



# IMVELISI

Developing African Enviropreneurs

*Bridging the gap between **Enviropreneurial ideas** and **feasible solutions.***

## 22-24 JULY

# iMvelisi Just Hackathon Report

02 August 2022

Version 1.0



International  
Labour  
Organization



the cpsi  
Government Component  
Centre for Public Service Innovation  
REPUBLIC OF SOUTH AFRICA



GreenMatter®



GEEKULCHA/>

#ImvelisiJustHack

22 - 24 July 2022

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# 1. Overview

This final project implementation report will give an overview of key activities undertaken by ICRD Group and its strategic partners during the implementation of Imvelisi Just Transition Knowledge Exchange and Hackathon. The report will further highlight the impact of this initiative and it will conclude by giving key recommendations moving forward. As a point of reference, the Imvelisi Enviropreneurs Programme is an ideation phase business development intervention designed for aspiring young entrepreneurs and innovators in the green economy. This sector specific programme equips aspiring young enviropreneurs with knowledge, skills and resources to develop their green business ideas.

Imvelisi focuses on the water and biodiversity sectors in particular; and the green economy in general. Since its inception Imvelisi Bootcamps have been generously supported by the Department of Science and Innovation (DSI) and other key sector stakeholders. This initiative is a partnership between GreenMatter (GM) and the South African Young Water Professionals (YWP-ZA). Since its inception, Imvelisi has been generously funded and supported by the Department of Science and Innovation (DSI) and other key stakeholders within the green economy.



To mark the 7<sup>th</sup> year anniversary of Imvelisi Enviropreneurs Programme, a hackathon and knowledge exchange was organised. According to Wikipedia, a hackathon is a sprint-like design event wherein computer programmers and others involved in software development, including graphic designers, interface designers, product managers, project managers, domain experts, and others collaborate intensively on software projects.

Dubbed **ImvelisiJustHack**, the iMvelisi Just Transition Hackathon was hosted to mark this occasion and to challenge young local entrepreneurs and technology developers to build solutions that address challenges in the water, biodiversity and environmental sector. This initiative further sought to fast-track Africa's transition to an inclusive, just, low carbon, resource efficient and prosperous green economy

**HACKATHON OBJECTIVE:** #ImvelisiJustHack: Pathways to A Just Transition Knowledge Exchange and Mini-Hackathon, was premised on the fact that collective action plays a vital role in building a sustainable and inclusive future for all.

*"A Just Transition means greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind."*

ICRD Group and Geekulcha present this report to showcase the implementation success, the innovation unearthed / developed and support mechanisms mapping for the solutions.

## 1.1 The Opening Ceremony Hackathon Debate

Ahead of the weekend of code development of solutions, an opening ceremony event was hosted to bring together participants and partners of the iMvelisi Enviropreneurs programme. A variety of industry thought leaders and practitioners from stakeholder organisations were invited to give guidance and form part of a panel.



This knowledge exchange event was hosted by Ms. Nonkululeko Mntambo

The topic of the day was **“The youth in SA already have the necessary skill-sets required to 'drive' SA's just transition to a low-carbon economy and climate-resilient society”**. Up to 4 teams participated in the debate: Tech Innovators, Wandile, Junior X and ArtScience. The debate was won by Jordan Gallant from Tech Innovators.

## 1.2 Weekend of code

Amid a rapidly changing innovation landscape, there is a need to identify and develop emerging 4IR technologies that could individually and collectively have the greatest impact on jobs, livelihoods, and environments. By collaborating to mitigate risks, seize opportunities, as well as capacitate and exploit our youth’s intellectual capital, we can create a sustainable 4IR-Enabled future for South Africa.

During the weekend of 22 to 24 July 2022, scores of young people from different parts of the country took part in a hackathon to apply their skills and build tech/digital solutions to help with a Just Transition in the era of the 4IR.



*Hackathon Teams at working*

A digital working space, Sonke (meaning together) was set up for the Hackathon weekend to support and strive to include virtual participation by youth from different parts of the country.



