

**UiO** : **Department of Technology Systems**  
University of Oslo

**The Climate Academy 2022, 25-29Sep2022, Kigali (Rwanda)**

# **Digitalisation for Sustainability**

Josef Noll,

Professor, University of Oslo, Department of Technology Systems  
Kjeller, Norway, m: +47 9083 8066, e: [josef@jnoll.net](mailto:josef@jnoll.net)







# Energy & Digital, enablers for



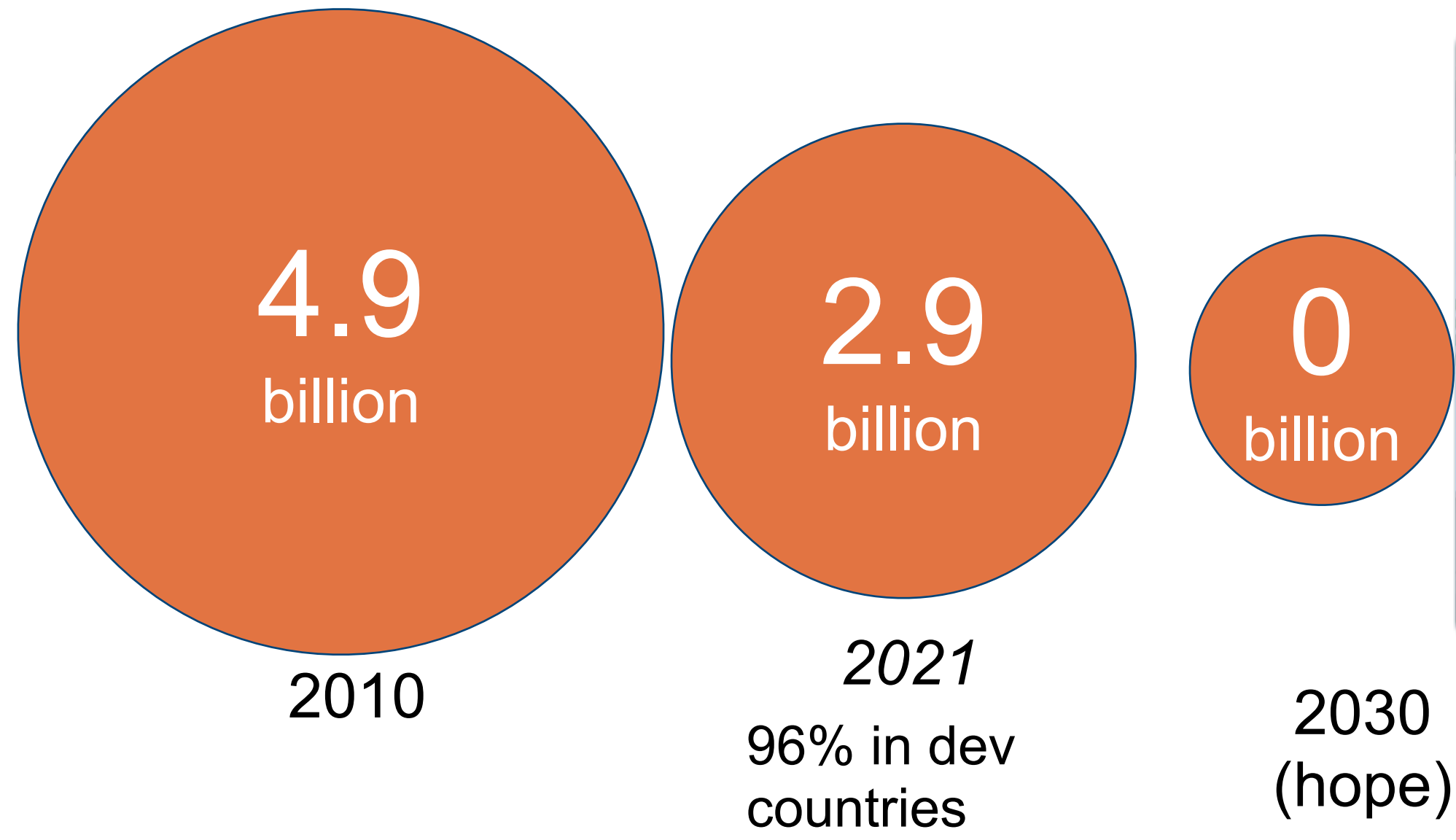
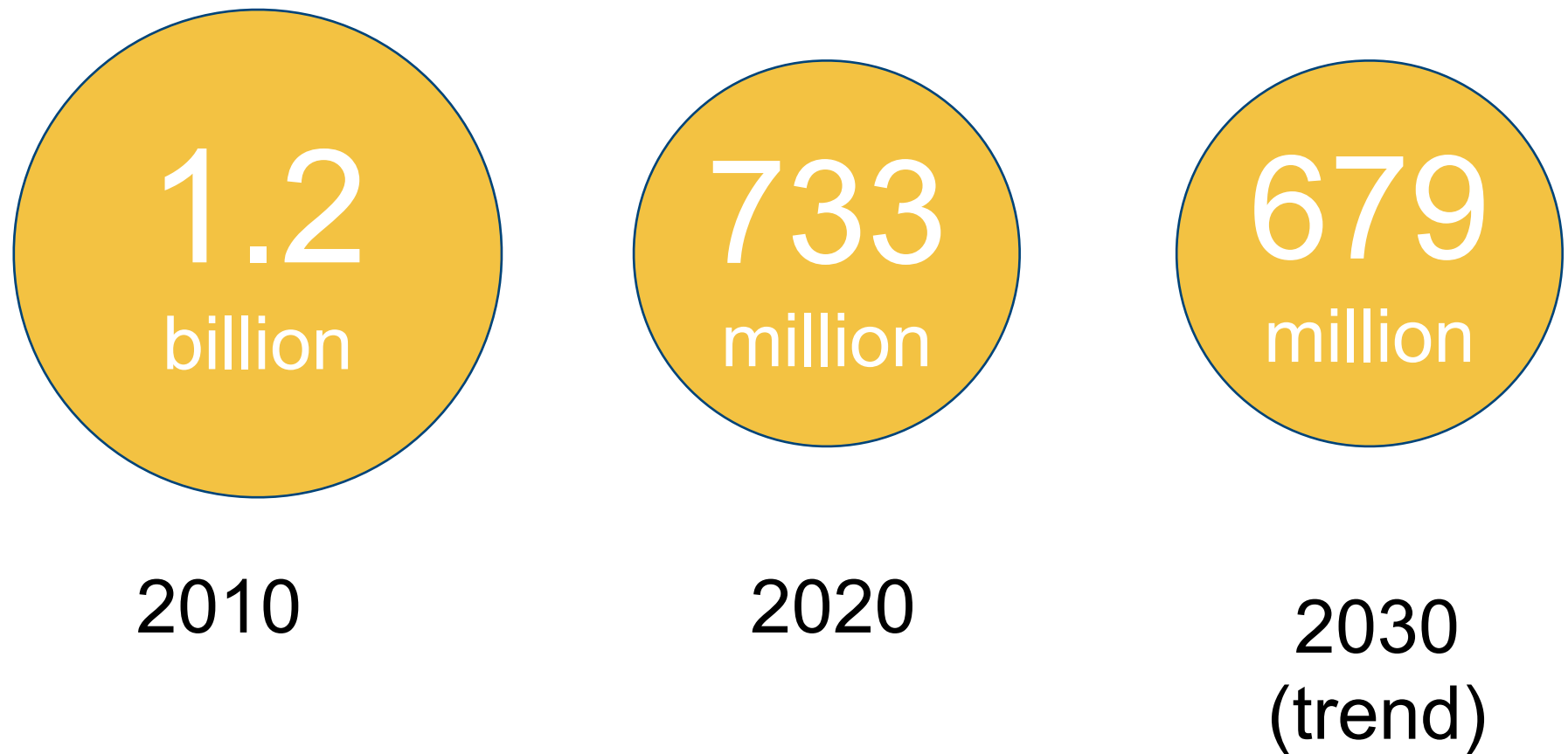
SDG 7.1 calls for universal access to .... energy by 2030



