

LET'S TALK

Quarterly Newsletter
June 2024



sanedi
South African National Energy
Development Institute



Top News

▶ SANEDI signed MOU with the University of Venda

▶ A SPARK IGNITED: SANEDI's China Visit Illuminates the Path Forward

WELCOME TO SANEDI

SANEDI AT THE FOREFRONT OF SOUTH AFRICA'S ENERGY JOURNEY

Born from innovation

Established in 2011, SANEDI (the South African National Energy Development Institute) isn't just another organisation. We're a driving force behind South Africa's energy transformation, mandated by the National Energy Act to spearhead research, development, and implementation of cutting-edge solutions.

The goal of our research and development is to create clean, sustainable energy solutions that can keep the lights on for years to come. We envision a future where growth and prosperity are fueled by innovative technologies that are kinder to the environment. SANEDI's efforts are also focused on creating jobs, stimulating economic growth, and reducing the country's carbon footprint. SANEDI is on a mission to be a leading research & innovation organisation for sustainable and inclusive energy development. This is why the organisation's vision is to expediently conduct policy-relevant research and implement innovative energy research, development and Energy Efficiency (EE)solutions to catalyse South Africa's socio-economic growth and climate resilience.



Mr. Sicelo Xulu,
Chairperson of the Board at SANEDI

SANEDI'S LEGISLATIVE MANDATE IN A NUTSHELL

Drive Innovation in Energy R&D

- Conduct and oversee research and development in all energy fields except nuclear energy.
- Promote and support innovation in energy technologies.
- Publish information about their work and establish knowledge-sharing platforms.

Develop Future Energy Leaders:

- Provide training and development opportunities in energy research and technology.

Bridge the Gap Between Research and Reality:-

- Facilitate the commercialization of energy technologies developed through research programs.
- Manage patents and intellectual property rights resulting from their activities.
- Issue licences for others to use their intellectual property.

Collaborate for a Sustainable Future:

- Partner with local and international entities to advance energy research.
- Offer grants for research initiatives in educational and scientific institutions.
- Promote the training of skilled researchers in the energy sector.

Advise the Government:

- Conduct investigations and research assigned by the Minister.
- Provide expert advice on energy technology to government officials.

WHEELING FOR ENERGY SECURITY

The energy landscape is undergoing a dynamic transformation, and getting the most out of every kilowatt is crucial. That's why wheeling strategies are taking centre stage.

The importance of wheeling strategies in optimising energy distribution, enhancing grid resilience and fostering renewable energy integration has grown significantly.

Recently, Mr. Sicelo Xulu, Chairperson of the Board at SANEDI, joined a captivating discussion at Enlit Africa, a premier energy event.

The conversation delved deep into the world of wheeling strategies, exploring how they can optimise energy distribution, enhance grid resilience, and pave the way for seamless integration of renewable energy sources. The highlight of the discussion? Mr. Xulu's ingenious wheeling concept specifically tailored for small municipalities! This innovative approach prioritises maximising benefits for customers – a win-win for communities and the energy sector as a whole.

WHY IT MATTERS

As technology evolves, so do the possibilities. We're constantly on the lookout for groundbreaking energy solutions that address crucial challenges: reducing emissions, preserving natural resources, and creating jobs. Technology is a powerful tool that can help humanity achieve these goals and create a healthier and more sustainable future.

The organisation is working to ensure that all South Africans benefit from the transition to a sustainable energy economy. SANEDI is working with businesses, government, and communities to ensure that everyone has access to clean, affordable energy. The organisation is also creating opportunities for people to gain the skills and knowledge they need to succeed in the future energy economy.

NAVIGATING THE BIG PICTURE

The global landscape is shifting. Climate change, urbanisation, and technological advancements all play a role in shaping our energy future. Governments must act now to ensure that these changes are managed responsibly and with an eye to the future. We must ensure that our energy systems are ready for the challenges of the future and are able to respond to changing needs.

SANEDI STAYS AHEAD OF THE CURVE BY FOCUSING ON KEY THEMES:

Climate Change and Decarbonisation

We're actively seeking solutions to mitigate climate change and transition towards a low-carbon future that is just, inclusive and equitable in a bid to promote a balanced energy transition.

Service Delivery within the Municipal Environment:

Making sure municipalities have the tools and resources to deliver efficient and sustainable energy services is crucial.