*Virtual participant's workspace*

## 2. Participation

A call for participation in the hackathon was made through different platforms for teams to be part of the Imvelisi Just Hackathon and Knowledge Exchange. Various mechanisms were utilised in reaching out potential participants of the hackathon, including social media, traditional media and mobilisation of innovation hubs.

The following is an outline of people who participated in the iMvelisi Just Hackathon.

## 2.1 The Numbers Summary

An overwhelming enthusiasm from the community was demonstrated through the interest and a response for a call to register for the hackathon.

<b>Vertical</b>	<b>Details</b>
Total registrations	129 (124 unique)
Marketing period	16 days (2 weeks and 2 days)
Provinces represented	9
Environmental practitioners	12%
Female Representation	44%
Participation from rural communities	23%
Mentors	8
Judges	6
Media features	6
Stakeholder representatives	9
Number of solutions in total	21
Number of solutions developed	16
Number of solutions presented	15

## 2.2 Participants Profiles

Diversification and skills complements were some of the driving principles in the call for participation of the Imvelisi Just Transition Hackathon. Accordingly, the different personas of the hackathon played a significant role in achieving the key objectives and



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**Stakeholder representatives:** Partners of the hackathon were represented at the hackathon in support, mentorship and technical assistance of the Hackathon proceedings.

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**Enviopreneurs:** Participants who have existing businesses in the

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**Tech developers:** Developers, digital practitioners, data scientists and aspiring developers dominated the hackathon participation during the hackathon weekend.

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**High school:** The hackathon was open to participants at high school level and a representation was prevalent. This was in part, to channel future enviopreneurs pipeline.

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**Rural area based youth:** Participants from rural areas of Mpumalanga, North West and the Eastern Cape were presented and participated in the hackathon event.

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## 3. Support Structures

The hackathon organisers gathered support mechanisms for the hackathon participants in ensuring that the development of the solutions meet the scope and achieves the desired outputs.

### 3.1 Partners

A range of stakeholders helped make the Imvelisi Just Transition Knowledge and Hackathon possible.



### 3.2 Mentors

Hackathon mentors included a mixture of academia, industry and sector practitioners in the Green Economy who assist with the hackathon teams with guidance in the development process. Herewith a list of mentors for the iMvelisi Just Hackathon:

- **Mr Ronny Mabokela:** Head of the Technopreneurship Centre at the University of Johannesburg.
- **Ms Mpho Kapari:** A fellow at GreenMatterZA
- **Mr Lucky Litelu:** Executive Chairman and CEO of the ICRD Group Holdings
- **Mr Moses Mhlwana:** Systems developer at Geekulcha
- **Mr Bernard Mashala:** Network Engineer at Transnet
- **Mr Mixo Ngoveni:** CEO at Geekulcha
- **Mr Tiyani Nghonyama:** COO at Geekulcha

The hackathon mentors assisted with the following:

- Sector guidance and channeling towards finding best methods in development
- Technical assistance in order to prototype a tech/digital solution
- Business development for a lucrative business model
- Articulation and presentation of the solution

### 3.3 The Judges

#	Name	Role and Organisation	Bio
1	Brian Mubiwa	Programme Manager, UNEP	Environmentalist / Regional Urban Planner
2	Irene Kiwia	Co-Founder, Adanian Labs	Judging
3	Simone Smit	Exploration, UNDP	Green innovation
4	Unifef Judges	3 Unicef Judges	Team Unicef

## 4. Hackathon Solutions

### 4.1 Judging Criteria

#	Criterion	Description	Weight
1	Business Model	Does the solution make business sense? Does it look like it will have a market potential?	15
2	Innovation	Is the problem clearly articulated? Does the solution solve a real issue? Is it new or does it improve an existing solution? Is it out of the box?	10
3	Impact and Scalability	Does it have relevance to the sector? Does it assert value to the people, community and the industry?	10
4	Practicality and Feasibility	Does the solution have an economic, procedure, operational and technical feasibility? Does it have ease of use and adoption?	10

