UNIVERSITY OF OSLO

AHERI Conference 2022, Arusha 3-4Nov2022

Showcase Community Networks:
Sustainable Internet Connectivity for Africa

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Mission

Framework Conditions

Partnerships

Africa

https://
www.mylifeelsewhere.com/
country-size-comparison/
tanzania/norway

How can we "Connect The Future"?

Josef Noll @josefnoll · Jun 2

Amazing opening by @ITU @ITUSecGen Houlin Zhao, setting the scene for connecting every single human by 2030, and @meilinfung, addressing the history of the Internet and #NRENs to connect schools. We're in @CateKimambo @RosalynnMworia @UcsafT @AheriNet @cisskisumu @WSISprocess
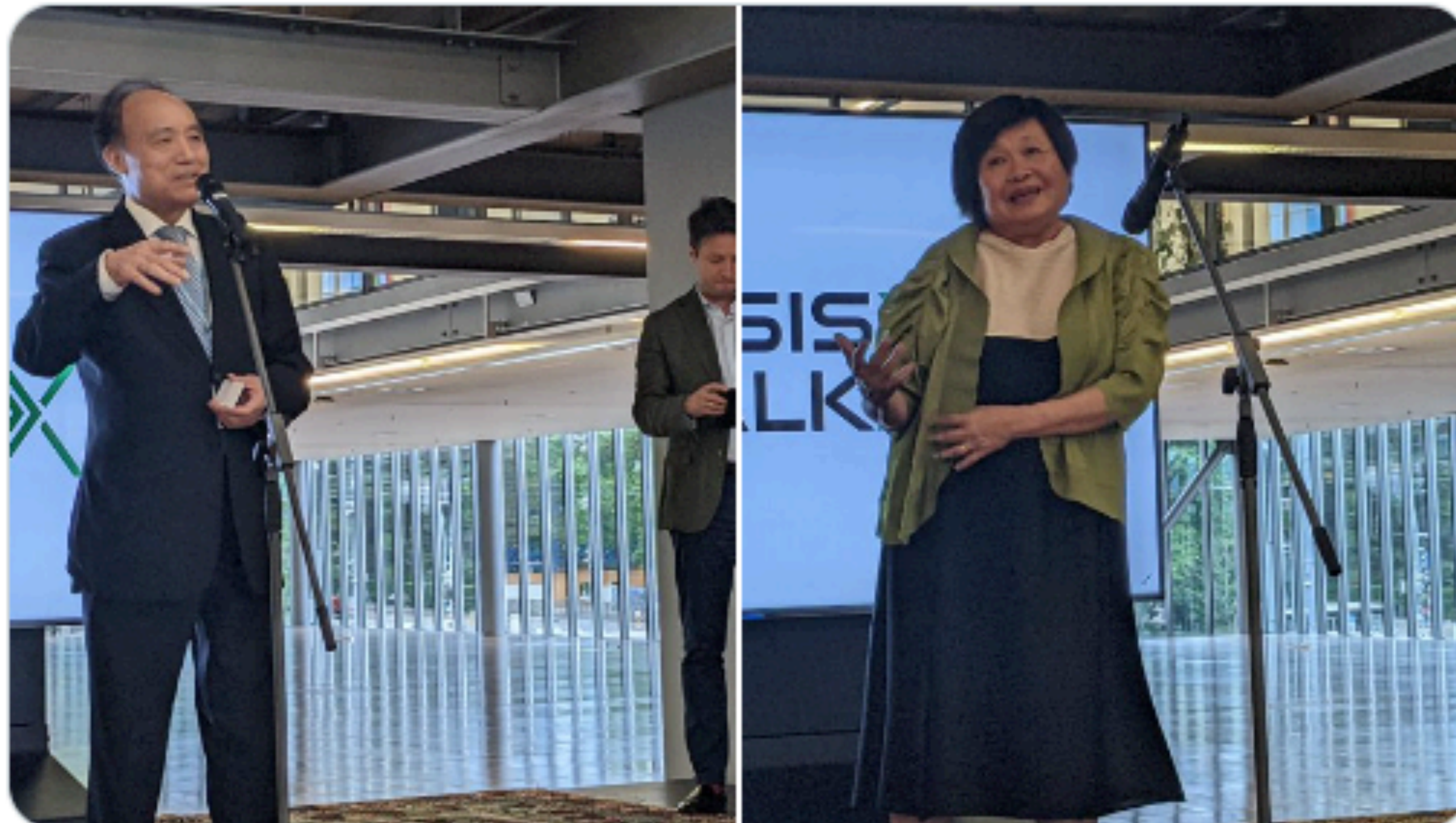
Energy & Digital, enablers for the SDGs

People without electricity

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

1.2 billion	733 million	679 million
2010	2020	2030 (trend)

[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

People not using Internet

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

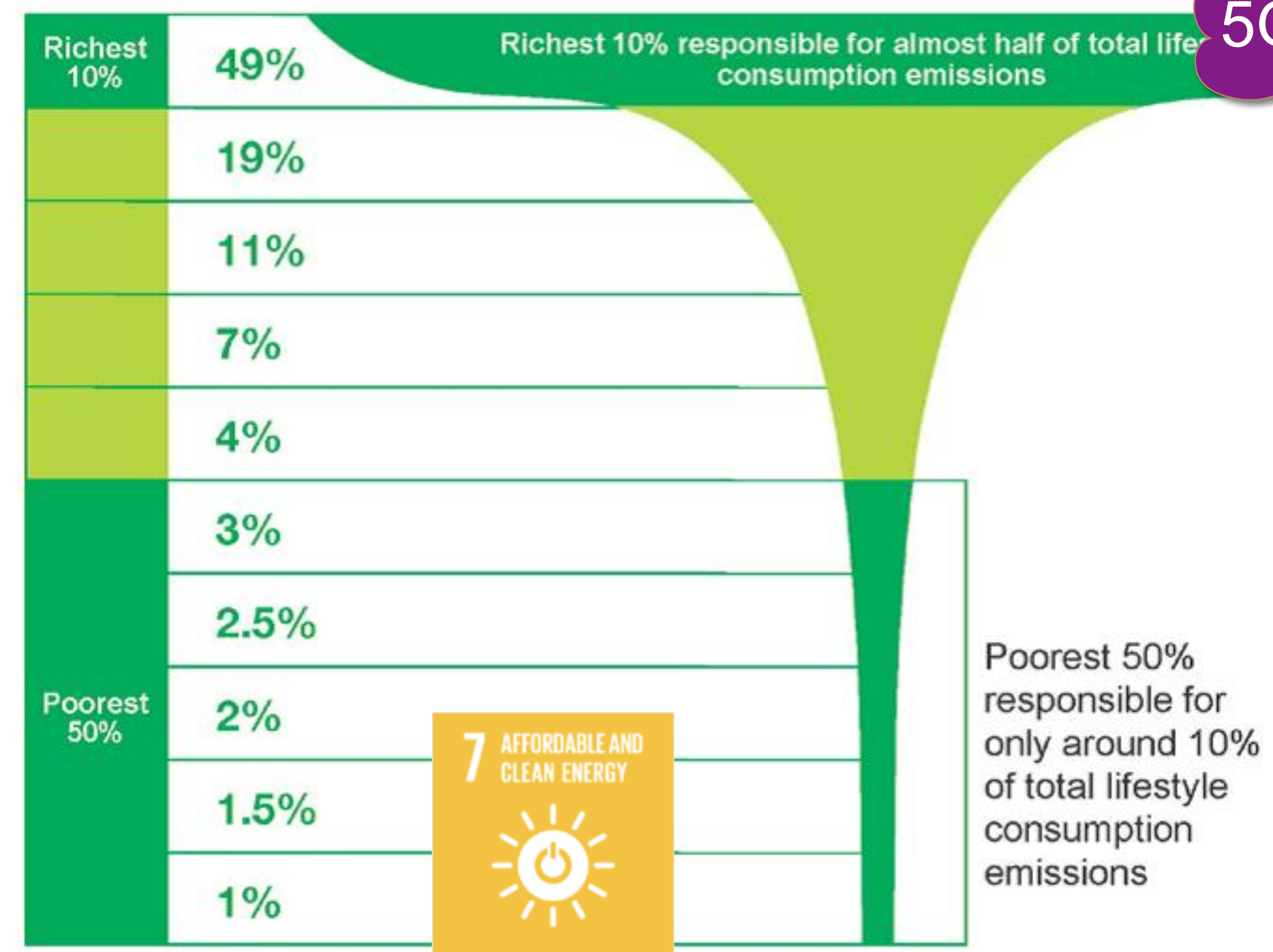| 4.9 billion	2.9 billion	0 billion
2010	*2021*	2030 (hope)
	96% in dev countries	

