South African Wind Energy Association (SAWEA)

WindAc Africa Conference Report 2021

Cape Town (Webber Wentzel Building) 5-7 October 2021

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1. Introduction

The WindAc Africa Conference 2021 was held at the Webber Wentzel offices in Cape Town from the 5th to the 7th of October 2021. The venue of this conference was carefully selected to be as close as possible to the Windaba Conference venue which was in the Cape Town International Conference. This venue came with professional conference facilities including support staff and amenities for a successful international conference.

WindAc Africa was making a return after a 2-year break from due to a number of reasons including the outbreak of Covid 19 in 2020. This event therefore provided a of excitement for both the planning team and delegates including speakers. This event took place at the height of Covid 19 and as such the event was held under strict Covid 19 regulations. This included streamlining the numbers of attendance to a maximum of 40 people as allowed by the venue capacity. This implied that the conference can only support a total of 20 students as compared to our previous events where the target was 50 students.

This event this year was held under the theme of **"All things Wind Energy"**, which was closely aligned to the **"Windaba theme Renaissance of the Wind Energy Industry"** –Delivering Economic Benefits for South Africa.
The chosen speakers and paper presenters were excellent, and we wouldn't have had a great conference without them all. In total there were 26 speakers and included in this number was paper presenters, expert presenters and moderators as well as impact talk presenters.

The event managed to support a total of 20 students who were selected to participate who came from different backgrounds. The planning team and the scientific advisory committee enjoyed engaging with each and every one them. It was fulfilling to hear their excitement at being selected and getting empowered by the expert presenters and paper presenters who were present at the conference this year.

This event would have not been a success if it was not for our sponsors and partners such as SAWEP, Danish Energy Agency, Webber Wentzel, SARETEC, GIZ, Green Economy Media and Journal of Energy Southern Africa as well as the scientific Advisory Committee. This event was also supported by other SAWEA events such as Windaba 2021, EnergyDRIVE 2021 and the rest of SAWEA Members (IPPs, Wind Farms, Project Developers, Consultants etc).

2. The Conference Programme

The conference agenda straddled over three days where the first day was dedicated to Impact Talk. This was a session where the students were empowered and inspired by the stories and successes of the two selected prominent leaders from both business and academia. See the first day programme below:

Day 1: Tuesday, 5 October 2021		
	Registrations	All
14h30	Tea/Coffee	Welcome and Meet and Greet with the SAC and Speakers
	Facilitators	Prof. Peter Freere, Associate Professor in Electrical Engineering, Nelson Mandela Metropolitan University (NMMU)
15h00 – 15h30	Impact Talk	Kimon Silwal, CEO Kathmandu Alternative Power and Energy Group
		Prof. Lwazi Ngubevana, Director of African Energy Leadership Centre at the Wits Business School
15h30 - 16h30	Networking cocktail and round table event	

Kimon Silwal

Prof. Lwazi Ngubevana

The second day was equally inspiring and we were pleased to be graced by the presence of high level of delegation from the Danish Energy Agency led by Mr Kristoffer Böttzauw, the Director General of the Danish Energy Agency who delivered the keynote address. This was followed by supporting remarks from the South African Wind Energy Programme (SAWEP) with the specific focus on SAWEP contribution to Wind Sector delivered by Mr Andre Otto both pictured below.

Mr Kristoffer Böttzauw, Danish Energy Agency

Mr Andre Otto, SAWEP

The rest of the programme day 1 and 2 was equally exciting and insightful (see agenda below).

