ITU regional ICT Indicators Workshop for Africa

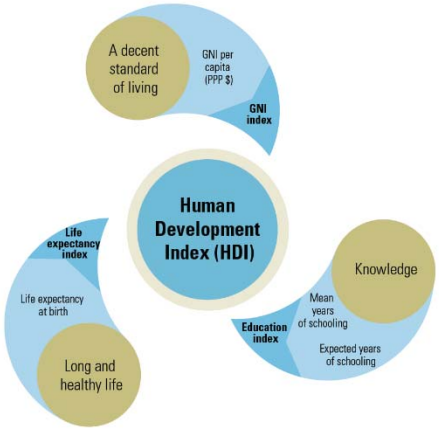
Lilongwe, Malawi
20-21 March 2018

The ICT Development Index (IDI)

ICT Data and Statistics Division
Telecommunication Development Bureau
International Telecommunication Union

What is a composite index?

- Multiple indicators combined into single index
- Measures multi-dimensional concept which cannot be capture by a single indicator
- Growing number of composite indices being published worldwide.

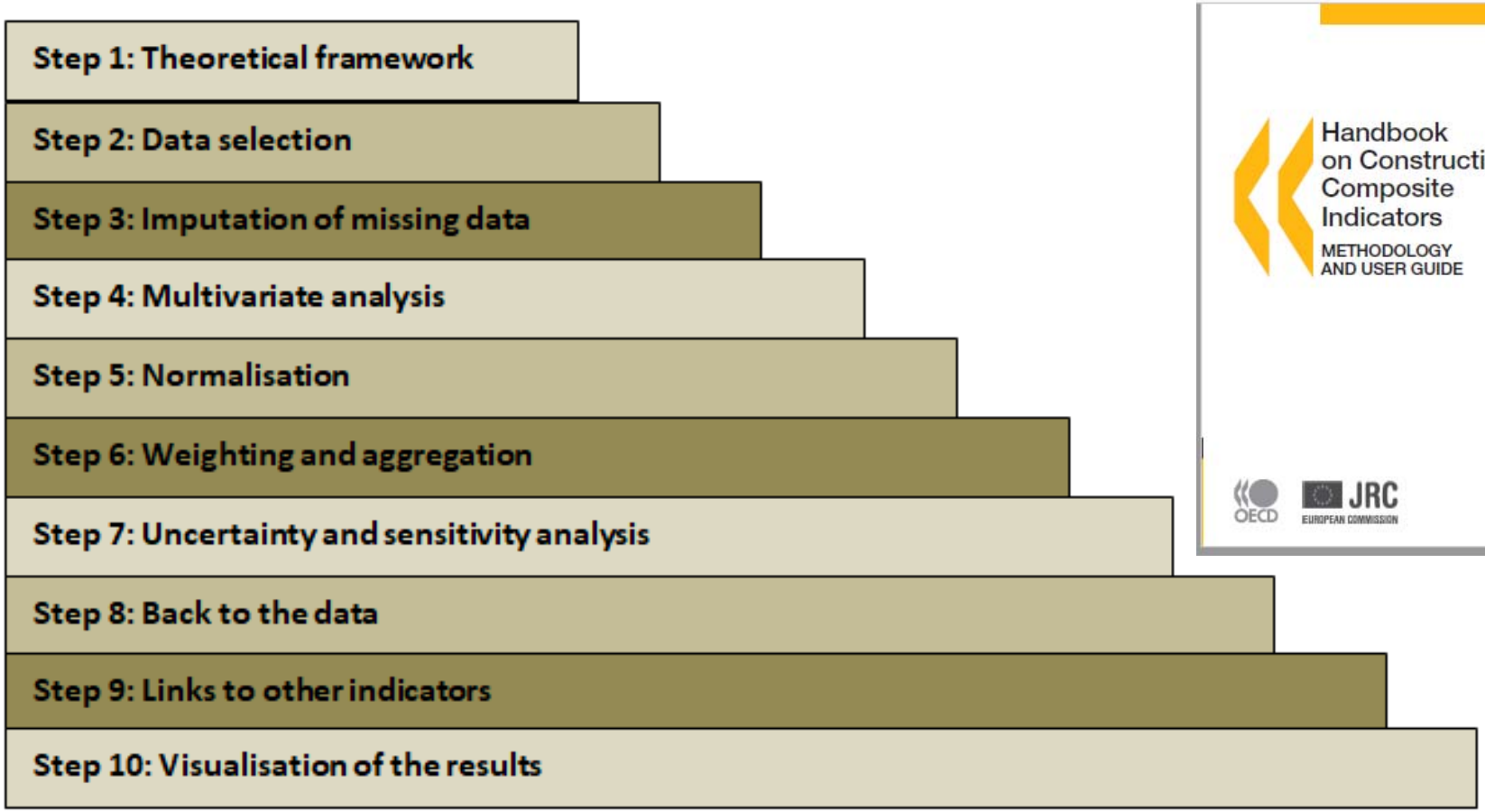


Pros and Cons

Pros	Cons
Summarize complex, multi-dimension realities into single value	Can be potentially misinterpreted and misused
Potentially easier to interpret and communicate to general public	May disguise serious failings in some dimensions
Spotlights country performance and progress for purposes of setting policy	Selection of indicators etc. may be subject to political dispute

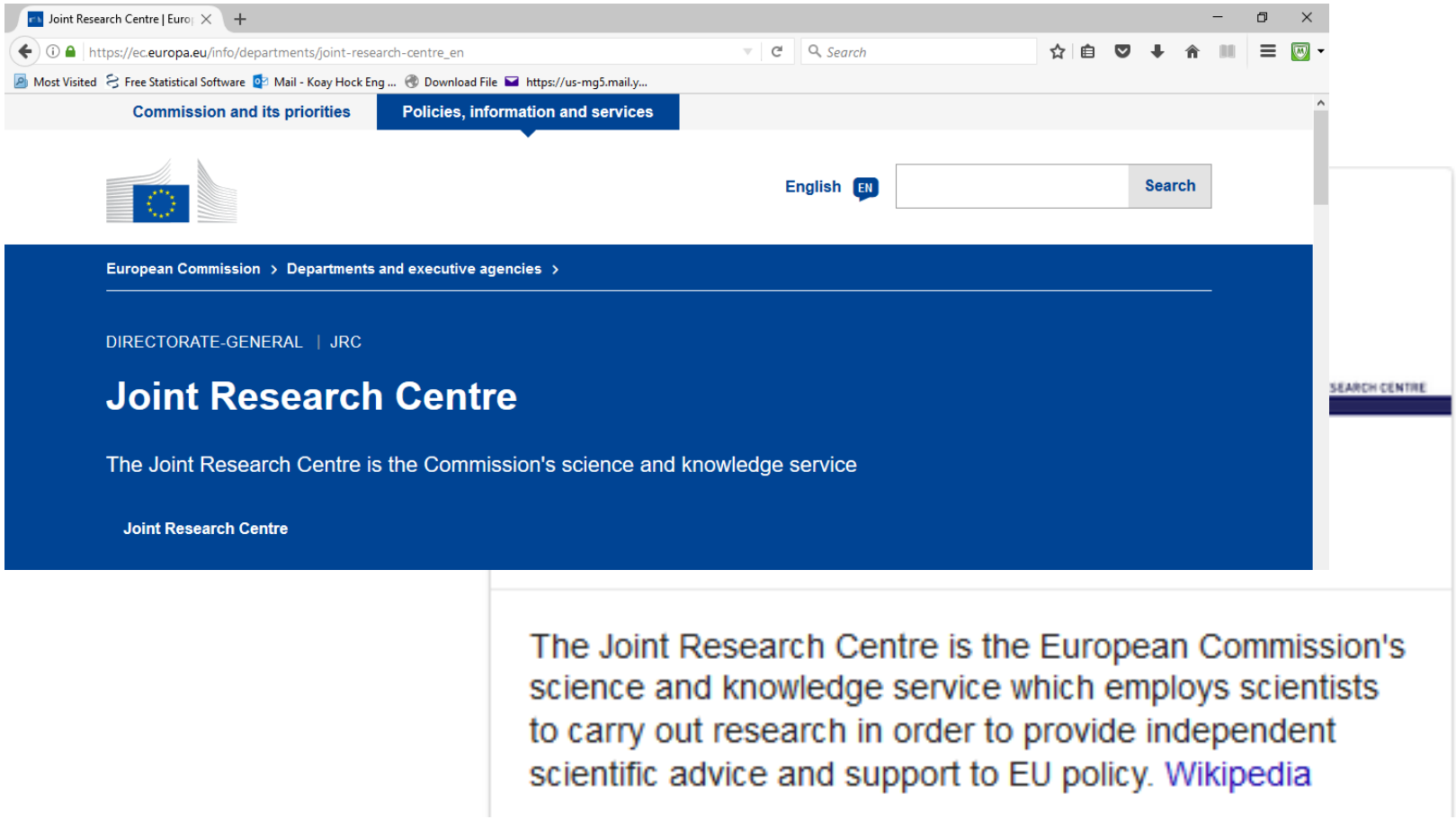
Adapted from: Saisana and Tarantola, 2012