5	Presentation	How is the flow of the pitch? Are they able to articulate their value proposition?	5
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## 4.2 Solutions developed

The follow are the solutions developed during the hackathon event

#	Team Name	Solution
1	AfricOil	AfricOil Due to the health and environmental hazards that are posed by waste cooking oil, AfricOil has decided to connect waste cooking oil sellers to waste cooking oil buyers who will be our biodiesel buyers. The specific reason to supply biodiesel manufacturers is to support them in producing renewable fuel that is environmentally friendly.
2	BIO Severs	Bio servers Bio-gas, whereby waste (Litter, manure and other disposed wastage) will be used to produce biogas, which will then be used to generate energy. The process of producing the biogas will also help in keeping the environment clean and minimise littering.
3	the SEED	THE SEED a solar powered aquaponic greenhouse
4	NML	Land Manager This project aims to give people the opportunity to get land and use it for various purposes.
5	Maven	Water Waste Detector Machine Learning Convolutional Neural Network model that can predict waste such as plastics in the ocean enables rapid clean up of pollution in the oceans.
6	ArtScience	Thela-Gro Our solution is an App that integrates XR(Mixed Reality), AI and sensor technology in a cloud environment in order to inform economically scalable and environmentally sustainable farming in South Africa.
7	Junior X	Smart Water Integrated Management System

8	Tech Innovators	Green-Gas The solution is an IOT solution backed by a blockchain incentive mechanism. The aim of our solution is to get people to lower their carbon emissions use. We have an arduino that will measure the level of emissions. This device will be used in factories, for cars, houses and much more. The Arduino sends the data collected onto a google sheet. And then the front end of our DAPP(decentralised application) and will link to the users account.
9	Mega G	Greener Renewable Energy Designing and manufacturing a renewable energy generator capable of providing power using new technology such as additive manufacturing/3D printing.
10	Darkblue	Doktor Monitor Weather forecasting and emission detection in one solution for industries and households with real-time air quality alerts, pollen forecasts, and wildfire information to name a few.
11	Veish group	Mokgotso A wearable tech solution which uses sensors and audible audio output.
12	MANSALAMA	The Salema GASES - We are recycling organic matter into biogas. We capture the gases produced by decaying matter and using the distillation method. The gas we reuse is methane which can be reused in a house ,hospital, restaurant's hold for cooking and lights . The organic matter will then be converted into natural fertilisers. which will be resold to farms, the methane gas will also be collected from drainage systems. This system will reduce methane pollution by 50% and reduce ozone depletion by 13% every year.
13	Aurum	GenE Electricity is an essential part of modern life , Life without electricity will be hard but producing it with coal is harmful to the environment we are developing a world class solution to offer sustainable and clean energy while promoting healthy lifestyle and reward people for that, We are installing piezoelectricity device in gyms, sporting grounds and have special events so we can collect that kinetic energy that will be produced when people are walking on top of the tiles with piezoelectricity devices , we then change it into electric energy through a piezoelectricity , the number of steps device are later converted into a Private , safe , secured cryptocurrency that we have developed called GenE We are solving the Load shedding issues in South Africa and the pollution that we cause through the use of coal to produce electricity.

14	Young Innovators Movement	Me2You A food sharing app, that connects people within the same community, to share and trade surplus food items and give a helping hand in reducing hunger and food wastage. Me2You also connects vendors and farmers to the community to help in reducing the 45% food wastage that happens in the agricultural sector by helping both farmers and vendors to sell their surplus and maximise profits. We are a gateway to connect communities to a more dignified way of sharing food with those who need it.
15	Team FullofMyself	Arduinos In Agriculture With the use of Arduinos and Machine Learning, one can set up automated systems for monitoring crops and agricultural products from seed to harvest. This will encourage skills development from the people as there will be no need for them to be on the fields as they used to be before the system was implemented. Once skilled, these people will be able to develop the implemented system and also develop more technologies in order to satisfy their needs.
16	Hydro Fuel	Hydro Fuel decreases the fossil fuel emissions in our current modes of transport. Non corrosive Electrolysis will allow us to create on demand Hydrogen. Our method will use an average 1lt (H2O)/1000km to increase fuel economy. Distance travelled in vehicles will have a saving of between 15-50%. This will accelerate the recovery of our planet .

