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Global ICT benchmarks: the SDG indicator framework and the ICT Development Index (IDI)

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3. Other international targets

From the MDGs to the SDGs

- MDGs target date was 2015
  - 3 ICT indicators to track progress

From the MDGs to the SDGs

- SDGs were adopted at the UN Sustainable Development Summit - September 2015
    1. 17 Goals
    2. 169 Targets
    3. 232 Indicators

The sustainable development goals (SDGs)

- A new framework for international cooperation to promote sustainable development between 2015 and 2030
- A Member State-led process (facilitated by the UN) with broad participation from major stakeholders that has identified a wide range of areas
  - economic growth
  - social justice
  - environmental sustainability

The SDG indicators framework

- UN Statistical Commission set up the Inter-agency Expert Group on Sustainable Development Goal Indicators (IAEG-SDGs) to take the lead role in developing a final list of indicators
  - 28 representatives of NSOs
  - Observers: regional commissions and regional and international agencies - including ITU and others that were responsible for global reporting on the MDGs to provide technical advice and support

ICT indicators for the SDGs

- The current draft outcome document recognizes that "*the spread of information and communications technology and global interconnectedness has great potential to accelerate human progress, to bridge the digital divide and to develop knowledge societies, as does scientific and technological innovation across areas as diverse as medicine and energy.*" (Draft Outcome Document of the UN Summit for the Adoption of the post-2015 Development Agenda)

- While none of the SDGs is specifically about ICTs, several targets make references to ICTs and technology

- ITU has lead role on ICT indicators for the SDGs, in cooperation with the Partnership on Measuring ICT for Development

ICT indicators for the SDGs

- ITU, in close consultation with the Partnership, <u>proposed</u> a list of 7 indicators, covering 6 targets within Goals 4, 5, 9, and 17
  - Including 3 indicators that are collected via household surveys from NSOs (relevant to EGH)
  - The other 2 indicators are based on administrative data collected from regulatory authorities/ICT Ministries

SDG Indicators framework

- The proposed list of indicators was endorsed at the 47th session of the UN Statistical Commission held on 8-11 March 2016

- 232 total indicators

- Includes 5 ICT indicators collected by ITU
  - 3 indicators that are collected via household surveys from NSOs
  - 2 indicators are based on administrative data collected from regulatory authorities/ICT Ministries

SDG Indicators framework

- Target 4.1: Proportion of schools with access to the Internet for pedagogical purposes (UIS)
- Target 4.1: Proportion of schools with access to computers for pedagogical purposes (UIS)
- Target 4.4: Proportion of individuals with ICT skills, by type of skills (ITU) C040401
- Target 5b: Proportion of individuals who own a mobile telephone, by sex (ITU) C050b01
- Target 9c: Percentage of the population covered by a mobile network, broken down by technology (ITU) C090c01
- Target 17.6: Fixed Internet broadband subscriptions, broken down by speed (ITU) C170602
- Target 17.8: Proportion of individuals using the Internet (ITU) C170801

SDG Goal	SDG Target	ICT indicator
Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	**Target 4.4:** By 2030, substantially increase the number of youth and adults who have **relevant skills, including technical and vocational skills**, for employment, decent jobs and entrepreneurship **Target 4.a** Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all	C040401 Proportion of individuals with ICT skills, by type of skills (ITU)
		Proportion of schools with access to the Internet for pedagogical purposes (UIS)
		Proportion of schools with access to computers for pedagogical purposes (UIS)

SDG Goal	SDG Target	ICT indicator
Goal 5: Achieve gender equality and empower all women and girls	**Target 5b:** Enhance the use of **enabling technology, in particular information and communications technology**, to promote women's empowerment	C050b01 Proportion of individuals who own a mobile telephone, by sex (ITU)

SDG Goal	SDG Target	ICT indicator
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	**Target 9.c:** Significantly increase **access to information and communications technology** and strive to provide universal and affordable access to the Internet in least developed countries by 2020	C090c01 Percentage of the population covered by a mobile network, broken down by technology (ITU)

SDG Goal	SDG Target	ICT indicator
Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development	**Target 17.6:** Enhance North-South, South-South and triangular regional and international cooperation on and access to science, **technology** and innovations, and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, particularly at the United Nations level, and through a global technology facilitation mechanism	C170602 Fixed Internet broadband subscriptions broken down by speed (ITU)
	Target 17.8: Fully operationalize the **technology bank** and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of **enabling technology, in particular information and communications technology**	C170801 Proportion of individuals using the Internet (ITU)

