CAPITALIZATION OF SCIENTIFIC INNOVATIONS & LEADERSHIP STRATEGIES - A PANACEA FOR REALIZING SUSTAINABLE DEVELOPMENT GOALS (SDGs)

CBAS Monthly Seminar Series

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Agenda

- Introduction
- Conceptualization of SDGs
- Catalogue of Scientific/Technological Innovations
- Challenges Impeding SDGs Realization
- Catalyst of Sustainability – Knowledge Management
- Recommendation & Conclusion

Introduction

Tripodal Strategies of innovations in Science, Technology and Leadership/Management – Enablers of Sustainable Development Goals (SDGs)

1. SDGs for Human and Environmental Well-being – *The journey So Far*
2. Sustainability Issues – 2030's Vision?
3. Platform for Holistic Approaches to foster habitable & conducive Future

Millennium Development Goals (MDG's) 2000-2015

At the beginning of the new millennium, in 2000, world leaders gathered at the UN to shape a broad vision to fight poverty in its many dimensions. That vision was translated into 8 Millennium Development Goals (MDGs).

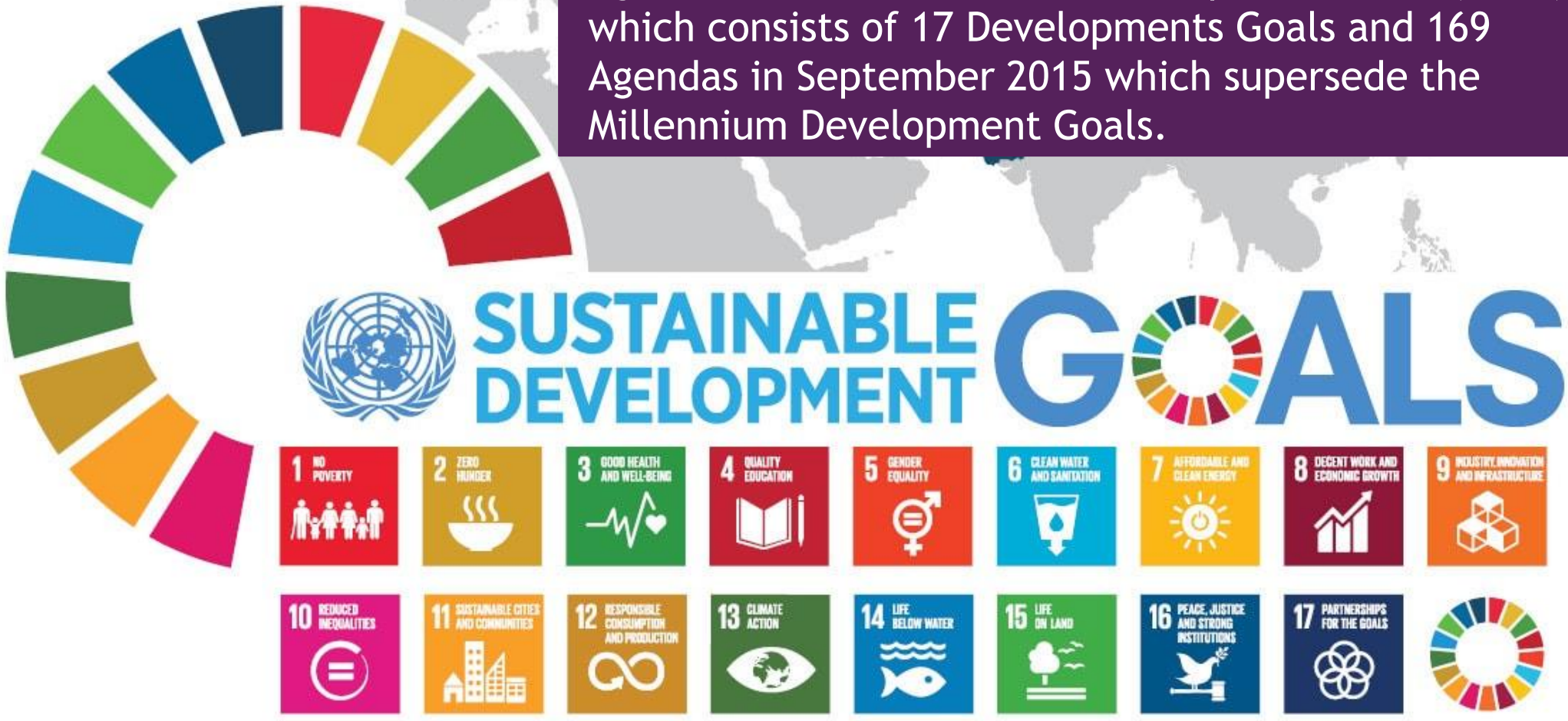
UNITED NATIONS

The shortcomings of MDG's

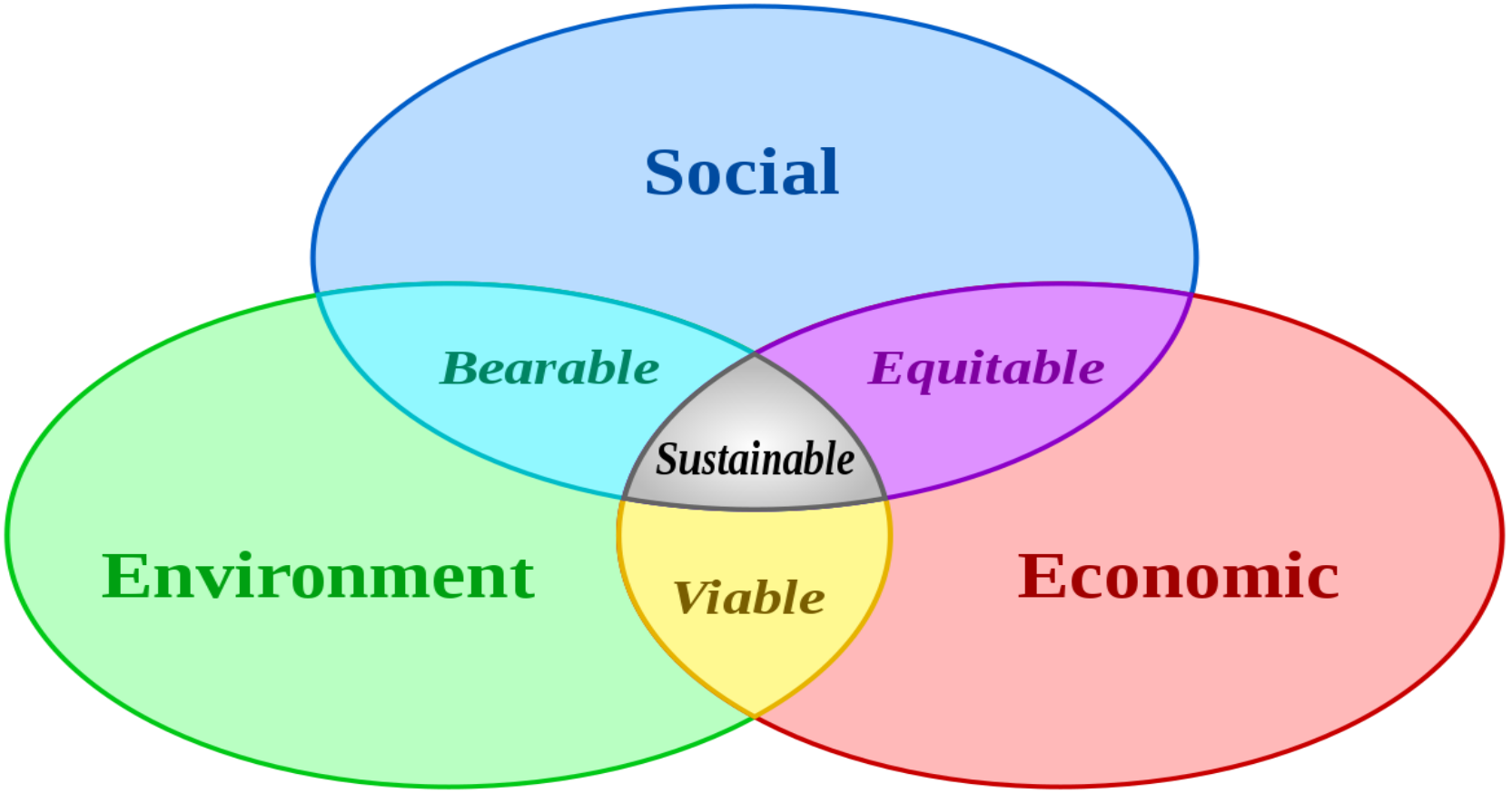
1. **The Uneven progress** towards the achievement of the Goals
2. **Huge disparities** across and within countries
3. **Poverty is greatest for rural areas within countries**
4. **Urban poverty is also extensive, growing, and underreported by** *traditional indicators*

SUSTAINABLE DEVELOPMENT GOALS

The head of state and high-representatives of United Nation's assembly accepted the 2030 Development Agenda on the Sustainable Development Goals (SDGs) which consists of 17 Developments Goals and 169 Agendas in September 2015 which supersede the Millennium Development Goals.



