

## From a Coal-to-Gas Conversion to a Microgrid Factory, Eskom builds Komati's just Energy Transaction Case



State-owned electricity utility Eskom is hoping to transform the workshops at the Komati power station – identified as the flagship site for the piloting of a broader 'just energy transition' programme that couples decarbonisation with social upliftment – into a factory capable of manufacturing and assembling a containerised microgrid solution.

The Mpumalanga power station has generated electricity since 1961 and its last operational unit is scheduled to be shut in 2022, signalling the start of a coal decommissioning programme that will result in at least 10 500 MW of coal capacity being decommissioned by 2030

The pace of decommissioning could be accelerated, however, as part of a so-called Just Energy Transaction that Eskom and government are seeking to finalise ahead of the upcoming COP26 climate negotiations, which will take place in Glasgow, Scotland, in early November 2021.

The financially troubled utility has indicated that it will be seeking to secure about \$10-billion to support its accelerated transition away from coal and to protect workers, communities and businesses whose livelihoods are threatened by the decommissioning programme.

**Read More:** <https://bit.ly/3zVRpdZ>

## Table of Contents

Page	News Topic
1	<b>Cover Story:</b> From a Coal-to-Gas Conversion to a Microgrid Factory, Eskom builds Komati's just Energy Transaction Case
2-3	<b>Stories across the Globe on Smart Grids:</b> <ul style="list-style-type: none"> <li>Chicago Consortium Forges Smart City Agreement with Lighting and Pole Provider</li> <li>African Development Bank Group's grant kicks off Desert-to-Power West Africa Regional Energy Program</li> </ul>
4-5	<b>Member Updates:</b> <ul style="list-style-type: none"> <li>Nedo to Host Smart Community Summit 2021 in Collaboration with Japan Smart Community Alliance</li> <li>Bangalore International Airport Achieves GBCI's Peer Platinum Rating System</li> </ul>
6-7	<b>GSEF Updates:</b> Asset Depreciation: A Regulatory Conundrum
7	<b>Smart Grid Events</b>
8	<b>GSEF at a Glance</b>

# Global Stories on Smart Grid

## Chicago Consortium Forges Smart City Agreement with Lighting and Pole Provider

The project is commencing in the cities of Palos Hills and Justice, gradually adding infrastructure with a target roll-out of approximately 2,000 smart poles by the second half of 2022. A consortium of 21 cities throughout suburban Chicago, Illinois, has reached a final 20-year agreement with Viper Networks to build and operate a variety of smart city projects. This will drive an annualized revenue of \$10m before adding the revenue share.

**Read More:** <https://bit.ly/37MbmAZ>

## Village School in Malawi Receives Solar+Storage Microgrid

**Key Highlights:** The project installation consists of 20 solar panels which generate 7.2 kW of solar power, and a lithium battery energy storage system with a capacity of 19.3 kWh.

This project has made it possible to improve not only the students' possibilities of studying but also the quality of life and working conditions of the teaching staff, as they now have light and electricity in their homes. The village is located in a rural area close to the parish of Benga in the central part of the country. This project, implemented together with global power technology group Ingeteam, nine teachers' homes and one girls' dormitory. The project installation consists of 20 solar panels which generate 7.2 kW of solar power, and a lithium battery energy storage system with a capacity of 19.3 kWh. The Ingeteam hybrid inverter, equipped with an EMS energy management system, is responsible for controlling the entire energy supply to the installation.

**Read More:** <https://bit.ly/3sm9OXY>

## Wärtsilä to Supply Energy Storage System in Taiwan

**Key Highlights:** Wärtsilä will supply a 5.2 MW/5.2 MWh energy storage system to provide the frequency regulation in the ancillary service market for the Taiwanese grid.

The technology group Wärtsilä will supply a 5.2 MW/5.2 MWh energy storage system to provide the frequency regulation in the ancillary service market for the Taiwanese grid as Taiwan seeks to achieve 20% of its energy from renewable sources by 2025. The order was placed in August 2021 by Shangfa Construction who will build the energy storage facility on behalf of North-Star International Co., Ltd. It will include Wärtsilä's Gridsolv Quantum, a fully integrated, modular and compact energy storage system, a Power Conversion System, as well as Wärtsilä's GEMS Digital Energy Platform. GEMS will provide complete energy asset control and optimisation. The system will be operational in late 2022. Taiwan aims to have 20% of its energy from solar and wind power by 2025, which will be augmented with an additional 15 GW of offshore wind power by 2035.