SDG 9c calls for universal, affordable internet access by 2020

People without electricity

People not using Internet



WSIS Forum 2022

[WorldBank 2021]  
<https://www.worldbank.org/en/news/press-release/2021/06/07/report-universal-access-to-sustainable-energy-will-remain-elusive-without-addressing-inequalities>

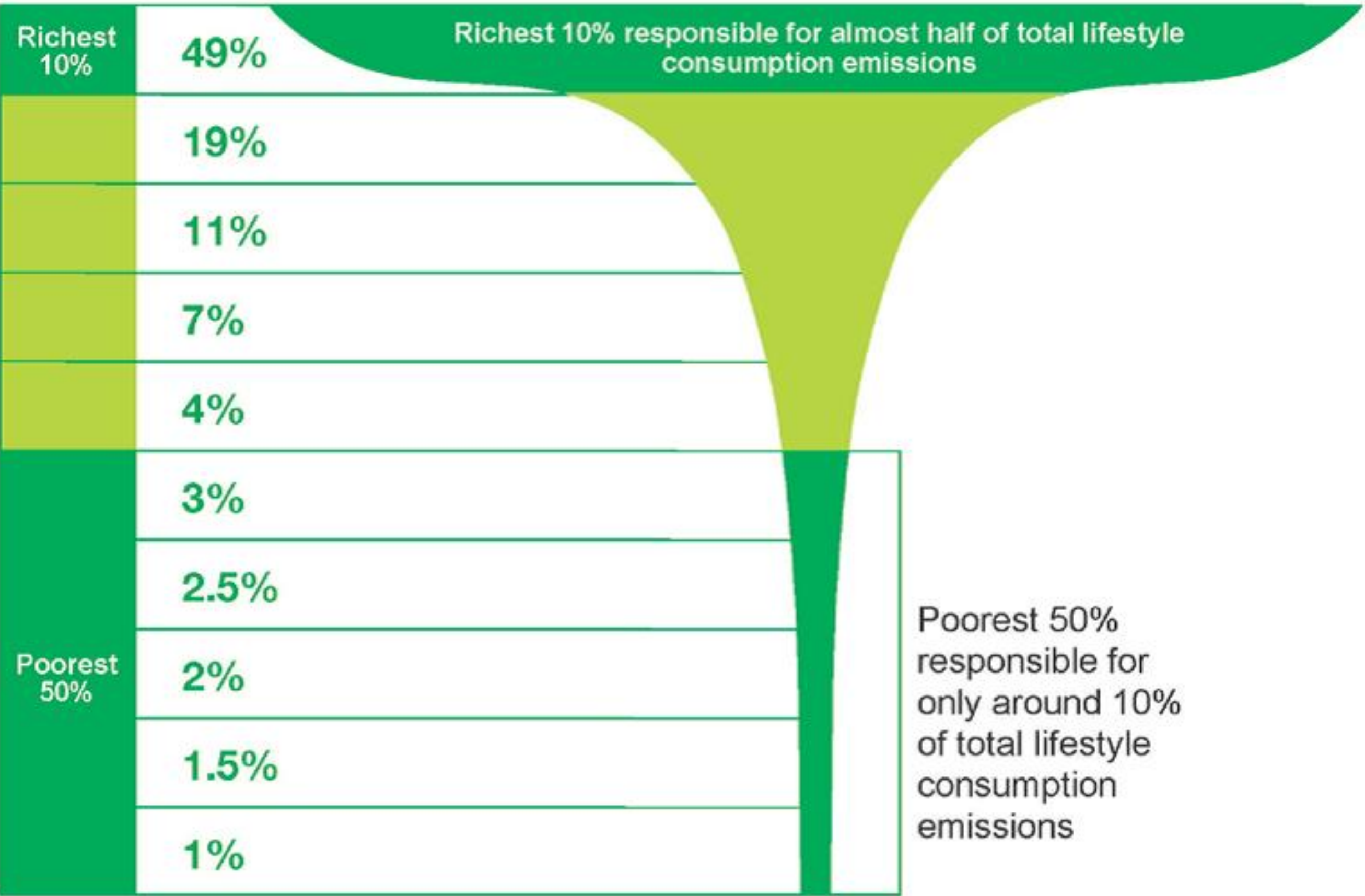
[ITU 2010, 2021]  
<https://www.itu.int/hub/2021/11/facts-and-figures-2021-2-9-billion-people-still-offline/>

