Landscape	30	91%	Stanford University
Corporate Valuation Modeling – Intermediate Level	17	91%	Edward Bodmer
Levelized Cost and Financial Modelling	24	100%	Edward Bodmer
Sustainability: Climate and Energy Nexus	46	98%	KAPSARC/KAUST
Effective Communication Skills for Policymakers on Conventional and Digital Platforms	23	96%	Dr. Brent Durbin
Business Skills and Communication	40	90%	Fullbridge
Energy Security	26	100%	The Institute of World Politics
Digitalization, AI, and Ethics in Public Policy	38	95%	Duke University

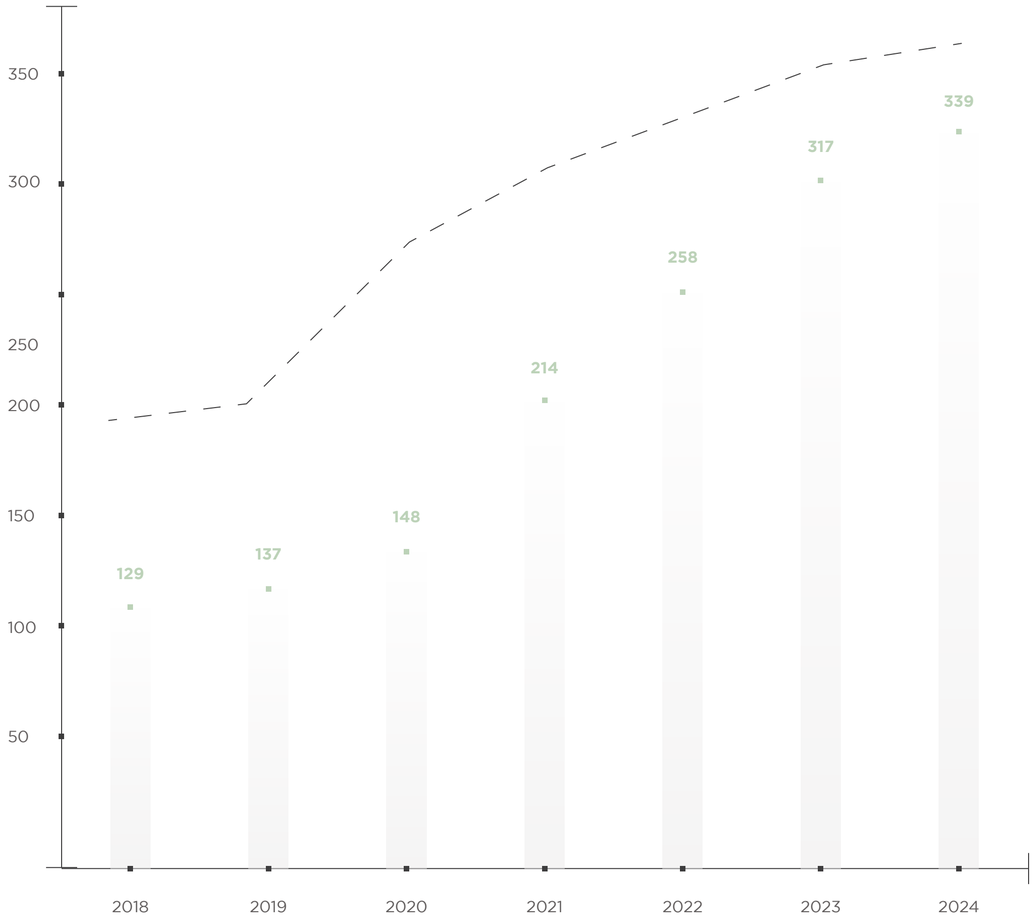


Incubating Distinctive Talents

Section No.

08

Staff Growth Between 2024-2018



Postdoctoral Program

KAPSARC launched the Postdoctoral Program to foster interdisciplinary collaboration and innovation in energy economics, policy, and sustainability. This rotational program allows researchers to engage with diverse research areas, broadening their expertise while supporting academic and professional development.

The program focuses on key research areas, including:

- Energy economics
- Climate and environmental studies
- Transport
- Utilities
- Renewable energy
- Oil and gas
- Energy sustainability

Postdoctoral researchers conduct practical, evidence-based, and policy-oriented studies that generate valuable insights into the energy sector.

