



UN
Big Data
Hackathon

WEBINAR

**Youth Engagement
and
the Sustainable Development Goals**

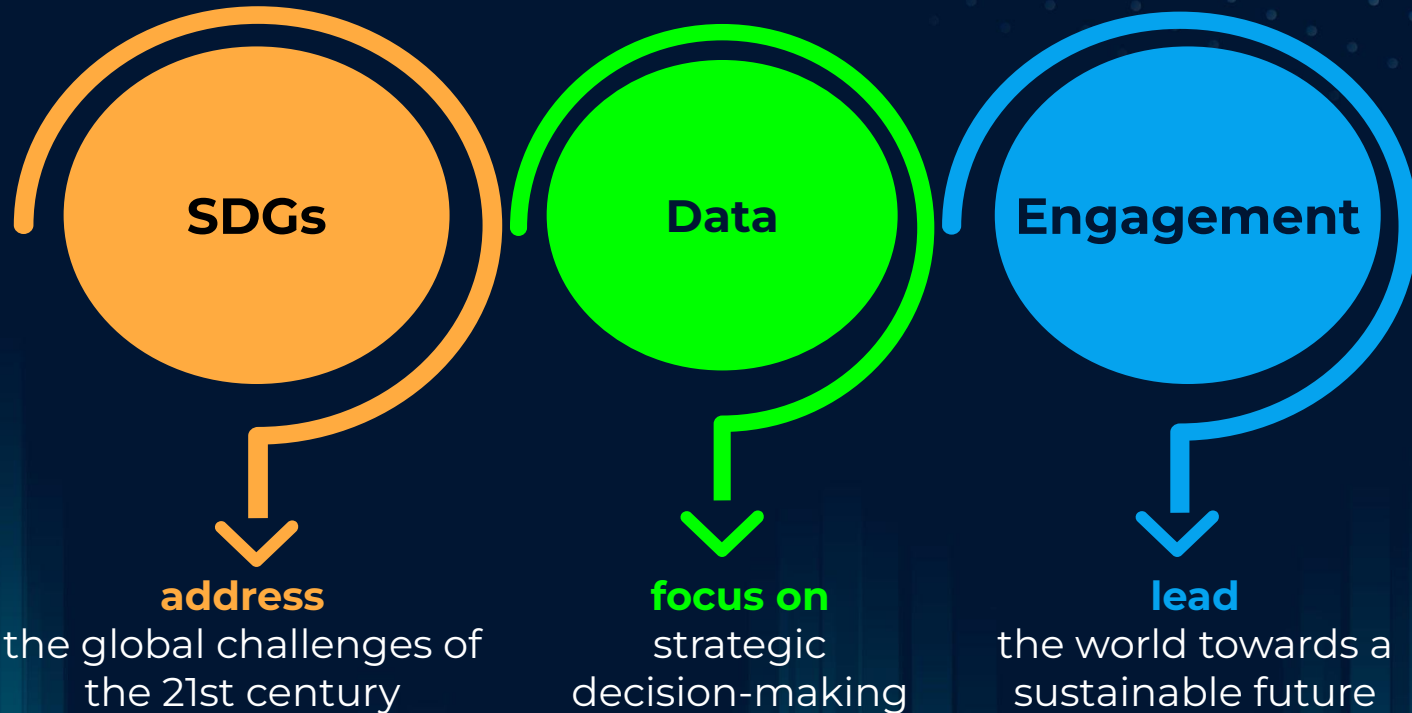
UNBDH Organizing Team



During this hackathon, the [United Nations Statistics Division](#), [Badan Pusat Statistik](#), [UNCTAD](#), [Major Group for Children and Youth](#), [UN Global Pulse](#), [UN Global Platform Regional Hubs](#) for Big Data (UAE, Brazil, Africa and China), [Office for National Statistics](#), [Statistics Canada](#), [Islamic Development Bank \(IsDB\)](#) and [Asian Development Bank \(ADB\)](#) will be on the lookout for **disruptive** and **innovative** solutions that use data, machine learning and artificial intelligence to fast track progress towards the **UN Sustainable Development Goals (SDGs)**.



What brings us here?



Objectives

The hackathon aims at:

- Providing a space for data-enthusiastic people to develop their data science skills by having direct access to relevant data sets and working collaboratively with their teams and partners of the event.
- Giving the participants an opportunity to scale up their solutions for action towards the SDGs.
- Collecting innovative solutions that may help the implementation of the 2030 agenda for sustainable development
- Supporting youth engagement in evidence-based decision making through the analysis of data.



