مدينة الملك عبد الله للطاقة
الذرية والمتجددة K•A•CARE

Energy Observatory

JOURNAL

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Renewable Energy News

Saudi Power Procurement Company signs two Power Purchase agreements with a total capacity of 1500 MW

Image: Saudi Power Procurement Company (SPPC)

The Saudi Power Procurement Company, as part of the National Renewable Energy Program's fourth phase, has signed two Power Purchase Agreements (PPAs) for the Al-Henakiyah and Tabarjal solar photovoltaic projects, amounting to a combined capacity of 1,500 megawatts. The Al-Henakiyah project, at 1,100 megawatts, was secured with the consortium of Masdar, EDF, and Nesma for a power purchase rate of ~1.68 US cents per kWh. The 400-megawatt Tabarjal project, signed with a coalition led by Jinko, Sun Glare, and Sunlight Energy, offers an electricity rate of 1.71 US cents per kWh. These projects are critical to Saudi Arabia's Vision 2030 goal of transforming the energy sector by increasing renewable energy's share to about 50% by 2030.

Source

Renewable Energy News

First Major Delivery of Wind Turbines Reaches NEOM Green Hydrogen Company Site

Image: NEOM

NEOM Green Hydrogen Company (NGHC), tasked with constructing the largest green hydrogen plant in the world, has celebrated the arrival of its initial shipment of wind turbines at the Port of NEOM in Saudi Arabia. This marks a significant advancement in the mega project's construction, with the turbines being transported for assembly at the Wind Garden near the Gulf of Aqaba. The plant, powered by 250 turbines and integrating 4 gigawatts of solar and wind energy, will produce 600 tonnes of hydrogen daily without carbon emissions. Slated for full operation by 2026, the green hydrogen will be globally exported as green ammonia, backed by an exclusive agreement with Air Products. NGHC's progress is a testament to Saudi Arabia's commitment to the energy transition, with the Oxagon industrial city poised to become a clean energy hub. The project, representing a total investment of USD 8.4 billion, has secured full financial backing and an off-take agreement for the next 30 years, ensuring its pivotal role in the renewable energy value chain.

Source

Renewable Energy News

Successful Geothermal Well Exploration in Greece Uncovers 80 °C Water Source

Well testing at the Sidirokastro geothermal field in Serres, Greece (source: HSGME)

A recent exploration of the geothermal potential in the Sidirokastro geothermal field, located in Serres, Greece, revealed the presence of approximately 78 °C water at a depth of 153.8 meters. This marks the highest temperature documented in the low-enthalpy geothermal fields within the Prefecture of Serres.

The borehole, reaching a total depth of 153.80 meters, tapped into a resource with a hydrostatic level of 91.85 meters. With an internal diameter of 8 inches at depth, the well utilized a specialized underwater pump assembly with a maximum capacity of 40 hp and temperature resistance up to 90 °C, positioned at a depth of 109.2 meters.

During testing, a consistent supply was achieved at a flow rate of 75 cubic meters per hour. The recovery of the hydrostatic level was remarkably swift, taking only 22 seconds after a drop of 2.10 meters. Throughout the flow testing, the temperature remained stable within the range of 78.0 to 78.2 °C, while the measured pH remained constant at 6.63.

Source

Egypt’s Minister Of Electricity And Siemens Explore Renewable Energy Collaboration

Egypt's Minister of Electricity and Renewable Energy, Mohamed Shaker, met with executives from Siemens to discuss potential collaborations and investment opportunities within Egypt's electricity and renewable energy landscape. The meeting highlighted the long-standing partnership between Egypt and Siemens, which has included the development of three high-efficiency power stations contributing significantly to fuel savings in Egypt. Minister Shaker detailed the country's renewable energy targets, aiming to exceed 42% by 2030, and the initial steps towards establishing pilot projects for green hydrogen production, reflecting the agreements signed during the Climate Conference COP 27. Egypt is positioning itself as a hub for clean energy in Africa and is looking to expand electrical interconnections with neighboring countries, Cyprus, and Greece, to potentially export electricity to Europe. Andreas Matthe from Siemens acknowledged Egypt's rapid progress in the energy sector and expressed Siemens' interest in deepening their cooperation, particularly in projects related to energy transition and environmental sustainability.