# Inequality in Energy & Digital Access

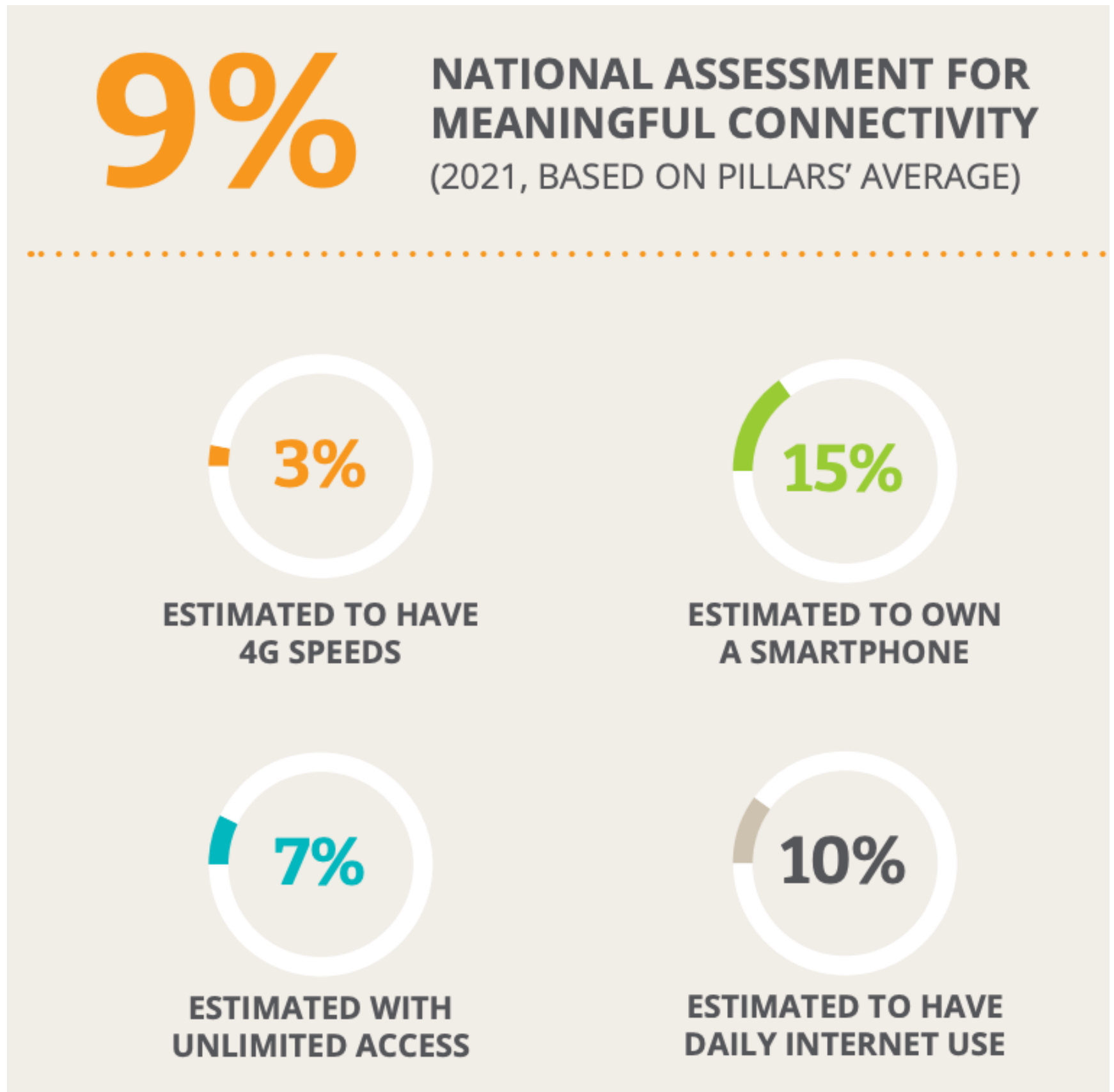


Percentage of CO<sub>2</sub> emissions by world population

World population arranged by income (deciles)