WSIS Forum 2022

[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 CO₂ emissions by world population

5G,6G

World population arranged by income (deciles)

Richest 10%	49%	Richest 10% responsible for almost half of total lifestyle consumption emissions
	19%	
	11%	
	7%	
	4%	
	3%	
	2.5%	
Poorest 50%	2%	Poorest 50% responsible for only around 10% of total lifestyle consumption emissions
	1.5%	
	1%	

7 AFFORDABLE AND CLEAN ENERGY

[Source: Oxfam.org, 2015]

9%
NATIONAL ASSESSMENT FOR MEANINGFUL CONNECTIVITY
(2021, BASED ON PILLARS' AVERAGE)

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

3% ESTIMATED TO HAVE 4G SPEEDS

15% ESTIMATED TO OWN A SMARTPHONE

7% ESTIMATED WITH UNLIMITED ACCESS

10% ESTIMATED TO HAVE DAILY INTERNET USE

[https://webfoundation.org/docs/2022/02/MC_Rwanda_FS_Screen_V1.pdf]

"Our mission is
to improve the life of **every human**
through **access to basic information** on the
Internet…."

"This mission is carrying us forward every single day.
We **solved** the **challenge of access**, and are focusing now the
local Knowledge Portal to **empower** individuals, societies and
nations. Through **free access** to the portal we address **access,
skills, regulations and inclusion**"

Mission

Framework Conditions

Partnerships
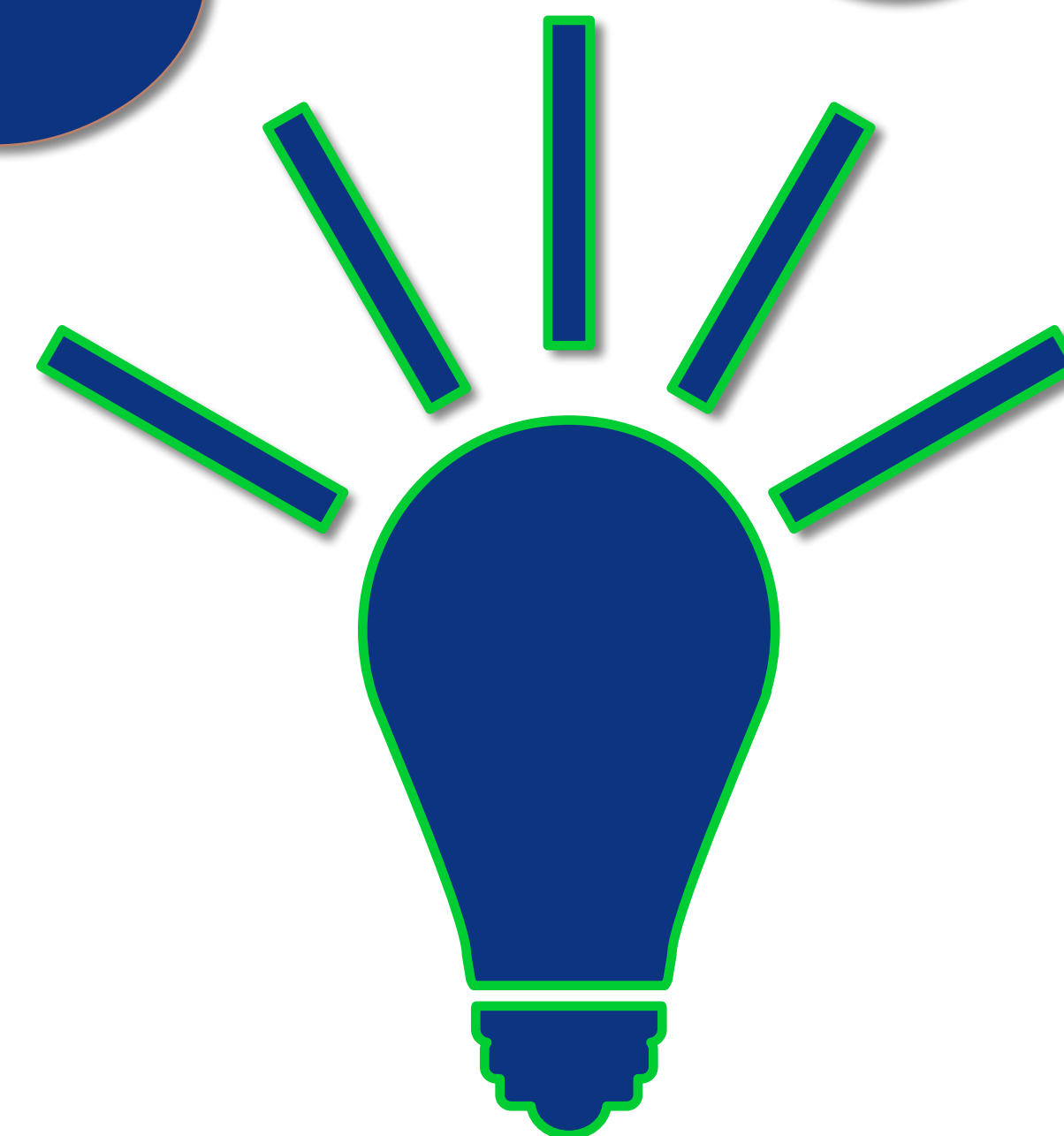
The Game Changer

105 schools
(Q2.2022)