UNBDH Tracks

Big Data Experts Track

Refer to the 2020 AIS Hackathon

- Government officials, professionals, and researchers with a background in data science, statistics, economics, or social sciences
- **Requires the usage of data coming from the Automatic Identification System (AIS) in line with the theme**
- Requires familiarity with data processing using pyspark, geospatial indexing techniques, and big data analytics and modeling
- Participants will form **20 teams of 3-5 people each team**. An ideal grouping of teams would include data scientists, statisticians, economists, and social scientists

Youth Track

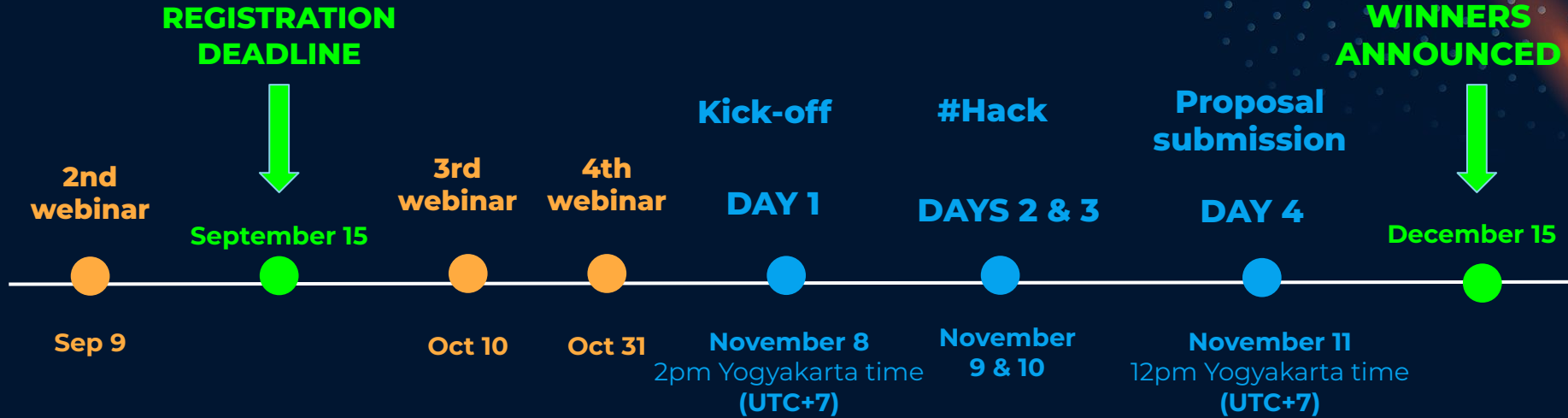
Refer to the 2021 UN Youth Hackathon

- Data enthusiasts, young professionals, or students that are **32 years old or younger**
- **All levels in data science are welcome!**
- Participants will form 100-200 teams of 3-5 people each team. An ideal grouping of teams would include participants from different professional and academic backgrounds.



UNBDH Timeline

Join the [mailing list](#) to be updated (webinars, deadlines, winners!)



- Access to the databases will be granted starting from **November 8th at 2:00 PM Yogyakarta Time (UTC+7)**.
- Proposals must be submitted on **November 11th at 12:00 PM Yogyakarta Time (UTC+7)**.



If you want to participate or receive all the updates:

1. **Register** for the hackathon with your team or individually:
<https://input.un.org/EFM/se/3995D1A40525E4CE>
2. Read about **all the information** about the hackathon on the **website**:
<https://unstats.un.org/bigdata/events/2022/hackathon/>
3. Join the **mailing list** to hear about the upcoming webinars, registration deadline & logistics:
<https://input.un.org/EFM/se/3995D1A46342E490>



Panel of Speakers



Sanjana Paul
SDG 13 - climate action
Co-Founder & Executive Director
@ Earth Hacks



Aoife O'Mahony
SDG 3 - health & well-being
Open Science Focal Point
@ MGCY



Alinne Olvera Martinez
SDG 11 - sustainable cities
Focal Point In Young Scientists
Platform on Disaster Risk Reduction
@ MGCY



Fatoumata Diarrassouba
SDG 7 - affordable & clean energy
Co-Founder & Managing Partner
@ Afrik'Energy Connect Inc





Sanjana Paul

Co-Founder & Executive Director of Earth Hacks
Researcher @ MIT's Senseable City Lab

 Cambridge, USA





Earth Hacks

Harnessing Hackathons for Climate Action

Sanjana Paul



Earth Hacks

UN Big Data Hackathon Webinar
Earth Hacks



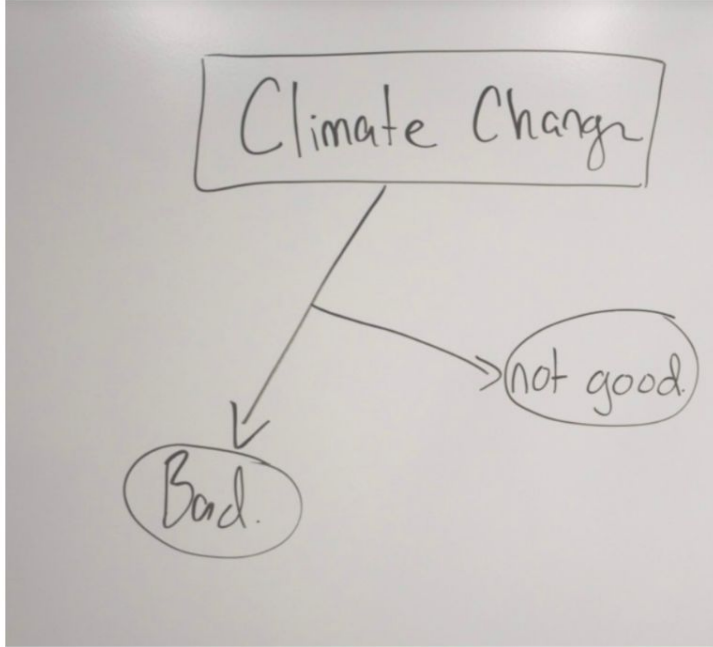


Earth Hacks Events





Why?