Day 2: Wednesday, 6 October 2021		
08h30 – 09h00	Registration and Refreshments	
Moderator	**Mr Mark Tanton Board Member – South African Wind Energy Association (SAWEA)**	
09h00 – 10h30	**Role of Academia in the Growing Wind Energy Sector**	
	Opening Address	Prof. Peter Freere, Associate Professor in Electrical Engineering, Nelson Mandela Metropolitan University (NMMU)
	Keynote Address	Mr Kristoffer Böttzauw, the Director General of the Danish Energy Agency
	Supporting Remarks	**Supporting Remarks:** South African Wind Energy Programme Contribution to Wind Sector – Andre Otto
10h30 -11h00	**Refreshment break**	
Moderator	**Andre Otto**	
11h00 – 11h20	**Expert Presentation: Power Sector Investment Trends in Sub-Saharan Africa: Development and Implications for Wind Power by Wikus Kruger**	
11h20 – 12h20	**Paper Presentations**	
	Stanley Semelane	Evaluating employment and economic impact for utility scale wind power component localisation in South Africa – A just energy transition case
	Kimon Silwal	Investigation of Wind Data Resolution with Two Different Anemometers for Small Wind Turbine Performance Study
	Greg Landwehr	The wind energy potential of South Africa's Eastern Cape Province in a changing climate
	Scientific Advisory Members	• *Andre Otto, WASA/SAWEP 2 Project Manager, SANEDI* • *Wikus Kruger, Researcher, Graduate School of Business - University of Cape Town (UCT)* • *Mr Eric BjÖrklund, Special Advisor, Economist, Centre for Global Cooperation*
12h20 – 13h20	**Lunch**	
Moderator	**Professor Chris Adendorff**	
13h20 – 13h40	**Expert Presentation: Abulele Adams - Renewable Energy Development Zones (REDZ)**	
13h40 – 14h40	**Paper presentations**	
	Prof Lochner Marais	Towards evidence-based understanding the local impacts of renewable energy projects
	Holle Wlokas	Corporate community engagement practitioners in the renewable energy industry: Dilemmas and agency at the coal face of South Africa's energy transition
	Poonam Hutheram	Sustainability reporting of wind turbine manufacturers and their response to public perceptions of wind energy
	Scientific Advisory Members	• *Paul Lochner, Principal Environmental Assessment Practitioner – CSIR* • *Abulele Adams, Environmental Assessment Practitioner – CSIR* • *Chris Adendorff, Professor in Future Studies and Professor in Commerce - World Futures Studies Federation (WFSF)*
14h40 – 15h00	**Refreshment break**	

Day 3: Thursday, 7 October 2021		
Moderator	**Prof. Josiah Munda, Professor and HoD: Department of Electrical Engineering Tshwane University of Technology (TUT)**	
09h00 - 10h30	**Masterclass** **New and Emerging Markets in an African Context (Offshore Wind Energy and Hydrogen Economy)**	
	Speakers	Offshore Wind Energy – Dr Kittessa Roro (CSIR Energy Centre) Hydrogen Economy - Thomas Roos (CSIR Energy Centre)
10h30 - 11h00	**Refreshment Break**	
11h00 - 12h30	Depart to CTICC	
12h30 - 14h30	VISIT TO WINDABA EXHIBITION	

The 3rd day was full of information and insights from the two masterclasses delivered by the two key experts from the CSIR namely Dr Kitessa Roro and Mr Thomas Roos who took the students through the interesting and topical issues of Offshore Wind and Hydrogen Economy respectively (see picture below).

Dr Kitessa Roro

Mr Thomas Roos

The students were then given an opportunity to visit Windaba Exhibition which took place on the next building in the CTICC. Here are some of the pictures illustrating the students experiences at the Windaba Conference and particularly at the exhibition by some of the Windaba clients.

3. The students

A total of 20 students were selected to be sponsored to attend the conference in Cape Town. The students that were selected were from a variety of tertiary institutions in South Africa representing different disciplines (see the list below).