77 632 students
(Q2.2022)

Participation in the Internet Society

Changing the lives of many

USD 1800 per school
ready installed

Histories

"My mobile is more important than a weapon"

Head of Mbaash, TZ

Catherine R Kimambo connecting her first village

https://vimeo.com/368147538 - 2020

Mount Kenya - our cultural heritage

Usingo Secondary School, KE

Scalable connectivity
for meaningful access
tailored towards the needs & capabilities

Self-actualisation
Entertainment

Empowerment, Work
Digital Transformation

Explore, Affection
Opportunities

Value creation
Trust & confidence

Mobile Broadband
20 USD/month/person

Community network
50-100 Mbps
200-500 USD/month

Narrowband
~5 Mbps
58 USD/month

InfoSpot
10 GB/month
<20 USD/month

Framework Conditions - the Integrated Approach

Access
- Wireless information spot
- Rural areas

Skills
- Decentralised Internet
- Local School Server
- Trusted information

Regulations
- Authority contacts
- Internet Lite
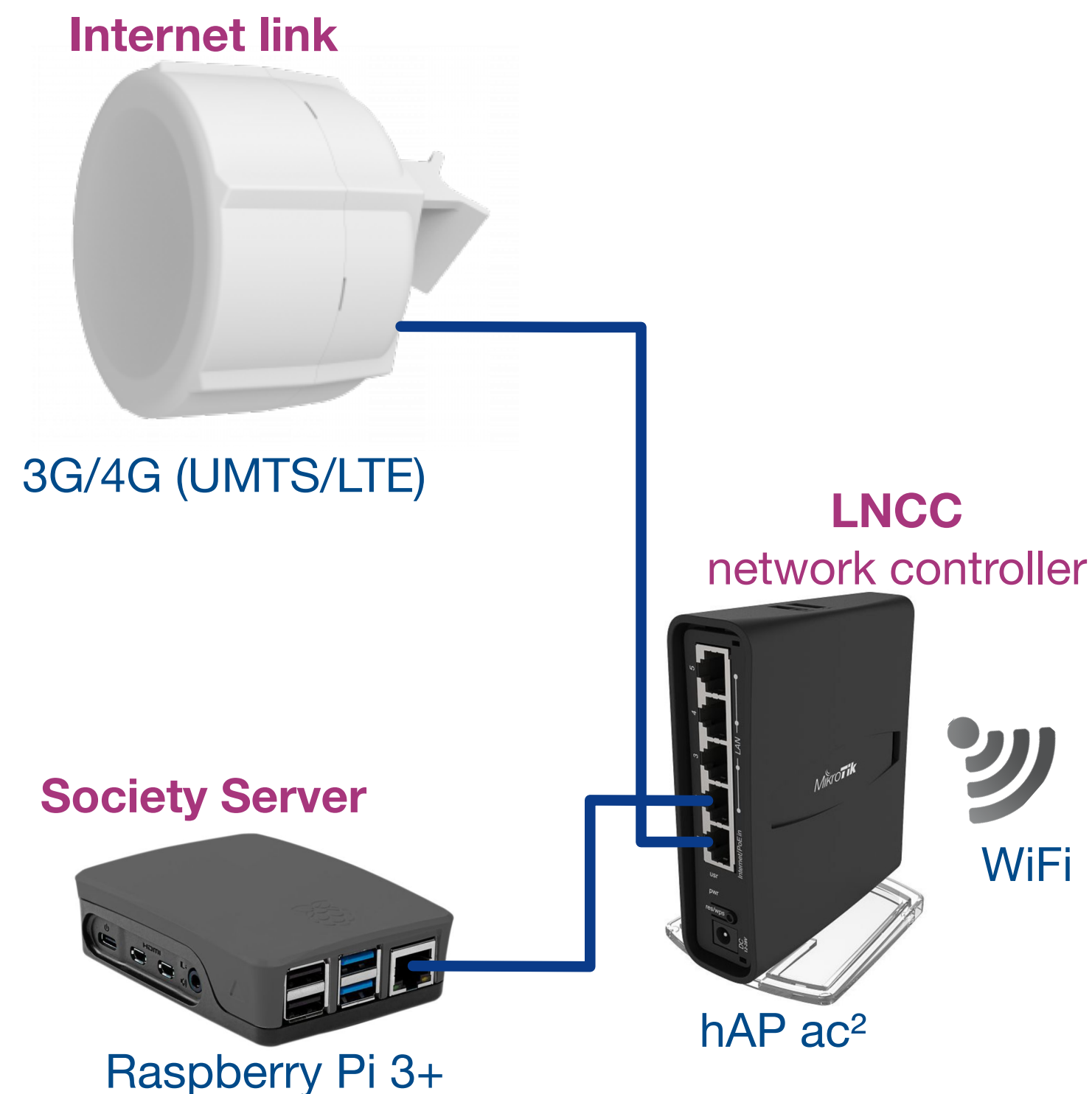- Freemium (free + premium) model

Inclusion
- Girls & women
- Special Needs

Solving the Access

➡ wireless information spot (InfoSpot)