Why Hackathons?

- Interdisciplinary environment
- Democratic, community-centric problem solving spaces
- Breeding ground for new ideas
- Access to resources
- Educational focus





No Silver Bullets

Silver bullet solutions - metaphor for simple, seemingly magical project or solution to a difficult issue. It may be a product of wishful thinking

Spectrum of Solutions

Technology is one aspect, but we also have to invest time and resources into governance, culture, public participation, and more

Thoughtful Approach

Focus on responsible innovation and centering of environmental justice to move away from harmful social and societal structures





Responsible Innovation

- Responsible Research and Innovation is a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society). - Dr. Rene von Schomberg





Environmental Justice

- All people are entitled to equal environmental protection regardless of race, color or national origin. It's the right to live and work and play in a clean environment. - Dr. Robert Bullard
- Environmental justice embraces the principle that all people and communities have a right to equal protection and equal enforcement of environmental laws and regulations.





Key Questions

Who gets to be an innovator?

Who bears the cost of innovation?

How does tech enable false progress?





Conclusion



Incorporate ethics & justice



Sometimes the best tech is none



Holistic, multidisciplinary approach





Thank you + stay in touch!

Earth Hacks

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-  @earthhacksorg
-  @earthhacksorg

Sanjana

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-  sanjana@earthhacks.io
-  @lightbulbnerd
-  @lighbulbnerd



Alinne Olvera Martinez

Regional Focal Point for Latin America and the Caribbean
@ Children and Youth for Sustainable Communities (CYCSC)
Focal Point In Young Scientists Platform on Disaster Risk Reduction
@ MGCY

 Mexico City, Mexico



Game Theory Applications for Risk Management in the context of SDG 11 compliance

A scientific approach to resilience

Risk & Game Theory

USEFUL CONCEPTS

SYSTEMIC THINKING

- Systemic Risk Unsustainable
- development Areas of study

GAME THEORY

- Game
- Players
- Strategies
- Outcome



Systemic Thinking

03

01

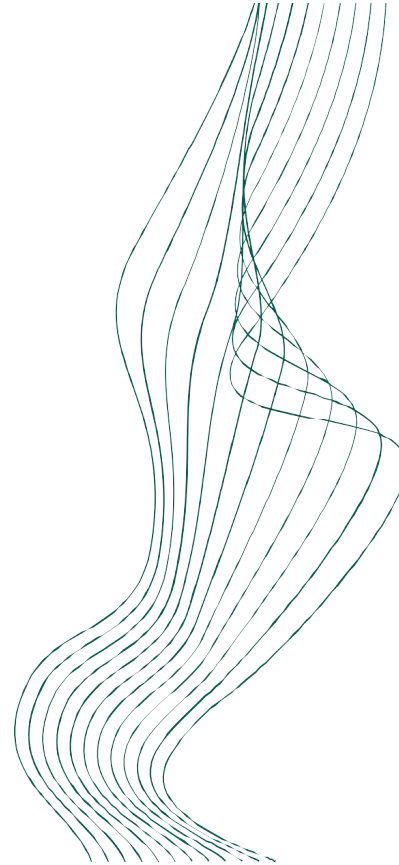
SYSTEMIC RISK

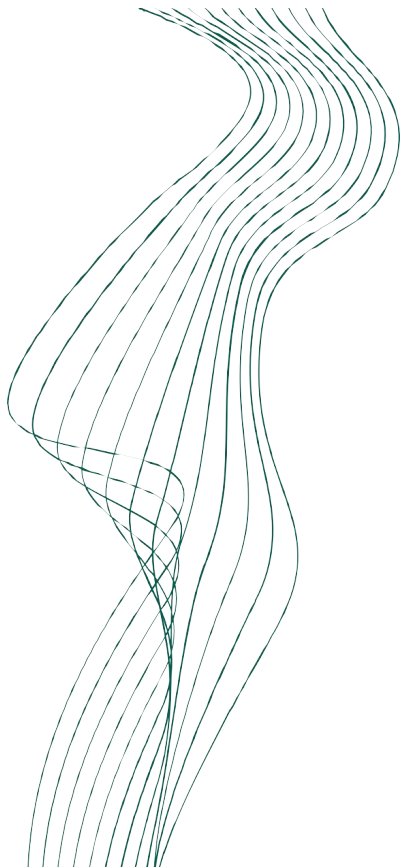
1. Probability
 - Hazard, exposure, vulnerabilities and resilience.
 - Examples of hazards and circumstances.

