What if…?
[Thinking about first-mile connectivity]

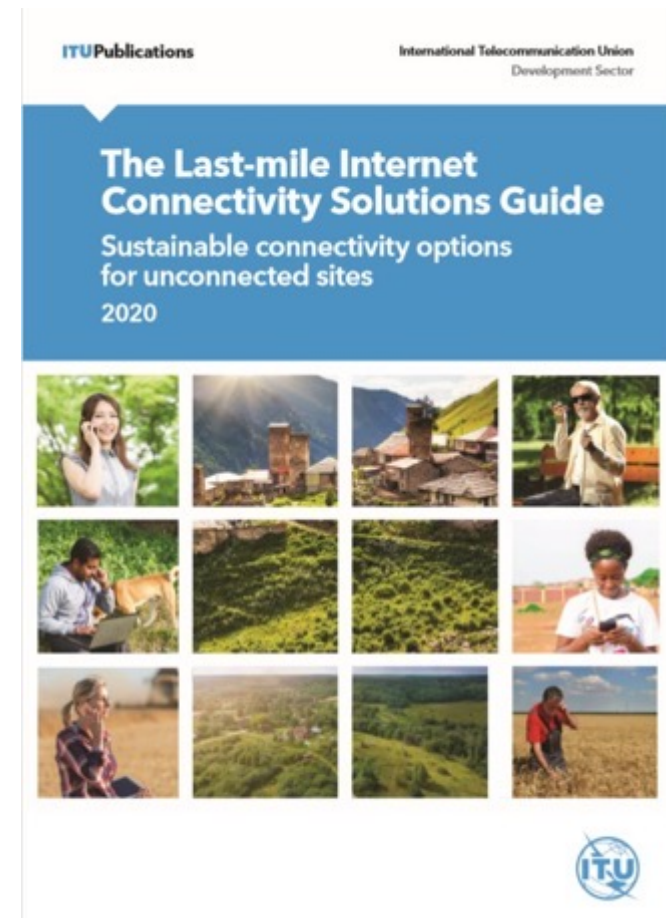**Tim Unwin**

Chairholder: UNESCO Chair in ICT4D

Royal Holloway, University of London

In the beginning...

- You now know all there is to know about last-mile connectivity!
- And how to apply it "best" in your own contexts
- This session is intended to be interactive and challenging
  - Getting you to think about these issues in rather different ways
- So let's begin with what you understand by the word "Last"
  - A quick brainstorm
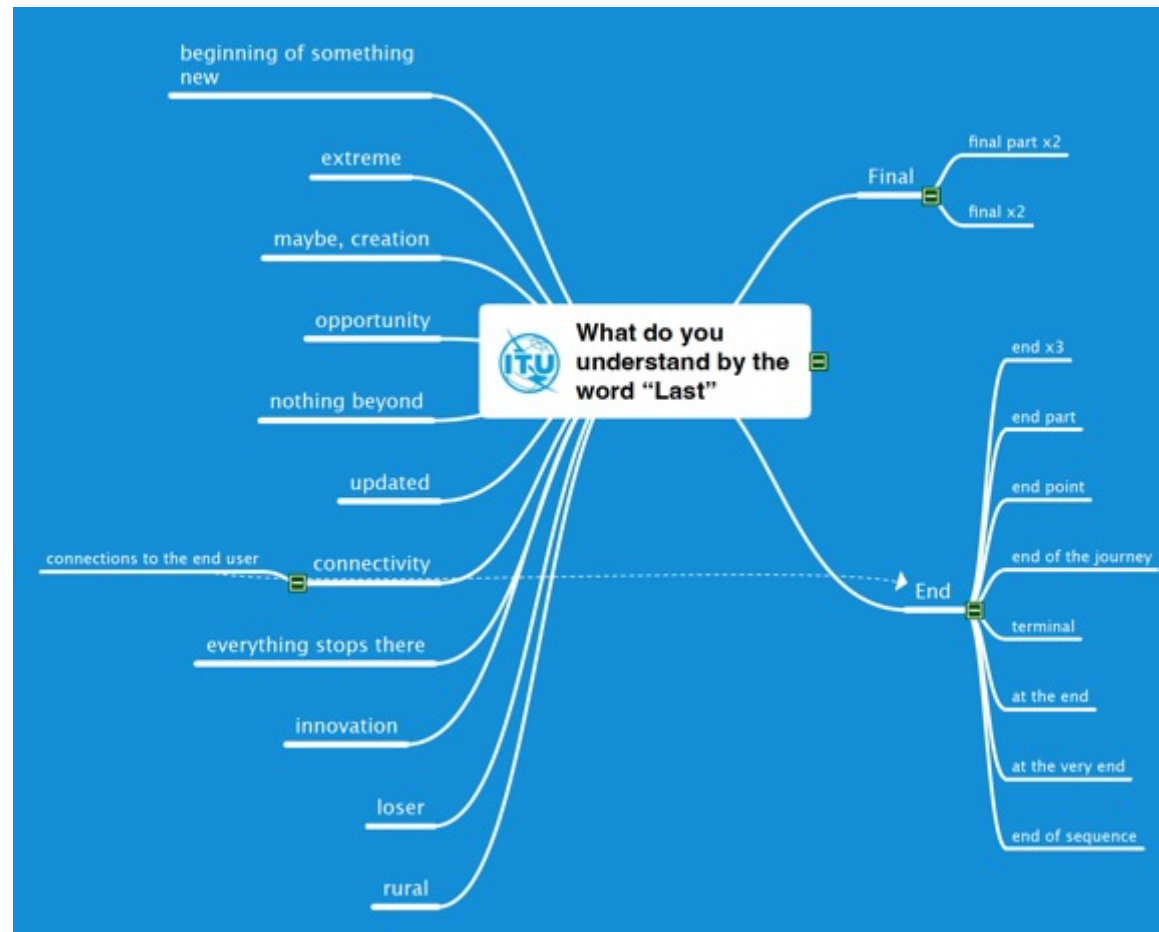 - The meaning of "last" in general; not to do with connectivity