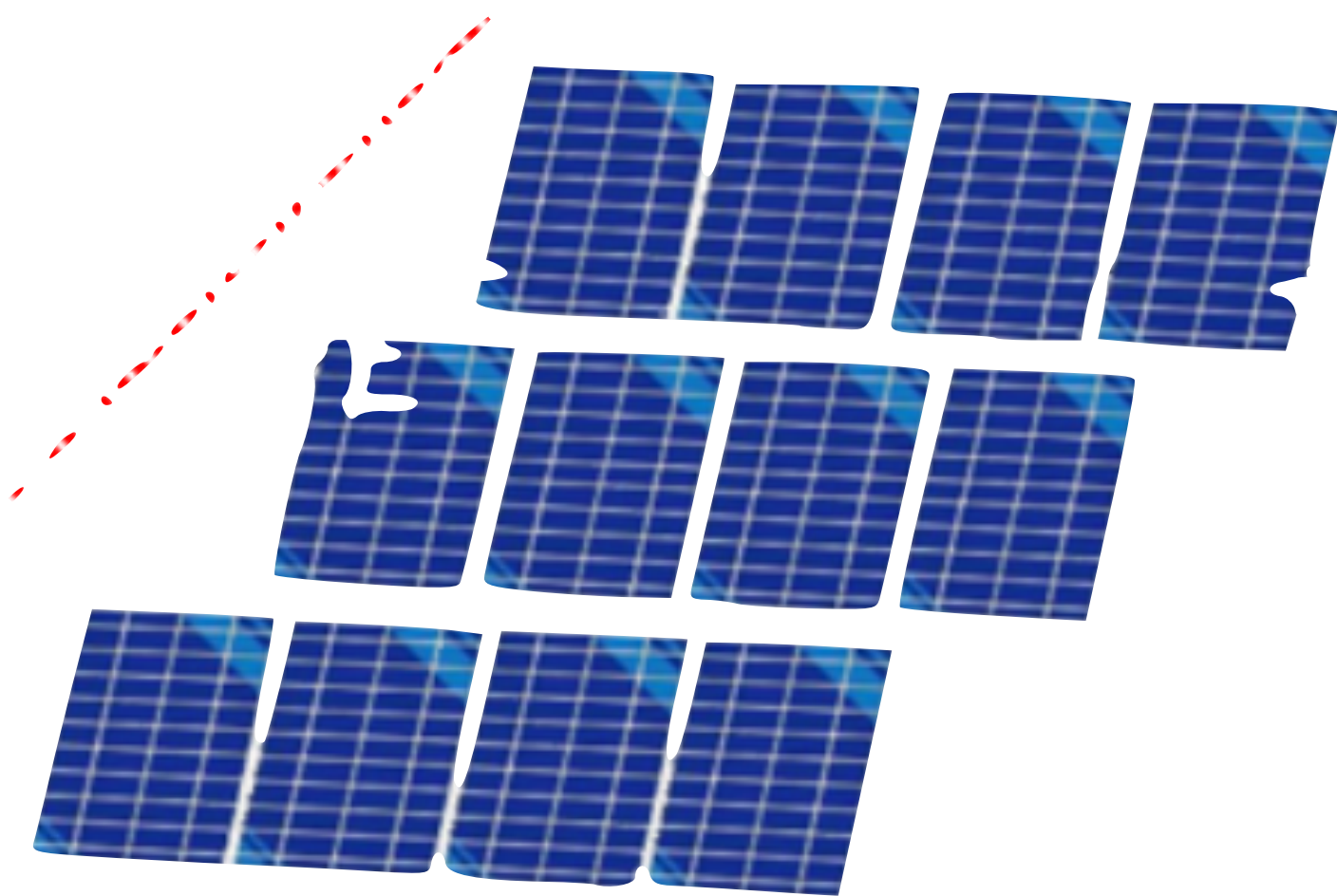
[Source: Oxfam.org, 2015]



[[https://webfoundation.org/docs/2022/02/MC\\_Rwanda\\_FS\\_Screen\\_V1.pdf](https://webfoundation.org/docs/2022/02/MC_Rwanda_FS_Screen_V1.pdf)]