Information Knowledge and Technological Convergence:

Data analysis, knowledge sharing, and embracing new technologies are key to driving innovation and progress.

Universal Energy access:

Ensuring everyone in South Africa has reliable access to power is a top priority.

Gender Mainstreaming and Youth Employment.

SANEDI is committed to collaborating with stakeholders across all sectors to ensure a sustainable and prosperous energy future for all South Africans. By staying ahead of the curve and investing in these key areas, SANEDI is laying the foundation for a safe and prosperous energy future. SANEDI's proactive approach must ensure that South Africa's energy needs are met for generations to come.

To achieve its desired impact of enabling decarbonisation and a just transition from a fossil fuel-based economy to a cleaner energy economy for sustainable development, SANEDI strives to achieve a number of outcomes within the 2020/25 planning period.

WHERE ARE THE GAPS?

Sustainable funding model for energy R&D and Demos:

Energy R&D in SA is currently underfunded, forcing organisations to look externally.

Energy Planning/Modelling:

Discussions underway with the DMRE to establish an Energy Planning/Modelling Centre of Excellence at SANEDI.

Consolidation of energy research and development:

SANEDI should drive consolidation of energy research activities in the country, and be the custodian of energy research agenda. Engagements with key stakeholders ongoing.

Energy Data:

There is a dire need for credible energy data for South Africa. SANEDI is gearing itself to close this gap.

Energy Policy Research:

There is a need for energy policy research to inform a balanced energy transition.

SANEDI'S POWERHOUSE PROGRAMMES:

DRIVING SOUTH AFRICA'S ENERGY FUTURE!

Leading the Innovation Charge

This is where the magic happens! SANEDI spearheads research and development projects across various energy fields, constantly seeking cutting-edge solutions.



1. ENERGY EFFICIENCY AND DEMAND SIDE MANAGEMENT (EEDSM)

Energy Efficiency is by far SANEDI's largest programme. It includes:

Section 12L Tax Incentives:

Administered by SANEDI, 12L Tax Incentive encourages businesses to invest in energy efficiency measures, including energy efficient technology. According to the Income Tax Act, 1962 (Act No. 58 of 1962), it provides an allowance for businesses to implement energy efficiency savings. The savings allow for tax deduction of 95c/kWh saved on energy consumption.

Cool Surfaces & Insulation:

The cool coating initiative has resulted in 600 000 square metres of already cool coated in Limpopo at end of May 2024, we hope to have 1000 000 m2 completed by end February 2025, 3 000 000 m2 in the next 3 years and 5 000 000 m2 completed by SMME activity.

Energy Performance Certificates:

EPCs are regulatory tools/instruments targeting inefficient buildings with the purpose of encouraging transformation towards energy efficient buildings. EPCs are indicators for building owners to note and change their consumption patterns in order to benefit financially and comply with regulations.

ESCOs Market Development:

The objective of the Energy Service Companies Market Development in South Africa is to increase demand and improve quality of services. It also includes capacity building and improving access to finance, equity and resilience to support the energy transition.

Standards & Labelling:

Implemented by SANEDI, this is a priority initiative by the DMRE designed to achieve energy cost savings and reduce carbon emissions from application and lighting products in SA.

Balancing energy supply and demand - Large scale roll out:

Balancing energy supply and demand is essentially aimed at ensuring that the amount of energy produced and distributed is equal to the amount consumed.

2. APPLIED ENERGY RESEARCH, DEVELOPMENT AND INNOVATION

FINDING SOLUTIONS, NOT JUST PROBLEMS

Applied energy research is the engine that drives innovation and paves the way for a clean, secure, and sustainable energy future. While basic research is essential, at SANEDI applied research bridges the gap. It translates scientific discoveries into practical solutions we can use today. Basic research provides the blueprint, while applied research translates that blueprint into a functional bridge that connects us to a sustainable energy future. Different regions have unique energy needs. Applied research allows SANEDI to develop solutions that are specific to South Africa's resources, context and challenges.

THIS PROGRAMME INCLUDES:

Cleaner Mobility

Significant progress has been achieved towards delivery of milestones for the initial phase of the multiyear EV charging infrastructure and Assessment of the 2018 Green Transport Strategy.

Renewables

On 23 May 2024 SANEDI was invited to a World Bank Battery Value Chain Workshop, where the General Manager of Applied Energy Research Development and Innovation participated in a panel discussion with other C-Suite peers. This event was well received and very informative, SANEDI looks forward to engaging further in this space with the World Bank.