**Read More:** <https://bit.ly/3k0clh7>

## Australian Firm Partners with JSW Energy on Green Hydrogen Projects in India

Australia's Fortescue Future Industries (FFI) has signed an agreement with JSW Future Energy Limited, an arm of power producer JSW Energy Limited, to explore green hydrogen development and use in industrial and transport sectors in India. FFI is committed to producing zero-emission green hydrogen from 100% renewable sources. It is actively establishing renewable green hydrogen and green industrial projects globally. Under the agreement, FFI and JSW Energy will collaborate and conduct scoping work on potential projects in green hydrogen production. They will also explore opportunities to utilize green hydrogen for steel making, hydrogen mobility, ammonia, and other mutually agreed industrial applications in India. JSW Energy aims to reach 20 GW of power generation capacity by 2030, with about 85% of the portfolio comprising green and renewable energy sources.

**Read More:** <https://bit.ly/2U5tNNY>

## African Development Bank Group's grant kicks off Desert-to-Power West Africa Regional Energy Program

Desert to Power, an initiative led by the Bank, is expected to transform the Sahel by harnessing the region's abundant solar potential

The African Development Bank Group has approved a USD 6 million grant to launch the initial phase of the Desert to Power West Africa Regional Energy Program. The grant funding, sourced from the African Development Fund's 15 (ADF-15) Regional Operations Envelope, will go to the West African Power Pool (WAPP) to conduct pre-feasibility studies for the construction of the Sahel Transmission Backbone that will link regional solar parks in all five countries. The financing will also help de-risk energy investments by preparing transmission infrastructure to link countries in the Sahel region and harness a larger share of electricity from solar power. The G-5 Sahel countries are Burkina Faso, Chad, Mali, Mauritania, and Niger.

**Read More:** <https://bit.ly/3DBg5En>

# Global Stories on Smart Grid

## EU-ABC urges ASEAN to expedite energy transition

Energy transition will help the region to deal with climate change challenges

The EU-ASEAN Business Council (EU-ABC) published a calling on ASEAN governments to accelerate energy transition as a means of helping the region deal with climate change challenges and ensure the greening of supply chains whilst meeting its rising energy demands. The EU-ABC believes that progress requires a mix of policies, finance and technology, with special assistance for developing countries. One such solution that could potentially support ASEAN is an Energy Transition Mechanism (ETM), a way to combine public and private finance to accelerate retirement of coal-fired power plants and significantly increase investment in renewables.

**Read More:** <https://bit.ly/3yurimo>

## DOE uses Firmware Machine Learning to bolster Electric Grid Cybersecurity

The Department of Energy is integrating machine learning (ML) with a threat information-sharing to find cybersecurity adversaries embedded in electric grid control systems. DOE's Grid Modernization Laboratory Consortium (GMLC) consists of the Idaho, Argonne and Sandia national labs and the National Renewable Energy Laboratory — all working together on the Firmware Command and Control (FC2) project which can detect firmware-centric vulnerabilities with ML. The main objective of the project is to develop automated vulnerability discovery techniques, which should make finding very large-scale vulnerabilities, such as those affecting TCP/IP stacks, faster and more frequent.

**Read more:** <https://bit.ly/3kaaBYe>

## Energy Conservation Program for Appliance Standards: Energy Conservation Standards for Residential Furnaces and Commercial Water Heaters

The Department of Energy (DOE or Department) published a final interpretive rule in the Federal Register determining that, in the context of residential furnaces, commercial water heaters, and similarly-situated products or equipment, use of non-condensing technology (and associated venting) constitutes a performance-related "feature" under the Energy Policy and Conservation Act, as amended (EPCA), that cannot be eliminated through adoption of an energy conservation standard.

**Read More:** <https://www.indiasmartgrid.org/viewnews.php?id=5359>

## World's Largest Offshore Floating Wind Farm is Now Complete in Scotland

The installation of the 50-megawatt (MW) Kincardine Offshore Wind farm, the world's largest floating offshore wind farm 9 miles (15 km) off the coast of Aberdeen, Scotland, is now complete. The wind farm consists of a 2 MW Vestas turbine and five 9.5 MW Vestas turbines. It's expected to generate up to 218 GWh of clean electricity each year, enough to power 55,000 households.