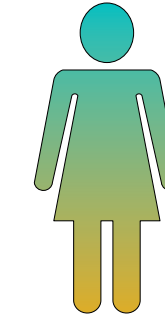


# Priorities for Africa

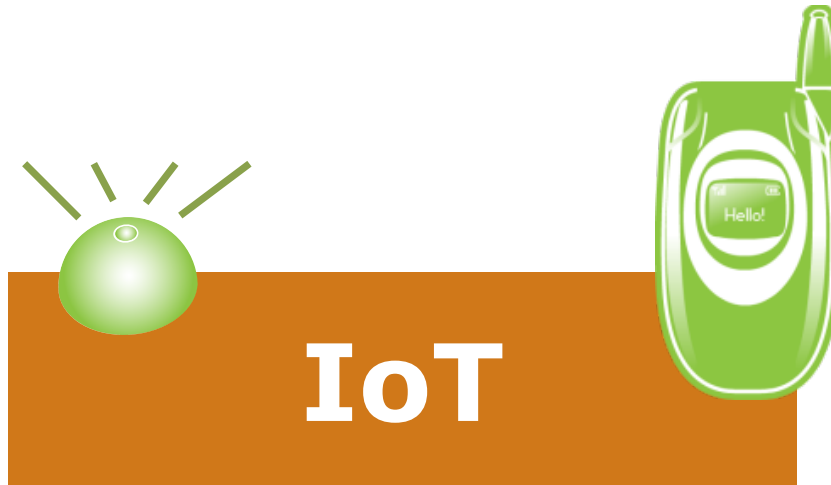




# Digitalisation as enabler



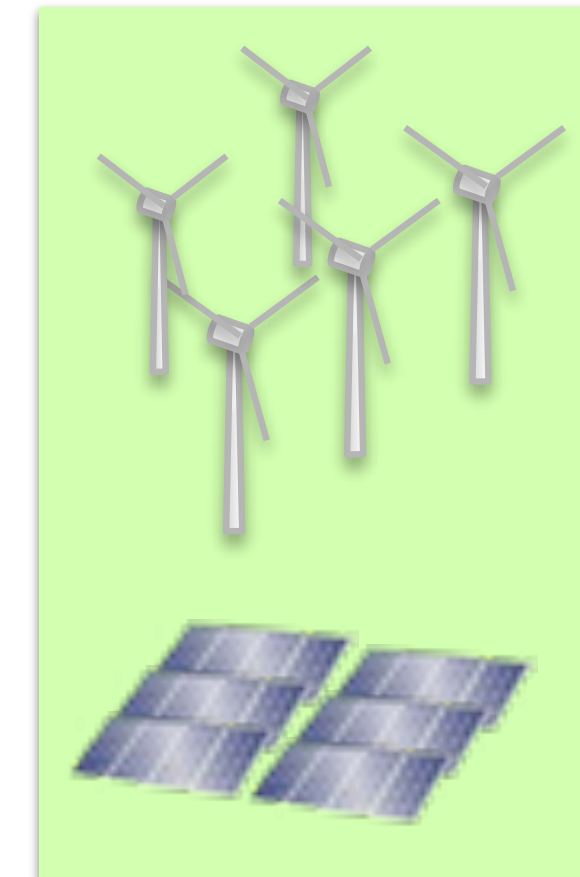
**People  
Society**



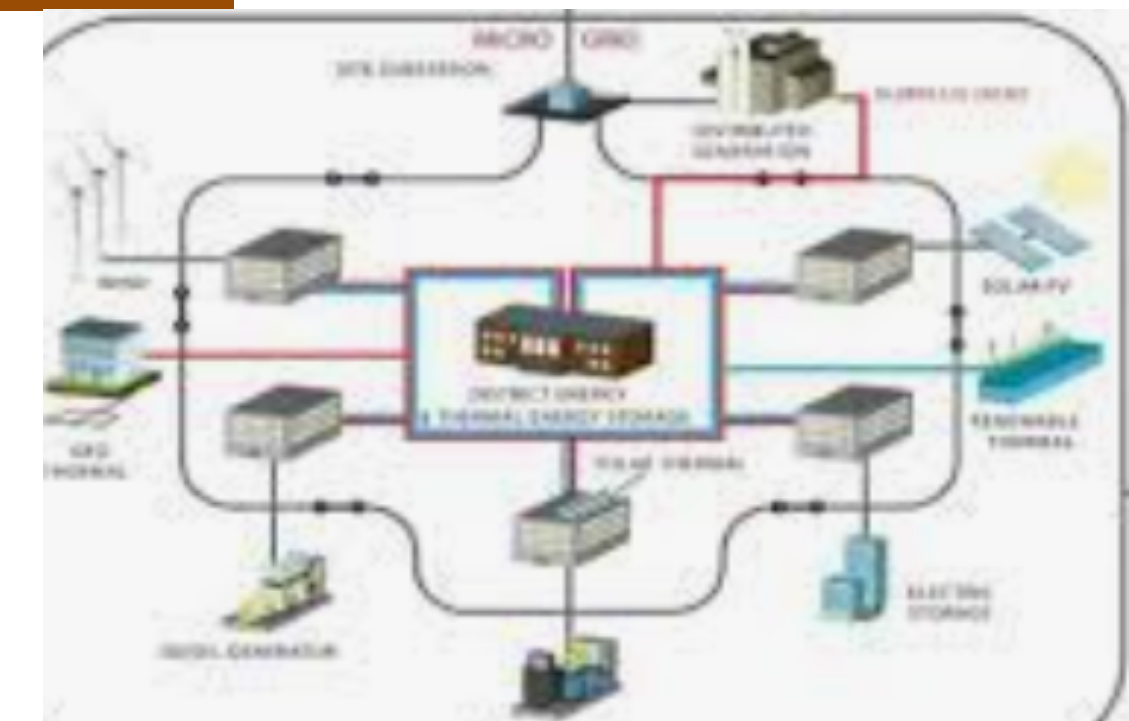
**IoT**



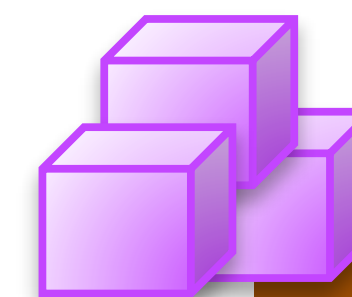