ITU Publications — International Telecommunication Union — Development Sector

The Last-mile Internet Connectivity Solutions Guide
Sustainable connectivity options for unconnected sites
2020

A quick brainstorm

What do you understand by the word "Last"

Outcome from the brainstorm

Interestingly, "Last" has both positive and negative connotations (Thesaurus.com)

Positive

- Conclusive
- End
- Eventual
- Final
- Finishing
- Furthest
- Most recent
- Ultimate

Negative

- Bitter end
- Hindmost
- Lag
- Least
- Lowest
- Meanest
- Rearmost
- Ulterior

But we usually contrast it with "First"

First

- Winner
- Best
- Most important
- Foremost in rank
- Earliest
- Quickest
- Beginning

Last

- Loser
- Worst
- Least important
- Lowest in rank
- Latest
- Slowest
- End

First and last: everyone participates, but only one is first!

What if we turn this completely around?

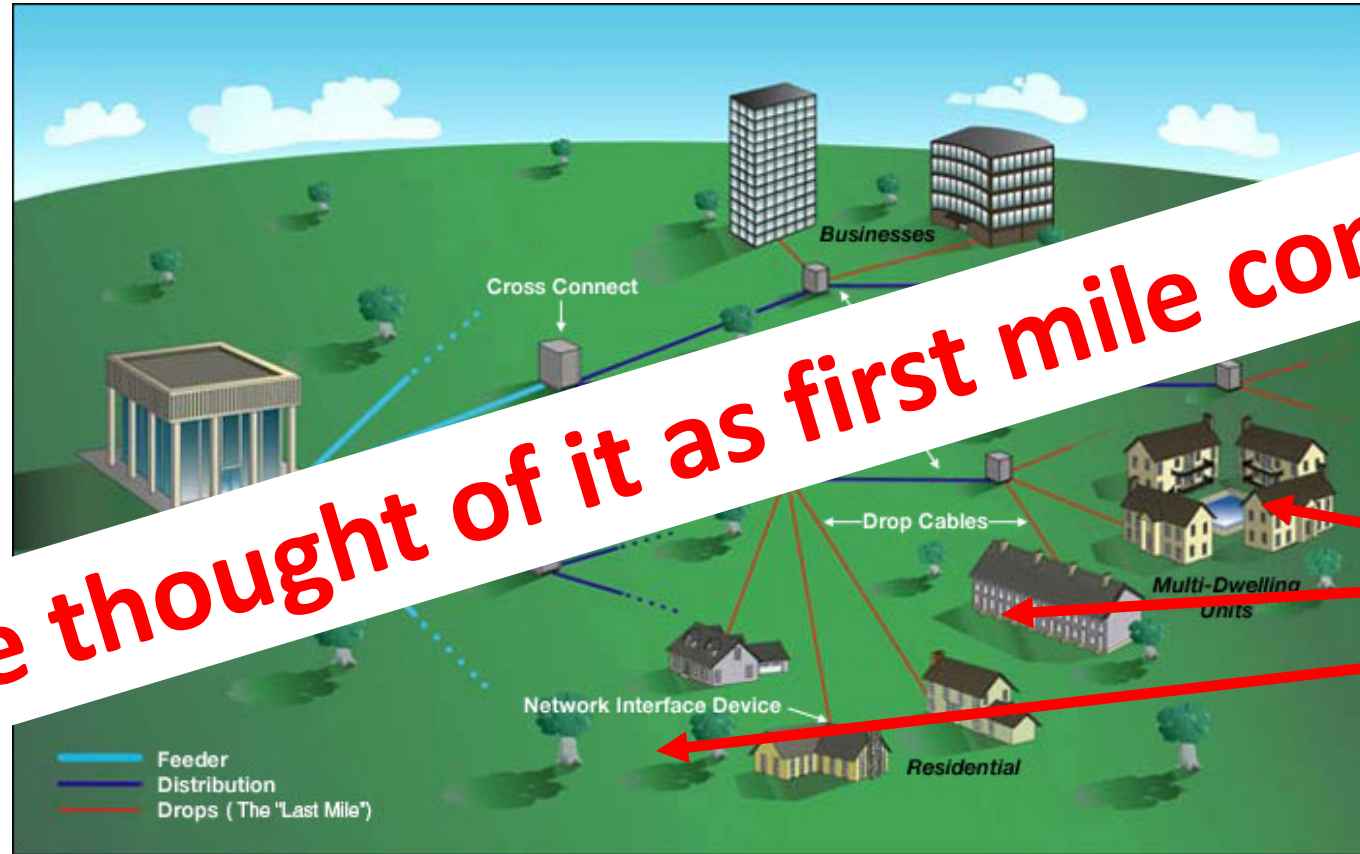"So the last shall be first,
and the first last"

(Matthew 20: 16)

Last mile connectivity...