## 5. Winners and Prizes

Up to R80 000.00 in cash prizes were up for the winning at the iMvelisi Just Transition Hackathon. This served as a motivation for the hackathon teams and to set prospects for further development of the solutions.

All cash prizes are to be distributed in cryptocurrency form.

### 5.1 Innovation Winners

Based on the judges' adjudication process, the following teams were selected and pronounced as winners of the Imvelisi Just Hackathon.

#	Team	Team Members	Prize
1	the SEED	Tebogo Masobe & McDonald Mothibi	R30 000.00
2	Mega G	Mpho Moloko, Bonolo Shanice Kale , Sindiswa Mafilika, Thato Ndaba, Keitumetse Thupayagale	R20 000.00
3	MANSALEMA	Salema	R10 000.00

## 5.2 Spot Prizes

Special prizes were given for outstanding recognition during the hackathon proceedings.

#	Winner	Prize Description	Value
1	Ms Princess Ndhlovu	Best Female Hacker	R 5 000.00
2	Mr Jordan Gallant	Winner of the Hackathon Debate	R 2000.00
3	Mr Samson Nkosi	Imvelisi Design Challenge Winner & internship	R 10 000.00

## 6. Visibility: Marketing, Social Media and Media Report

Starting from the entrance, the hackathon was branded with stakeholder banners and branding to depict the support structures throughout the hackathon weekend. Participants were encouraged to tag / mention stakeholders on social media channels as the hackathon proceeded.



*Soweto TV covering the Hackathon*

Stakeholders were mentioned throughout the media interviews and indeed, social media as the hackathon weekend proceeded.

## 6.1 Social Media Numbers

The iMvelisi Just Hackathon social media was driven by the participants, organisers and traditional media houses.



58 Influencers

Mentions Reach Impressions Latest Mention

Profile	Mentions	Reach	Impressions	Latest Mention
 <b>GEEKULCHA</b> @Geekulcha	66	19,913	1.31 mil	01 Aug
 <b>Tiyani Nghonyama</b> @TiyaniTee	48	10,106	485,088	05 Aug
 <b>mrslltelu</b>	1	244,932	244,932	24 Jul
 <b>SAfmRadio</b> @SAfmRadio	1	237,062	237,062	25 Jul
 <b>Irene Phoebe Kiwia</b> @Kwiwairene	1	157,850	157,850	24 Jul
 <b>UNICEF South Africa</b> UNICEFSouthAfrica	1	154,115	154,115	28 Jul
 <b>Bonolo Shalice Kale</b> @Bonoloo	14	8,945	125,230	24 Jul

**UNICEF South Africa** @UNICEF\_SA

UNICEF SA joined iMvelisi, @UNDPSouthAfrica, @UNEP, @dsigovza, @Geekulcha & others at the #iMvelisiJustHack event, where 16 teams of enviropreneurs developed innovative 4IR-enabled solutions to SA's Just Transition. Congrats to the 3 winning teams: The Seed, MegaG & Mansalema.



8:12 AM · Jul 28, 2022 · Twitter Web App

**Agness** @Ness\_Nyathi · Jul 23

The team from Mpumalanga just joined us here at Newtown...it's going down 🙌🙌 #ImvelisiJustHack

@Geekulcha @VuligqondoLab @cpsi\_sa @UNDPSouthAfrica





## 7. Outcomes and Impact

Against the set of objectives, the iMvelisi Just Hackathon managed to realise a set of milestones in different vectors.