Rationales for SDGs



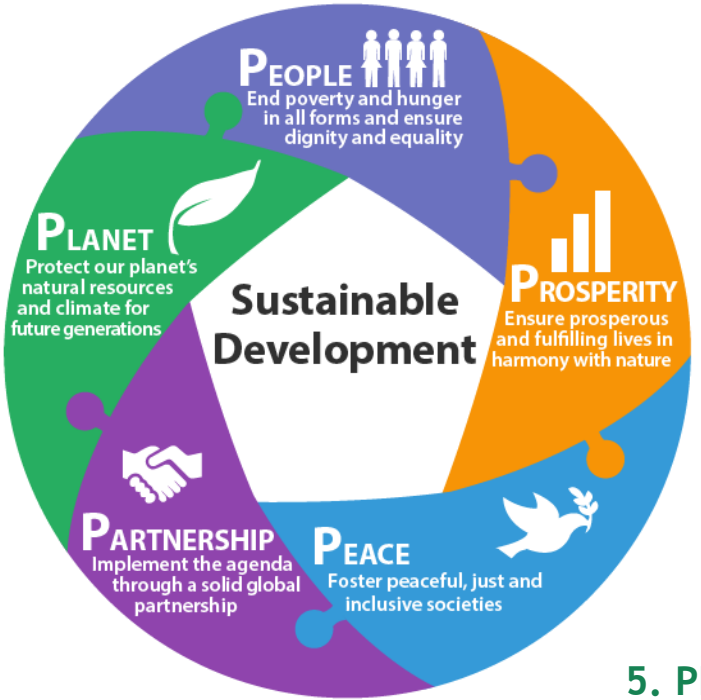
Five (5) Pillars of SDG

1. PEOPLE

"to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfill their potential in dignity and equality and in a healthy environment"

3. PARTNERSHIPS

"to mobilize the means required to implement this Agenda through a revitalized Global Partnership for Sustainable Development, based on spirit of strengthened global solidarity, focused in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people"



2. PEACE

"to foster peaceful, just and inclusive societies, which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development"

4. PROSPERITY

"to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occur in harmony with nature"

5. PLANET

"to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations"

Conceptualization of SDGs - “System Thinking”

- SDGs is a system with the 17 goals making up its subsystems
- Success in one aspect would have positive bandwagon effects on the accomplishment of the others

Agenda for Sustainable Development 2030

Catalogue of Technological Innovations for SDGs

Digital revolution

Artificial intelligence, big data, biotech, nanotech, autonomous systems

Human capacity & demography

Education, health, ageing, labor markets, gender, inequalities

Smart cities

Decent housing, mobility, sustainable infrastructure, pollution

SDGs:
Prosperity
Social Inclusion
Sustainability

TWI2050
The World in 2050
www.twi2050.org

Consumption & production

Resource use, circular economy, sufficiency, pollution

Food, biosphere, & water

Sustainable intensification, biodiversity, forests, oceans, healthy diets, nutrients