➡ Reaching out >20 km to mobile network
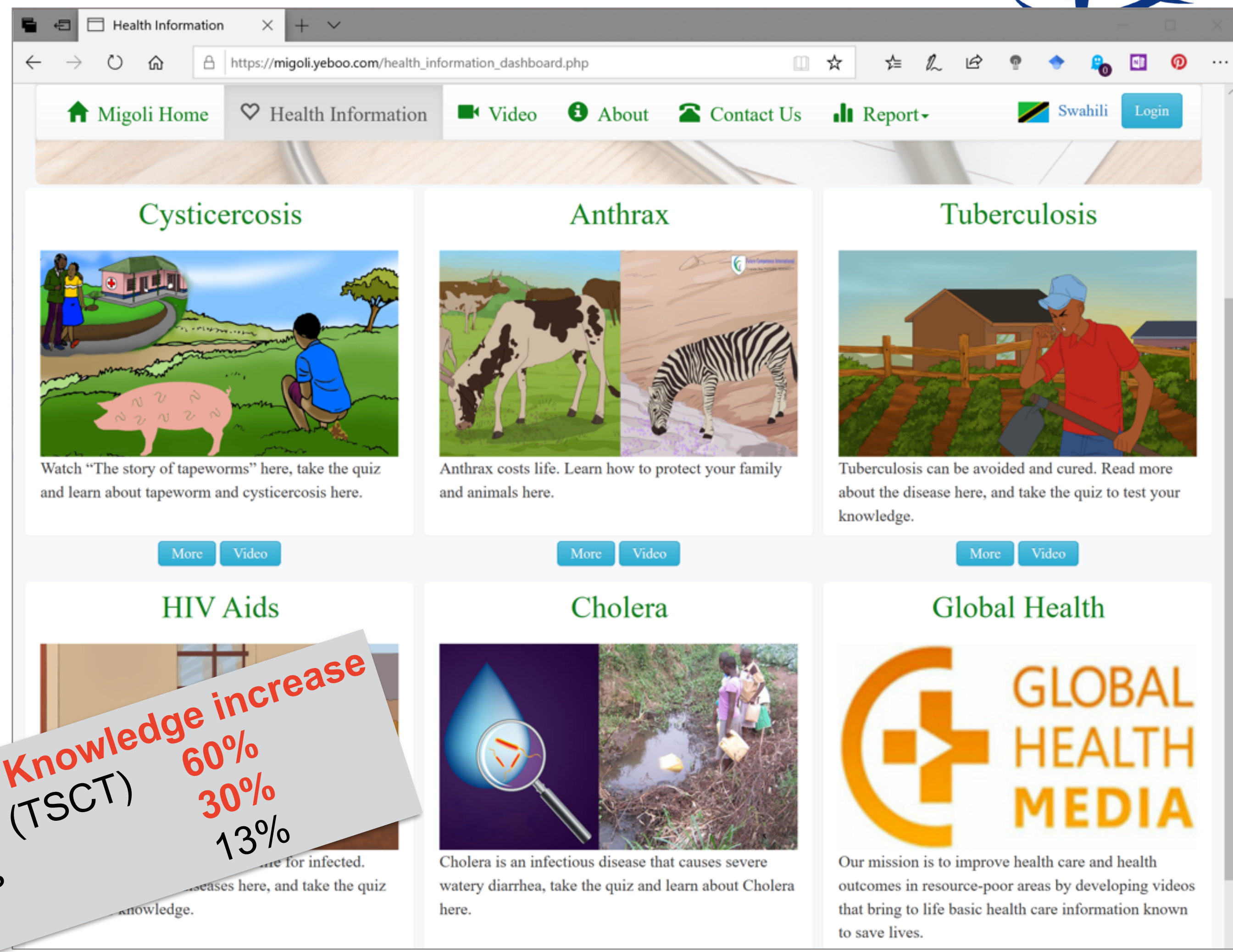
➡ Affordable solution: OPEX <20 USD/ month

Internet link

3G/4G (UMTS/LTE)

LNCC
network controller

WiFi

Society Server

Raspberry Pi 3+

hAP ac²

School server: yeboo.com
Example: Health package

School server with locally stored information on health care etc.

Health Information
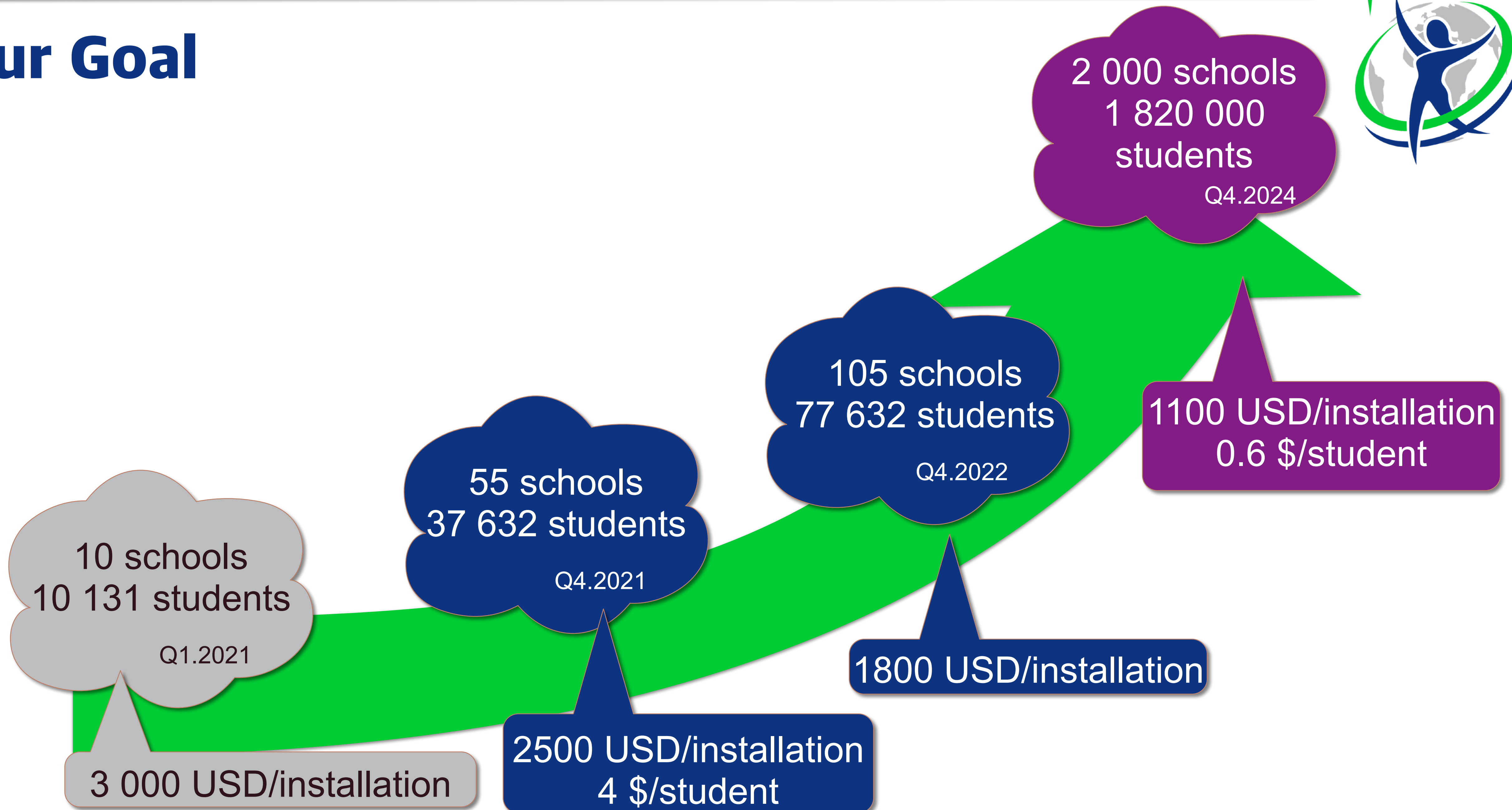https://migoli.yeboo.com/health_information_dashboard.php

🏠 Migoli Home   ♡ Health Information   🎥 Video   ℹ️ About   ☎ Contact Us   📊 Report▾   Swahili   Login

Cysticercosis

Watch "The story of tapeworms" here, take the quiz and learn about tapeworm and cysticercosis here.