Smart Grids

These programmes focus on promoting smart grid technologies. It includes: An Asset Management Smart Grids study in collaboration with South African Municipalities and electricity distributors. This process has concluded with 4 municipalities being selected. The project will be kicked off this month with Introductory and Asset Management Training Workshops.

Cleaner Fossil Fuels

SANEDI embarked on a Study Tour to China and out of the tour, there is a proposed collaboration between SANEDI and China's EPPEI. The objective is to build on expertise in power system modelling, analysis, and planning. China has a significant R&D component in its approach, with 2.43% of GDP invested in it as of 2021, compared to South Africa's 0.62%.

The country has invested in power stations like CHN Energy's BIN CHANG Power Plant, which will operate an Ultra-Supercritical unit with a CFB boiler, FGD (dry) and

water-cooling tower. The integration of three clean coal technologies in one plant requires significant funding for research and construction. CHN Energy's Panshan Power Plant is also upgrading large capacity units, with a domestic efficiency ultra-supercritical intermediate reheat turbine-generator unit. These projects require target research, simulations, and demonstrations before construction and operation.

Viability and Validation of Innovation for Service Delivery (VVISD)

Five municipalities were awarded funds to implement energy management technologies which will improve quality service delivery. The scope of technologies comprises, inter alia, geyser tag load control; free basic alternative energy coupon systems; streetlight and geyser ripple control load management.

Data & Knowledge Management

These Digitalization projects explore how digital solutions can enhance the efficiency and sustainability of our energy systems. SANEDI will be launching the Digitalisation Laboratory with the vision to develop a centralised Energy Database for visualisation of data as well as a position paper on the Demand Side Aggregator Model for South Africa and participation at the upcoming DSM Indaba.



3. DSI ENERGY SECRETARIAT FLAGSHIPS FOR A SUSTAINABLE AND SECURE ENERGY FUTURE



The DSI Energy Secretariat's mandate is centered around monitoring the implementation of the Science, Technology, and Innovation (STI) Decadal Plan as well as monitoring innovation policies relevant to the energy sector through the four flagships: Hydrogen South Africa (HySA), Carbon Dioxide Capture and Utilisation (Coal CO₂-x), Renewable Energy Hub & Spokes and Energy Storage. In addition this office oversees managing and monitoring large scale deployments in partnership with public, private sector, science councils and academia in support of the Presidential District Development Model (DDM). These include the platinum valley, clean energy deployments in partnership with local and district municipalities, as well as other government departments; and coordinating the training of Technical and Vocational Education and Training (TVET) graduates and University of Technology (UoT) graduates on emerging technologies. The office also coordinates national and international partnerships aimed at leveraging co-funding, joint IP development and general RDI programmes.



ENERGY PULSE

Powering Up Progress: A Message from the SANEDI CEO

Here at SANEDI, excitement crackles in the air! The last quarter has been a whirlwind of innovation, and we're thrilled to share some electrifying developments.

Lighting the Way for a Sustainable Future

- We've joined forces with the University of Venda, establishing a research hub at the Masia Multipurpose Community Centre. This isn't just a building – it's a beacon of hope, where researchers will explore the transformative potential of renewable energy and hydrogen technologies.
- Imagine a 5-kW hydrogen fuel cell powering agricultural systems! This partnership with the DSI showcases cutting-edge solutions in action, demonstrating how we can utilise renewable energy sources like a 20-kW solar PV system and battery storage to power a sustainable future for agriculture.
- In addition, the proposed establishment of a specialisation centre in Energy, Water, Food, and Climate Change, to be hosted by Mangosuthu University of Technology (MUT), is aimed at addressing critical socio-economic challenges and advancing SANEDI's research agenda.
- This initiative signifies a strategic opportunity for SANEDI to expand its footprint in energy research spheres while fostering collaboration with historically disadvantaged tertiary academic institutions. The establishment of the specialisation centre aligns closely with South Africa's strategic imperatives, particularly in addressing energy security, sustainable agriculture, climate resilience, and water management.

Investing in Tomorrow's Changemakers

We're not just focused on technology; we're investing in people! Our R1 million pledge towards physics students at the University of Venda empowers the next generation of energy leaders. These bright minds will be at the forefront of South Africa's evolving energy landscape.