The Madrid-headquartered Cobra Wind was responsible for the commissioning, engineering, design, supply, and construction of the wind farm. The Navantia-Windar consortium in Spain manufactured the floating wind foundations. They were then transported to Rotterdam in the Netherlands, where the wind turbines were mounted on the foundations.

**Read More:** <https://www.indiasmartgrid.org/viewnews.php?id=5361>

## IRENA and ESA agree to use space assets for Global Energy Transition

The International Renewable Energy Agency (IRENA) has signed a memorandum of understanding (MoU) with the European Space Agency (ESA) for advancing global energy transition in space activities. IRENA and ESA will use space-based services and products to improve access to energy, electrification modelling, renewable resource mapping and smart grid planning, with the aim of ensuring sustainable long-term socioeconomic development within planetary boundaries.

The two agencies believe that 5G technology, combined with satellite imagery, artificial intelligence (AI) and big data, could enable a wider space economy and support energy transitions worldwide. Satellite data is also thought to hold benefits for urban energy system planning focused on local renewables, as well as improving system resilience.

**Read more:** <https://bit.ly/3kaurCE>

# Member Updates

## NEDO TO HOST SMART COMMUNITY SUMMIT 2021 IN COLLABORATION WITH JAPAN SMART COMMUNITY ALLIANCE

Smart Community Summit 2021 is being organized this year to disseminate the latest international trends, projects results and future directions regarding smart communities. The theme of the event is "Power System Flexibility to Support Integration of Large-Scale Renewable Energy".

Globally, greenhouse gas emissions need to be reduced to virtually zero by 2050, and the world is now entering an era of large-scale renewable energy integration. Especially, the share of solar and wind, known as variable renewable energies (VREs), to the world power generation composition is about 10% at present, whereas it will turn to be about 70% in 2050 according to IEA's 2021 report.

To realize large-scale integration of such VREs, it is necessary to improve "flexibility" in power systems safely, stably, and economically, and its importance is recognized worldwide, including the 12th Clean Energy Ministerial (CEM) held in June 2021.

Leading experts from Japan and abroad will hold lectures on the current state of the power system, the problems to be solved and the required power system flexibility.



**Registration link:** [https://www.nedo.go.jp/events/Z4SE\\_00001.html](https://www.nedo.go.jp/events/Z4SE_00001.html)



# Member Updates

## BANGALORE INTERNATIONAL AIRPORT ACHIEVES GBCI'S PEER PLATINUM RATING



### Transforming towards Sustainable Infrastructure

Kempegowda International Airport, Bengaluru (KIAB/BLR Airport), has the unique distinction of being the first Greenfield Airport in India, established on a Public-Private Partnership (PPP) model. KIAB is one of the fastest growing airports in the world and recorded a passenger traffic of 33.65 million in 2019. KIAB is committed and has strong values and ethics, and the leadership team is passionate towards sustainability, energy efficiency, climate change and promote innovation. To scale up their infrastructure to meet the growing demand and to ensure the systems are built reliable, resilient, and safe, KIAB has taken up PEER certification.

#### Advanced Power Infrastructure ensuring Business Continuity

KIAB is the first ever PEER certified project globally to achieve a score of 92 points for a total of 100. To achieve this feat, KIAB has undergone rigorous review process and implemented several infrastructure improvements. These include smart meters with real time power quality monitoring capabilities, master controller for remote start and stop of the operations, islanding abilities during long term power outage and a strong communication backbone. Further, KIAB has 6.8 MW onsite solar PV that is capable of supporting essential services during grid failure and long-term blackout. 65% of the KIAB's energy mix comes from renewable energy much higher than Karnataka states energy mix of 18% that help in reducing dependency on dirty grid power and mitigate harmful GHG emissions – a pathway towards achieving net energy neutrality. KIAB has 98% of their distribution circuit protected with distribution redundancy and auto restoration ensuring faster power restoration and increasing power reliability.

All these efforts have made KIAB a world class facility and has set a high benchmark for its peers in the field of sustainable aviation and power infrastructure resilience.