02

GAME THEORY

1. Game concept
2. Are all systems in the same circumstances?

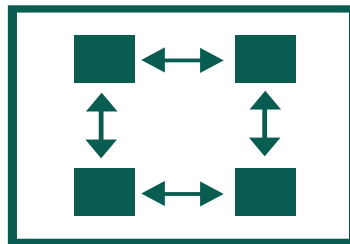




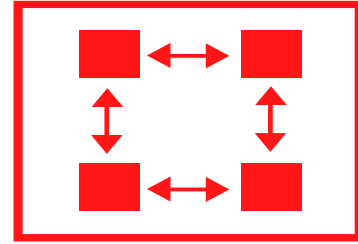
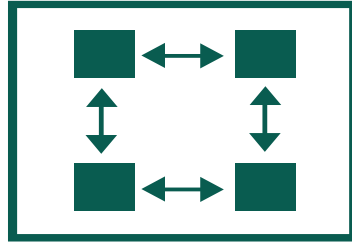
Game Theory

04

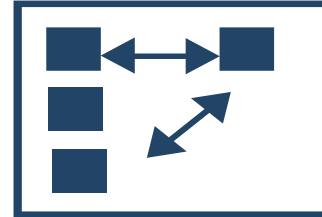
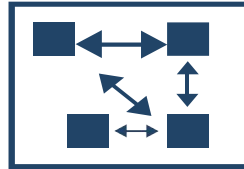
GAME: SYSTEM WITH PLAYERS, STRATEGIES
AND OUTCOMES.



In every game, the strategy of player 1 will affect player 2 and vice versa.
For every player i , the strategy of player j will **simultaneously** affect them.



COVID-19 Pandemic has shown us that systems aren't constant nor similar. Countermeasures should take decision making and risk into consideration.



ASSESSMENT

01

CREATION OF YOUNG SCIENTISTS GROUPS

Adequately address risk

02

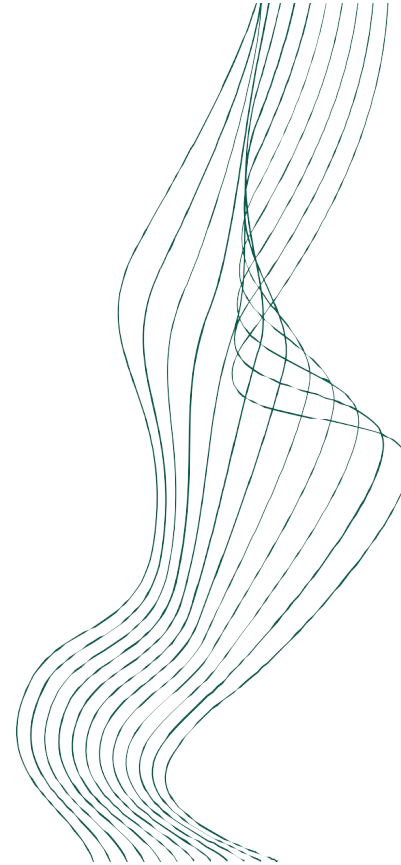
APPLY NASH EQUILIBRIUM
CRITERIA

Frameworks and collective strategies

03

DELIVERABLES

Player's habits, customs and patterns





Aoife O'Mahony

Open Science Focal Point at MGCY
PhD student @ Cardiff University

 Cardiff, UK





Major Group for
Children and Youth
A space for children and youth in the United Nations