Viewing it from the perspective of the user

What if we thought of it as first mile connectivity?

These become most important

https://www.norscan.com/google-fiber-last-mile-problem

Outline

1. The "last" mile in whose eyes?
2. Parallels with the "next billion"
   - and the "Digital Divide"
3. Whose perspectives matter most?
4. The political economy of connectivity
5. The fundamental role of regulation
6. Global connectivity initiatives
7. Environmental implications

1. The last mile in whose eyes?

Are they not each the last mile for the other?

Last mile connectivity

- Strictly speaking the "end-user" is the last mile
  - Therefore much connectivity practice is perhaps not actually very user centric in design (users left to last)
- Last mile is often interpreted as providing connectivity for
  - Isolated areas
  - Small islands
  - Rural as against urban
  - Harsh landscapes (mountains and deserts)
  - Those who cannot afford it
  - Distant places
- "Smart cities" implies "dumb villages"

The last mile in the ITU toolkit

Figure 2. Telecommunication network components supporting last mile interventions in developing countries
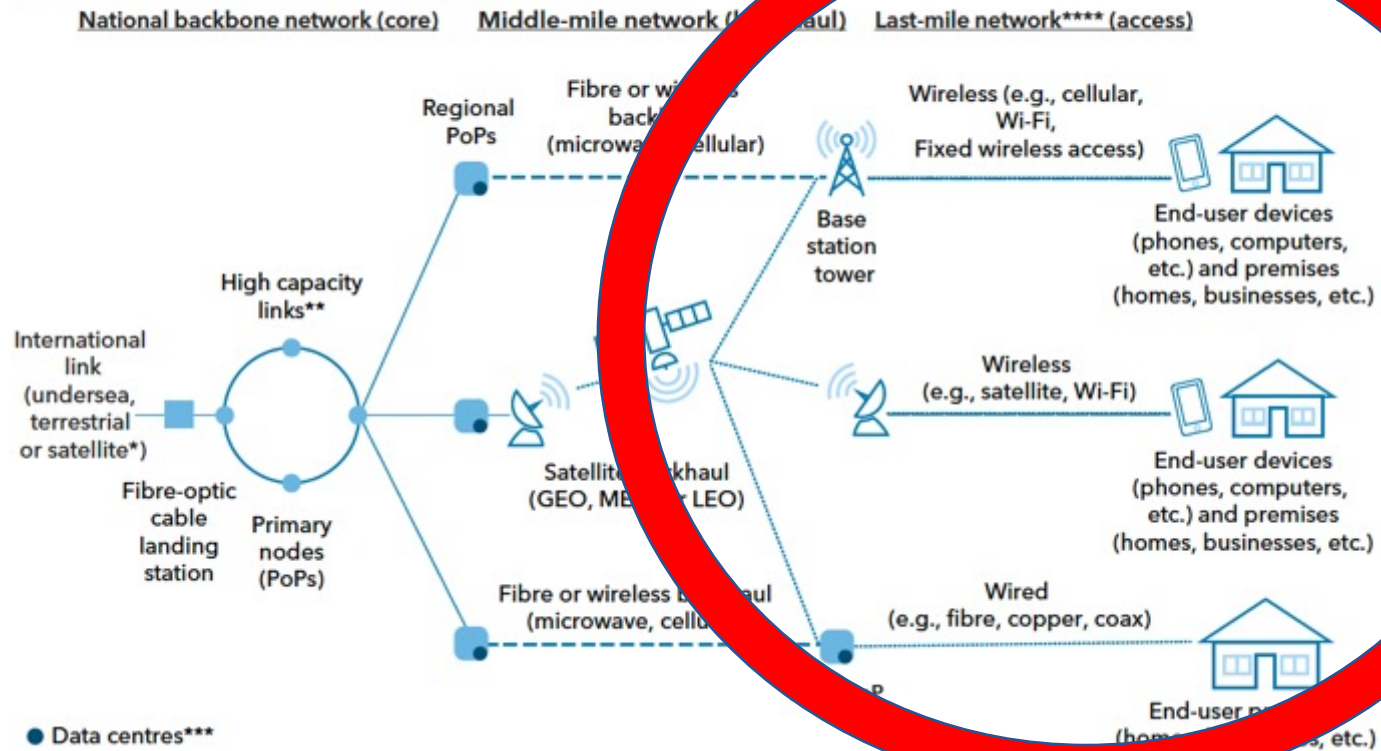
Thinking of this as the first and most important will change our perspectives

Source:

2. Parallels with the "next billion"

https://www.youtube.com/watch?v=m-G2Cx1waAM

Development will trickle down to all if there is enough economic growth – but this is simply not true
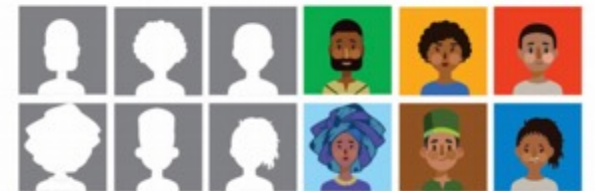
Similar to the "next billion"

- Much global emphasis on connecting the next billion
  - But this will still leave the poorest (the "last billion") even further behind
- It is easier and cheaper for tech companies to expand their existing systems and tech into "the next"…
  - Than it is to design something completely new specifically for the most marginalised
- But if you can deliver connectivity to the most marginalised (the last mile) cost effectively
  - You will undercut those who are only focusing on the "next"
  - And this is a very important business opportunity

the next billion

Making Google work for everyone

https://mustardelsmedia.com.ng/google-house-demos-next-billion-user-products-for-africa/

A quick show of hands...