Name	Gender	Race	University	Course
Hinal Patel	Male	Indian	University of Cape Town	Full Dissertation: MSc(Eng)
Banjo Ayoade Aderemi	Male	African	Tshwane University of Technology	Electrical Engineering
Mandlakhe Qavane	Male	African	University of Johannesburg	BSc Honors Energy Studies
Mandla Chiliza	Male	African	Mangosuthu University of Technology	Electrical Engineering
Felly Cikaya	Male	African	Vaal University of Technology	Chemical Engineering
Tebogo Mogashoa	Male	African	Vaal University of Technology	Mechanical Engineering
Temperance Sebele	Female	African	University of Witwatersrand	PhD in Geography Archaeology and Environmental Studies
Thandiwe Chidzungu	Female	African	University of the Witwatersrand	Geography, Archaeology and Environmental Studies
Dovhani Vanessa Munyembane	Female	African	University of South Africa	BSC Honours In Geography
Thandeka Makhanya	Female	African	Durban University of Technology	Meng: Electronic
Malebo Mamoloko Maifo	Female	African	University of South Africa	Bachelor of Science Honours in Environmental Management
Keshrie Reddy	Female	Indian	Cape Peninsula University of Technology	Btech: Chemical Engineering
Ntombintathu Pepeta	Female	African	Walter Sisulu University	ND: Mechanical Engineering
Raquel Peters	Female	Indian	University of South Africa	BA (Hons) Environmental Management
Fakazile Thusi	Female	African	Stellenbosch University	Post Graduate Diploma in Environmental Management
Nomonde Chiliza	Female	African	Durban University of Technology	Language Practice
Oratiloe Sathekge	Female	African	University of Johannesburg	BSc Honours in Energy Studies
Nomzukiso Manxusa	Female	African	Vaal University of Technology	Chemical Engineering
Tlhalefo Jessica Mohloai	Female	African	Vaal University of Technology	Diploma Mechanical Engineering
Johannes Magodiele Nkwana	Male	African	Sedibeng College	Electrical Engineering

4. Paper Presenters and Speakers

There were 9 papers presenters who were shortlisted to participate at the conference all vying a place in the publication of their papers. And all the papers were judged to be worthy of the publications opportunity. The papers presenters were:

Paper Presentations:

1 - **Stanley Semelane** - Evaluating employment and economic impact for utility scale wind power component localisation in South Africa – A just energy transition case
2 - **Kimon Silwal** - Investigation of Wind Data Resolution with Two Different Anemometers for Small Wind Turbine Performance Study
3 - **Greg Landwehr** - The wind energy potential of South Africa's Eastern Cape Province in a changing climate

4 -**Prof Lochner Marais** - Towards evidence-based understanding the local impacts of renewable energy projects
5 – **Holle Wlokas** - Corporate community engagement practitioners in the renewable energy industry: Dilemmas and agency at the coal face of South Africa's energy transition
6 – **Poonam Hutheram** - Sustainability reporting of wind turbine manufacturers and their response to public perceptions of wind energy.

7 – **Getahun Aklilu** - Numerical investigations on aerodynamic performance enhancement of NACA aerofoils applicable for modelling of horizontal axis wind turbine blades
8 – **Dr Greg Poulos** - Replacing Wake Loss Modelling with Wind-Farm Atmosphere Interaction Loss Modelling
9 - **Mamello Chauke** - Trend analysis and inter-annual variability in wind speed in South Africa

There were a total of 9 other key expert speakers namely:

- **Impact Talk:**
  - 1. Kimon Silwal, CEO Kathmandu Alternative Power and Energy Group.
  - 2. Prof. Lwazi Ngubevana, Director of African Energy Leadership Centre at the Wits Business School.
- **Keynote Address: Role of Academia in the Growing Wind Energy Sector -** Mr. Kristoffer Böttzauw, the Director General of the Danish Energy Agency
- **Supporting Remarks: South African Wind Energy Programme Contribution to Wind Sector** – Andre Otto
- **Power Sector Investment Trends in Sub-Saharan Africa: Development and Implications for Wind Power -** Wikus Kruger**.**
- **Renewable Energy Development Zones (REDZ) -** Abulele Adams
- **Grid integration considerations for wind and other bulk distributed energy resources –**Barry McColl
- **Masterclass – New and Emerging Markets in an African Context – Focus Area**
  - **Offshore Wind Energy –** Dr Kitessa Roro (CSIR)
  - **Hydrogen Economy –** Mr. Thomas Roos (CSIR)