Source

Renewable Energy News

Hithium and Solarpro to Construct Southeast Europe's Largest Battery Energy Storage Facility in Razlog, Bulgaria

Hithium, in collaboration with Solarpro, has announced plans to build a 55 MWh energy storage facility in Razlog, Bulgaria, marking the largest battery energy storage project in southeast Europe. Construction is set to commence next year and will support an existing 33 MWp solar plant.

Hithium, a China-based energy storage company, will supply the project's batteries, consisting of 16 3.44 MWh capacity energy storage containers. Solarpro, a Bulgarian-based solar energy contractor, will oversee the turnkey engineering, procurement, and construction (EPC) services.

An undisclosed subsidiary of Renalfa, an independent power producer based in Vienna, will own the battery energy storage systems (BESS). The decision to co-locate the battery within the existing 33 MWp capacity PV plant was made by the investor. The setup will include a PV tracker mounting system and a substation.

Source

Surge in Offshore Wind Patents Revealed in IRENA and EPO Study

A joint study by the International Renewable Energy Agency (IRENA) and the European Patent Office (EPO) underscores the imperative for global renewable power capacity to triple by 2030 to meet the 1.5°C target of the Paris Agreement. The study emphasizes the need for offshore wind capacity to nearly reach 500 GW by 2030, marking a fourteen-fold increase from 2020.

Offshore wind, with its high energy output and rapid gigawatt-scale deployment, emerges as a cost-effective solution for supplying electricity to densely populated coastal areas. The study analyzes patent statistics to uncover recent technological trends in the offshore wind industry. Between 2002 and 2022, patent filings for offshore wind technologies increased by an average of 18%, experiencing a notable surge in recent years after a period of stagnation from 2014 to 2017.

Key findings from the report include:

Offshore wind innovation is predominantly driven by players in Europe and Asia, with the United States emerging as a future market. Germany and Denmark lead among the top ten countries in filed International Patent Families (IPFs).

Within the offshore wind supply chain, significant invention activity is observed in floating foundations, logistical capacities, and support for green hydrogen production. Inventive focus centers on floating foundations, transportation equipment, and turbine installation and erection.

Offshore wind systems are increasingly exploring energy storage and hydrogen production to balance power systems and enhance value. There is a growing interest in integrating energy storage options within offshore wind farms, particularly those with hydrogen production capabilities, to accelerate decarbonization efforts

Source

Nuclear Energy News

Idaho SMR project terminated

The SMR project in Idaho has been terminated due to economic and regulatory uncertainties, according to an announcement. The decision to halt the small modular reactor (SMR) initiative was made by the project's lead company, which cited challenges in obtaining sufficient funding and uncertainties regarding the regulatory environment. The cancellation of the project represents a setback in the development of SMRs in the United States. Despite this setback, the broader landscape of SMR development continues globally, with ongoing efforts to overcome challenges and advance small modular reactor technology for nuclear energy.

Source

A rendering of a NuScale plant (Image: NuScale)

European Commission to create SMR Industrial Alliance

Commissioner Kadri Simson speaking at the European SMR Partnership meeting (Image: @KadriSimson/X)

The European Commission is set to establish the Small Modular Reactor (SMR) Industrial Alliance to support the development and deployment of small modular reactors in Europe. This initiative aims to bring together key stakeholders, including industry, research organizations, and policymakers, to promote collaboration and advancement in SMR technology. The alliance is part of the broader strategy to strengthen Europe's position in the global nuclear market and contribute to the region's energy transition. The move reflects a growing interest in small modular reactors as a viable and flexible option for low-carbon energy production.

Source

Nuclear Energy News

Moltex announces waste recycling breakthrough.

Moltex Energy has revealed a significant breakthrough in nuclear waste recycling. The company's process involves extracting useful materials from nuclear waste, potentially reducing the long-term environmental impact of radioactive materials. Moltex aims to demonstrate the feasibility of its technology and advance towards commercialization. This development represents a promising step in addressing nuclear waste challenges and promoting more sustainable nuclear energy practices. The breakthrough underscores ongoing efforts within the industry to find innovative solutions for nuclear waste management.

Source

IAEA Mission Says Romania is Committed to a High Level of Nuclear and Radiation Safety, Sees Areas for Further Enhancement.

According to a team of experts from the International Atomic Energy Agency (IAEA), Romania is dedicated to upholding and bolstering its regulatory framework for radiation and nuclear safety. The team recommended strengthening the coordination amongst Government agencies involved with radiation source facilities and activities and commended the Romanian authorities for their efficient preparations for the future deployment of small modular reactors (SMRs).