10 steps



https://composite-indicators.jrc.ec.europa.eu/?q=10-step-guide and realigned to Handbook on Constructing Composite Indicators, Methodology and User Guide , OECD 2008

The Joint Research Centre

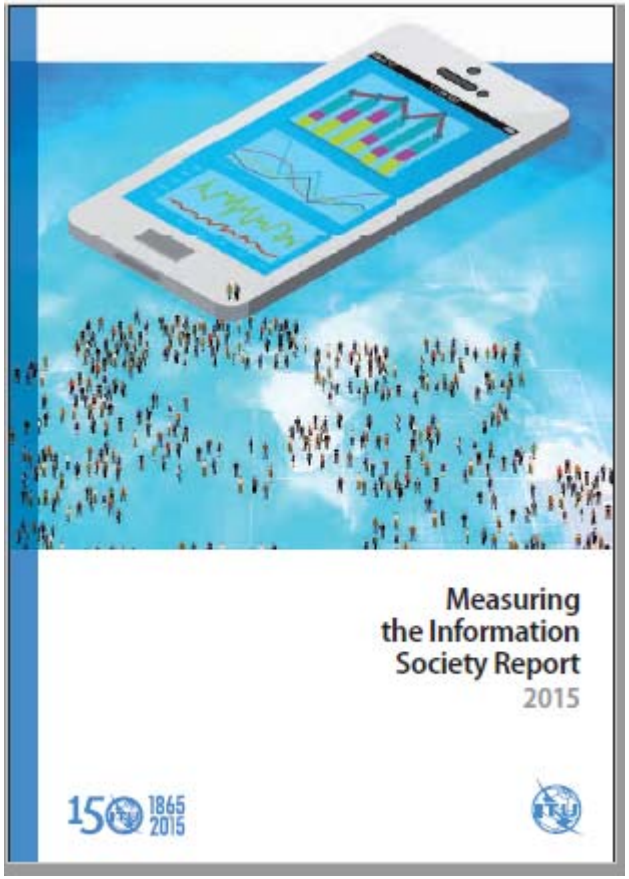


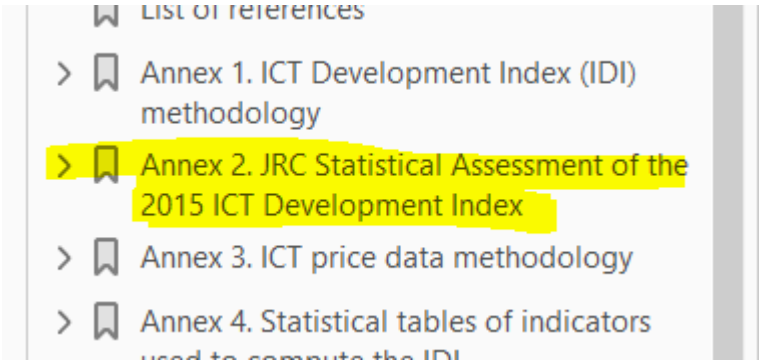
https://composite-indicators.jrc.ec.europa.eu/
https://ec.europa.eu/jrc/en/coin

The ICT Development Index (IDI)

- The IDI is a composite index that combines 11 (until 2017) indicators
- Designed to be global and reflect changes taking in place in countries of different levels of development
- Was developed by ITU in 2008 in response to member states' request to establish an overall ICT index
- Results first reported in the Measuring the Information Society Report (MISR) 2009