How many of us use the term "Digital Divide"?

... and bridging the digital divide

The vulnerable and marginalised – without the latest digital tech

The rich and powerful – with the latest digital tech

https://www.shropshire-guide.co.uk/places/ironbridge-1/

... but it is an impossibility because digital tech widens the divide

The most marginalised are left with the nothing they had before

Digital technologies

The latest digital tech is much better than what went before

3. Whose perspectives matter most to you?

The politically and economically powerful (the "first"), or the poorest and most marginalised (the "last")?

The dominant views of the rich and powerful who consider themselves the first

- Global power structures
  - Powerful states
  - Powerful individuals: the digital barons
- Seek to create the world in their own images
  - Think for example of the Gates Foundation
  - Neo-imperialist expansion and control
- Their perspectives begin with their own world view (often neo-liberal agendas)
  - Private sector, urban, technological, individualistic...
  - The rural and the poor really are furthest away (last)
- A mainly top-down approach
  - Language of first/last
  - And very "male"
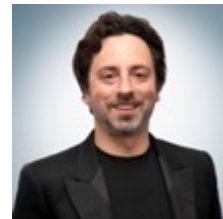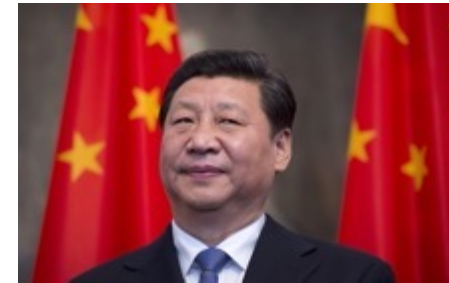
5 of the 7 richest in the world

Or the views of the poorest and most marginalised - who are told they are last?

- Much rhetoric about user-centred design
  - But how many researchers or companies begin with isolated indigenous communities?
- People living here know their contexts very much better than do outsiders?
  - Designing "with" not "for"
- What exactly are the needs that they perceive for digital tech and connectivity?
- Perhaps some actually want to enjoy the benefits of being unconnected?
  - Perhaps many don't want to be enslaved by the Digital Barons

The UN-led Sustainable Development Goals

- Rhetoric to reduce poverty and enable everyone to benefit from sustainable development

- The reality is a focus on economic growth
  - Only one goal claims to be about reducing inequalities (SDG10)

- But many people do believe in the SDGs
  - Surely those who claim to do so should focus most on the poorest (yet they call them the last).

We all have a choice as to the perspectives that matter most to us

4. The political economy of connectivity

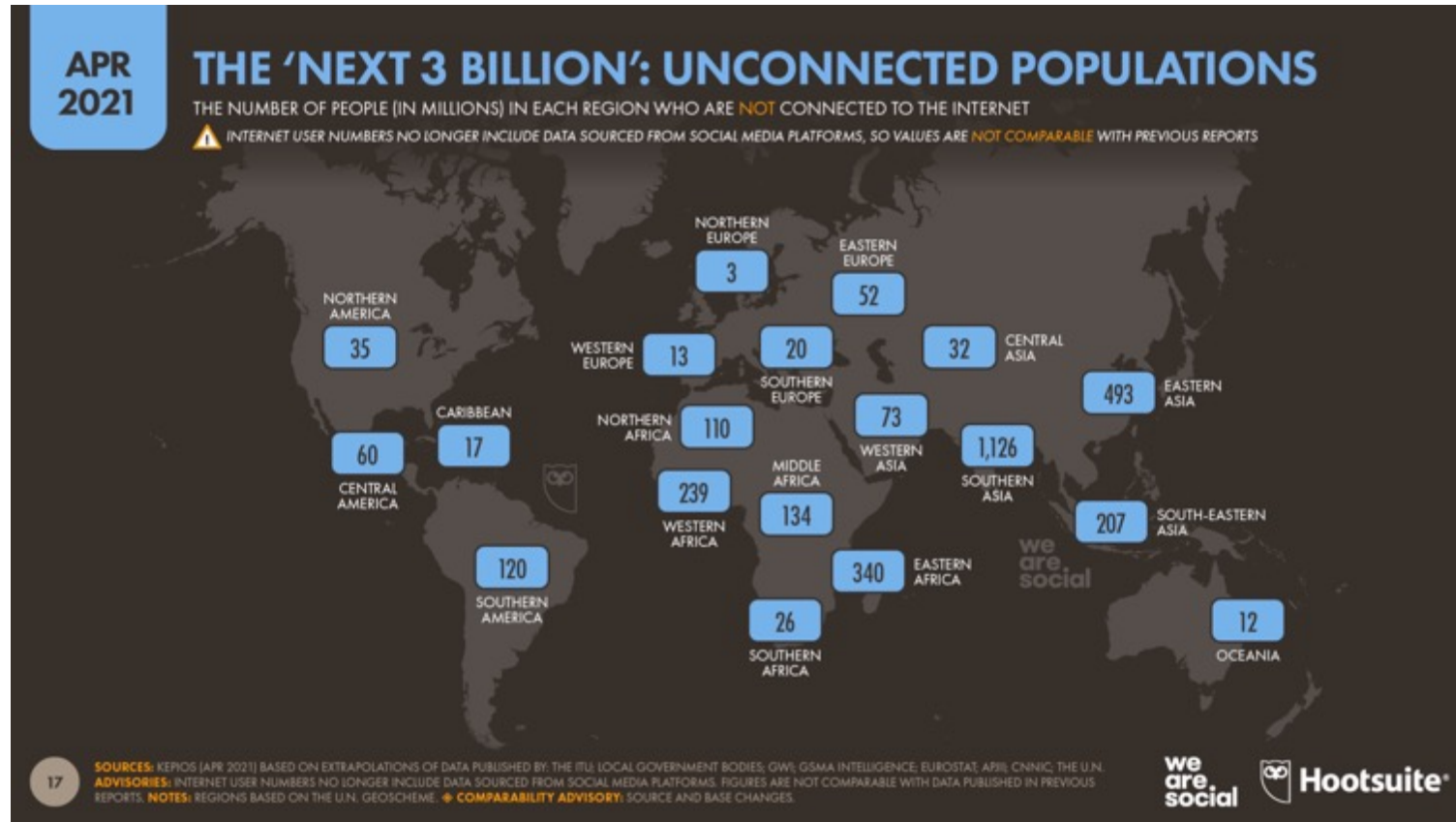In whose interests are we connecting?