Source

UK regulators consider application of AI in nuclear sector

The UK's nuclear regulators are exploring the potential applications of artificial intelligence (AI) in the nuclear sector. The focus is on how AI can enhance safety and efficiency in nuclear operations. Regulators are considering the use of AI for tasks like monitoring and analyzing data, as well as improving decision-making processes. The exploration of AI in the nuclear industry reflects a broader trend of integrating advanced technologies for increased effectiveness. However, discussions also involve addressing potential challenges and ensuring the safe implementation of AI within the sector.

Source

IAEA Launches Open Data Platform

The main objective of IAEA's initiatives to improve international knowledge sharing and strengthen transparency is to make scientific data more easily accessible to experts, decision makers, and the general public. The IAEA Data Platform, which unifies access to numerous publicly shared datasets on a single platform, was recently introduced by the IAEA with this goal in mind. This platform makes it easier to maintain and standardize data, and it allows data users—like Member States, scientists, and researchers—to view and download data in a number of formats.

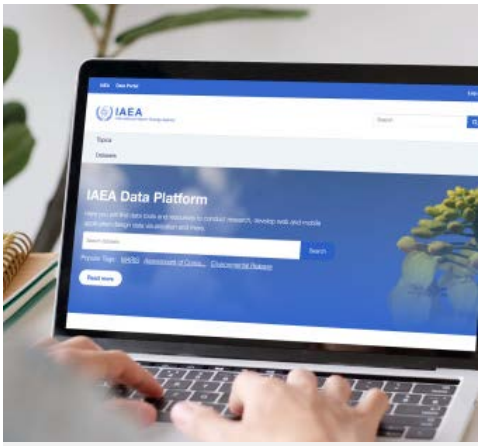
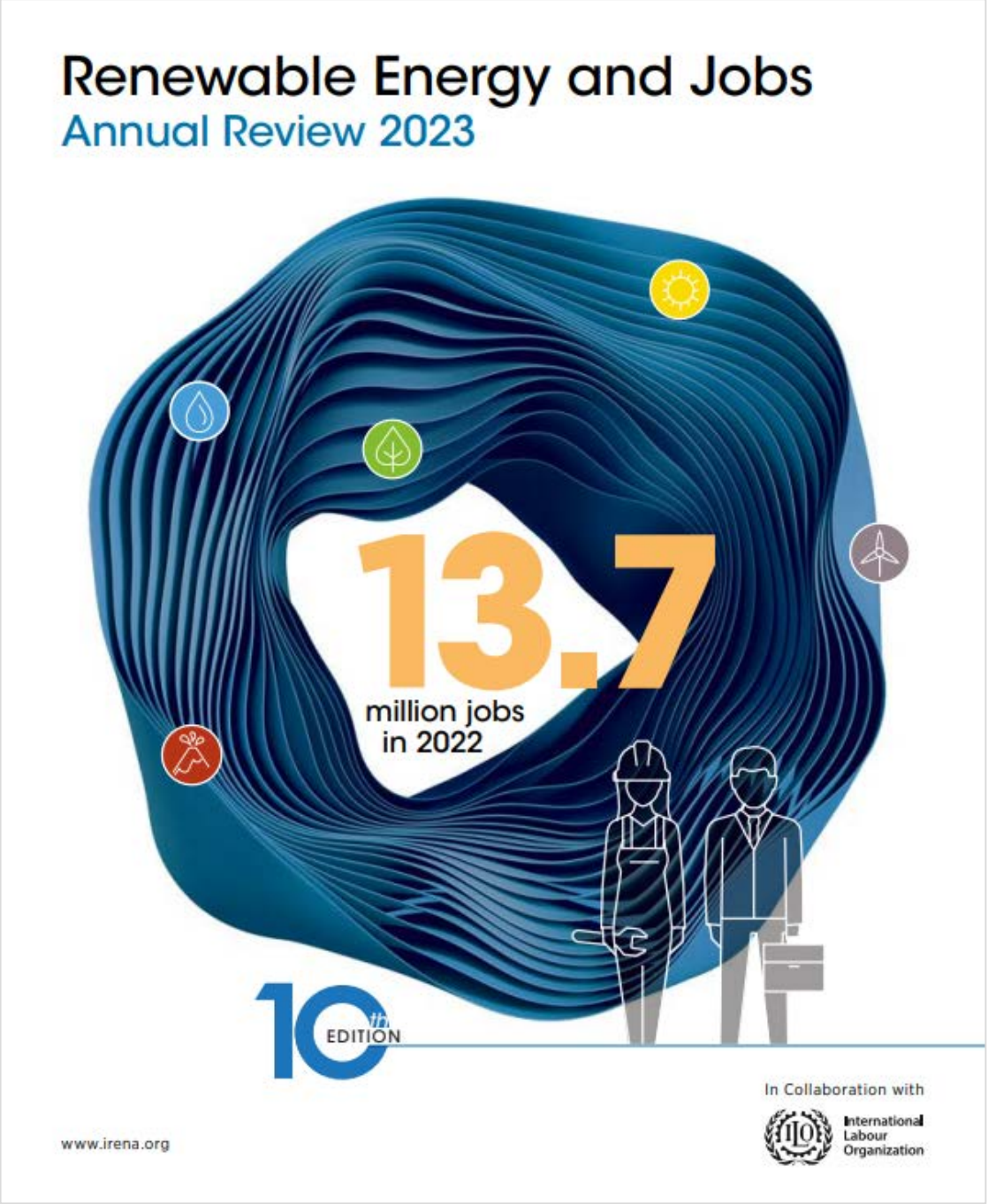