YOUTH SPI PLATFORM

Science Policy Interface

Youth engagement in open science for the SDGs

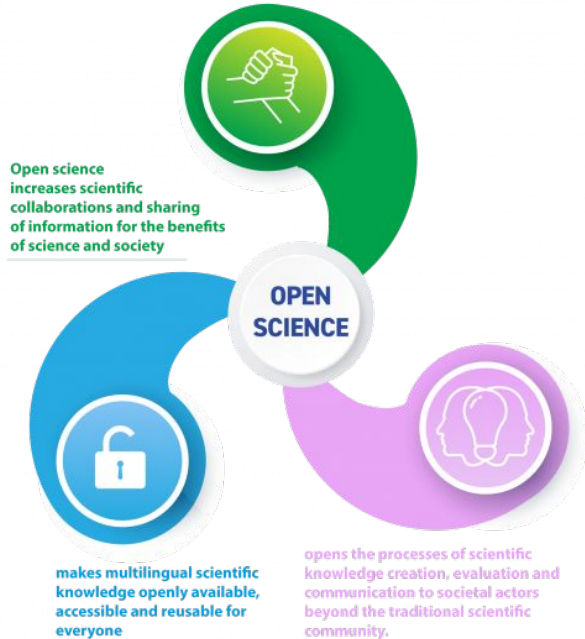
Aoife O'Mahony

Open Science Focal Point, MGCY SPI

aiofe.omahony@unmgcy.org

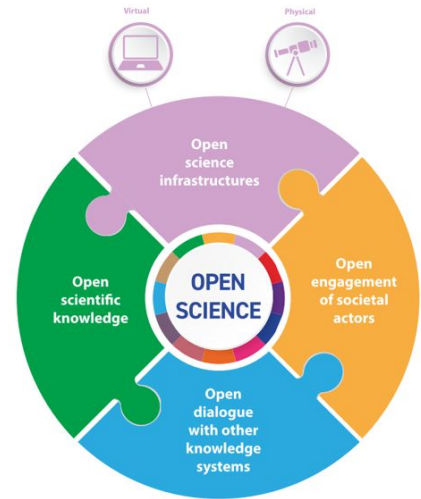
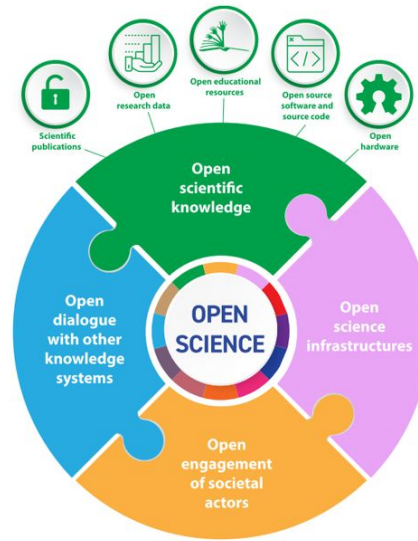
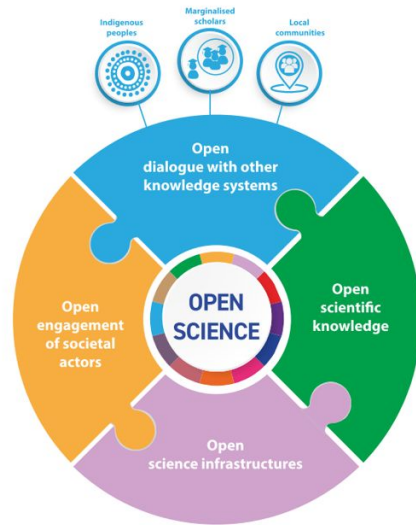
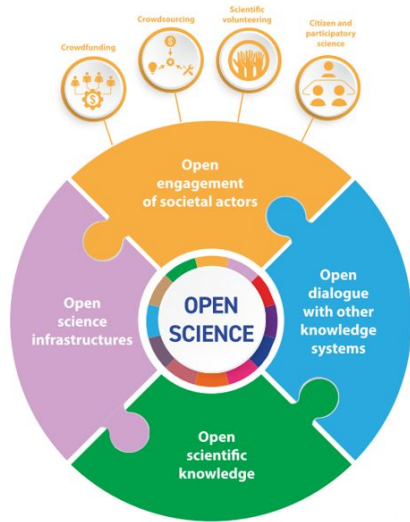
<https://www.unmgcy.org/science-policy-interface>

What is Open Science?



“Open Science has the potential of making the scientific process more transparent, inclusive and democratic. It is increasingly recognized as a critical accelerator for the achievement of the United Nations Sustainable Development Goals and a true game changer in bridging the science, technology and innovation gaps and fulfilling the human right to science”.

UNESCO



Towards a New Social Contract: Reducing Inequalities through Digital Public Goods and Youth Collaboration for the Sustainable Development Goals (SDGs)

Authors: Mauricia Abdol Tshilunda, Mohammad Atif Aleem, Eileen Cejas, Marta Galambos, Fernando García, Aleksandra Ivankovic, Victoria Lovins, Oumaima Makhrouk, Elliott Mann, Tristan Norman, Juliana Novaes, Aoife O'Mahony, Carolina Rojas, Gustavo Souza, Youth Coalition on Internet Governance (YCIG), Major Group for Children and Youth (MGCY), Science-Policy Interface Platform (SPI), the United Nations Department of Economic and Social Affairs (UNDESA)

Background

For many decades, the General Assembly has been mindful of the difficulties and opportunities presented by technological change. In 2015, the Addis Ababa Agenda for Action [69/313](#) and the 2030 Agenda for Sustainable Development established the Technology Facilitation Mechanism to support the Sustainable Development Goals (SDGs). Later resolutions [72/242](#) and [73/17](#), specifically address rapid technological change and its impact on the SDGs. Additionally, the World Programme of Action for Youth (WPAY) highlights information communication technologies as a priority area and lists specific action items such as providing training to promote the use of information and communications technology and protecting youth from its detrimental elements.

The spread of information and communications technology and global interconnectedness can accelerate human progress, bridge the digital divide and develop knowledge societies, as does scientific and technological innovation across diverse areas. However, there are also negative consequences, including labour displacement, concerns about privacy and respect for human rights, and the possibility that harnessing technologies to advance towards achieving one of the SDGs could negatively affect other goals and targets.

Numerous problems are exacerbated by the digital divide. The possibility that improvements in digital technology would benefit the already connected while increasing inequality within and across countries must be addressed through effective policies that achieve the shared objective of leaving no one behind. The COVID-19 epidemic has exacerbated pre-existing digital divides and technical inequality.

Inequality, in multiple forms, has been a defining dynamic of the early twenty-first century even before the COVID-19 pandemic, and increased inequality both between and within countries continues to drive instability. This has impacted many vulnerable and marginalized groups, especially young people, who

<https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2022/01/Digital-Public-Goods-Submission.pdf>

MGCY's work on Open Science

SPECIAL CALL FOR PAPERS <https://bit.ly/JSPGOpenScience>

**OPEN SCIENCE POLICIES
AS AN ACCELERATOR OF
THE SUSTAINABLE
DEVELOPMENT GOALS**

SUBMISSION DEADLINE: JULY 10, 2022

ISSUE SPONSORS **OUTREACH PARTNER**

 **JSPG**
Journal of Science
Policy & Governance

 **unesco**

 **OPEN SCIENCE**
WORKING GROUP
GLOBAL YOUNG ACADEMY



UNESCO Recommendation on Open Science

<https://www.unesco.org/en/natural-sciences/open-science/implementation>



<https://worldebhcday.org/become-an-evidence-ambassadors>

OSDG is an open source initiative that aims to integrate various existing attempts to classify research according to Sustainable Development Goals, and to make this process open, transparent and user-friendly.