**Article contributed by** Ishaq Sulthan, Associate Director, GBCI India

## ASSET DEPRECIATION: A REGULATORY CONUNDRUM?



The concept of depreciation is very old (since the 1800's). The Tiffany's Digest of Depreciations, 1890 edition noted, "the book ...will prove of great value and assistance in determining the rates of depreciation on a basis that will not only be equitable as between the Insurer and the Insured, but also prove of assistance to Architects, Builders, Machinists and Contractors in their calculations." So, depreciation was used for determining (1) the insured value during their useful life and (2) residual value for sale (like Kelley Blue book for cars today). What is intriguing, is why architects would need depreciation schedules for buildings that last for centuries. Tiffany's Digest addressed this in its preface stating, "It should be remembered that all percentages on buildings are based on the actual life of the building without any repairs. Any repairs such as painting, renewing of roof, siding or flooring, should be credited to the building, and the percent of depreciation reduced."

However, the above depreciation schedules were never intended to be a part of tax accounting. Why then is depreciation so firmly a part of tax accounting today? The United States enacted its income tax law in 1913. The motives behind depreciation tax laws were not exactly benign. Without delving into history, tax accounting rules were invented by a coalition of bankers (creating a benefit treatment for their loans) and politicians (to fund govt. programs). But maybe because depreciation was already in accounting ledgers by 1913, they got included into tax accounting as a result of its prevalence in companies.

Depreciation is an expense (income deduction) that is set aside by companies to create a "depreciation reserve" for replacing their assets as and when they stop functioning. The amount by which the asset is depreciated each year is deducted from the value of the asset. Constant usage, wear-and-tear and obsolescence are responsible for the decline in asset value. This "non-cash expense" is transferred into this depreciation reserve at the end of every year throughout the asset's useful life. It does so, using depreciation schedules for various asset classes as prescribed in the tax code. Through this mechanism, the company accumulates sufficient funds to replace the asset when it stops working. The theory being, there is sufficient funds to replace old assets and the company does not suffer losses when such situation arises.

From an accounting perspective every fixed asset (or group) has its own depreciation reserve account and adding to such reserves provides tax benefits to the company. Since depreciation is a non-cash expense, it lowers the net income for tax purposes while increasing cash at hand. This money can be either distributed to shareholders as dividends or utilized/invested in any other area of the business.

Many global utilities undertook major expansion in generation and transmission between 1960-80 and such assets are reaching their end-of-life. Nuclear/Hydro generation facilities are currently being refurbished, while transmission is slated to start soon. All this means there is a need to seek and rate-base new investment capital for these replacements. Concentric Energy Advisors, USA/Canada (<https://ceadvisors.com>) specializing in this area note <https://ceadvisors.com/publication/depreciation-expenses-a-new-focus-of-regulatory-scrutiny/> that (1) "return on invested" capital, and the "return of" capital, through depreciation, will cause significant increases in the overall revenue requirement even with no increase in depreciation rates; (2) accumulated depreciation reserve accounts are significantly under-funded due to retirement of associated plant assets which are younger than their average service life; (3) "negative salvage" costs (for removal) is needed on top of new investments depreciation; and (4) revenue requirement is becoming much more significant and is facing much more regulatory scrutiny than ever before.

All of the above, leads me to my observations and few simple questions (below):

1. Typically, Depreciation Reserves are not held as cash/near-cash in the balance sheet for asset replacement and could be returned it to the shareholders as dividends or reinvested in other business areas. *Why does the tax/accounting code allow this for regulated business? Does this pool not belong to asset replacement and the rate-payer? Can such pool be legislated to be held in trust, much like a retirement/pension pool?*
2. Should rate hearings focus on incremental rate-base costs (i.e., additional new capital investment required less accumulated depreciation reserves). *Such methods would force depreciation reserves to be maintained as cash, with only incremental capital costs being sought for asset replacement. Is this possible?*
3. Given a prescribed debt/equity ratio for regulated utilities, the debt coverage through building and operating such regulated assets is a proxy on the rate-payer side, whereas equity is a proxy on the shareholder side. Yet, rarely does the rate-payer get adequate protection against increases while ROE is often one of the guiding principles in rate hearings. *How can ROA protect the rate payer?*
4. Utility assets are now getting financially complex with many power-equipment having electronic, IT/Telecom/data processing and battery related sub-systems associated with the main power equipment. Thus, each sub-depreciation rate needs to be blended in with the main power equipment depreciation. This makes it difficult for the regulator to compare assets and their longevities. *Should we create a separate "minor-fixed" asset class as a sub-system of the main power equipment class and depreciate it faster?*