JRC Assessment of the IDI



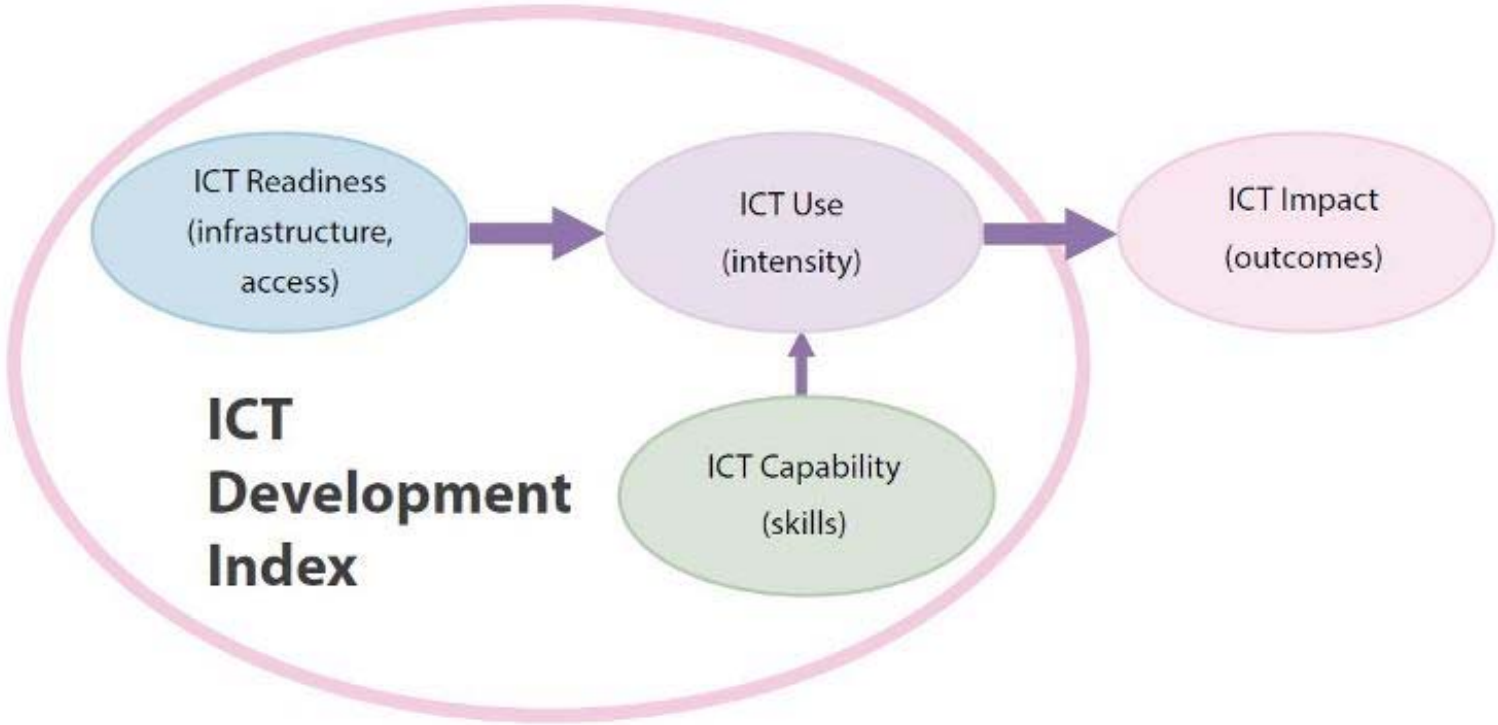


Objectives of the IDI

To measure:

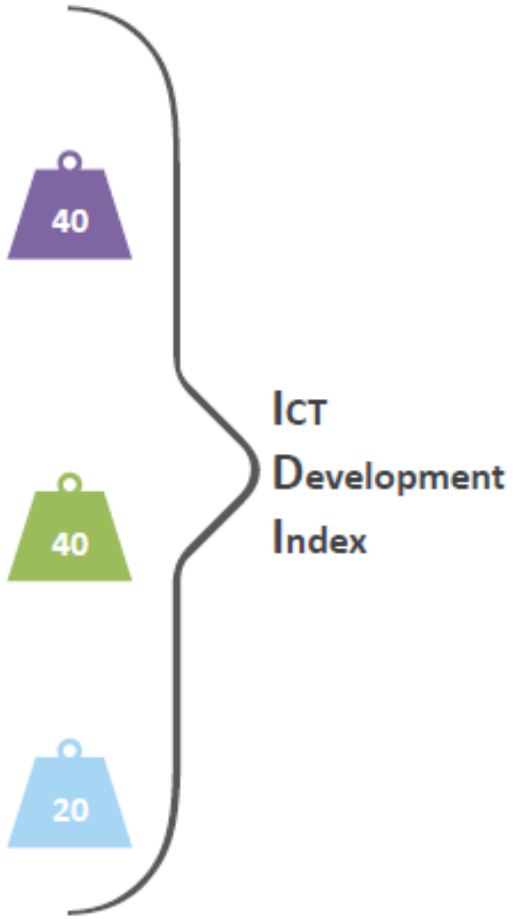
- the *level and evolution over time* of ICT developments in countries and the experience of those countries relative to other countries;
- progress in ICT development in *both developed and developing countries*;
- the *digital divide*, i.e. differences between countries in terms of their levels of ICT development; and
- the *development potential* of ICTs and the extent to which countries can make use of them to enhance growth and development.

Three stages in the evolution towards an information society



ICT Development Index – indicators, reference values and weights (until 2017)

ICT access	Reference value	(%)
1. Fixed-telephone subscriptions per 100 inhabitants	60	20
2. Mobile-cellular telephone subscriptions per 100 inhabitants	120	20
3. International Internet bandwith (bit/s) per internet user	2'158'212*	20
4. Percentage of households with a computer	100	20
5. Percentage of households with Internet access	100	20
ICT use	**Reference value**	**(%)**
6. Percentage of individuals using the Internet	100	33
7. Fixed-broadband subscriptions per 100 inhabitants	60	33
8. Active mobile-broadband subscriptions per 100 inhabitants	100	33
ICT skills	**Reference value**	**(%)**
9. Mean years of schooling	15	33
10. Secondary gross enrolment ratio	100	33
11. Tertiary gross enrolment ratio	100	33



Note: * This corresponds to a log value of 6.33, which was used in the normalization step.
Source: ITU.