Participants benefit from specialized training workshops, seminars, and mentorship opportunities designed to enhance their research capabilities, academic writing, and policy advocacy skills.

In 2024, KAPSARC welcomed five postdoctoral researchers with diverse and distinguished academic backgrounds. Their expertise spans economics, finance, transportation engineering, and environmental policy. The researchers hold Ph.D. degrees from leading international institutions such as the University of Barcelona, UMASS-Amherst, Goethe University Frankfurt, and the Technical University of Braunschweig. Their academic training covers areas including climate change, energy transition, macroeconomics, financial market analysis, transportation modeling, and sustainable urban mobility.

Graduate Development Program

KAPSARC remains committed to developing the next generation of leaders through its Graduate Development Program (GDP), an annual initiative designed to attract and nurture high-potential graduates. In 2024, the program continued its strong momentum, receiving 3,651 applications – a 12% increase compared to the previous year. Following a rigorous selection process, 21 candidates were accepted into the program, comprising 15 males and 6 females.

The selected participants came from diverse academic backgrounds, including:

- Climate and Environmental Science
- Economics
- Computer Science
- Engineering
- Public Policy
- Cybersecurity
- Information Systems
- Business Administration
- Human Resources
- Finance
- Accounting
- Communications
- Media
- Translation

This diversity underscores KAPSARC's commitment to cultivating multidisciplinary talent aligned with the Center's research and operational priorities.

This new cohort reflects KAPSARC's ongoing efforts to build a strong, diverse, and sustainable talent pipeline that supports the Center's long-term strategic objectives.

This 12-month GDP program offers structured learning, hands-on experience, and professional development opportunities. Participants in the 2024 cohort completed nine training programs totaling 32 days, equipping them with essential skills to excel in their fields.

12
month program

32
training days

09
training programs

The cohort represented diverse disciplines, including engineering, information technology, computer science, business management, and other key areas.

Employee Education Program (KEEP)

KAPSARC remains committed to supporting employees in their educational pursuits through the KAPSARC Employee Education Program (KEEP). The program continues to attract diverse participants, including experts and support staff from departments.

In 2024, 22 employees benefited from KEEP, reinforcing KAPSARC's dedication to continuous learning and professional growth across all areas of the organization. Additionally, the ongoing applicants' majors encompass various fields, including Sustainable Resources, Translation, Law, Urban Spatial Science, and Health Informatics. Several applicants specialize in Digital Media and Marketing, Accounting and Finance, and Business Administration, reflecting a broad spectrum of expertise aligned with the organization's strategic priorities.

Local Universities

جامعة الفيصل Alfaisal University

جامعة اليمامة Al Yamamah University

كلية الأمير محمد بن سلمان للإدارة وريادة الأعمال Prince Mohammad Bin Salman College Business & Entrepreneurship

International Universities

IMPERIAL

UCL

HARVARD Kennedy School

MANCHESTER 1824

London Business School

ie UNIVERSITY

Internal Events and Engagement

In 2024, KAPSARC continued to foster a vibrant and engaged workplace culture by organizing various internal events and initiatives. Key cultural and national celebrations, including Eid Al-Fitr, Eid Al-Adha, Ramadan, Saudi National Day, and Saudi Founding Day, strengthened employees' sense of community and connection to the broader cultural context.

In addition to these celebrations, KAPSARC hosted special events to advance institutional goals and employee development. Highlights included KAPSARC Day 2024, a center-wide event dedicated to reflecting on KAPSARC's achievements and future aspirations, and a Cybersecurity Awareness Campaign, launched to enhance organizational understanding and resilience against cyber threats.

KAPSARC also held bi-annual Poster Sessions to promote knowledge-sharing and professional growth. These sessions provided employees with an opportunity to showcase and exchange insights into ongoing research and initiatives.

These internal activities collectively support a dynamic, informed, engaged KAPSARC community.

Career Fair Participation

As part of its commitment to attracting top talent and fostering the next generation of energy professionals, KAPSARC actively participated in multiple career fairs in Saudi Arabia and internationally. These events provided a platform to engage with emerging talent, showcase career opportunities, and reinforce KAPSARC's position as a leading employer in the energy sector.