Image: International Atomic Energy Agency (IAEA)

Source

Report title: Renewable energy and jobs: Annual review 2023



Introduction:

One of the most crucial socioeconomic factors associated with energy transition and renewable energy development is employment and job creation. Thus; the aim of this section is to shed some light on IRENA and the international labour organization recent publication (Septmber,2023) on Renewable Energy and Jobs. This report is 10th edition of IRENA Renewable energy and jobs series which began in 2014 to assess the state of employment within renewable energy sector. This assessment encompasses an analysis of various renewable energy technologies on a global scale, as well as within selected countries of interest.

Prepared by: Omar Al Owain

Source

Report title: Renewable energy and jobs: Annual review 2023

	World	China	Brazil	United States	India	European Union (EU27)[n]
Solar PV	4 902	2 760	241	264[f]	282[l]	517
Liquid biofuels	2 490	55	856[e]	360[g]	35	148
Hydropower[a]	2 485	876	194	66[h]	466	83
Wind power	1 400	681	68	126	40	319
Solid biomass[b,c]	779	195		47[i]	58	354
Solar heating and cooling	712	557	41	n.a.	19	38
Biogas	309	160		n.a.	85	47
Geothermal energy[b]	152	87		8.6[j]		7
Concentrated solar power	80	59.4		n.a.		5
Total	**13 720[d]**	**5 548**	**1 400**	**994[k]**	**988**	**1 534[e]**

Note: The figures presented in the table are the result of a comprehensive review of primary national entities such as ministries and statistical agencies, and secondary data sources such as regional and global studies. Empty cells indicate that no estimate is available. "n.a." indicates not applicable. The column values may not add up precisely to totals due to rounding off.

Figure 3 Estimated direct and indirect jobs in renewable energy worldwide, by industry, 2021-2022 (in thousands):

Key massages from the report:

Worldwide renewable energy jobs reached 13.7 million in 2022.

China, the European Union, Brazil, the US, and India lead in equipment manufacturing and the installation of renewable energy technologies.

Decentralized renewable energy solutions can provide both power and employment opportunities for remote areas.

Growing interest in renewable energy industrial policy focuses on the following:

- Vulnerability to global supply chain disruptions
- Geopolitical rivalries
- Strengthen local capacities and securing related job
- Critical materials, economic development and community rights

The geography and location of renewable energy manufacturing sector are influenced by corporate policies seeking low labor cost locations for their factories and government policies attempting to localize manufacturing.