The Swedish example in the 20ᵗʰ century

- Strong social welfare based society

- Great emphasis on enabling equality of access to telephony

- Considerable expenditure on trying to ensure that every small hamlet had copper telephone lines

- Even though this was expensive

- Strong ethos that every household should have access to a phone

The next 3 billion Internet users

https://datareportal.com/reports/6-in-10-people-around-the-world-now-use-the-internet

In whose interests is connecting the "last mile" and the "last" billion?

- Primarily the global corporations and private sector companies
  - Especially those from North America (and Europe), but also China
- Neo-liberalism
  - Liberal democracy and reducing the role of the state,
    - Because it is inefficient
  - The free market and maximising the role of private sector
    - Innovation, efficiency and profit
- Connecting the world (temporarily) overcomes many problems of free market capitalism
  - Expands both the market and also available labour
 - But is also used to enslave through data exploitation

https://www.ipsnews.net/2019/05/poverty-policy-economic-ruin-true-folly-neoliberalism/

# The roll-out usually exacerbates existing inequalities

- Regardless of whether digital connectivity is seen as being positive for the majority of the world's people, or for just a few, it undeniably increases inequalities

- The challenge is that it gets more expensive to connect the more isolated or marginalised the context
  - And most companies and organisations will not pay for this

- For the purposes of equity
  - Greater resources must be invested in the interests of the most marginalised
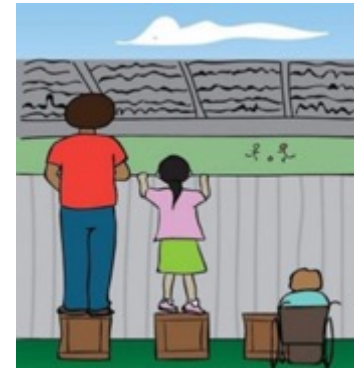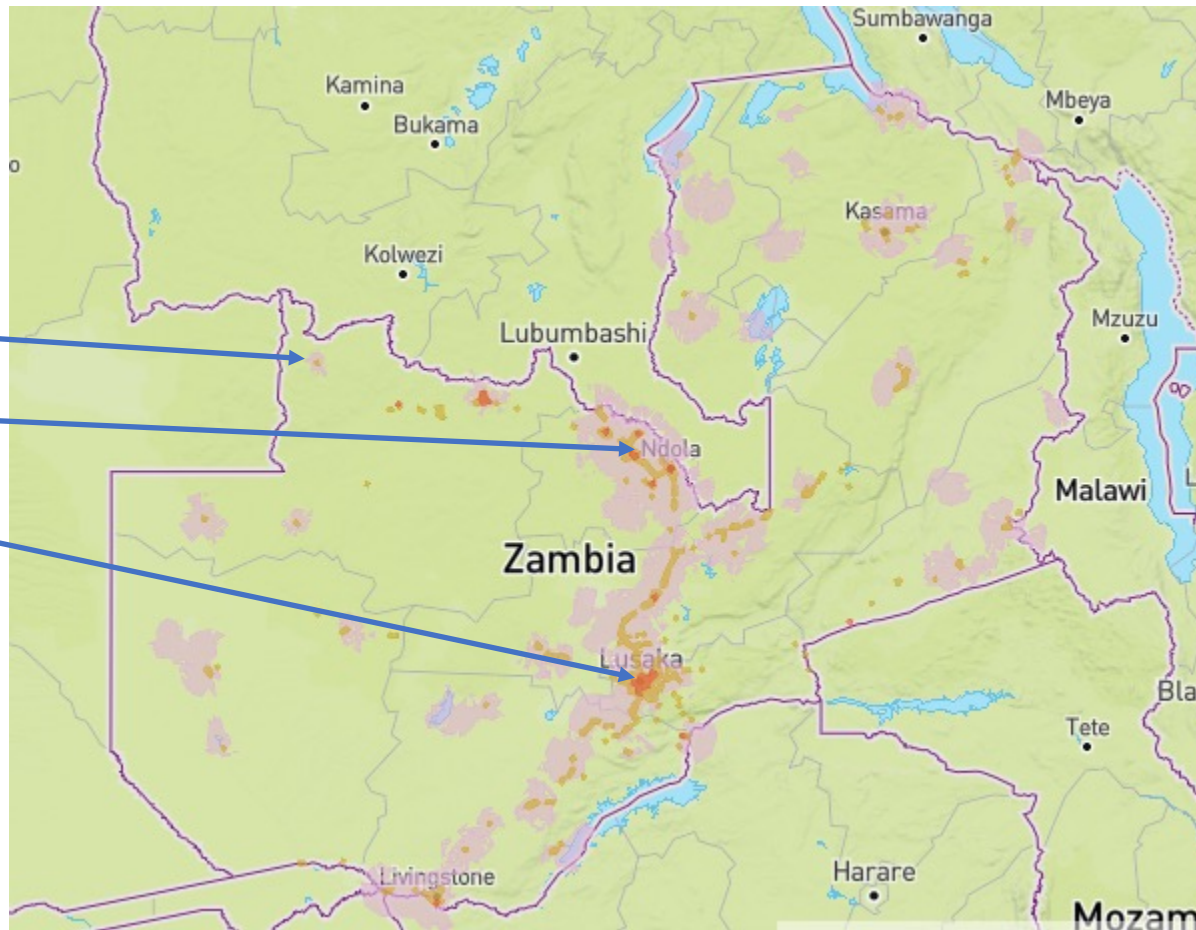
Equality