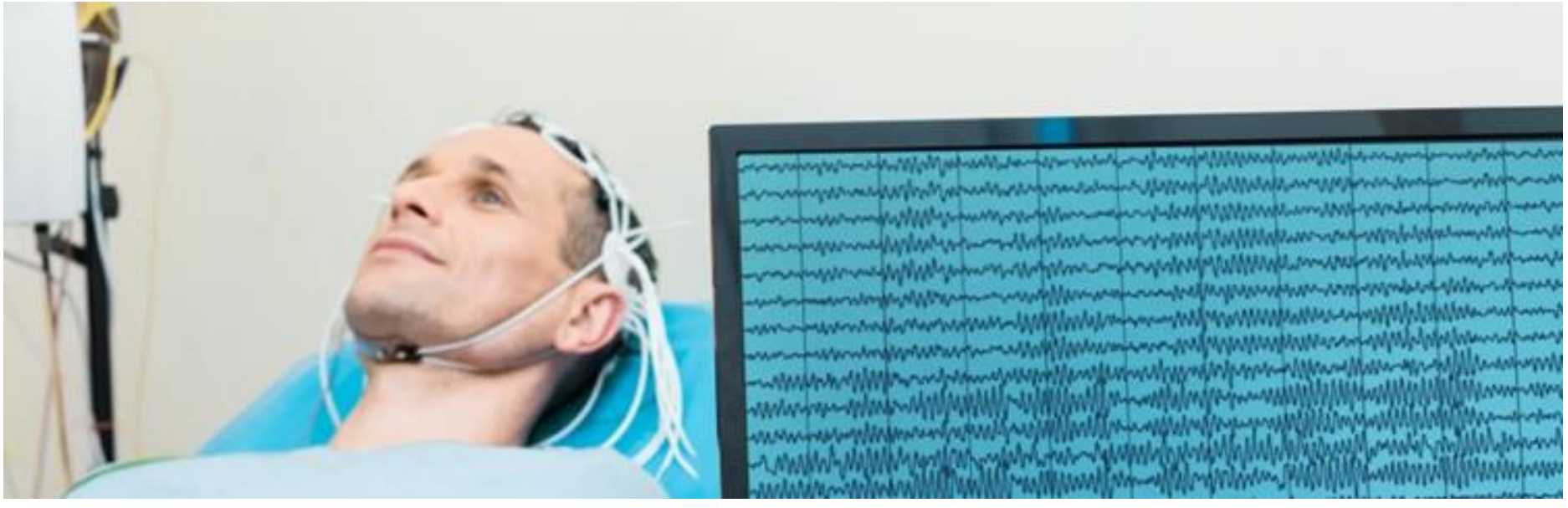
Decarbonization & energy

Energy access, efficiency, electrification, decent services

Catalogue (Contd..)

- Recently, a brain speech signals to texts system to aid paralysed patients to communicate their intended statements was developed - University of California

- the first AI-based flu vaccine – Flinders University Australia



African Computational Sciences Centre for Health and Development (ACSC4HD)

ACSC4HD is established to tackle intractable global challenges of African developing countries utilizing both inter- and multi-disciplinary research that leads to the development and deployment of innovative sustainable and scalable computational solutions to these problems.

To foster an academic environment where interactions and dialogue can exist, flourish and can quickly be implemented or prototyped, the center collaborates with University College London, London, United Kingdom and University of Ibadan, Ibadan, Nigeria.

ACSC4HD Current Work In achieving SDGs

SUSTAINABLE DEVELOPMENT GOALS

Poverty estimation in sub-Saharan Africa

Socio-Economic deprivation, otherwise referred to as “Poverty” has become a major global concern in recent times. People living on less than $1.90 per day are in extreme poverty (United Nations General Assembly (UNGA), 2015).

It has multiplier effects and linkages to health issues, insecurity, shortened life expectancy, broken homes, more vulnerable children and even death,

SUSTAINABLE DEVELOPMENT GOALS

Poverty on the Chip (PoC) Project in Sub-Saharan Africa

- It has greater impact on developing countries such as, Nigeria, Kenya, Ghana, Zambia, Togo, Rwanda, Mali and several other Africa nations inclusive (World Bank, 2002; Dansabo, 2015; Aliyu and Dansabo, 2017)