**Machine  
Learning**



**PhotoVoltaics**



**MicroGrid**



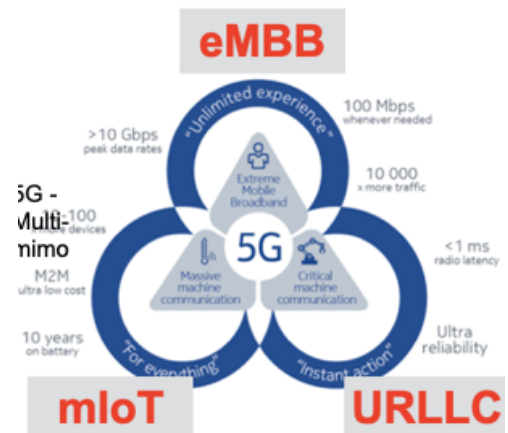
**battery**



**waste 2 energy**



**electrical vehicles**



**5G/6G**



**Artificial  
Intelligence**



**Blockchain**

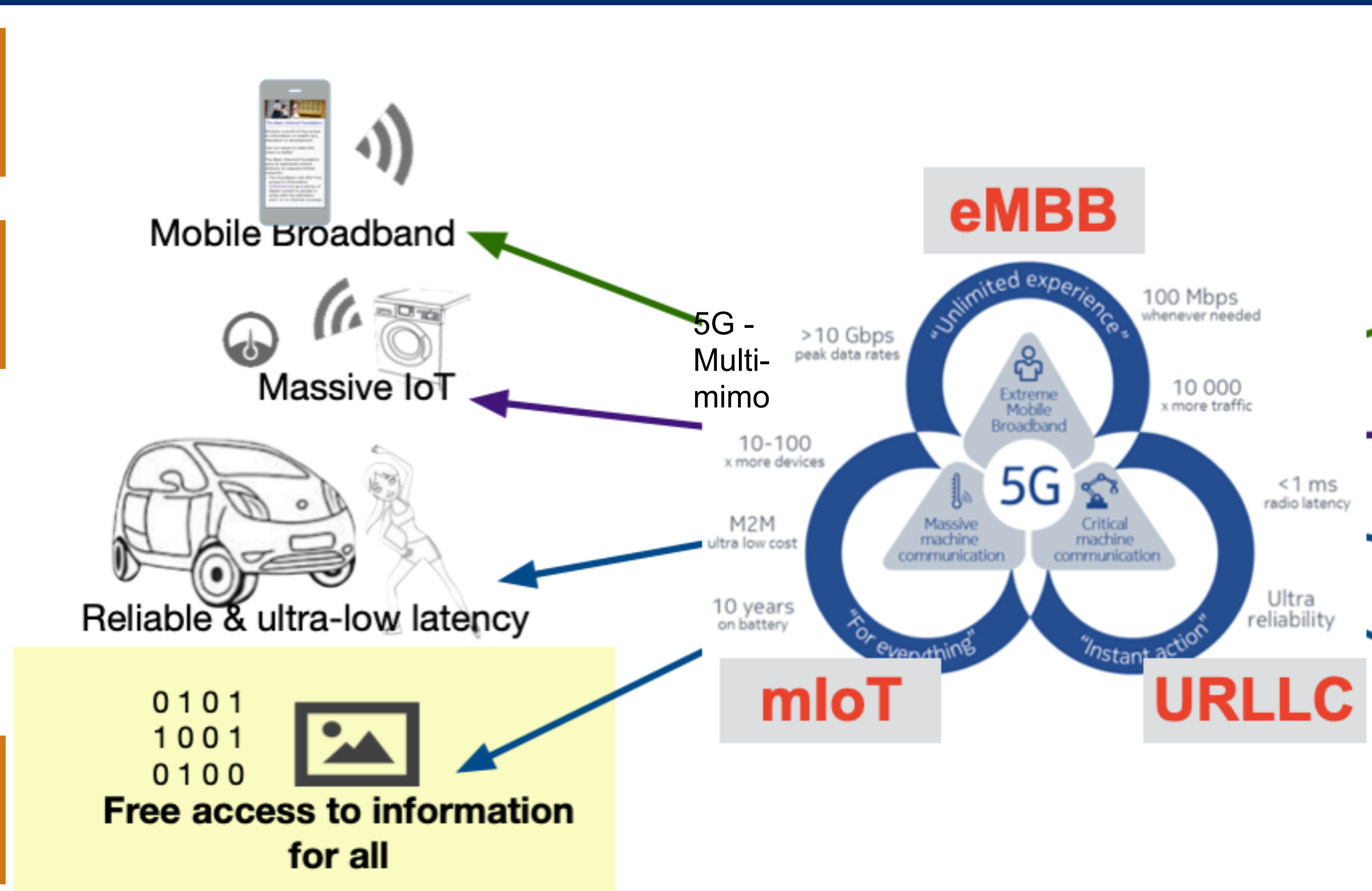
knowledge  
KISS (simple)  
for all people