More   Video

Anthrax

Anthrax costs life. Learn how to protect your family and animals here.

More   Video

Tuberculosis

Tuberculosis can be avoided and cured. Read more about the disease here, and take the quiz to test your knowledge.

More   Video

HIV Aids

...re for infected. ...seases here, and take the quiz ...knowledge.

Cholera

Cholera is an infectious disease that causes severe watery diarrhea, take the quiz and learn about Cholera here.

Global Health

GLOBAL HEALTH MEDIA

Our mission is to improve health care and health outcomes in resource-poor areas by developing videos that bring to life basic health care information known to save lives.

Results in TZ: **Knowledge increase**
Cysticercosis (TSCT)   **60%**
Tuberculosis   **30%**
HIV/AIDS   13%

Our Goal

2 000 schools
1 820 000 students
Q4.2024

105 schools
77 632 students
Q4.2022

55 schools
37 632 students
Q4.2021

10 schools
10 131 students
Q1.2021

1100 USD/installation
0.6 $/student

1800 USD/installation

2500 USD/installation
4 $/student

3 000 USD/installation

Scale-up Tanzania
Catherine connects schools

10 schools in Mar2021
10.131 students connected
427 teachers connected

Google My Maps
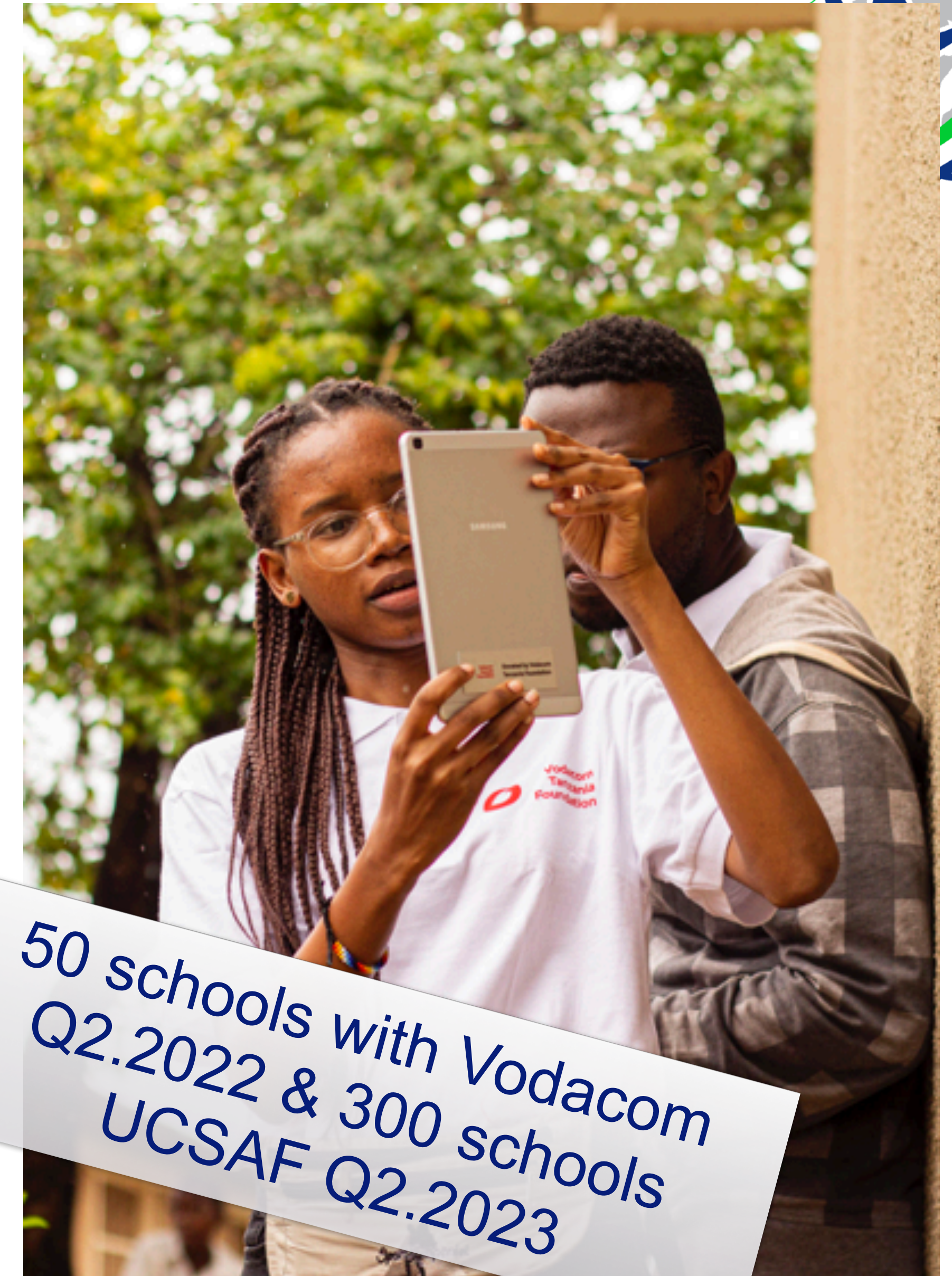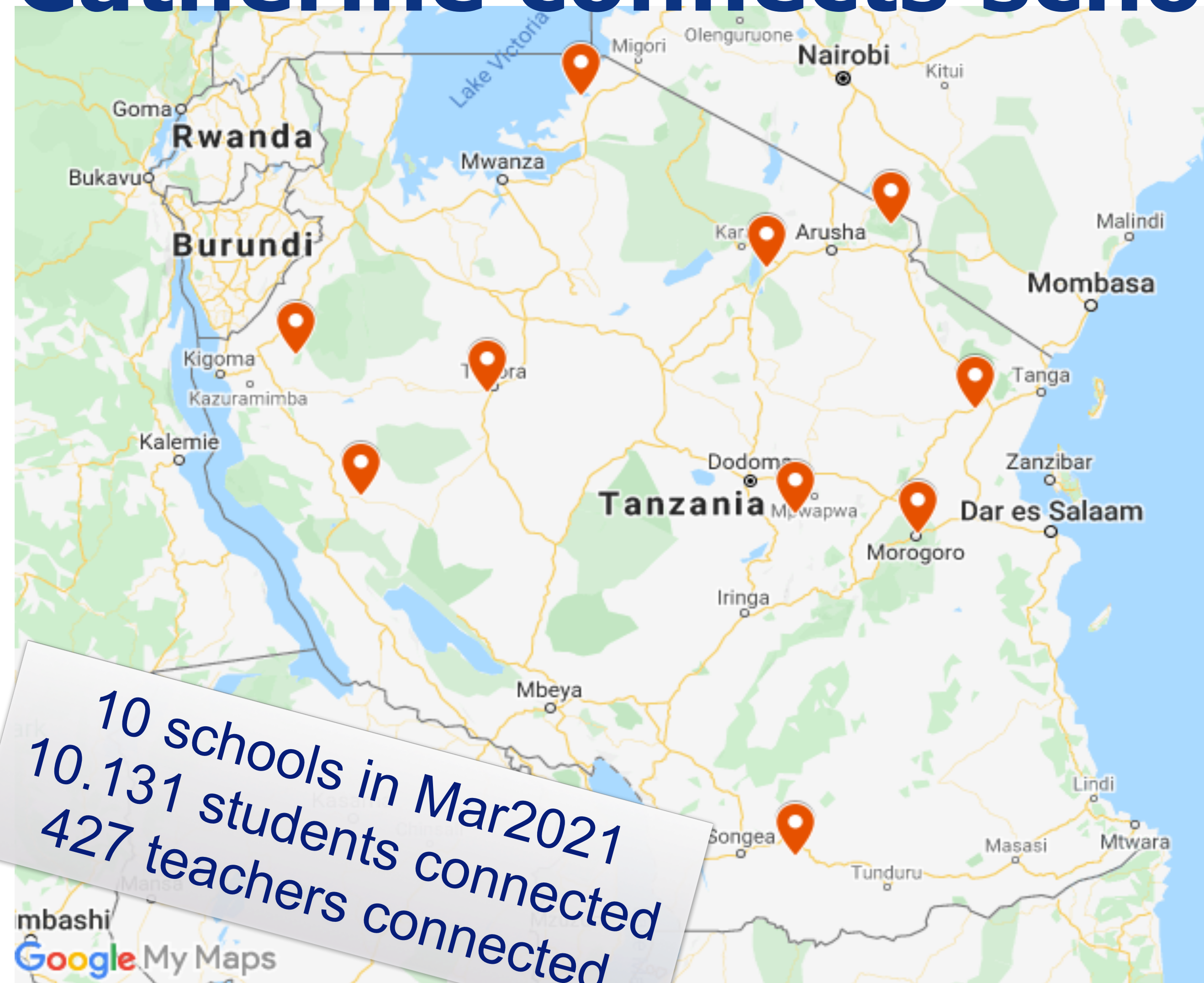
50 schools with Vodacom
Q2.2022 & 300 schools
UCSAF Q2.2023