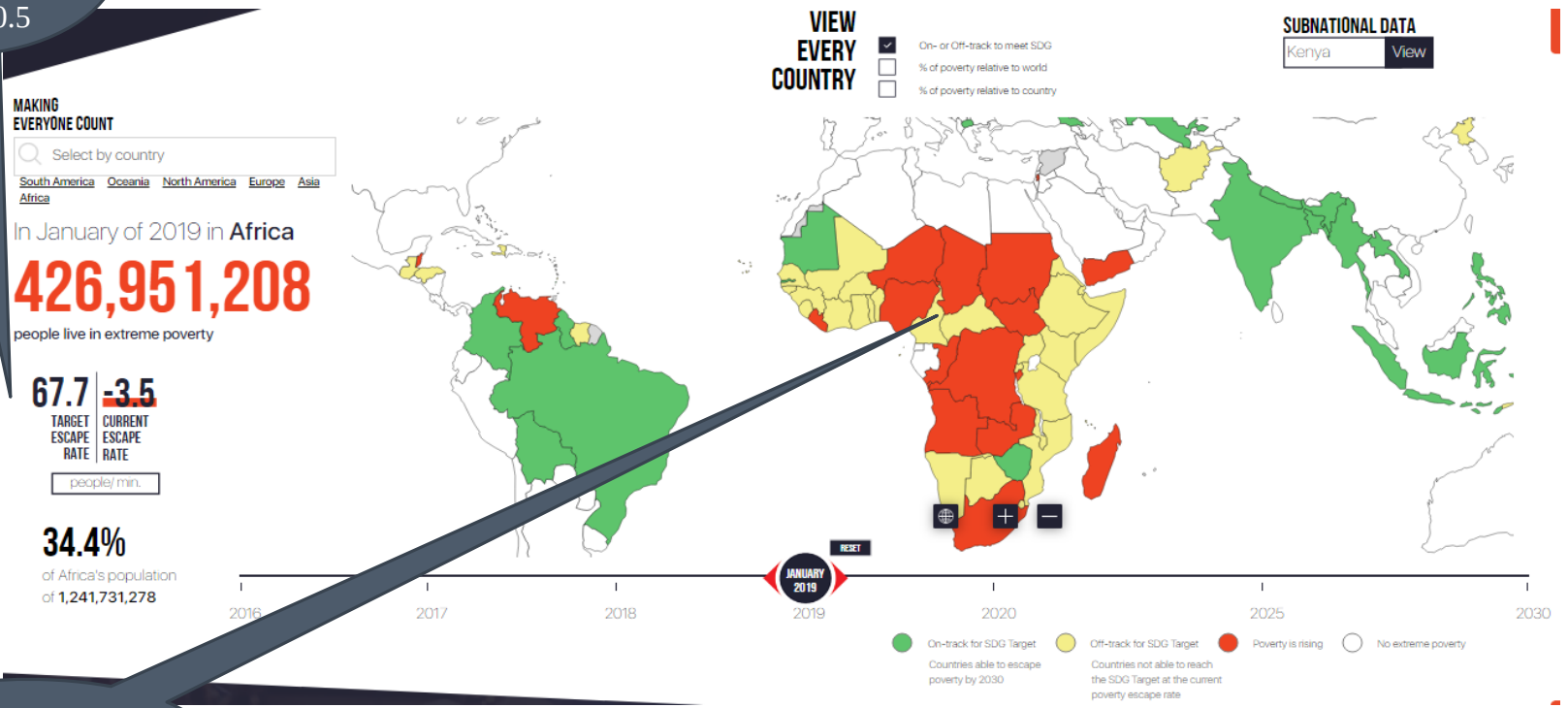
- As of 2018, it was estimated that the country with the most people living in extreme poverty is Nigeria, at 86 million beating India at 73 million (Cuaresma et al., 2018; Kharas et al., 2018) and 92.6 million (47.6%) and 45.0 million (3.3%) respectively as of November 2019 (World Poverty Data, 2019).

- It is so serious that it is ranked first of the major global problems addressed in the Sustainable Development Goals (SDGs) (UNGA, 2015).

SUSTAINABLE DEVELOPMENT GOALS

World Poverty Data Relative to SDG's, 2019

Global SDG
Escape Rate
Target: 1.6
Current: 0.5



Continent	Pop (%)
Africa	34.4
Oceania	6.8
S-America	5
Asia	3.1
N-America	1.7
Europe	0.4
Average	**8.6**

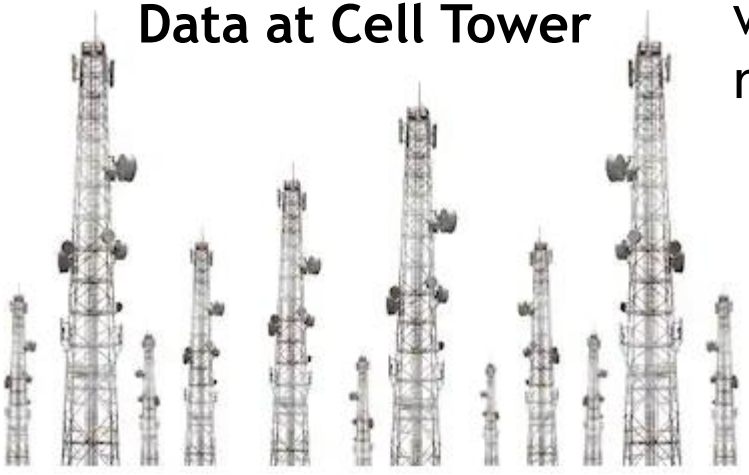
Africa, going Off-track SDG's

World Poverty Rate On- / Off-track to Meeting SDG's
Source: (World Poverty Clock data, 2019)

End poverty in all it forms everywhere

In order to end poverty in all it forms, we are partnering with MTN Nigeria to get customer dataset at cell tower level and build a robust machine learning model to estimate poverty based on some features of the data

Hence, Government and all stakeholders can view, plan and act on the poverty dominated region and provide viable solutions