Equity
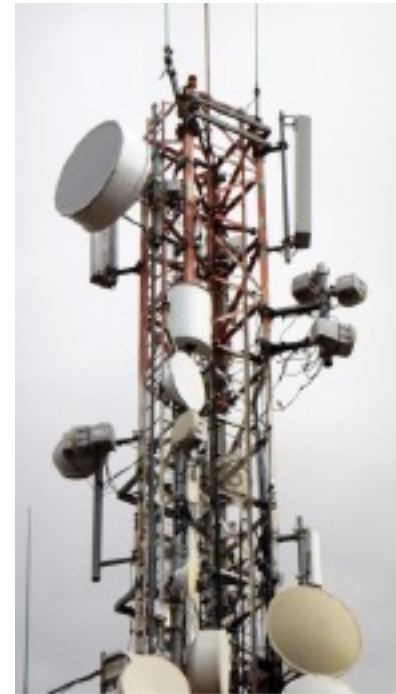
Zambia MTN Network coverage: an example of spatial inequalities

GSM
3G
LTE

Other networks (Airtel, Zamtel, Massnet, Vodafone) reflect broadly similar patterns

Source: GSMA, https://www.gsma.com/coverage/#770

5. The fundamental role of regulation: the technology is the easy bit!

Whose interests do regulators serve?

Being a telecommunications sector regulator...

- Is one of the most challenging jobs in the world
  - So many end up being sacked or jailed
- Nobody's friend and everyone's scapegoat
- Notionally "independent", but in reality tied to governments' overarching policies
- In practice regulators have largely served the private sector more than they have the needs of the poorest and most marginalised
  - Despite their best efforts