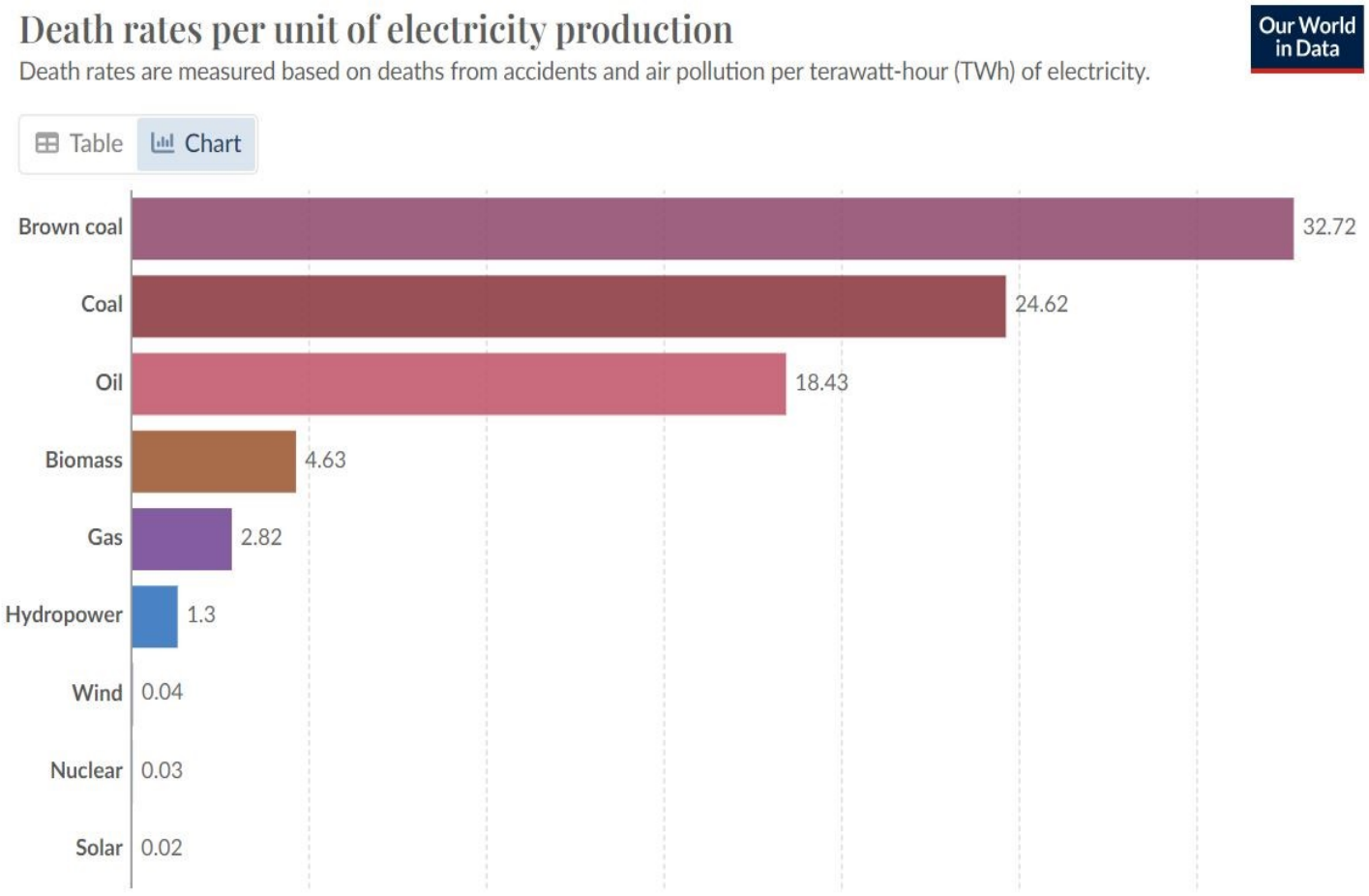
There is a need to broaden education and training efforts to prevent skill gaps.

It is important to support workers and communities affected by the energy transition.

Prepared by: Omar Al Owain

Source

Nuclear and renewables are far safer than fossil fuels



Data source: Markandya & Wilkinson (2007); Sovacool et al. (2016); UNSCEAR (2008; &2018)