Members od scientific advisory committee acted as both moderators and judges for the paper presentations and the following members participated:

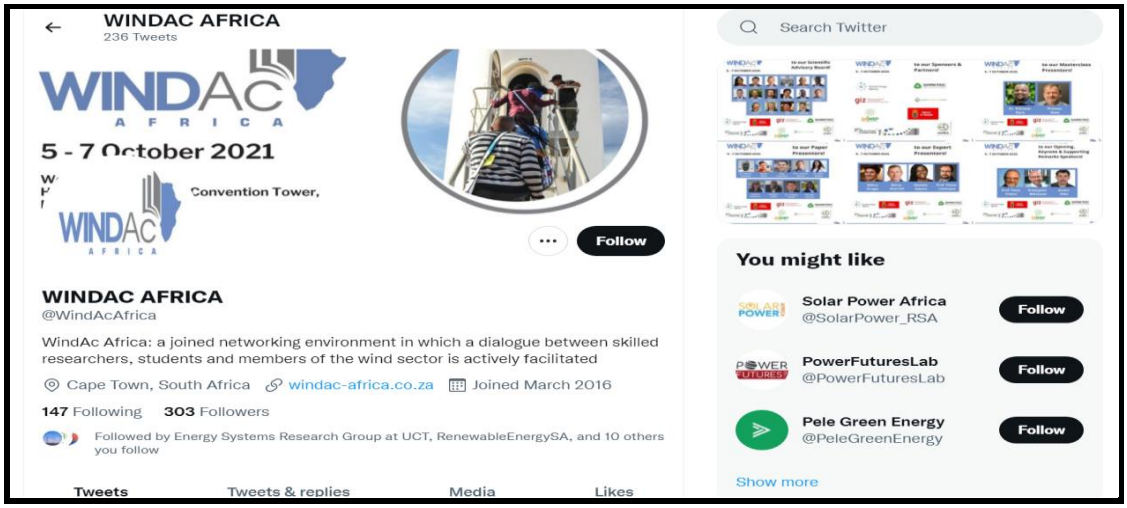
- *Andre Otto, WASA/SAWEP 2 Project Manager, SANEDI; Wikus Kruger, Researcher, Graduate School of Business - University of Cape Town (UCT); Mr Eric Björklund, Special Advisor, Economist, Centre for Global Cooperation;*
- *Paul Lochner, Principal Environmental Assessment Practitioner – CSIR ; Abulele Adams, Environmental Assessment Practitioner – CSIR; Prof Pieter Levecque, Associate Professor Dept. of Chemical Engineering, University of Cape Town.*
- *Barry McColl, Senior Regional Manager – Epri; Ntlahla Ntsadu, Engineer – Eskom; Prof. Peter Freere, Associate Professor in Electrical Engineering, Nelson Mandela Metropolitan University (NMMU); Prof. Josiah Munda, Professor: Department of Electrical Engineering Tshwane University of Technology (TUT).*