Some of the actions regulators can take

- Controversy over many initiatives to try to address connectivity inequalities
  - Australia's NBN
- We must fundamentally change our perspectives
  - So we begin by focusing on the most marginalised (the Fist mile)
- Many basic interventions can make a difference...
  - Shared infrastructures
  - Holistic approaches
  - New design approaches
- Must ensure that universal access agreements in spectrum tenders are actually delivered on
  - All too often companies wriggle out
- Debate over effectiveness of Universal Service Funds
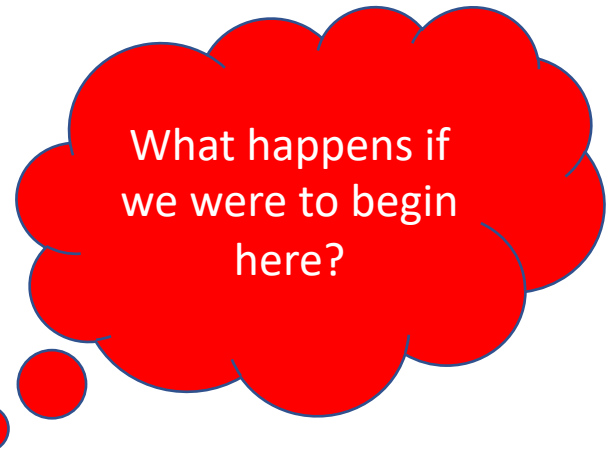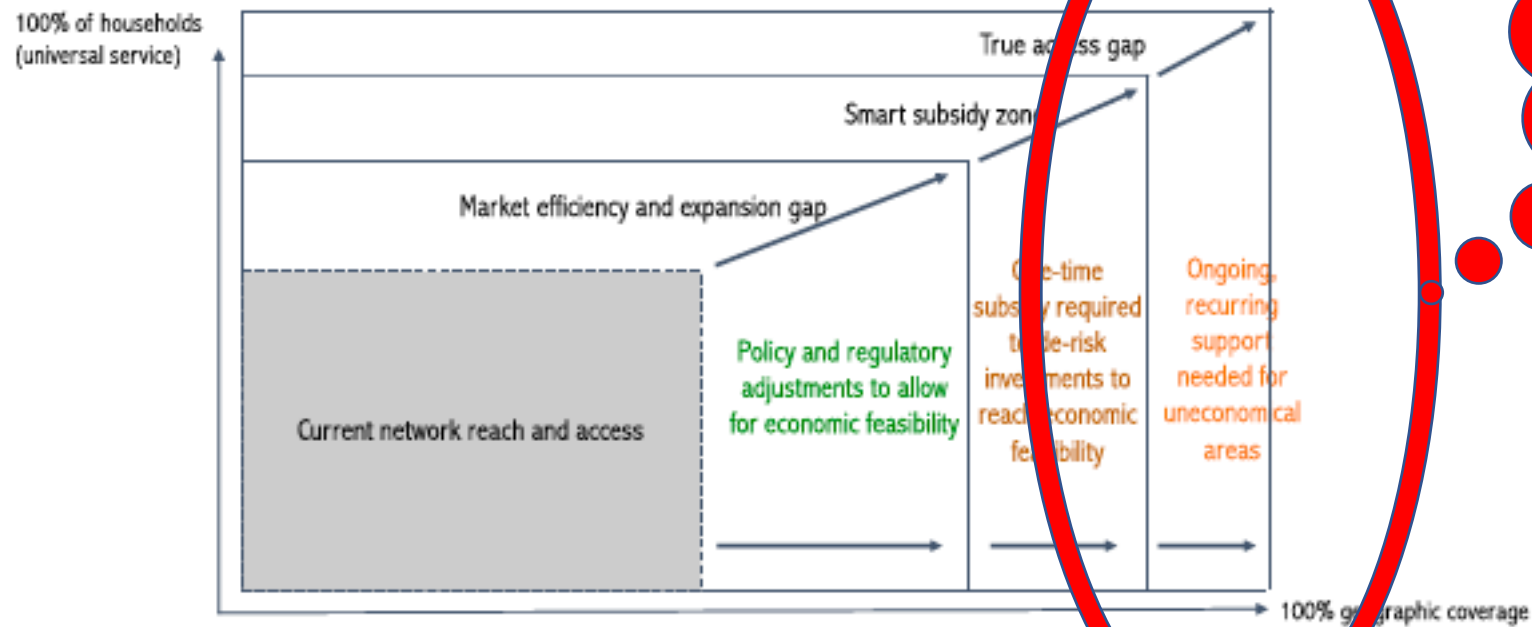 - On balance a sticking tape solution

https://spectrum.ieee.org/australias-troubled-national-broadband-network-delivers-a-fraction-of-what-was-promised

Currently largely based on a top-down view of regulatory interventions

Figure 35. Intervention distinctions for the various access gaps

Source: ITU ICT Regulation Toolkit, note 42

Source:

6. Global initiatives to enhance connectivity

UN chief calls for universal digital connectivity

Leaving no one behind means leaving no one offline, says UN Secretary-General Antonio Guterres

James Tasamba | 07.06.2022

https://www.aa.com.tr/en/world/un-chief-calls-for-universal-digital-connectivity/2607282

Often focus on financing existing (largely top-down) models

Global connectivity agendas

- Based on the false assumption that connectivity will improve the lives of everyone equally
- Many designed to find new funding mechanisms to roll out connectivity for all
  - Often through partnerships between governments and the private sector
- But this is based on extending the existing "failed" models (from the "last's" perspective", rather than fundamentally rethinking connectivity
- More of the same
- We need a radically new model
  - Perhaps we need to think of the other changes that need making before connectivity
  - Connectivity alone will not enable the "First Mile" to benefit much

Achieving universal and meaningful digital connectivity in the decade of action

Aspirational targets for 2030

Achieving universal and meaningful digital connectivity –the possibility for everyone to enjoy a safe, satisfying, enriching, productive and affordable online experience– is key for enabling digital transformation and meeting the Sustainable Development Goals.

As part of the implementation of the UN Secretary-General's Roadmap for Digital Cooperation, the International Telecommunication Union and the Office of the UN Secretary-General's Envoy on Technology have established a set of aspirational targets for 2030 to help prioritize interventions, monitor progress, evaluate policy effectiveness, and galvanize efforts around achieving universal and meaningful connectivity by the end of the decade.

More information:
www.itu.int/umc2030

Universality targets

- 100%
  - of population aged 15+ uses the Internet
  - of households have Internet access
  - of businesses use the Internet
  - of schools are connected to the Internet
  - of population is covered by a mobile network of the latest technology[1]
  - of population aged 15+ owns a mobile phone
- >70% of population aged 15+ has basic digital skills
- >50% of population aged 15+ has intermediate digital skills
- Gender parity is achieved for Internet use, mobile phone ownership and use, and digital skills[2]

Technology targets

- 100% of fixed-broadband subscriptions are 10 Mb/s or faster[3]
- 20 Mb/s Minimum download speed at every school
- 50 kb/s Minimum download speed available per student[4]
- 200 GB Minimum data allowance for every school

Affordability targets

- 2%
  - Entry-level broadband subscription costs less than 2% of gross national income per capita
  - Entry-level broadband subscription costs less than 2% of average income of the bottom 40% of population

Notes [1] Mobile network of the latest technology is the most advanced technology available in the country with at least 40% of the population already covered. | [2] Parity is deemed reached when the share of women using the Internet/owning a mobile phone/using a mobile phone with specific digital skills, among the female population is equal to the share of men. | [3] Download speed. Mb/s = megabits per second. | [4] kb/s = kilobits per second.