These engagements were structured around key themes:

Global, International and Local Talent Outreach

To expand its international recruitment efforts, KAPSARC connected with high-caliber professionals and graduates from leading global institutions:

UK Career Fair (London, Birmingham, and Manchester)

Connecting with top graduates from prestigious UK universities.

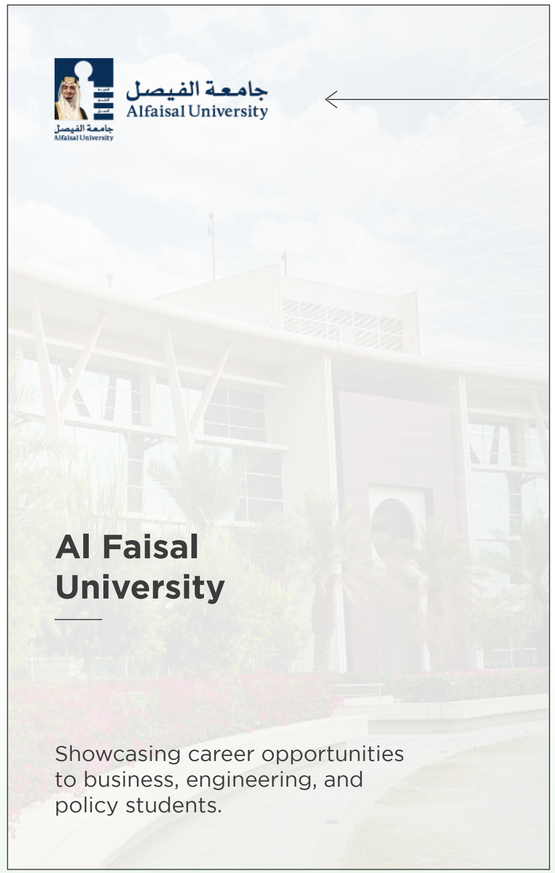
London Business School (LBS) MENA Conference

Engaging with business, energy, and policy leadership professionals.

Association for Public Policy Analysis & Management (APPAM) Conference

Targeting experts and graduates specializing in public policy and economic analysis.

KAPSARC strengthened its presence within Saudi Arabia's leading universities, fostering relationships with emerging local talent:

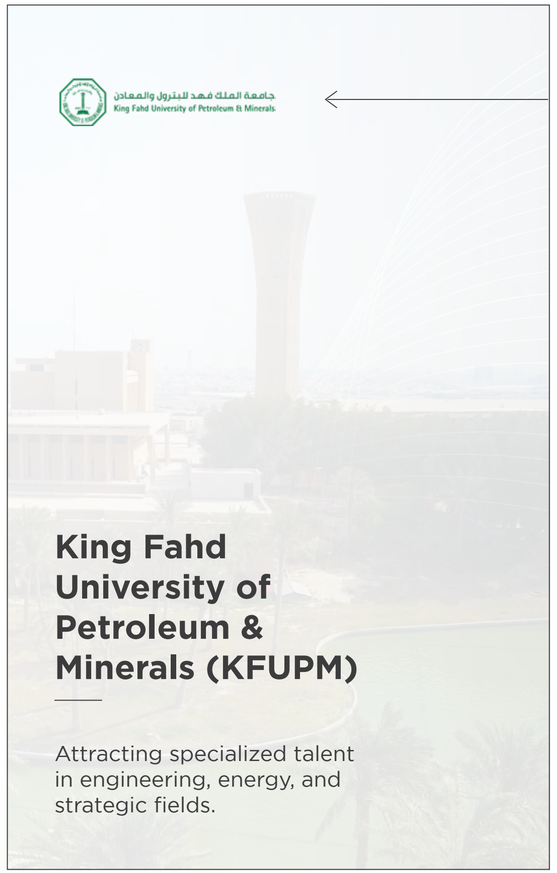


Al Faisal University

Showcasing career opportunities to business, engineering, and policy students.