SDG for AI Diagnostics System for Malaria Detection (FASt-Mal) at ACSC4HD

3 GOOD HEALTH AND WELL-BEING

1 NO POVERTY

10 REDUCED INEQUALITIES

Think

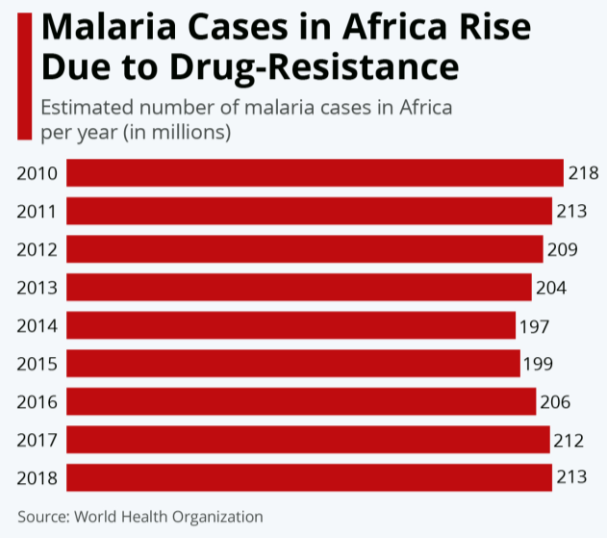
Research

Innovate

AI Diagnostics System for Malaria Detection (FASt-Mal) at ACSC4HD

Over 200 million malaria cases globally lead to half-million deaths annually. Accurate malaria diagnosis remains a challenge for which automated approaches to analyze Thick-Blood Films (TBF) could provide scalable solutions for urban healthcare providers in the holoendemic malaria sub-Saharan region.

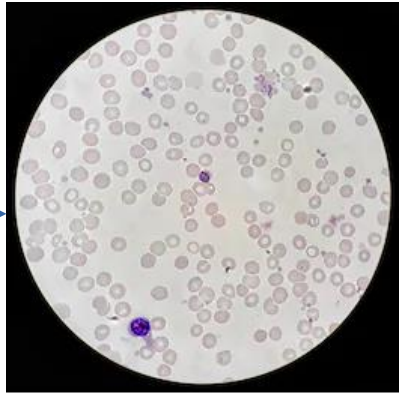
A diagnostic tool was developed which detect, diagnose and predict occurrence of malaria parasite (**Plasmodium falciparum**)



3 GOOD HEALTH AND WELL-BEING

Ensure healthy lives and promote well-being for all at all ages

Dataset of malaria parasite (**Plasmodium falciparum**) were collected in our lab at the Department of Peadiatrics, College of Medicine, University of Ibadan, Ibadan, Nigeria. We built and train an AI diagnostic tool to automatically detect malaria parasite



Artificial Intelligence (AI) for Neonatal Ward Monitoring

Ensure healthy lives and promote well-being for all at all ages

The statistic provided in a report by UNICEF in 2018 concluded that newborn mortality rate of 29 deaths per 1,000 births ranks Nigeria has the 11th highest country on newborn deaths from global estimation ranking

This information corroborates the recent multiple indicator cluster survey (MISC) conducted by the Government of Nigeria in 2016/17 which also rated the newborn deaths per 1,000 births as 37

Furthermore, 80% of newborn deaths were due to premature, asphyxia complications during birth or infections such as pneumonia and sepsis to mention a few.

Challenges Impeding Proactive Implementation of SDGs

1. **Though technology has great potential to support the delivery of SDGs, it is also at the root of exclusion and inequalities** (HLPF SD, 2018)
2. **Slower and Unequal Economic Growth across and within countries**
3. **Demography – Over population in Africa**
4. **Urban poverty – Vulnerability of Middle Class**