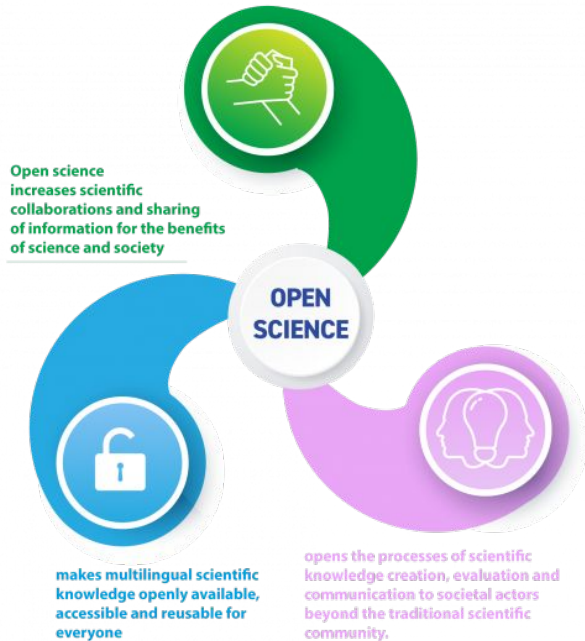
We integrate existing research into a comprehensive approach that avoids the shortcomings of previous individual approaches and the duplication of research efforts.

OSDG is a partnership between [PPMI](#), [UNDP SDG AI Lab](#), and a growing community of researchers led by [Dr. Nuria Bautista Puig](#).

<https://osdg.ai/>

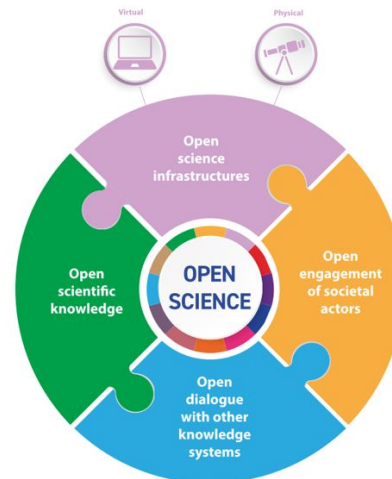
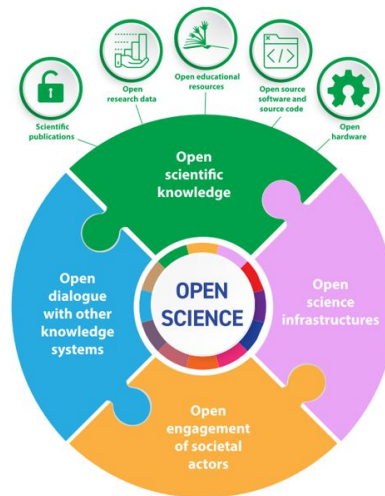
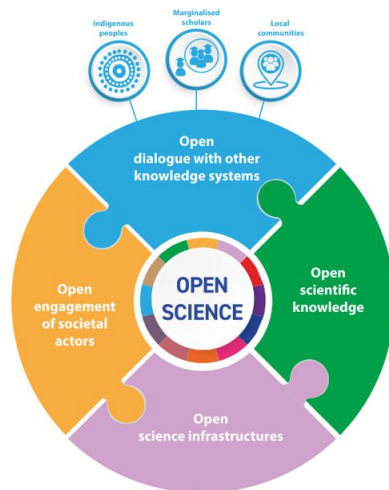
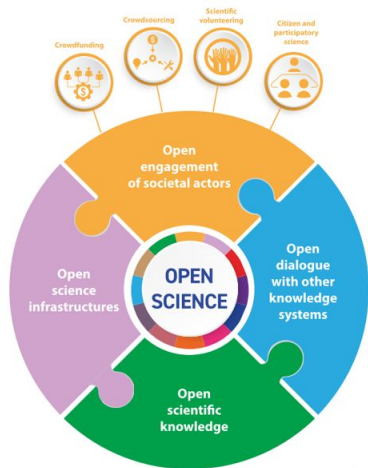


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Fatoumata Diarrassouba

Co-Founder & Managing Partner @ Afrik'Energy Connect Inc

Member of the SDG7 Youth Constituency @MGCY

 Indiana, USA



Youth Engagement towards solving SDG7



Fatou Diarrassouba Amoussou
Co-Founder/Managing Partner @Afrik'Energy Connect

 afrikenergy.org

 infos@afrikenergy.org

Afrik'Energy Connect Inc. is a pan-African start-up company based in Liberia (West Africa)

- *providing affordable climate smart technologies mainly for off grid rural and peri-urban households & communities of West Africa*
- **developing efficient micro/mini grids management tools**
- **developing/prototyping productive use leveraging solar energy equipment (solar cassava micromills, solar rice threshers, solar electric cookers)**

About Us



Afrik'Energy Connect Inc. is a renaissance in the energy access, efficiency and productive use space in Africa.