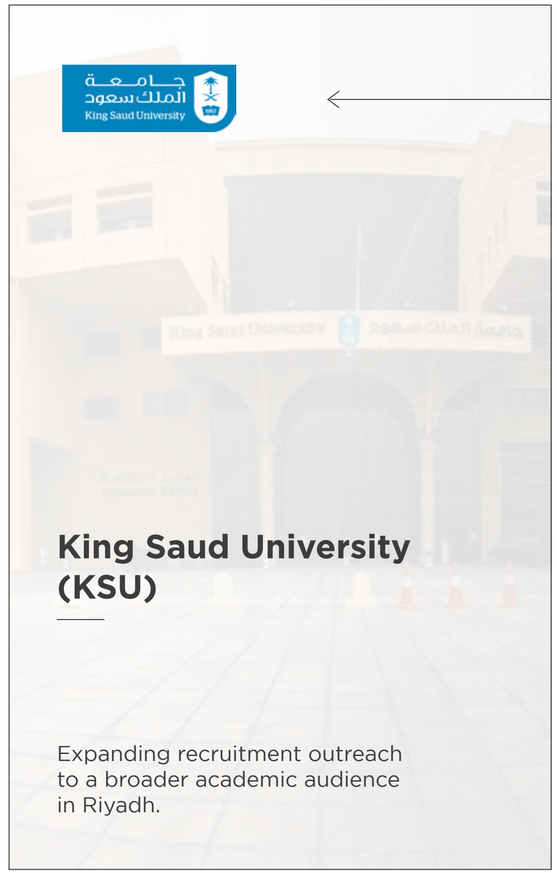
King Abdullah University of Science and Technology (KAUST)

Engaging with researchers and professionals in science, energy, and technology.



King Fahd University of Petroleum & Minerals (KFUPM)

Attracting specialized talent in engineering, energy, and strategic fields.



King Saud University (KSU)

Expanding recruitment outreach to a broader academic audience in Riyadh.

By participating in these diverse career fairs, KAPSARC continues to ensure access to top-tier talent and foster the next generation of energy professionals.

Section No.

Building a Future-Ready KAPSARC

09

01 | Community and Security Experience Automation

Scope and Execution

- Digitized access control and transportation.
- Implemented integrated dashboards and streamlined digital workflows.

Key Achievements

- Enabled real-time facility access monitoring and rapid response coordination.
- Simplified and centralized the approval process for access requests.

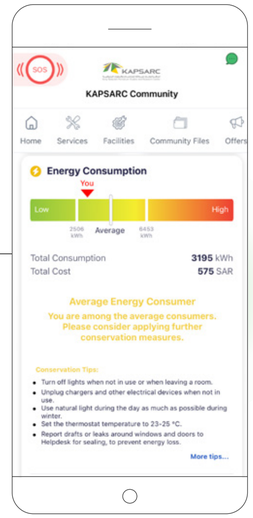
Benefits

- Improved visibility and coordination across safety-related operations.
- Reduced manual interventions and reliance on physical paperwork.
- Increased employee confidence in security protocols.

Operational Impact

50%
reduction in access request handling and gate processing time.

Significant decrease in procedural delays.



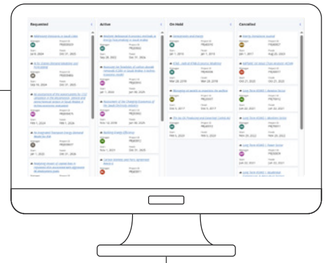
02 | Enterprise Project and Portfolio Management (EPPM) – Phase 2

Scope and Execution

- Enhanced ServiceNow's EPPM module to support advanced project governance.
- Introduced new dashboards, metrics, and approval workflows.

Key Achievements

- Streamlined project initiation and lifecycle tracking.
- Integrated request management across departments.



Benefits

- Improved cross-functional collaboration and transparency.
- Real-time visibility into project KPIs, timelines, and resource use.
- Stronger alignment between project execution and organizational goals.