14 countries in Africa

Ethiopia:
Koye Secondary School

Tanzania:
scale up to
360 schools

Sustainability Internet

➡ Stable equipment (and network provision)

➡ Affordable costs, value for money

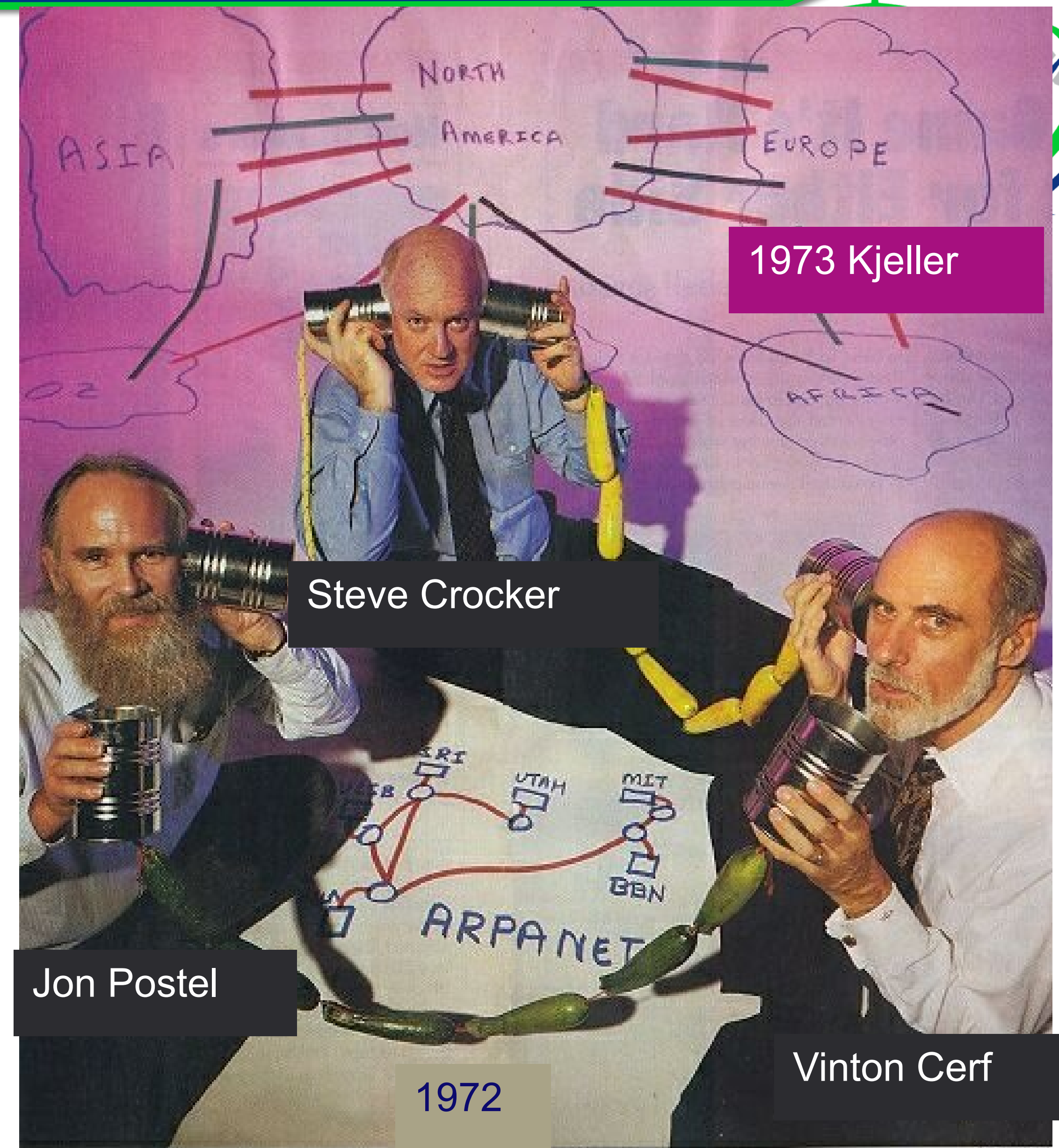➡ Trouble shooting: why is my network not working?