Nb: Reference value = ideal value

Extraordinary meeting of EGTI/EGH

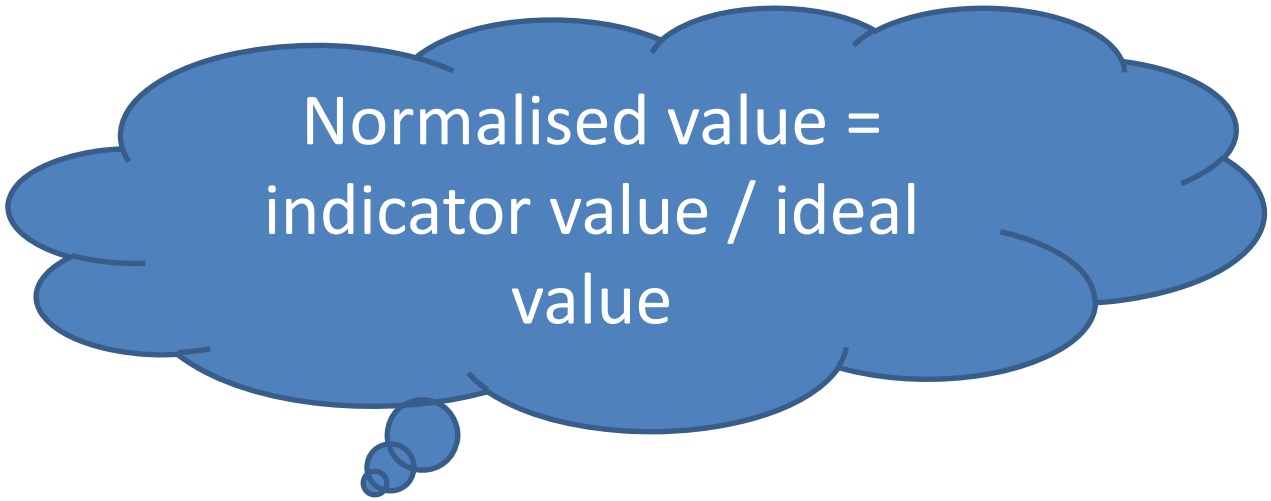
- Held in Geneva, Switzerland, on 1-3 March 2017
- Meeting was open to all ITU members and experts in the field of ICT statistics and data collection
- Objective - to discuss, debate and agree on a revised set of indicators to be included in the IDI
- Two input documents prepared by the sub-group and the independent group of experts
- Adopted a total of 14 indicators to be included in the IDI compared to the current list of 11
- Two indicators were dropped from the current IDI
  - fixed-telephone subscriptions per 100 inhabitants
  - mobile-cellular subscriptions per 100 inhabitants
- http://www.itu.int/en/ITU-D/Statistics/Pages/events/eghegti2017/default.aspx

List of indicators agreed for the IDI (for 2018)

Access	Use	Skills
Percentage of households with a computer	Percentage of individuals using the Internet	Mean years of schooling
Percentage of households with Internet access	Active mobile-broadband subscriptions per 100 inhabitants	Gross enrollment ratio (secondary level)
International Internet bandwidth (bit/s) per Internet user	Mobile-broadband Internet traffic per mobile-broadband subscription	Gross enrollment ratio (tertiary level)
Percentage of the population covered by mobile networks - At least 3G - At least LTE/WiMAX	Fixed-broadband Internet traffic per fixed-broadband subscription	Proportion of individuals with ICT skills
Fixed-broadband subscriptions by speed (as % of total BB subscript.): - 256 kbit/s to 2 Mbit/s - 2 to 10 Mbit/s - Equal to or above 10 Mbit/s	Percentage of individuals who own a mobile phone	

Normalised value

- Normalised value for an indicator= Value of that indicator / Ideal value for that indicator
- Normalised values have no units



Ideal value of an indicator

- Highest achievable value (i.e. 100 for use indicators)
- Ideal value of an indicator = mean value of that indicator across all economies + 2 standard deviations

Ideal value = mean + 2 sd

- Ideal value may OR may not change every year

Normalising International Internet bandwidth (IIB)