5. Media Coverage

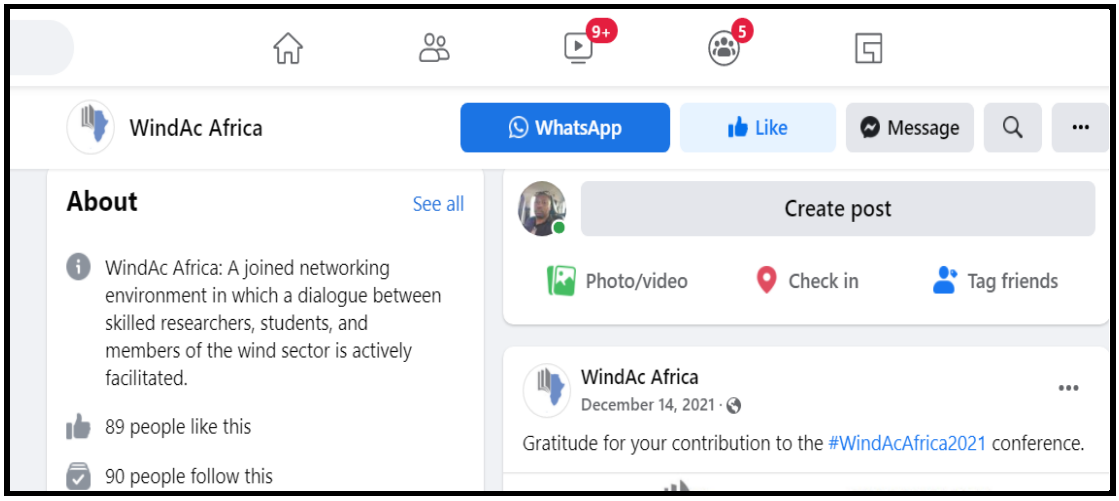
The following social media platforms were used to share the news on WindAc. The WindAc Facebook page, SAWEA Facebook page, and WindAc Twitter page

https://www.windac-africa.co.za/press-releases/

https://twitter.com/WindAcAfrica



https://web.facebook.com/WindAcAfricaConference/?ref=page_internal



6. Sponsors and Industry Partners

The following were the industry role players who supported and engaged the students and were part of the conference:

- SAWEP
- Danish Energy Agency
- GIZ
- Webber Wentzel
- SARETEC
- Journal of Energy Southern Africa
- Green Economy Media

The Journal of Southern Africa will be publishing successful papers during the second quarter of 2022. This will undoubtedly put the WindAc Africa Conference 2021 researchers on the map and upgrade their research credentials.

7. EnergyDRIVE

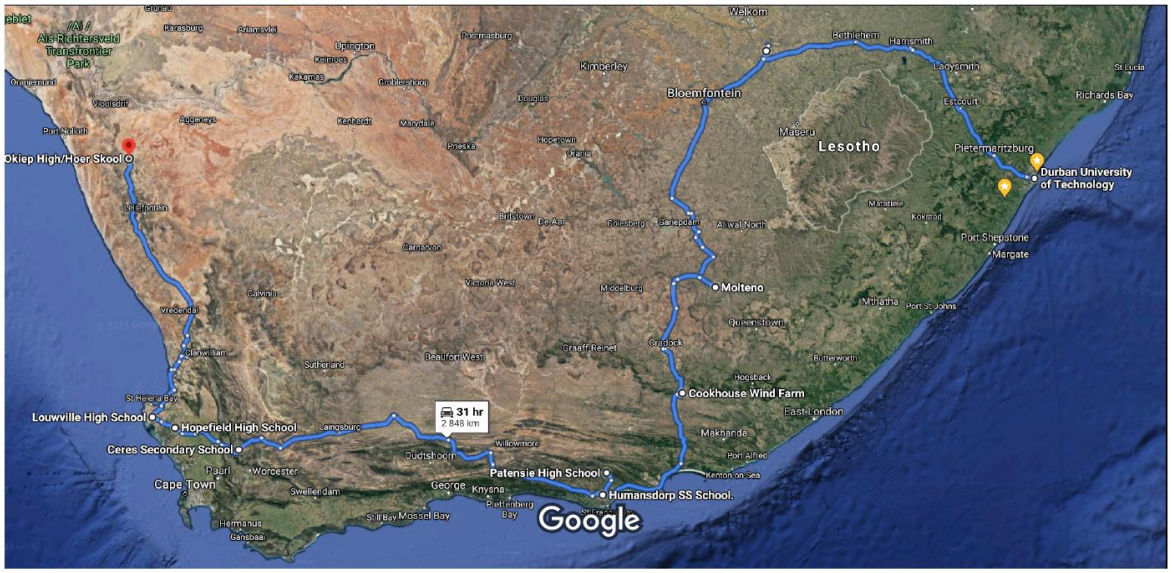
EnergyDrive 2021, would not have been possible without the support and involvement from all the participating SAWEA members, SAWEP, DUT and SANEDI. As SAWEA, we are grateful for the support and hope our partnership will do better and greater for the students, for years to come. The involvement of the Wind Farms, MD's, their ED managers and all involved truly made EnergyDrive2021 a success. The chosen schools, from the principals, teachers and learners benefited from their participation.