➡ Content locally available

Mouse, Keyboard

power - MicroUSB

HDMI

An inclusive
Next Generation Internet

1973 Kjeller

Steve Crocker

Jon Postel

Vinton Cerf

1972

1973: Internet to Kjeller/Europe

Yngvar Lundh   Pål Spilling

Norge
Norway

1994: Opera Software

Kjeller

2014:

Basic Internet
FOUNDATION
Connect The Future

KJELLER
INNOVASJON

Source: http://www.michaelkaul.de/History/history.html

What do we need to change?

Road model: pedestrians & cyclists

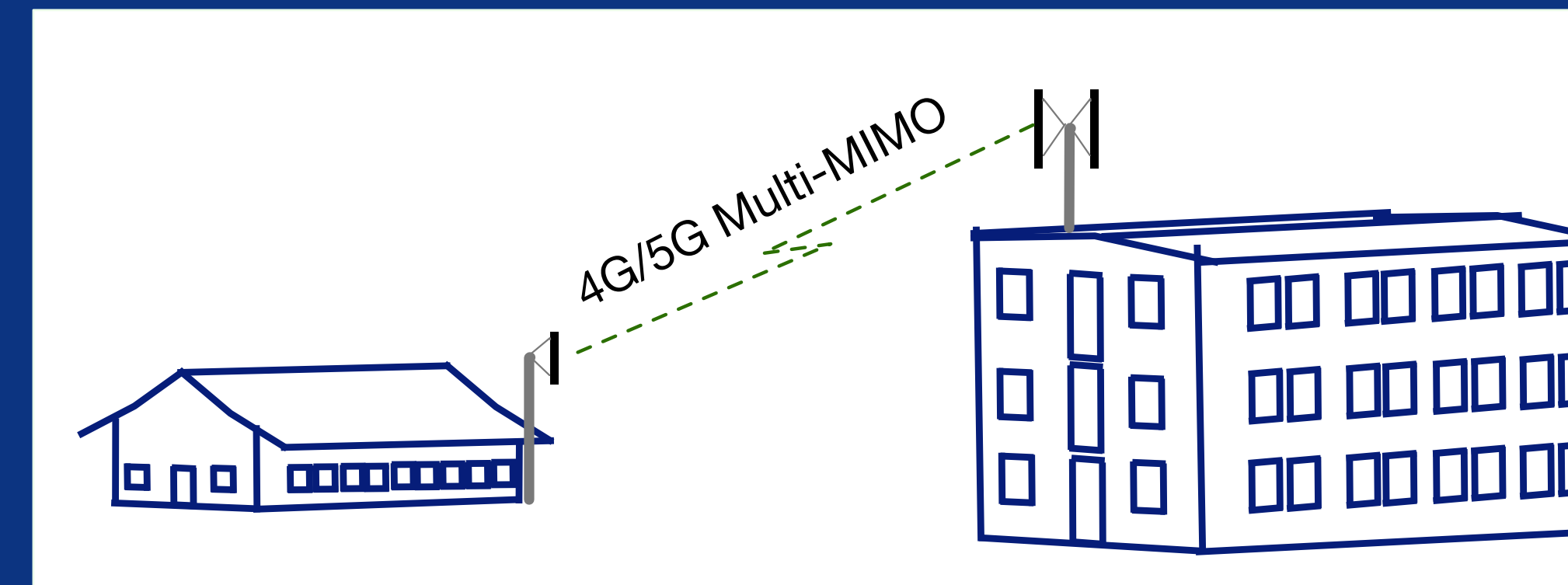Internet: text & pictures

Internet Lite
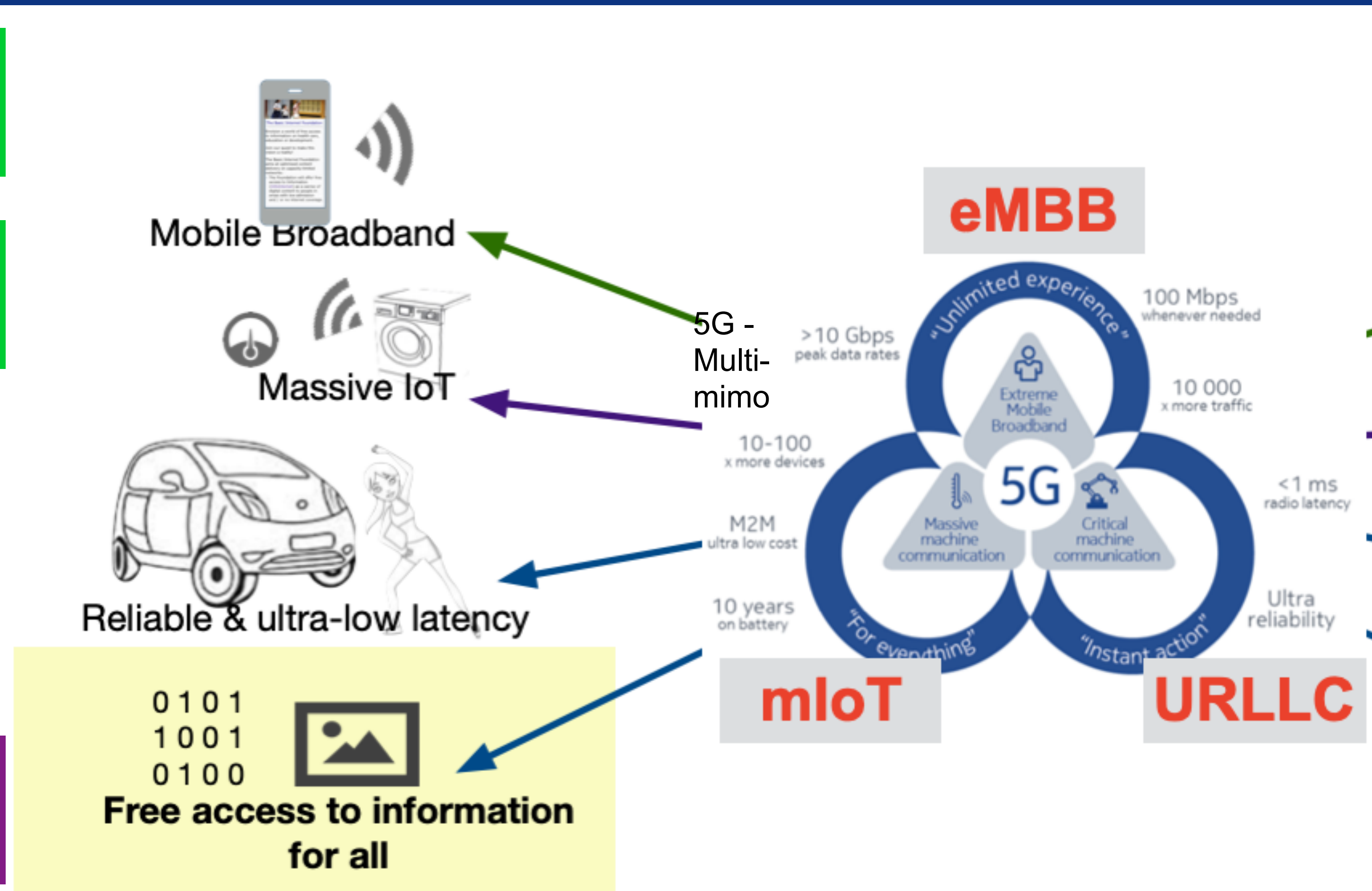
AfricaConnect3 and the role of Universities