- Normalised value = log (IIB for economy) /log (ideal value for IIB)
- Log or Ln can be used. Same results.
- But not a mixture of Log and Ln

Example:

- IIB Iceland = 997’830, ideal value = 2’158’212
- Normalised value = log 997’830 / log 2’158’212 = 0.95
- Or ln 997’830/ln 2’158’212 also = 0.95

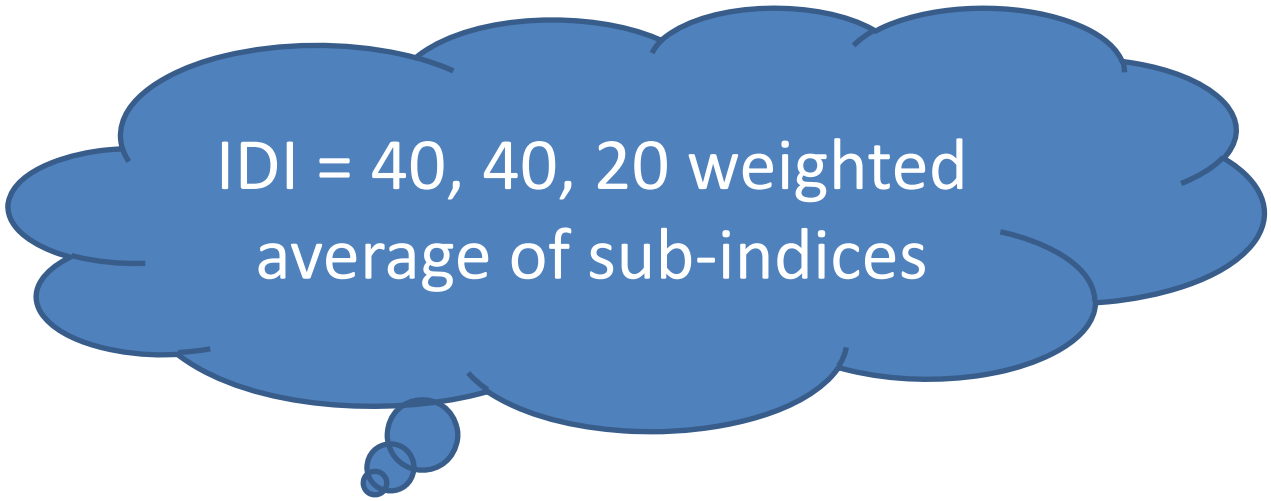
Sub-index

- Sub-index = simple average of normalised values of indicators within that sub-index
- Also known as equi-weighted average of normalised values within that sub-index

Sub-Index= Average of normalised values x 10

ICT Development Index

- IDI = weighted average of all 3 sub-indices
- Sub-indices: Access, Use, Skills
- Weights: 40, 40, 20 in that order



Pointers

- Normalised values are between 0 and 1.
- Normalised value > 1 is set to 1
- All sub-indices are between 0 and 10
- IDI is also between 0 and 10

(Non-)availability IDI supply side data (1)

	ACCESS						USE		
	International internet bandwidth in Mbits/sec	Percentage of the population covered by mobile networks - at least 3G	Percentage of the population covered by mobile networks - at least LTE/WiMAX	Fixed-broadband subscriptions by speed tiers -256kbit/s to 2mbit/s	Fixed-broadband subscriptions by speed tiers -2 to 10 mbit/s	Fixed-broadband subscriptions by speed tiers - equal to or above 10 mbit/s	Active mobile-broadband subscriptions	Fixed-broadband internet traffic in exabytes	Mobile-broadband internet traffic in exabytes
Benin			n.a.			n.a.		n.a.	n.a.
Burkina Faso			n.a.					n.a.	n.a.
Burundi	n.a.	n.a.			n.a.	n.a.		n.a.	n.a.
Cameroon				n.a.	n.a.	n.a.	n.a.	n.a.	
Cape Verde			n.a.	n.a.				n.a.	n.a.
Central African Rep.	n.a.							n.a.	n.a.
Chad	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Congo (Dem. Rep.)				n.a.	n.a.	n.a.		n.a.	
Congo (Rep.)				n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Equatorial Guinea		n.a.	n.a.			n.a.		n.a.	n.a.
Eritrea	n.a.	n.a.	n.a.		n.a.	n.a.	n.a.	n.a.	n.a.
Gabon	n.a.			n.a.	n.a.	n.a.		n.a.	n.a.