Collaboration is Key

We believe in the power of teamwork! Building strong international partnerships is crucial for sharing skills, resources, and technology. By collaborating with global players, we can accelerate innovation and position South Africa for a sustainable energy future that reduces greenhouse gas emissions and embodies a just transition, leaving no one behind.

Thank you for your dedication to our mission. Together, we will continue to innovate and lead the way towards a sustainable future!

Dr Zwanani Titus Mathe
Chief Executive Officer - South African National Energy Development Institute (SANEDI)



NEWS



SANEDI AND UNIVEN SIGN A R1 MILLION MOU TO SPARK A BRIGHTER FUTURE FOR PHYSICS STUDENTS

We're thrilled to announce a brand new partnership with the University of Venda (UNIVEN)! Together, we've signed a Memorandum of Understanding (MoU) to create a R1 million fund specifically for physics students. The signing ceremony was a whirlwind of insightful presentations from thought leaders at both institutions.

The signing ceremony followed a lecture on the history of Eskom generation with the changing political economy in the early 90s by Prof. Sampson Mamphweli. During the signing ceremony SANEDI CEO, Dr. Titus Mathe announced the areas of collaboration and its significance for energy development; Dr. Robert Martin, Deputy Vice-Chancellor Corporate Services highlighted how the collaboration was aligned to the University's Centre for Entrepreneurship and Rapid Incubation while Dr. Robert Martin and Prof. Bernard Nthambeleni of UNIVEN praised the MoU's benefits.

The May 3, 2024 signing ceremony marked a milestone for the institution and will prove to fuel the next generation and spark innovation!

[Click here to read more](#)

CRACKING THE ENERGY SUSTAINABILITY EGG OVER THE EASTER HEAT

Sparking curiosity at the Rand Show 2024, SANEDI's clean and efficient energy squad, led by Ashanti Mbanga, brought the power! Their mission: to ignite a passion for sustainable practices and everyday clean energy solutions.

With interactive booths buzzing with demos and quizzes, they showcased cutting-edge energy-saving tech and renewable solutions. From curious families to industry pros, everyone learned how the globe is rushing to become more sustainable and energy efficient.

SANEDI's interactive approach made complex topics clear and engaging, receiving rave reviews! This Rand Show success story proves that through public engagement and promotional activities to showcase our work can contribute to building a brighter, more sustainable future.

[Click here to read more](#)



POWERING CHANGE: SANEDI Represents at 3rd Women in Engineering Africa Summit

SANEDI recently joined the 3rd Women in Engineering Africa Summit in Johannesburg on April 11, 2024. The summit gathered female engineers and leaders to discuss challenges and advocate for gender diversity. Represented by five members, SANEDI aimed to support gender diversity, highlight women's roles in energy, and share its initiatives. Through discussions and networking, SANEDI showcased its commitment to empowering women in engineering and fostering collaborations. This participation reinforces SANEDI's leadership in promoting gender diversity in the energy sector.

[Click here to read more](#)

SANEDI AND DSI LAUNCH NEW SCIENCE LABS IN LIMPOPO

We're beaming with pride to unveil two incredible projects that are electrifying rural development. This innovative space, powered by the sun and a reliable water source (thanks to a borehole!), is now the stomping ground for 42 curious learners in Hlanganani ka Bungeni, Limpopo. Additionally, the Multipurpose Centre in Masia village features a Solar PV Energy System, water supply, and shades for fruit tree and vegetable growing. Interns are being trained in agricultural production, with the first sweet potato crops harvested in 2023!

[Click here to read more](#)



SANEDI POWERS UP AT G20:

Breaking down barriers to sustainable energy finance

SANEDI joined the G20 Energy Transition Working Group in Brazil on April 15, 2024, backing South Africa's Department of Minerals Resource and Energy. The group focuses on mitigating risks in clean energy financing for emerging markets and developing economies. Comprising 19 nations, the EU, and the African Union, the G20 aims for international cooperation. SANEDI's involvement signifies South Africa's commitment to sustainable energy, fostering discussions, sharing practices, and seeking collaborations. This participation promises strengthened global cooperation and innovative solutions for South Africa's energy sector.