This educational tour visited 14 schools, with groups of between 20 – 36 students, and 8 Wind Farms who opened their facilities to conduct wing farms operations and demonstrations. Lockdown restrictions affected the planning of EnergyDrive and access to the Wind Farms, but we are grateful that we pulled through and made it a success even under such strict restriction. All Lockdown protocols were adhered to.

At each school we were greeted by enthusiastic principals, teachers and Wind Farms representatives to kick off the mornings. The participation of the learners was amazing and at times the length of the session will be extended to ensure enjoyment, and engagement of the learners with the facilitators. Promotional items from SANEDI were given as spot prizes, and this too encouraged the students to try and participate more.

The concept of this EnergyDRIVE revolves around the fully kitted bus which is owned and managed by the Durban University of Technology. This bus is kitted with a number of renewable energy technologies that are used to demonstrate the importance of sustainable development principles. We also included some information about energy efficiency.

7.1 EnergyDRIVE Route



The trip was a 2848 km drive over 3 weeks starting in the Eastern Cape, Western Cape and finally Northern Cape. The route was planned to visit the following schools:

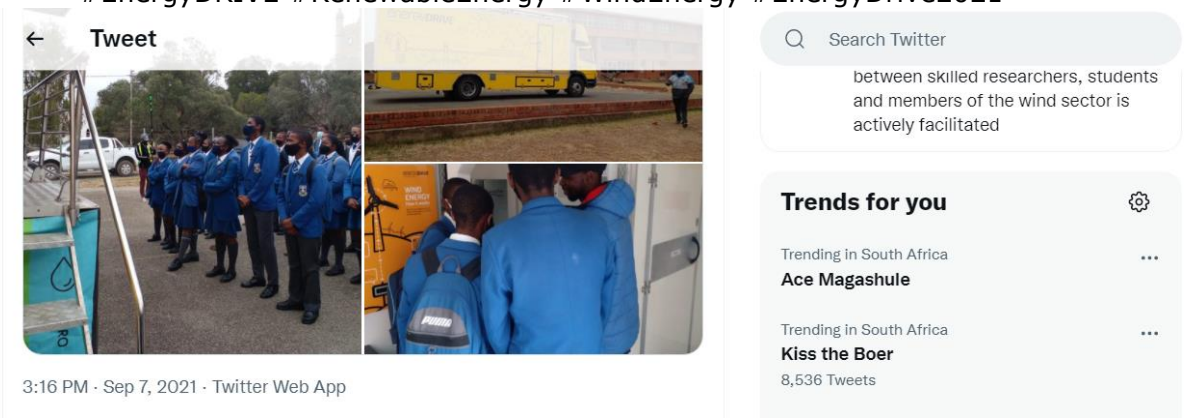
1. *Landed at East London Airport and drove to Molteno*
2. *Joe Slovo Freedom High School – Dorper Wind Farm*
3. *Molteno High School – Dorper WF*
4. *Siyaphakama Senior Secondary School*
5. *Aeroville Secondary School – Cookhouse WF*
6. *Adelaide Gymnasium High School – Nojoli WF*
7. *Lungiso High School – Kouga WF*
8. *Qhayiyalethu FET*
9. *Vukani Combined School – Gibson Bay WF*
10. *Ceres Secondary School – Perdekraal WF*
11. *Bella Vista High School – Perdekraal WF*
12. *Iingcinga Zethu High School – Perdekraal WF*
13. *Hopefield Primary School – Umoya Energy WF*
14. *Okiep High School – Kangnas WF*

Lastly, we planned the trip to coincide with WindAc and Windaba conferences so that we can have the bus forming part of the Windaba exhibition for the benefit of the conference delegates.