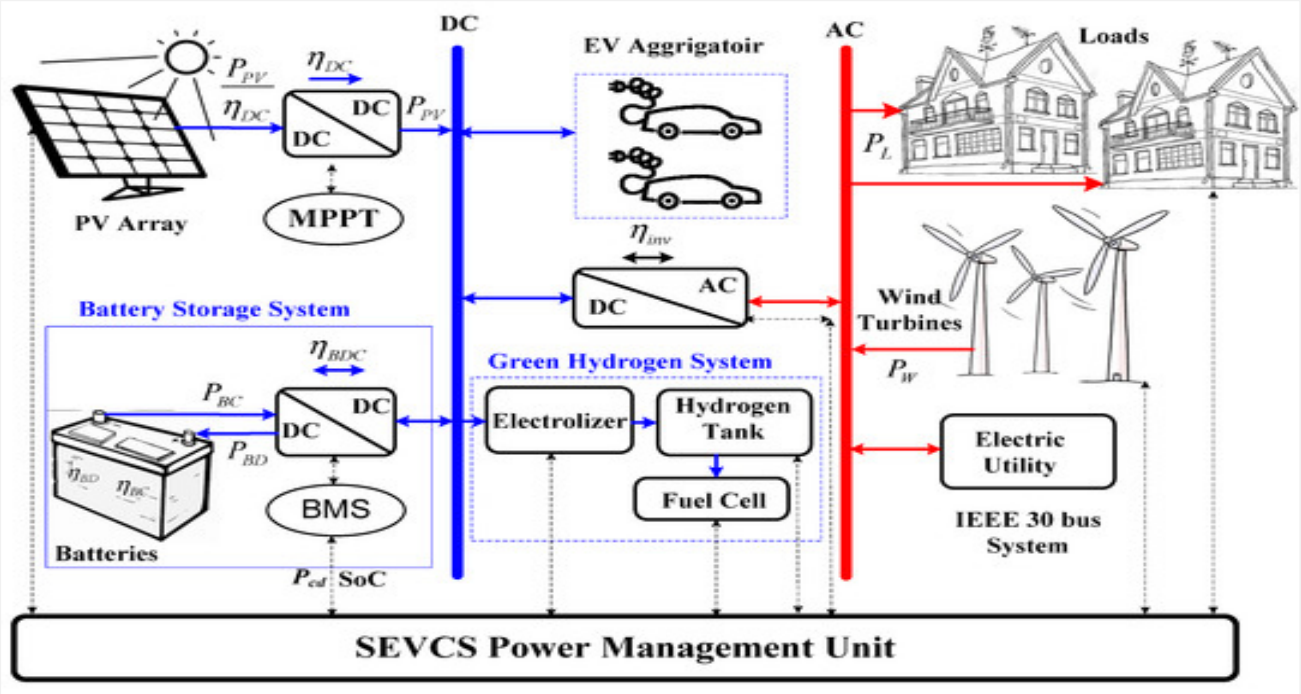
Let's examine the relative short-term health hazards associated with each source before moving on to the long-term effects of climate change. We can't just compare the overall number of deaths from each source to determine fairness in these comparisons because fossil fuels still account for the majority of the world's energy mix, which means that their death toll should be higher.

Rather, we contrast them according to the approximate quantity of fatalities they generate for each unit of electricity. Terawatt-hours are used to measure this. One terawatt-hour is roughly equivalent to one hundred fifty European Union individuals' annual electricity consumption. This covers fatalities resulting from supply chain mishaps and air pollution. Let's examine this chart comparison. For every unit of power produced, fossil fuels and biomass kill far more people than nuclear and contemporary renewable energy sources. By far the dirtiest is coal.

Prepared by: Aseel Zamzami

Source

Research Title: Upgrading Conventional Power System for Accommodating Electric Vehicle through Demand Side Management and V2G Concepts (Majed A. Alotaibi and Ali M. Eltamaly)



Smart EV charging station (SEVCS)

This research paper discusses the challenges posed by the increasing use of renewable energy sources (RES) and electric vehicles (EVs) in power systems and proposes a solution using demand side management (DSM) and vehicle-to-grid (V2G) concepts. The study explores the use of EV batteries as energy storage systems (ESS) to provide power during energy shortages and store surplus energy during periods of high generation. It also discusses the integration of RES near EV charging stations to support them without relying on the existing power system.

- The paper introduces a novel strategy to enhance the power system's performance and replace the drawbacks of EV charging stations on stability and reliability.
- The use of DSM increases the correlation between loads and available generation from RES, improving system efficiency.
- DSM and V2G concepts provide a backup solution for the power system by utilizing surplus power during high generation periods and supplying stored energy during generation shortages.
- The performance of the system with and without the novel DSM and V2G concepts was compared using the IEEE 30 bus system as an example.
- Modified particle swarm optimization was used for optimal sizing and optimal load flow calculations, reducing energy costs and power system losses.
- The implementation of smart DSM and V2G concepts substantially improved voltage profile, transmission line losses, fuel cost for conventional power systems, and overall system stability.