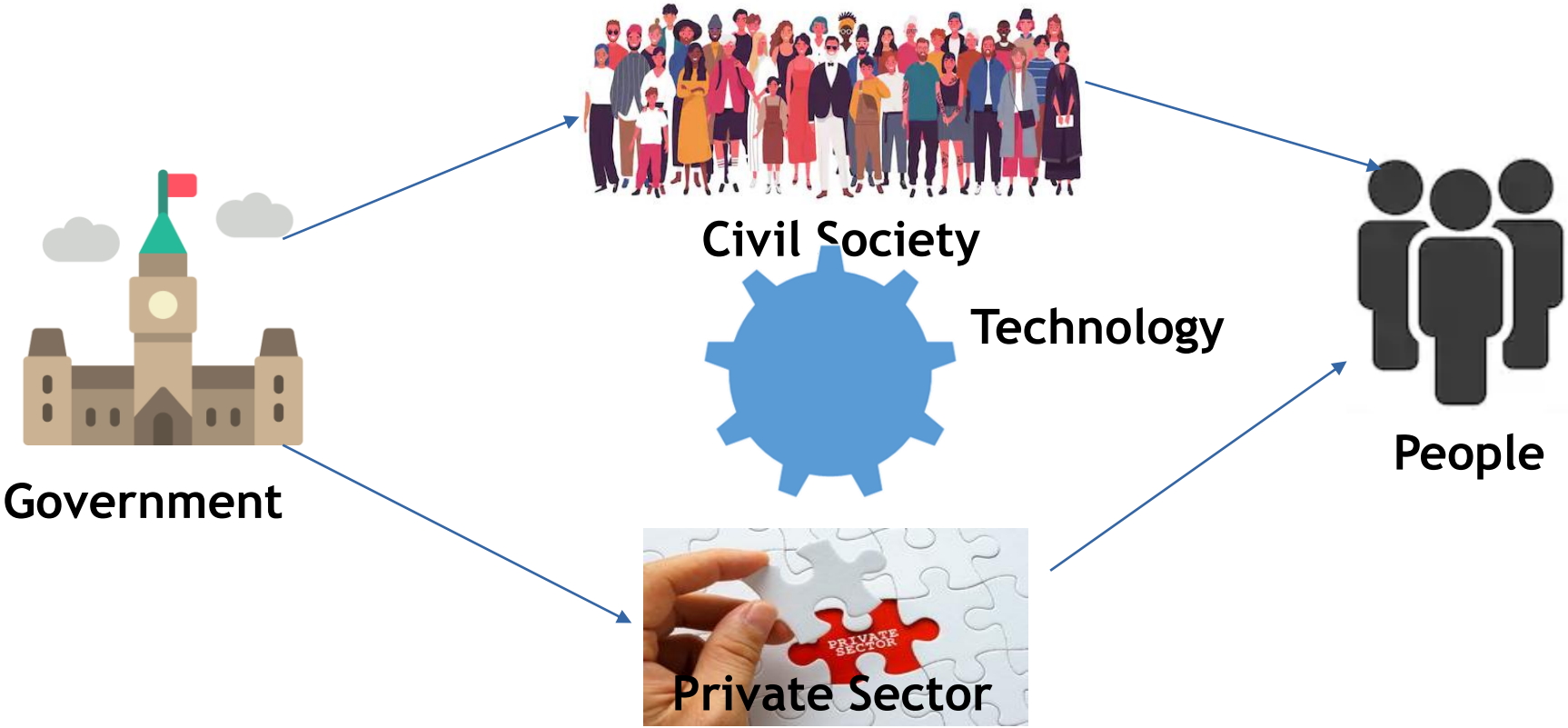
The Way Forward → → → Realizing SDGs 2030's Vision

TRIPLE HELIX APPROACH

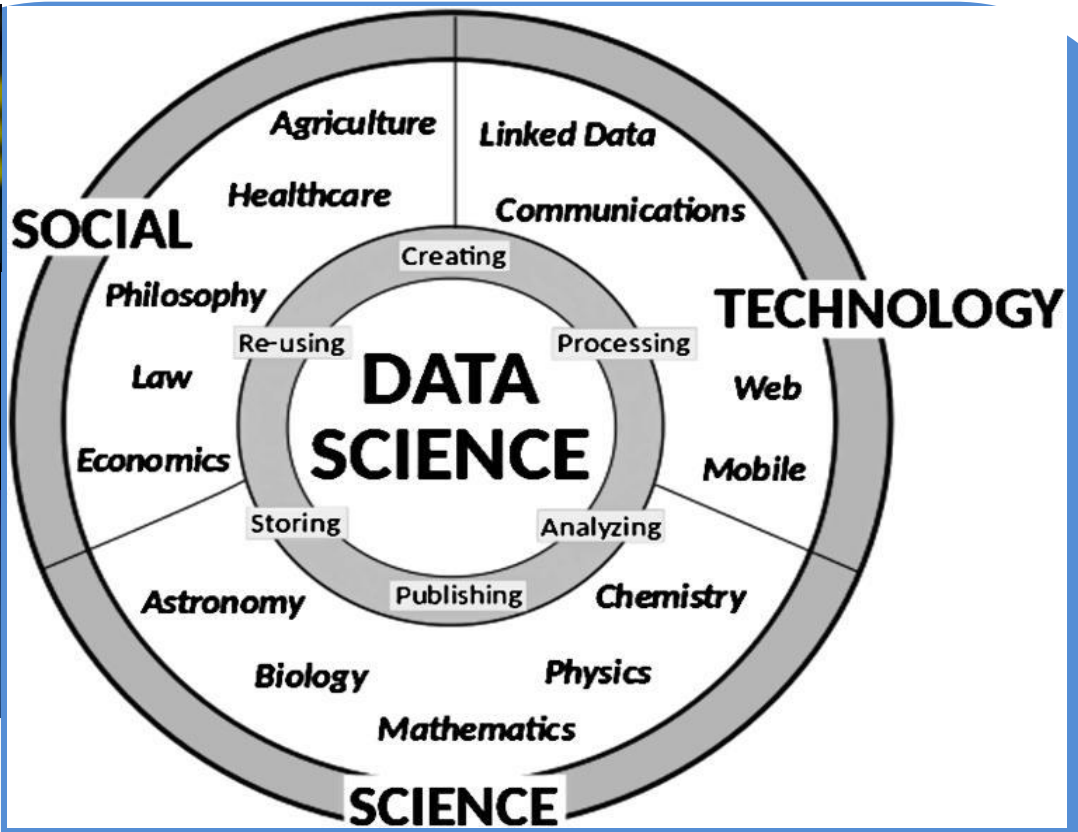
- ❑ Leadership/Government
- ❑ Technology
- ❑ Partnership