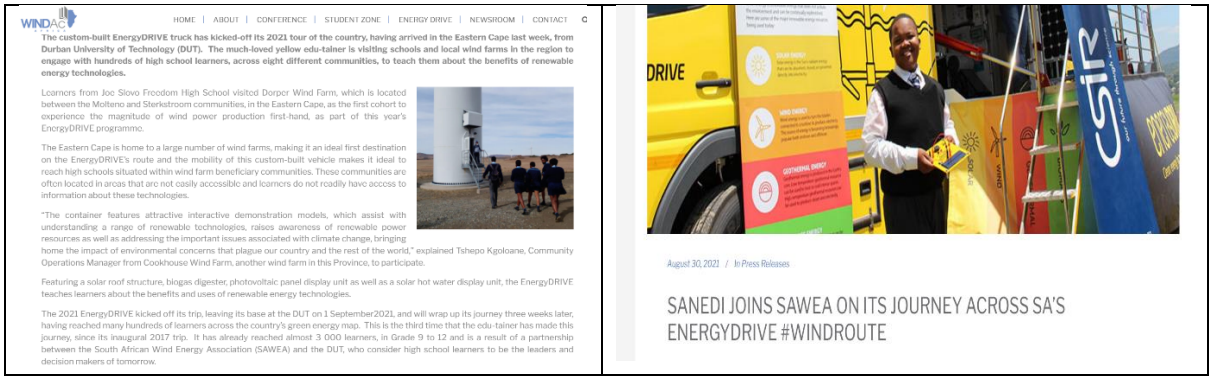
7.2 Event Promotions

The following social media platforms were used to share the news on the EnergyDrive. The SAWEA Facebook page, WindAc events page on Facebook.

- **https://twitter.com/windacafrica?lang=en**
  #EnergyDRIVE #RenewableEnergy #WindEnergy #EnergyDrive2021



- **http://www.windac-africa.com/energydrive/**



- https://web.facebook.com/WindAcAfricaConference/?ref=page_internal
  #EnergyDRIVE #RenewableEnergy #WindEnergy #EnergyDrive2021

  1 or 2 articles were written about the EnergyDrive and the SABC 3 Exfontiers crew joined the EnergyDRIVE at Louwville High School on Friday, 17 September 2021. https://www.esi-africa.com/renewable-energy/rural-learners-to-learn-about-climate-change-renewable-energy/

7.3 Industry Involvement

The following were the industry role players who engaged the learners, teachers and principals, and were part of the route:

- Dorper Wind Farm
- Nojoli Wind Farm
- Cookhouse Wind Farm
- Kouga Wind Farm
- Gibson Bay Wind Farm
- Perdekraal Wind Farm
- Umoya Energy Wind Farm
- Kangnas Wind Farm

This year, the converted mobile edu-unit, made its way to remote communities where learners often do not have access to information about renewable technologies and although not all wind farm are able to allow access, due to CV-19, many did opened up. This includes Umoya Energy Wind Farm (West Coast, Western Cape); Cookhouse Wind Farm (Eastern Cape); and Perdekraal East Wind Farm (Ceres, Western Cape).

The EnergyDRIVE, which is designed to be interactive, enticing and educational, kicked off in 2017 and has already reached around 3 000 learners. It features a solar roof structure, biogas digester, photovoltaic panel display unit as well as a solar hot water display unit. The walls of the edu-unit are made up of a battery bank, photovoltaic components and a TV and display cupboards, making it an inspirational and experiential teaching aid.

8. Future Vision and Sustainability for EnergyDRIVE & WindAc

SAWEA view this event as an opportunity for strategic partnerships as with organisations that has mandates that resonates with SAWEA's objectives of equipping South Africa with a healthy skills pipeline in the renewable energy sector skills. SAWEA had long identified these strategic partners outside of its core members. This has seen the likes of SAWEP, SANEDI, Durban University of Technology (DUT), and others becoming the core players and organisers of the EnergyDRIVE.