Our work contribute to efforts aimed at achieving SDG 7 “*Ensure access to affordable, reliable, sustainable and modern energy for all*”.



Our Products & Services



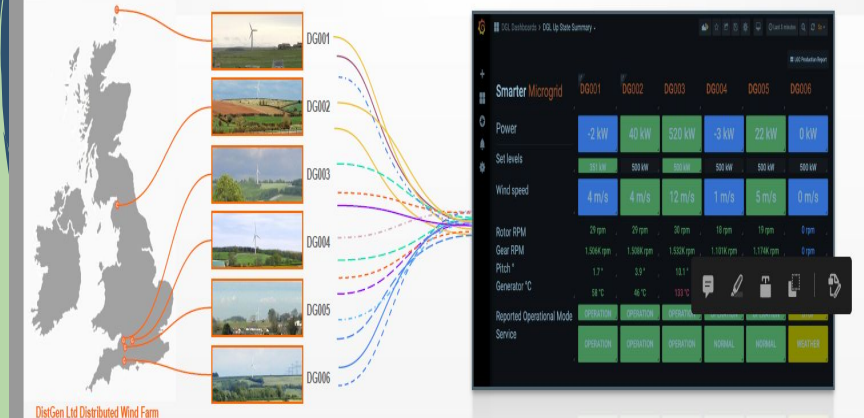
Smart microgrid controller
for efficient microgrid
management



Solar Home Systems &
Productive Use Leveraging
Solar (PULSE) Equipment

ES SCADA

Superior real time visualisation of your business' Key Performance Indicators (KPI)



Current project: Providing reliable & efficient energy access through smarter mini grids management in Liberia

Problem

- challenges of supplying reliable and reasonably-priced electricity
- lack of a reliable national grid to rural, peri-urban and urban locations alike, for example due to damage to the infrastructure of generation, transmission and distribution, caused floods and other natural catastrophes

Solution : **Smart microgrid controller ES – SCADA System**

Project Partner: SML

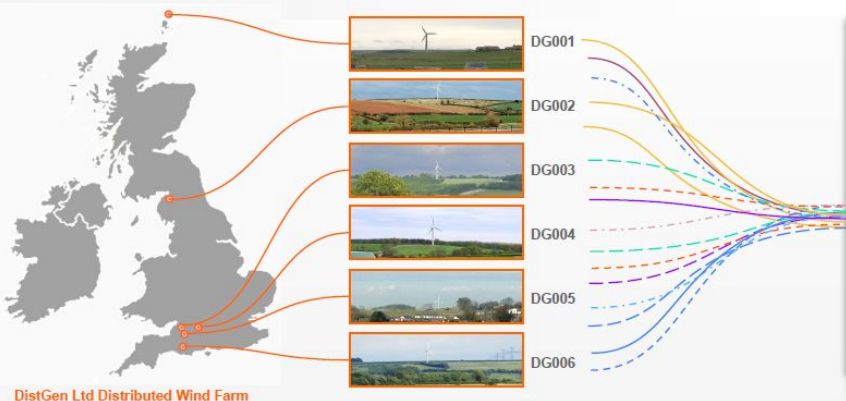
- Apply the latest IT industry leading digital systems technology to provide a superior but affordable solution to the many challenges of managing the generation of electricity from the wind
- Minimize the capital and operating costs of a microgrid, often calculated as the Levelized cost of electricity (LCOE)
- Monitor all the relevant sub-systems of the microgrid, and so help the operator to manage the Key Performance Indicators (KPI) for generation, storage and consumption, effectively and efficiently
- Software-as-a-service, so it is available anywhere in the world



ES – SCADA System

ES SCADA

Superior real time visualisation of your business' Key Performance Indicators (KPI)



	DG001	DG002	DG003	DG004	DG005	DG006
Power	-2 kW	40 kW	520 kW	-3 kW	22 kW	0 kW
Set levels	351 kW	500 kW	500 kW	500 kW	500 kW	500 kW
Wind speed	4 m/s	4 m/s	12 m/s	1 m/s	5 m/s	0 m/s
Rotor RPM	29 rpm	29 rpm	30 rpm	18 rpm	19 rpm	0 rpm
Gear RPM	1.506K rpm	1.508K rpm	1.532K rpm	1.101K rpm	1.174K rpm	0 rpm
Pitch °	1.7 °	3.9 °	10.1 °	14.4 °	-0.1 °	44.9 °
Generator °C	58 °C	46 °C	133 °C	32.0 °C	55 °C	20 °C
Reported Operational Mode	OPERATION	OPERATION	OPERATION	OPERATION	OPERATION	STOP
Service	OPERATION	OPERATION	OPERATION	NORMAL	NORMAL	WEATHER

Smart digitalisation, changing the way the energy business is done.

To get the best from your generating assets we believe you need to thoroughly exploit the wealth of information embedded in the monitoring data. We have utilised our decades of software development expertise and 14 years of renewable energy generation experience to produce a state of the art Smart Digitalisation system. Our Unified Management System provides a live digital visualisation and overview of the performance of your fleet so you have better control of your business.