- **Research for the (digital) Society**
- **Competence for the Digital Transformation**
- **Connect Schools & unconnected Communities practical experiences**
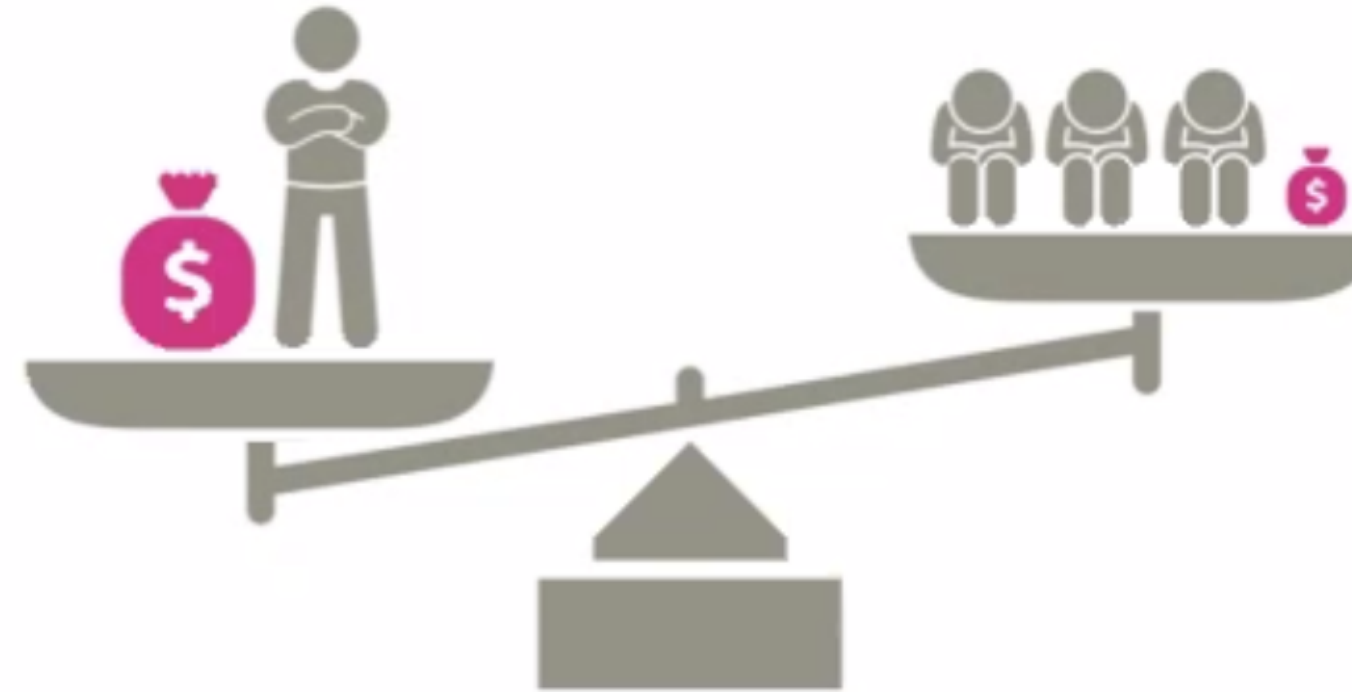- **Real world search based on needs from the communities**

COVID-19 HAS LED TO THE FIRST RISE IN EXTREME POVERTY IN A GENERATION

AN ADDITIONAL **119-124 MILLION PEOPLE** WERE PUSHED BACK INTO **EXTREME POVERTY** IN **2020**

THE PANDEMIC IS LIKELY TO REVERSE PROGRESS MADE IN REDUCING INCOME INEQUALITY SINCE THE FINANCIAL CRISIS

COVID-19 ESTIMATED TO INCREASE THE AVERAGE GINI FOR EMERGING MARKET AND DEVELOPING COUNTRIES BY 6%

The Sustainable Development Goals Report
2021

THE PANDEMIC

HAS LED TO THE LOSS OF THE EQUIVALENT OF **255 MILLION FULL-TIME JOBS**

ABOUT **4X** THE NUMBER LOST DURING THE GLOBAL FINANCIAL CRISIS (2007-2009)

COVID-19 HAS WIPED OUT 20 YEARS OF EDUCATION GAINS

AN ADDITIONAL **101 MILLION** OR **9% OF CHILDREN** IN GRADES 1 THROUGH 8 **FELL BELOW** MINIMUM READING PROFICIENCY LEVELS IN 2020

ECONOMIC RECOVERY IS UNDER WAY

GLOBAL REAL GDP PER CAPITA (2017-2022)

2.2   -4.6   3.1

2017   2020   2021   2022
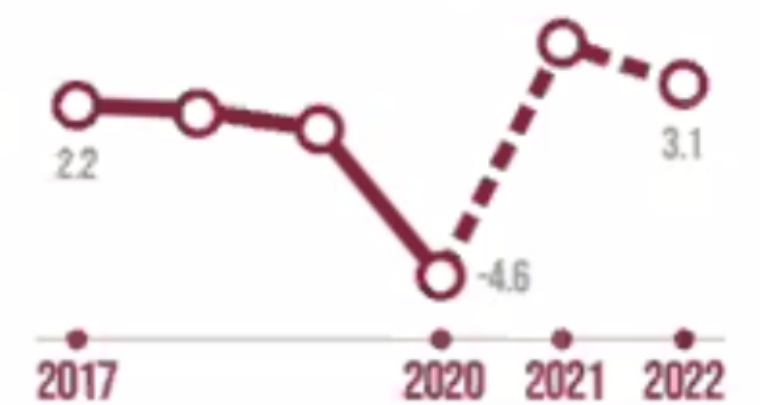
BUT FOR MANY COUNTRIES, ECONOMIC GROWTH IS EXPECTED TO RETURN TO PRE-PANDEMIC LEVELS ONLY IN 2022 OR 2023

Conclusion
Partnership for Sustainable Internet Connectivity

➡ Universities

- Real-world knowledge
- Decentralised, empower the communities
- Knowledge4Africa, 5GforPeople

➡ Community Networks

- extension of NRENs?

➡ Commercial actors

- Mobile operators: Research with 5G as backbone
- ISPs, satellite

➡ Government, ITU, UNICEF, UNESCO, ···

- Framework conditions (spectrum, Internet Lite)