Proactive Approach towards Achieving SDGs

Achieving Sustainable Development Goals involves partnership between the Government, Private Sector, Civil Society and the People.



Technology

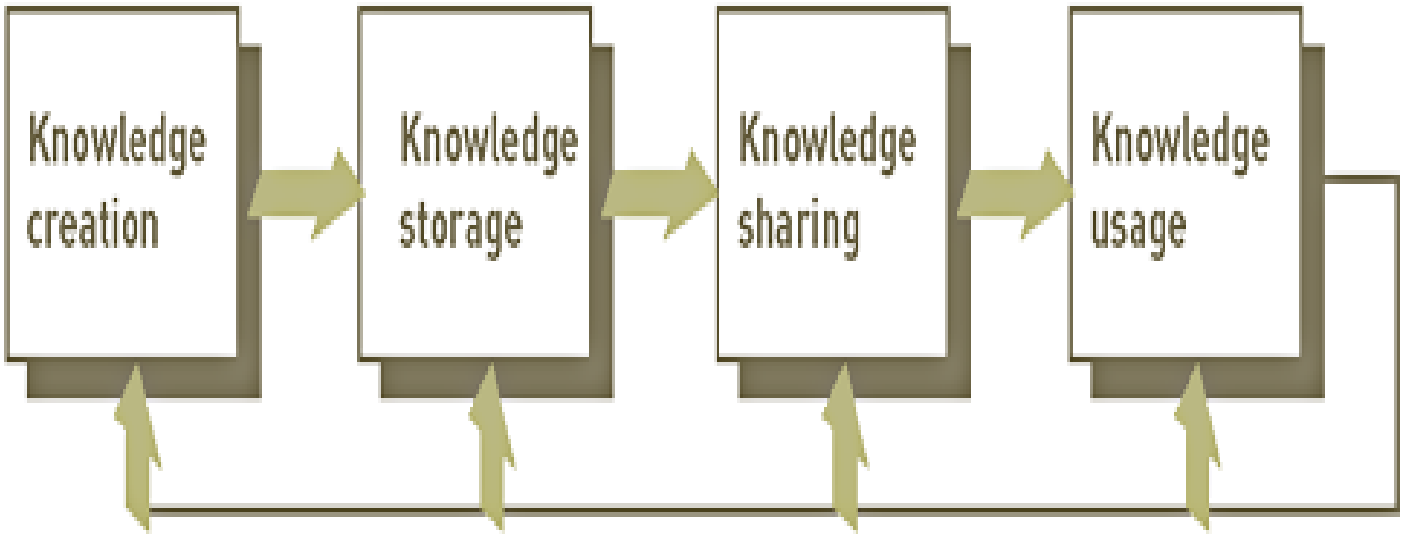


Emerging applications of AI/ML
Data Science

Catalyst of Sustainability – Knowledge Management Strategy

KM synergizes with AI to bridge the Inequalities among partnering Nations for realization of SDGs

KNOWLEDGE MANAGEMENT (KM)



Recommendation

Collaboration → Organizational Culture → Leadership →
Catalyst for Impacts of Scientific & technological Innovations

Conclusion

Speedy Realization
of
SDGs across
193 Countries
by
2030

Thank you