### 7.1 Goals Achieved

- Accelerated Digital Literacy: Participants from marginalised communities were assisted with better understanding and usage of the Internet.

### 7.2 High and Lowlights Moments

#### **Hackathon Highlights**

- A diversified registration by participants from all parts of the country
- Physical attendance of participants from rural communities
- Stakeholder representation in knowledge sharing and assessments
- Participants included a primary school teacher from a rural community in Siyabuswa, Mpumanga

#### **Hackathon Lowlights**

- Technical issues (especially on livestream) delayed some of the Hackathon proceedings
- Not enough resources to cater travel expenses for participants from more rural communities around the country

### 7.3 Exit Pathways and Impact

After the hackathon, the following are mechanisms that the participants are channeled or encouraged to follow / implement in order to take solutions forward.

- Use of acquired skills and knowledge to apply in different settings of developmental prospects or goals.
- Teams created business models which will set a leeway in strengthening business cases of the solutions

## 8. Recommendations

Following the implementation of the Hackathon event, the following sets of recommendations are proposed for the hackathon.

- Stakeholders must explore setting up 45 minutes guidance calls between the teams and sector experts in relation to the projects.
- All teams must be invite to the startup bootcamp in September to assist in consumer phasing and prepare a launch version of the solutions
- More opportunities that would assist in further development of the solutions must be identified and shared with teams
- Professional videography of all team's and their solutions must be made to further profile the teams and aligning angle in the green economy and Sustainable Development Goals (SDG)

## 9. Acknowledgements

The following stakeholders assisted in making this hackathon possible, the organisers thank them for their commitment and support.

- A million thanks to UN Agencies ( UNICEF, UNEP, UNDP, UNIDO, UNPAGE & ILO)
- A big thanks to the Embassy of Switzerland in South Africa
- A massive thank you to the Department of Science and Innovation (DSI), Technology Innovation Agency (TIA) & Global Clean-Technology Innovation Programme (GCIP)
- A huge thank you to our founding patrons GreenMatter (GM) & South African Young Water Professionals (YWP-ZA)
- A gigantic thank you to the Centre for Public Service Innovation for their technical assistance
- An immense thank you to The participants themselves for availing their time to help find pathways to a Just Transition
- A colossal thank to The Business Clinic, Geekulcha & Startup Business Campus teams for their support and hospitality.
- An enormous thank you to everyone who made this initiative possible directly or indirectly

## 10. Conclusion

Finding exit pathways in the era of the 4th Industrial Revolution within the Green Economy and enviropreneurship was a focus of the iMvelisi Just Hackathon. The Hackathon had a culmination of the following:

- A pool of skillsets consisting of the technological solutions developers and enviropreneurs.
- Teams demonstrated a research process undertaken on their solutions and thereby referenced various reports including the World Bank to contextualise their solutions.
- Solutions included and integrated Connected Intelligence as well amplified intelligence of the technologies used.
- It is also encouraging that some of the teams made their solutions to point or suggest policy direction as far as Just Transition is concerned for legislative frameworks.

Given the outputs achieved as a combination of solutions and developmental pathways of both the participants (technologists and enviropreneurs), the hackathon was a success in achieving its objectives.

A post-hackathon support mechanism is in activation to nurture and set course on the future of the solutions.

Your support and participation in this exciting and high impact initiative is much appreciated. Let us continue working together to fast-track Africa's transition to an inclusive, resilient, just, low carbon, resource efficient and prosperous green economy.

## 11. Hackathon Resources

Hackathon in Photos: <https://flic.kr/s/aHBqjzZhZF>

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Interview on SAFM: <https://bit.ly/3BhfCZf>

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Ventureburn Article: <https://bit.ly/3J1FKt2>

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Social TV: <https://bit.ly/3Sz2d57>

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Unisa Events: <https://bit.ly/3BjDMST>

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Footnote: <https://bit.ly/3PPiYr3>

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