[Click here to read more](#)



NAVIGATING THE FUTURE OF FOSSIL FUELS AT THE 3RD ICSC ENERGY TRANSITION WORKSHOP EXHIBITION

SANEDI's Participation in the 3rd Future of Coal Workshop held on 24-25 April 2024 at the Cape Town International Convention Center (CTICC), Cape Town. This workshop brought together industry experts, policymakers, and researchers to discuss the future of coal in the context of global energy transitions and environmental sustainability. SANEDI's participation aimed to contribute to the dialogue on coal's role in the energy mix and to explore innovative approaches for making coal usage more sustainable.



[Click here to read more](#)

A SPARK IGNITED: SANEDI's China Visit Illuminates the Path Forward



SANEDI's recent visit to China aimed to unlock valuable insights into their approach to clean coal technology and development. The visit wasn't all about technology. It also revealed China's impressive commitment to data integration for real-time monitoring of power plant operations, as well as their focus on clean and safe power stations.

[Click here to read more](#)

TEAM TALK

RECOGNISING AWESOME ACHIEVEMENTS

This month, we acknowledge our phenomenal graduates who have gone the extra mile, put in long hours and achieved fantastic results. We are super proud of you! As we celebrate Youth Month, we thank you for your willingness to work and study really hard, extend yourselves, and show our nation that we can be proud of our young people. We are betting on you to use your degrees to make a valuable difference to our vision and goals, and to drive an energy-efficient future for us all. CONGRATULATIONS!



Ntethelelo Khumalo
Intern for DSI Energy Secretariat
**Ntethelelo receives his Bachelor of Engineering
Technical Honours degree**

In the galaxy of academic pursuits, perseverance and dedication serve as the guiding stars to illuminate the path to success. For Ntethelelo Khumalo, these virtues have been the cornerstone of a remarkable journey culminating in his recent graduation with a BEng Tech Honours degree from the University of Johannesburg.

[Read more here about Ntethelelo's remarkable milestone.](#)



Simpfiwe Mokonza
Data Modeller
Simpfiwe graduates yet again

Simpfiwe Mokonza, a data modeller within the South African National Energy Institute (SANEDI)'s Data, Knowledge Management and Energy Modelling unit, initially completed her National Diploma and BTech degree in chemical engineering at the Tshwane University of Technology. She has continued to excel and reach for the stars, and in May this year attained a Bachelor of Science (BSc) (Honours) degree at the University of Pretoria.

[Read more here about Simpfiwe's career journey at SANEDI.](#)



Keorapetse Kgaswane
Project Officer - Smart Grid
Keorapetse excels in Information Systems

Keorapetse Kgaswane, a project officer under the Smart Grids Sub-Programme, recently graduated (in May 2024) with a Bachelor of Information Technology Honours in Information Systems (BITHons – IS) from the University of Pretoria. This specialised degree, that combines both academic and industry teachings, has provided her with a deeper understanding of the complexities inherent in Information Systems, and given her an all-round, comprehensive education that will significantly benefit her in the workplace.

[Read more here about Keorapetse's thoughts on her achievement.](#)

LET'S HEAR FROM THE YOUTH

Voices of Change: SANEDI's Commitment to Youth and Women's Development

At SANEDI we pride ourselves in diversity and representation among women and youth. 53% of our staff are under the age of 35 while 62% are represented by women. It does not stop with representation, inclusivity matters, and this means putting diverse voices at important tables. Facilitating the growth and development of young people and women is something we will continue to invest in and encourage.

Let's hear from them.



Bhekani Ntuli
Project Officer - Renewable Energy

Can you tell us about your career journey so far and what inspired you to join The South African National Energy Development Institute (SANEDI)?

I joined SANEDI after my Internship at the South African Wind Energy Association (SAWEA) and after completing my BSc honours in Energy Studies at UJ. My passion for sustainable energy and climate change led me to pursue a career in the energy sector. I was drawn to SANEDI because of its commitment to promoting sustainable energy solutions and its role in shaping the country's energy future at a national level.

Can you share a project or initiative you have worked on at SANEDI that you are particularly proud of, and what impact did it have?

I am particularly proud of a Soltrain project I am currently working on, which aimed to promote the development of renewable heating and cooling in Southern Africa. The project involves capacity building and gender diversity awareness. The project results are showing more and more women participation in our training.

How do you feel being a young professional in the energy sector, and what unique perspectives do you think youth bring to this field?

As a young professional in the energy sector with a background in renewable energy and electric vehicles, I believe that my unique perspectives and fresh ideas can bring innovative solutions for the intersection of the energy and transport sector.