ES-SCADA visualises the data, all of the useful data, and nothing but the useful data when the data is useful.

Our ES-SCADA software enables you to:

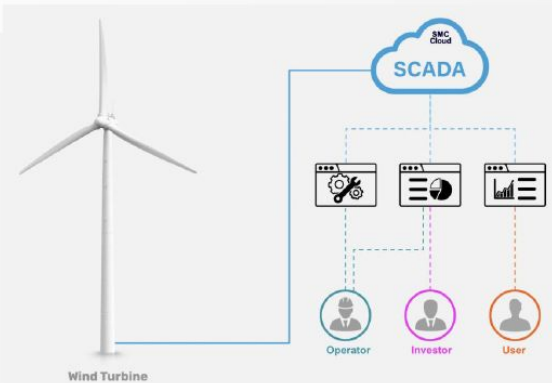
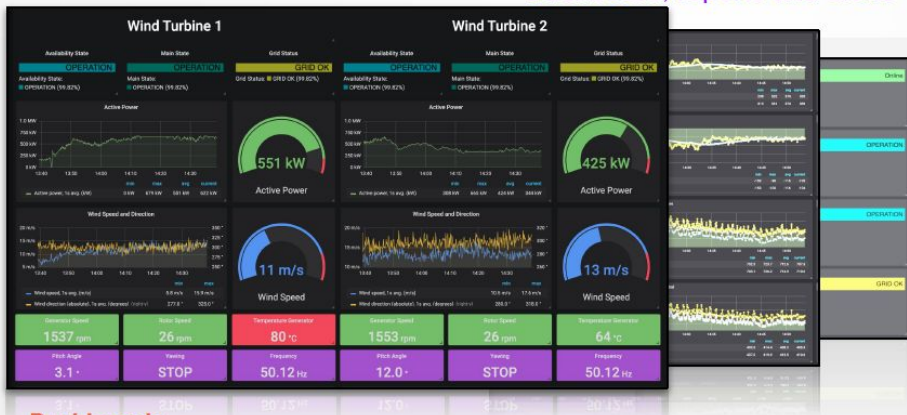
- Easily understand and interpret the mass of complex operational, generation, production and reliability data produced by your wind turbines and electrical infrastructure
- Continuously improve the utilisation and productivity of your generating assets
- Remotely manage your generating assets from anywhere
- Share a single Unified Management System across all the interested parties including owners, landlords, funders, operators, maintenance managers and technicians...and your mates at the bar and whoever else needs to know



ES – SCADA System

ES SCADA

Dashboard, reports and alerts



Dashboards

Our system, built on a powerful and flexible data visualisation platform (Grafana), allowing you to track your KPIs and so optimise your asset's performance. Production of new dashboards when requested or customisation of existing ones is easy and quick allowing you to track your KPIs



Reports

Generator performance (mechanical reliability, availability, power curve...)
Asset productivity (kWh, financials)
Resource reporting (wind speed, wind direction, turbulence...)



Alerts

Alerts actively inform you of error events so you can rapidly organise for them to be resolved and so minimise expensive generator outages - you can relax because you know what is going on at all times and can rely on the system to tell you when something different occurs



ES-SCADA provides role based permissions and access levels so each user can have a tailored set of dashboards, reports and alerts suited to their specific needs.



ES – SCADA System

ES SCADA

Superior real time monitoring and control of your generating assets

Built by a Wind Turbine (WT) operator for WT operators

- + The SCADA system was designed and built inhouse to address our specific requirements first
- + Made to help wind turbine operators take full advantage of the DEIF retrofit WT controller



Everything you need - no bloatware

- + ES-SCADA Basic is a lightweight package that provides all of the essential functionality 'out of the box'
- + Customisable to best match the needs of each individual user
- + A raft of 'concealed' functionality that can be configured for access when needed

Low Cost - High Function & High Quality

- + Performance scalability and functional extensibility to service the demanding needs of sophisticated/power users
- + Open standard Raspberry Pi hardware platform user can buy themselves
- + Super low cost integrated UPS allows you to keep monitoring the site even while the grid is down
- + ES-SCADA Basic dashboards, reports & alerts for 3 seats from £80 pm



ES – SCADA System

ES SCADA

Superior real time monitoring and control of your generating assets

Networking challenges overcome

One of the biggest challenges we have encountered was unreliable internet access in remote rural areas. In order to provide a reliable management system, we developed a SCADA system that can operate and provide reliable data networking in the most challenging environments:



High reliability monitoring

- Works well everywhere including locations with relatively poor mobile data coverage
- 'No LAN' 3G/4G GSM 'to the cloud' WAN multi turbine (windfarm) solution.
- Computer host hardware 'auto set up' and software updates delivered 'automagically' 'Over-The-Air' from the cloud.
- WT control functionalities such as: Start, remote Stop & Restart are available through the same interface

Simple to install

- Plug&Play mobile data network setup & operation ('near zero' IT skills needed)
- Simple physical installation (at worst just two cables to plug in)
- Tiny form factor
- Negligible power consumption



Q&A

Do you have additional questions?

un-big-data-hackathon@unmgcy.org

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