(Non-)availability IDI supply side data (2)

	ACCESS						USE		
	International internet bandwidth in Mbits/sec	Percentage of the population covered by mobile networks - at least 3G	Percentage of the population covered by mobile networks - at least LTE/WiMAX	Fixed-broadband subscriptions by speed tiers -256kbit/s to 2mbit/s	Fixed-broadband subscriptions by speed tiers -2 to 10 mbit/s	Fixed-broadband subscriptions by speed tiers - equal to or above 10 mbit/s	Active mobile-broadband subscriptions	Fixed-broadband internet traffic in exabytes	Mobile-broadband internet traffic in exabytes
Gambia		n.a.				n.a.		n.a.	n.a.
Ghana			n.a.	n.a.	n.a.	n.a.		n.a.	
Guinea	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Guinea-Bissau	n.a.		n.a.		n.a.	n.a.		n.a.	n.a.
Kenya			n.a.					n.a.	n.a.
Lesotho				n.a.	n.a.	n.a.			
Liberia				n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Mali	n.a.		n.a.	n.a.	n.a.	n.a.		n.a.	n.a.
Mauritius									n.a.
Mozambique			n.a.			n.a.		n.a.	n.a.
Namibia								n.a.	n.a.
Niger								n.a.	

(Non-)availability IDI supply side data (3)

	ACCESS						USE		
	International internet bandwidth in Mbits/sec	Percentage of the population covered by mobile networks - at least 3G	Percentage of the population covered by mobile networks - at least LTE/WiMAX	Fixed-broadband subscriptions by speed tiers -256kbit/s to 2mbit/s	Fixed-broadband subscriptions by speed tiers -2 to 10 mbit/s	Fixed-broadband subscriptions by speed tiers - equal to or above 10 mbit/s	Active mobile-broadband subscriptions	Fixed-broadband internet traffic in exabytes	Mobile-broadband internet traffic in exabytes
Nigeria			n.a.					n.a.	n.a.
Rwanda				n.a.	n.a.			n.a.	n.a.
S. Tomé & Pr.				n.a.	n.a.	n.a.		n.a.	n.a.
Senegal	n.a.	n.a.	n.a.				n.a.	n.a.	n.a.
Seychelles			n.a.	n.a.	n.a.	n.a.		n.a.	n.a.
Sierra Leone	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
South Africa	n.a.								
Swaziland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Tanzania	n.a.			n.a.	n.a.	n.a.		n.a.	n.a.
Togo			n.a.		n.a.	n.a.			
Uganda								n.a.	n.a.
Zimbabwe								n.a.	

Availability IDI household data

	2016				
	ACCESS		USE		SKILLS
	Percentage of households with a computer	Percentage of households with internet access	Percentage of individuals using the internet	Percentage of individuals who own a mobile phone	9 activities
Cape Verde	36.00	48.80	50.32	72.39	
Ethiopia	5.03	15.37	15.37	58.29	
Lesotho			27.36		
Mali	3.18	8.95	11.11		
Mauritius	54.66	63.27	52.19		
Rwanda		9.30			
South Africa	21.14	55.85			
Zambia (2015)	7.10				

Data gaps

- Almost no demand-side data
- Data gaps can lead to non-official data
- Need to coordinate data production and work with governments and data users

Thank you

For more information
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