Mandisa Nkosi
Senior Project Officer -
DSI Energy Secretariat

What is your current role at SANEDI, and what are your main responsibilities?

I am currently the Senior Project Officer and SANEDI has provided me with a great opportunity to work on cutting-edge projects, this includes managing the DSI Energy Secretariate four flagship programmes by monitoring and evaluation, contract management and finance management, collaborating with experts in the field, and contributing to shaping the future of energy in South Africa.

What is your vision for the future of the energy sector in South Africa, and what role do you see SANEDI playing in achieving that vision?

Envisioning a future where every citizen has access to every energy related technology, where as a country we achieve energy security through diversified renewable energy sources, reduced carbon emissions, and enhanced energy efficiency. SANEDI would play a crucial role by leading research, driving innovation, advising policymakers on sustainable energy strategies and ensuring that the strategies are implemented.

What advice would you give to other young people aspiring to work in the energy sector, particularly within organisations like SANEDI?

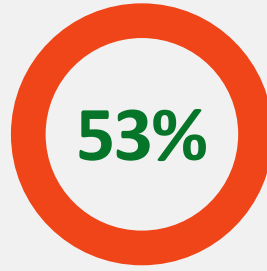
- Stay updated, the energy sector is rapidly evolving with advancements in technology and policy changes. Stay informed about industry trends, innovations, and regulatory developments.
- Understand Local Context: If you're aiming to work at SANEDI or similar organisations, understand the local energy landscape and challenges specific to your region. Tailor your knowledge and skills accordingly.
- Energy is a global industry with opportunities across borders. Consider how global trends and innovations can impact local markets and vice versa.
- Be Patient and Persistent: Breaking into any industry takes time and effort. Stay persistent in pursuing your goals and be patient with the process of gaining experience and advancing your career.

LET'S TALK NUMBERS



62%

Percentage of SANEDI staff that are women



of SANEDI staff are younger than 35



times SANEDI was mentioned in the news this quarter

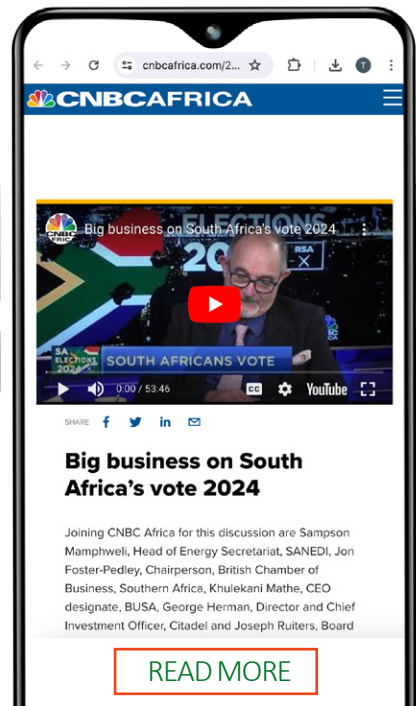
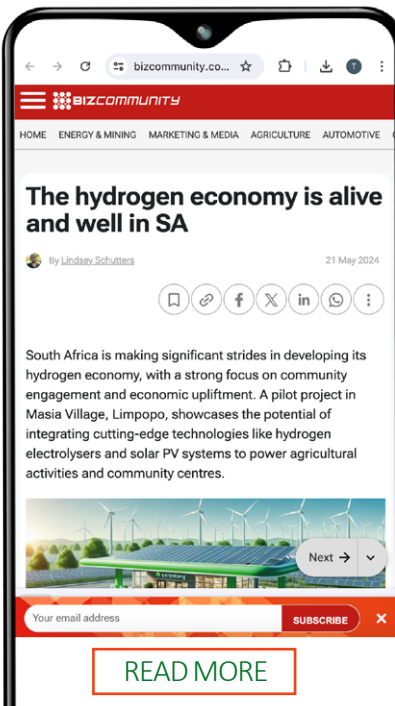


JOLT YOUR SCHEDULE - DATES TO REMEMBER

- **15 July:**
World Youth Skills Day
- **18 July:**
Mandela Day
- **28 July:**
World Nature Conservation Day
- **29 July - 03 August**
National Science Week
- **23 August**
World Water Week
- **30 August - 05 September**
Arbor Week
- **21 September**
International Zero Emissions Day
- **26 September**
World Environmental Health Day

WATT'S UP

SANEDI IN THE NEWS



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