5. Can inflationary factors be built into current depreciation rates to mirror the estimated cost of future new replacement to soften the jerkiness and spikiness of such rate hikes? Also, a deemed time-value/interest rate can be associated with the depreciation reserve to make it grow over decades. Currently, this is not done as tax/accounting code recognizes actual costs only. *If allowed, how can this be protected against unwanted utility gains in the future?*
6. Finance teaches us differing attributes of Return on Gross Assets (ROGA) and Return on Net Assets (RONA) and their distinctiveness in creating long-term shareholder value. *Is there a rate-payer angle that can be included? Are we missing this aspect?*

Somehow the principles of depreciation as outlined in the 1800s appears to have gone awry in modern times. A regulated utility unlike other free-market businesses must keep its assets viable on a “perpetual basis” without undue gains to its shareholder. After all, the assets and its rate base are supported by the rate-payer and unlike a free-market consumer, the rate-payer simply cannot refuse to pay and walk away.

A potential huge rate hike is in the works to pay for such refurbishments and in the words of Bob Dylan’s famous song line, “How many times can a man turn his head, and pretend that he just doesn’t see? The answer my friend is blowing in the wind, the answer is blowing in the wind”.

**Article contributed by** Ravi Seethapathy, GSEF Ambassador for Americas

## Smart Grid Events

**20 – 23 September 2021:** CIRED

<https://www.cired2021.org/>

**29 – 30 September 2021:** CARILEC’s Renewable Energy & Smart Grid Conference & Trade Show

<http://www.carilec.org/event/renewable-energy-and-smart-grid-conference-and-tradeshaw/>

**06 – 07 October 2021:** Innovation for Cool Earth Forum (ICEF), Tokyo

<https://www.icef-forum.org/>

**10 - 12 October 2021:** Turkey Energy Summit

<http://turkeyenergysummit.com/en/>

**13 - 15 October 2021:** EIF World Energy Congress and Expo

<https://www.enerjikongresi.com/>

**25 – 29 October 2021:** Singapore International Energy Week

<https://www.siew.gov.sg/>

**30 November – 02 December 2021:** Enlit Europe, Milan (formerly known as European Utility Week)

<https://www.enlit-europe.com/>

**18-19 November 2021:** Distribution Utility Meet

<http://dumindia.in>

**01 - 04 March 2022:** India Smart Utility Week 2022

[www.isuw.in](http://www.isuw.in)

Disclaimer: This information is from the public domain. GSEF does not hold any responsibility for the information provided in this section.

**22 - 25 September 2021:** Solar Istanbul

<https://www.solaristanbul.com.tr/>

**29 September - 1 October 2021:** INT’L Smart Grid Expo

<https://www.smartgridexpo.jp/en-gb.html>

**06 - 08 October 2021:** EM Power Europe

<https://www.em-power.eu/home>

**12 - 13 October 2021:** Clean Power New Energy 2021

<http://www.mcpnewenergy.com/>

**18 - 22 October 2021:** Smart Grid Forum IEC 61850 Week 2021

<https://www.smartgrid-forums.com/iec-61850-week-2021>

**25 – 29 October 2021:** Solar World Congress

<https://www.swc2021.org/>

**03 – 05 November 2021:** 14<sup>th</sup> International Energy Congress and Expo

<https://www.worldenergy-congress.com/>

**26 - 28 January 2022:** DISTRIBUTECH International

<https://www.distributtech.com/event-information>

# GSEF at a glance

## Charter Members



Think Smart Grids



India Smart Grid Forum



Korea Smart Grid Association (KSGA)



Prakarsa Jaringan Cerdas Indonesia (PJCI)



GridWise Alliance

## Regular Members



Smart Grid Mexico



Japan Smart Community Alliance

## Utility Members



Electricity Generating Authority of Thailand (EGAT)



Electricity Supply Commission of South Africa (ESKOM)



EDM Mozambique



Tenaga Nasional Berhad (TNB) Malaysia



European Distribution System Operators (E.D.S.O)



Botswana Power Corporation

## Associate Members



Green Business Certification Inc.



Florence School of Regulation (FSR)



Energy BlockChain Consortium



Caribbean Electric Utility Services Corporation



Electric Power Research Institute

## Current Working Groups

- Blockchain for Utilities
- Regulatory Changes or Regulatory Reforms for the post Covid Digital Utility
- AI and Analytics for Utilities

## Working Groups in Pipeline

- Green Recovery Playbook for Utilities

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