# Digitalisation (5G/6G)

Road model: pedestrians & cyclists

Internet: text & pictures

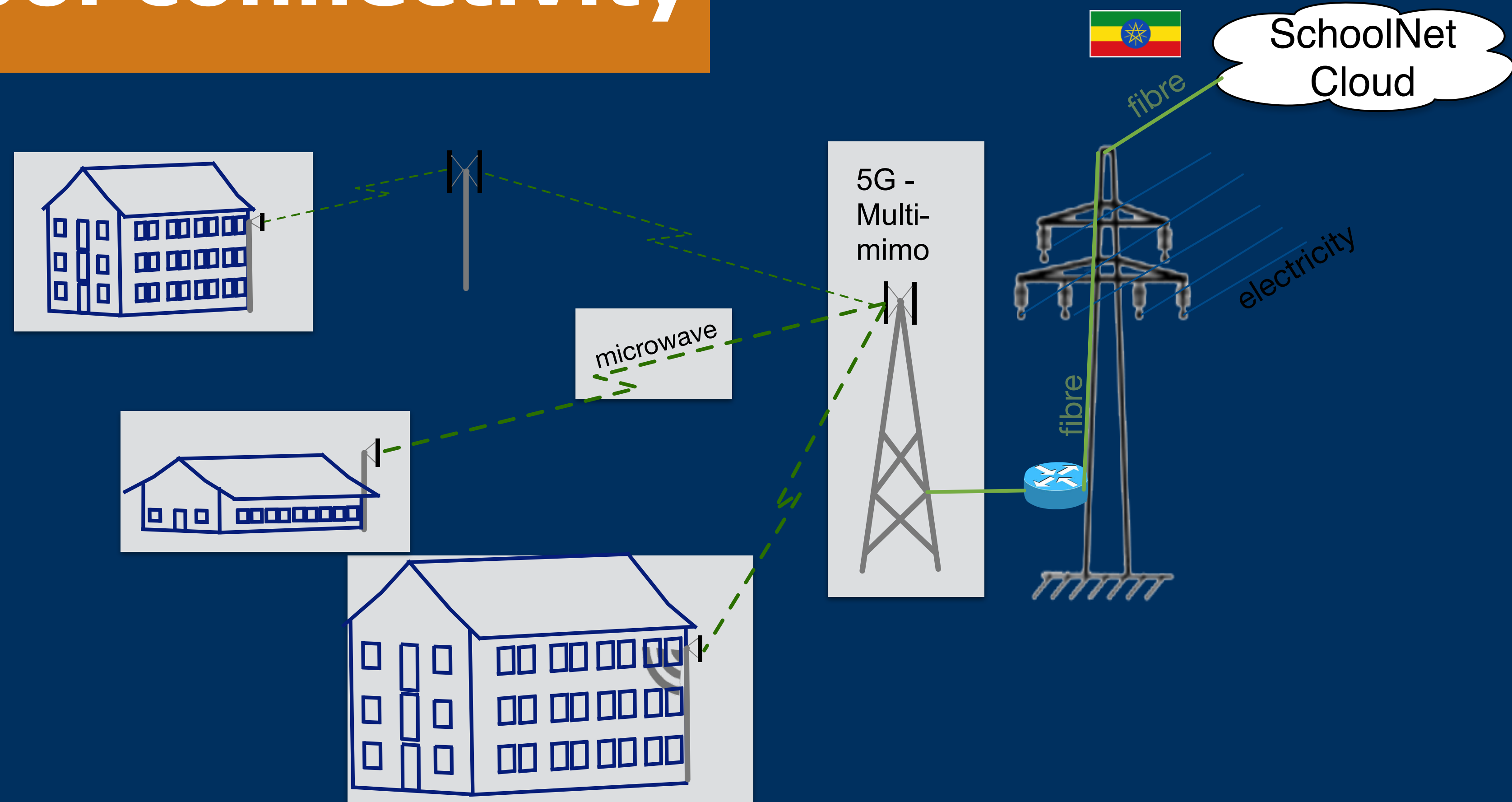
Internet Lite





# 5G/6G for reaching the villages

## 5G/6G for school connectivity



# Digitalisation for Sustainability



- Digitalisation as enabler
  - KISS: Keep it simple, stupid
  - Decentralised, empower the communities
  - Knowledge4Africa, 5GforPeople
- Renewable energy
  - micro-grid, decentralised
  - production <> consumption balance
  - empowerment for communities
- Self-sustained communities
  - Building blocks for
    - job-creation, educating, energy