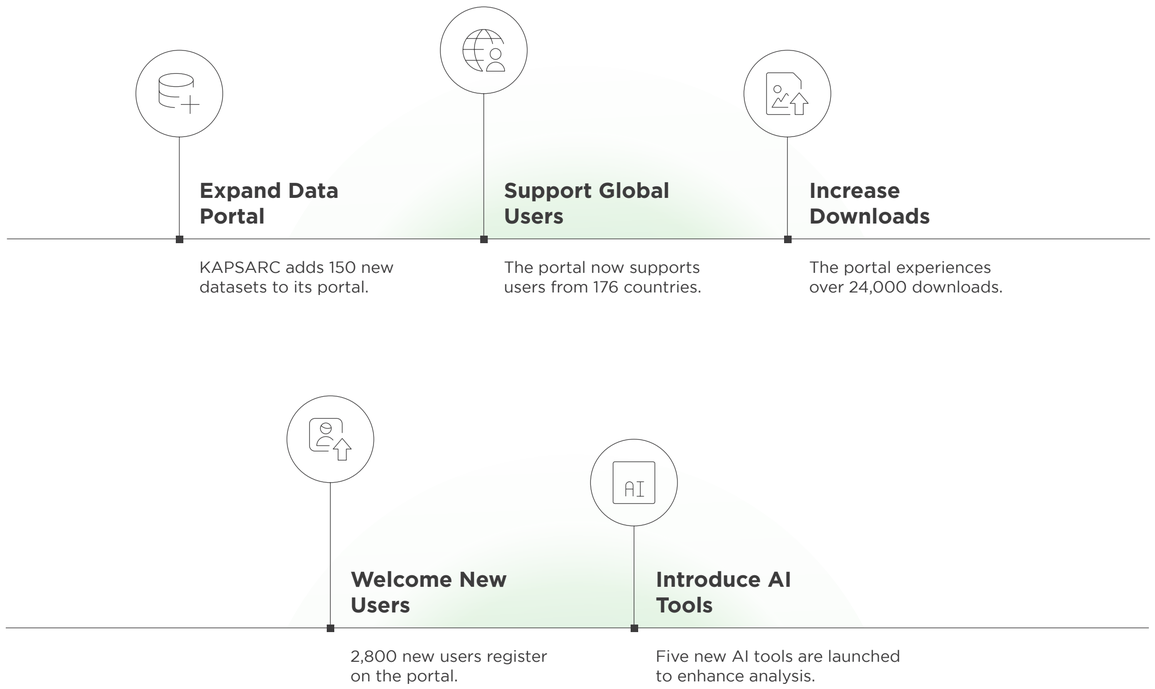
Operational Impact

- faster project request approval cycles.
- Higher project delivery accuracy due to better milestone tracking.
- Improved reporting for executive oversight and strategic planning.

Enhanced Data Accessibility and AI Integration

KAPSARC significantly expanded its open data portal, data.kapsarc.org, by adding 150 new datasets. The platform now supports a global user base from 176 countries, with more than 24,000 downloads. The portal welcomed 2,800 new registered users, underscoring our commitment to open data access and transparency.

Furthermore, five new AI-powered tools were introduced to augment knowledge acquisition and analysis, bolstering productivity and strategic decision-making across KAPSARC.



Enhancing Energy and Environmental Sustainability

Energy and Water Management Enhancement:
In 2024, KAPSARC's sustainable energy initiatives led to an 8.89% reduction in energy consumption across ROC Buildings compared to 2023. This achievement results from stringent control measures and reflects our commitment to environmental stewardship and operational efficiency.

Innovative Community Engagement Through Technology:
We have introduced a pioneering feature in our Community App, enabling residents to monitor their energy and water consumption in real time. This tool provides daily conservation tips and allows users to compare their consumption with similar units, fostering a community-wide culture of sustainability.

Enhancing Energy Efficiency:
Building on our energy-saving efforts, we have fully transitioned to LED lighting across all external areas of the Utility sector. This shift has significantly reduced energy consumption and enhanced lighting quality and safety.

Strengthening Water Resource Management:
Our commitment to water conservation has resulted in a 9.40% increase in well water production over the previous year. This achievement reduces reliance on conventional water sources and aligns with our long-term environmental objectives.

Advancing Sustainable Waste Management:
In 2024, we made significant progress in waste management, increasing compost output by 13.5% and solid waste recycling by 18%, reaching a total recycling rate of 90%. These improvements are crucial in minimizing waste and reinforcing our commitment to responsible environmental practices.

These energy, water, and waste management advancements demonstrate our ongoing dedication to sustainability, innovation, and continuous improvement.

Scan

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