Source

Prepared by: Mohammed Al Essa

Developing a Strong Nuclear Safety Culture in a New-to-Nuclear Nation: Reflection on personal experience from nuclear new build in the UAE

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Chartered Engineer, UK Engineering Council

06 November 2023

Introduction

The peaceful use of nuclear energy offers benefits including clean energy generation and development of local skills. However, this comes with significant responsibilities, especially to the safety of people and the environment. New-to-nuclear nations embarking on their nuclear journey must establish a robust nuclear safety culture to ensure the safe and secure operation of their nuclear facilities. Drawing inspiration from personal experiences of nuclear new build in the UAE, this essay explores the key elements and lessons in developing a strong nuclear safety culture in a new-to-nuclear nation.

Understanding Nuclear Safety Culture

Nuclear safety culture refers to the shared values, beliefs, and behaviors of an organization and its employees regarding nuclear safety. It emphasizes the importance of safety, the commitment to continuous improvement, and the need to learn from past experiences. In a nuclear new build programme, establishing this culture is of paramount importance, and the UAE serves as a valuable example for the KSA to learn from.

Leadership and Commitment

One of the foundational principles for building a robust nuclear safety culture is leadership commitment. The UAE made a commitment to use international best practice when it joined WANO in 2010, both within the company and the government, they were dedicated to fostering a strong safety culture. National leaders, regulators, and industry executives became champions for safety and set a clear example. This commitment is essential for inspiring a culture of safety among employees and stakeholders.

Education and Training

A well-educated and trained workforce is critical to nuclear safety. Continuous learning was an integral part of the nuclear culture and ENEC and Nawah, throughout the construction of the plants. The importance of investing in education and training programs was recognized early in the plant life-cycle, especially in the Emirati "Energy Pioneers" programme, which was a key element to support localization, thus ensuring that local employees had the necessary knowledge and skills to operate and maintain nuclear facilities safely.

Effective Safety Communication

Open and transparent communication is vital, Nawah actively promoted a culture of transparent communication, encouraging employees to report safety concerns without fear of reprisal. This required a big change in personal behaviours for people from many countries, requiring leaders to foster openness and trust, which is crucial for early detection and mitigation of potential problems.

Learn from Experience

Learning from past experiences, is a hallmark of a strong nuclear safety culture. It was essential during the development stages that safety incidents were reported openly and investigated robustly. This encouraged a culture of knowledge sharing and learning.

International Collaboration

ENEC embraced membership of WANO and its partnership with KHNP/KEPCO to enhance their commitment to international best practices. Actively engaging with the global nuclear community and leveraging international expertise helped to build a strong nuclear safety culture.

Conclusion

Developing a strong nuclear safety culture is a fundamental requirement for any nation embarking on a nuclear energy program. Experience in the UAE provides valuable insights into the key elements of establishing a robust nuclear safety culture. Leadership commitment, education and training, effective communication, learning from experience and international collaboration are all crucial components for success. As the nuclear energy programme in the KSA progresses, it is vital that international experience and established good practice are adopted to help ensure safe operations in the Kingdom for the benefit of Saudi society, minimizing risk and ensuring a sustainable future.

5th FANUS (Federation of African Nutrition Societies) Conference (Organized in Cooperation with the IAEA)

The 5th Annual FANUS Conference (Federation of African Nutrition Societies) will be held from 19 to 24 November 2023 in Dakar, Senegalese. The conference will bring together around 500 nutrition experts from all over the world. The theme of this year's conference is "A Multisectoral Approach to Strengthening Food Systems and Achieving Sustainable Nutrition Targets in Africa." The programme will include the opening ceremony, Plenary Sessions, Scientific/Technical Sessions, Workshops, Symposium, Special Presentations, Exhibitions, Networking, Social and Sightseeing Tours among others. The programme will be a one-of-a-kind and valuable experience that consolidates efforts to overcome malnutrition in Africa.

19-24 November 2023, Dakar, Senegal

Source

Technical Meeting on Good Practices in and Lessons Learned from the Long Term Operation of Nuclear Power Plants

The event's goal is to offer a global platform for exchanging best practices and insights gained from long-term nuclear power plant operation. Reviewing a draft publication tentatively titled "Good Practices and Lessons Learned from the Long Term Operation of Nuclear Power Plants" will also be possible during the event.