SANEDI for instance took a pivotal role this year in EnergyDRIVE and was one of the facilitators that addressed each and every one of the fourteen participating schools on topics like an energy efficiency technologies, which are being illustrated and demonstrated using lighting, heating and infrastructure. Topics also included energy reduction at home and many others to equip and increase awareness of the learners. Their presentation also inform learners on how renewable energy is contributing towards the reduction of carbon dioxide emissions by power stations in relation to the reduction in electricity demand, which the learners found very interesting.

With the current challenges faced by the country in terms of energy supply and demand, it is imperative to sew the seed amongst learners, as future leaders, so that they begin to think of alternatives that will not only satisfy the energy demand but protect the environment as well. It is important that leaners are exposed to energy alternatives such as renewable energy, amongst others, and encourage them to be innovative in their career pursuit.

With the view that school learners are the leaders and decisions makers of tomorrow, the programme promotes renewable energy and climate change awareness, instilling knowledge to learners across rural communities, about the benefits and uses of clean energy technologies. The intention is to increase awareness to create a generation of well-informed decision-makers that can play an essential role in increasing energy adaptation and mitigation capacities of communities, whilst empowering youth to adopt sustainable lifestyles.

Additionally, SAWEA hopes to impart a broad vision of the opportunities that lie within the wind energy industry of South Africa, available to learners once they complete their High School careers or tertiary studies.

9. Financial Implications EnergyDRIVE & WindAc

SAWEA submitted the proposal to SAWEP requesting financial support for the events for the 2021 year. The high level costs breakdown for both WindAc and EnergyDRIVE can be summed up as follows:

SAWEP contributions to budgets	**Details**	**Value in ZAR**
EnergyDRIVE educational tour	Fuel, Driver costs & Toll fees	R94,000
Sponsoring of 20 students	20 x 13,592 ZAR	R255,000
Sponsoring of 10 local speakers	5 x R5,100 (discounted fee)	R51,000
TOTAL required support of SAWEP 2 (2021)		**R400,000***

SAWEA is currently preparing the detailed financial report which will be submitted as part of this report in due course.

10. Conclusion

WindAc Africa Conference 2021 under the theme "All Things Wind Energy" which intended to generate knowledge throughout the value chain gearing towards an integrated research to power transformation in South Africa was a great success. The focus of the conference on the technical, socio-economic, policy and environmental aspects, the conference provides an International multidisciplinary academic exchange, creating a platform for diverse solutions and problem-solving approaches to Wind Energy. Ensuring academic excellence SAWEA has partnered with SAWEP, the Danish Energy Agency (DEA), GIZ, SARETEC and others to host another successful conference and workshop.

The WindAc sponsorship programme originally aimed to sponsor at least 45 local students from Academic institutions throughout Southern Africa. This was however reviewed in line with the Covid 19 protocols and was limited to 20 students and in total there were 43 delegates attending the conference (students and speakers). This great opportunity encourages academics, provides motivation and inspiration to the upcoming young professionals. The EnergyDRIVE initiative and student mentorship programme under the WindAc Africa portfolio contributes tremendously to broadening the knowledge about the wind industry in South Africa.

In alignment with objectives of overcoming strategic barriers to attaining the Integrated Resource Plan (IRP) targets; SAWEA requested support of Sponsors for WindAc Africa 2021 Conference. In conclusion these events displayed the alignment between industry and academia in support to national targets and growth of a global wind industry. This cannot be achieved without the valuable contribution made by the sponsors such as SAWEP.

In our proposal to SAWEP we requested financial support to the tune of R400 000.00 for EnergyDRIVE and WindAc. This funding was to sponsor the cost of EnergyDrive Bus expenses, students and speakers expenses, and other related cost.