United Nations
Office of the Secretary-General's
Envoy on Technology

7. Final reflections on environmental implications

Going beyond just "climate change"

Remember that being unconnected has real advantages

- Re-living in "nature"
- Saving time wasted in digital li[fe]
- Retaining more of our per[sonal]
- Less harm to the phys[ical] (see DESC)
- Escaping digital a[ba]nd[onment]
- Not forced b[y] [self]-exploit
- Avoiding
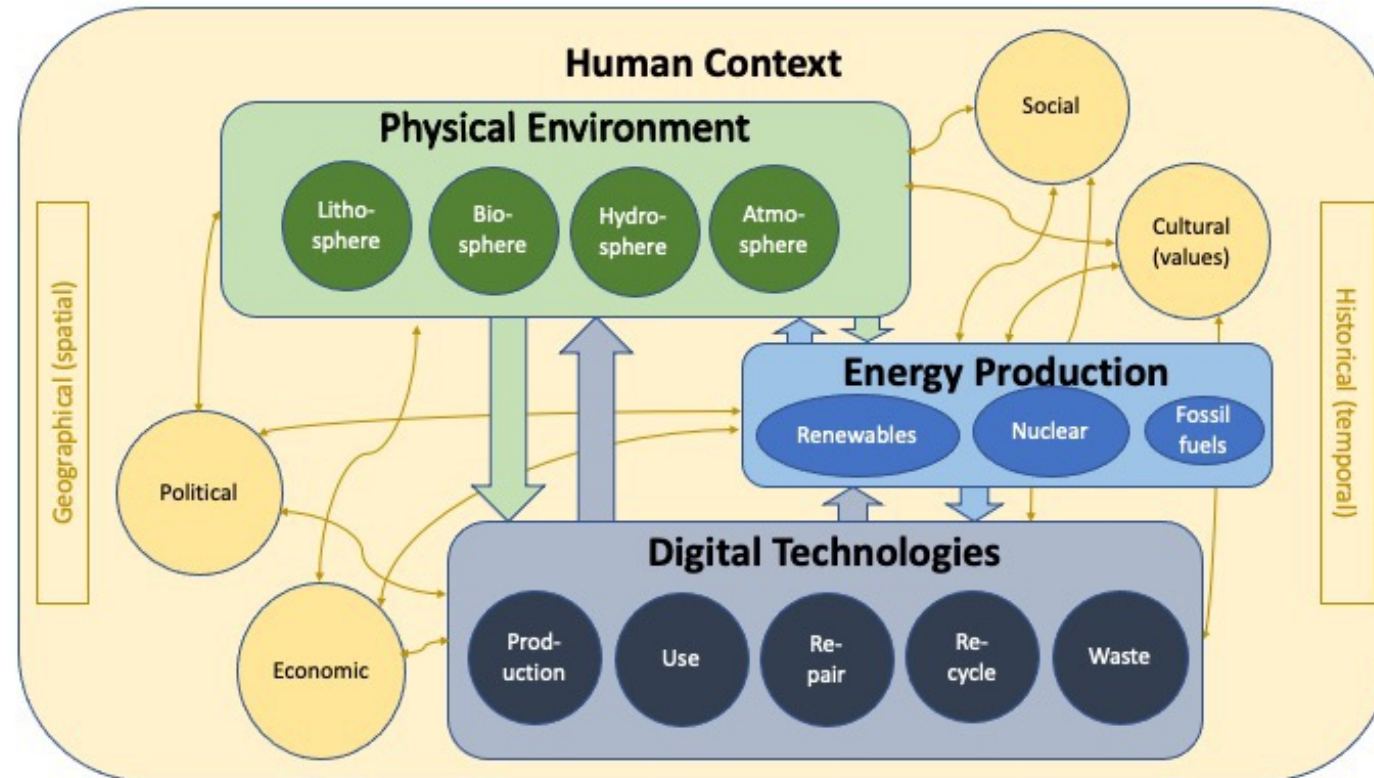- Avoi[ding] [addic]tions (gambling, pornography)
- [...]

The "right to be unconnected" rather than the "right to be connected"

What is the environmental impact of connecting the next 2.9 billion people?

http://desc.global

Conclusions:
the last is the most important, and should be first

… and discussion

Conclusion: beginning with the poorest and most marginalised

- It is not essentially a technical problem

- If we really wish to provide global connectivity we can easily reach 95%

- We need to have the will to do so and recognise the cost of equity

- This involves governments putting the last first and the first last

- Only by focusing on the "first mile" can we ensure this happens

What will you do differently after this session?

Participants will discuss innovative interventions that they have implemented or plan to implement in their countries...

...as well as their takeaway from the course as a whole