21 – 24 Nov 2023 , Gyeongju-si, Republic of Korea

Source

International Conference on Research Reactors: Achievements, Experience and the Way to a Sustainable Future

The objective of the Conference is to foster exchange of information on operating and planned research reactors. It is a forum in which reactor operators, managers, users, regulators, designers and suppliers can share experience in all relevant areas including safety, security, operation, fuel front and back-end options, utilization, infrastructure and capacity building, and management, and showcase how achievements and experience attained with research reactors in these areas, contribute to a sustainable future.

27 November – 1 December 2023, Dead Sea, Jordan

Source

COP28 UAE - United National Climate Change Conference

ICONS 2024 will provide a global forum for ministers, policymakers, senior officials and nuclear security experts to discuss the future of nuclear security worldwide, whilst providing opportunities for exchanging information, sharing best practices and fostering international cooperation.

20-24 May 2024, Vienna, Austria

Source

Saudi Arabia Smart Grid 2023

With more than 2500 participants and 70 exhibitors, this prestigious event provides an excellent opportunity to promote products, services, ideas and business in a comprehensive way as it attracts the attention of the regional governmental, scientific, business and technological community.

18 – 20 December 2023, Riyadh

Source

Decommissioning Conference

The event focuses on contemporary challenges, innovations, and accomplishments in nuclear decommissioning. Industry leaders, including keynote speaker Bryan Hanson, will discuss the sector's future. Attendees can network, undergo professional training, and take a technical tour of the San Onofre Nuclear Generating Station. A full-day decommissioning training by NEI and EPRI covers transitioning from operations to decommissioning, risk management, groundwater protection, and the complex license termination process. The conference is relevant for domestic and international decommissioning communities, regulatory bodies, and media representatives.

Jan. 30–Feb. 1, 2024, Oceanside, California

Source

Intersolar Middle East

Intersolar Middle East is held in Dubai World Trade Centre Dubai on 16 to 18 April 2024 showing the companies news of United Arab Emirates and internationals related to sectors Solar energy, Renewable energies.

April 16–18, 2024, Dubai World Trade Center

Source

26th World Energy Congress 2024

The 26th World Energy Congress is a critical turning point for leadership on clean and inclusive energy transitions worldwide and an opportunity to spring forward in redesigning energy for people and planet.

22-25 April 2024, Rotterdam, Netherlands

Source

International Conference on Nuclear Security: Shaping the Future

ICONS 2024 will provide a global forum for ministers, policymakers, senior officials and nuclear security experts to discuss the future of nuclear security worldwide, whilst providing opportunities for exchanging information, sharing best practices and fostering international cooperation.

20-24 May 2024, Vienna, Austria

Source

Nuclear Innovation Conference

The Nuclear Innovation Conference 2024 (NIC2024), hosted by NRG|PALAS in collaboration with the IAEA, emphasizes the importance of nuclear energy in achieving energy security and meeting climate goals. The conference aims to facilitate collaboration to address the evolving landscape of nuclear energy. Seeks to bring together key players in the nuclear industry, fostering collaboration and showcasing high-potential initiatives. The content of the conference, supported by NRG|PALLAS's expertise and partnerships, reflects a collective vision for a sustainable future in nuclear energy. Participants can engage in presentations and discussions with global representatives from energy utilities, vendors, regulators, and other stakeholders, providing a unique opportunity to expand networks and contribute to the progression of nuclear energy.

5-6 June 2014, Amsterdam, Netherlands

Source

International Conference on Nuclear Knowledge Management and Human Resources Development

The International Atomic Energy Agency (IAEA) is organizing the Nuclear Knowledge Management and Human Resources Development Conference in response to challenges and opportunities in the evolving global nuclear landscape. The event aims to address the need for a knowledgeable and experienced multigenerational workforce in the nuclear industry, emphasizing the importance of preserving and transferring knowledge as experienced professionals approach retirement. The conference will review global developments, discuss challenges and opportunities, and provide practical solutions for organizational, national, and international levels. Targeting professionals from various sectors, the conference will focus on sustainability by following 'green meeting' guidelines, incorporating paper-smart documentation, waste reduction, and environmentally friendly catering.

1-5 July 2024, Vienna, Austria

Source