Leaving no one behind
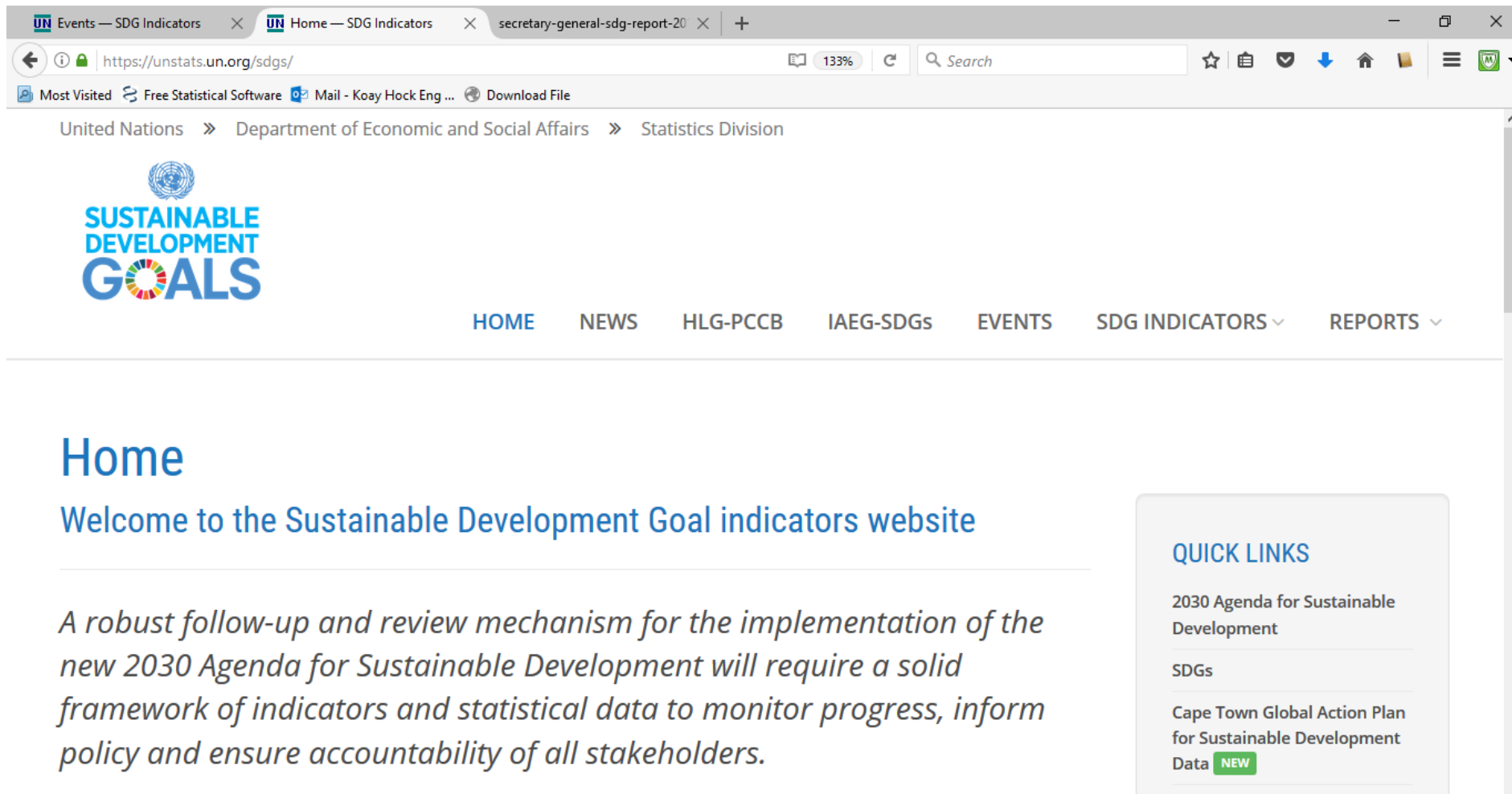
Sustainable Development Goal indicators should be disaggregated, where relevant, by:

- income
- sex
- age
- race
- ethnicity
- disability
- geographic location
- other characteristics, in accordance with the Fundamental Principles of Official Statistics

Homepage of the SDGs
https://unstats.un.org/sdgs/

SDG Knowledge Platform
https://sustainabledevelopment.un.org/topics

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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.
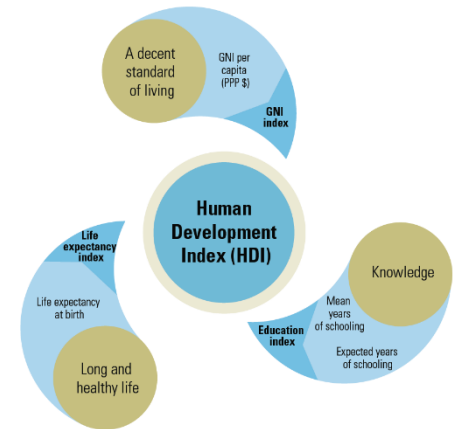
Pros and Cons

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
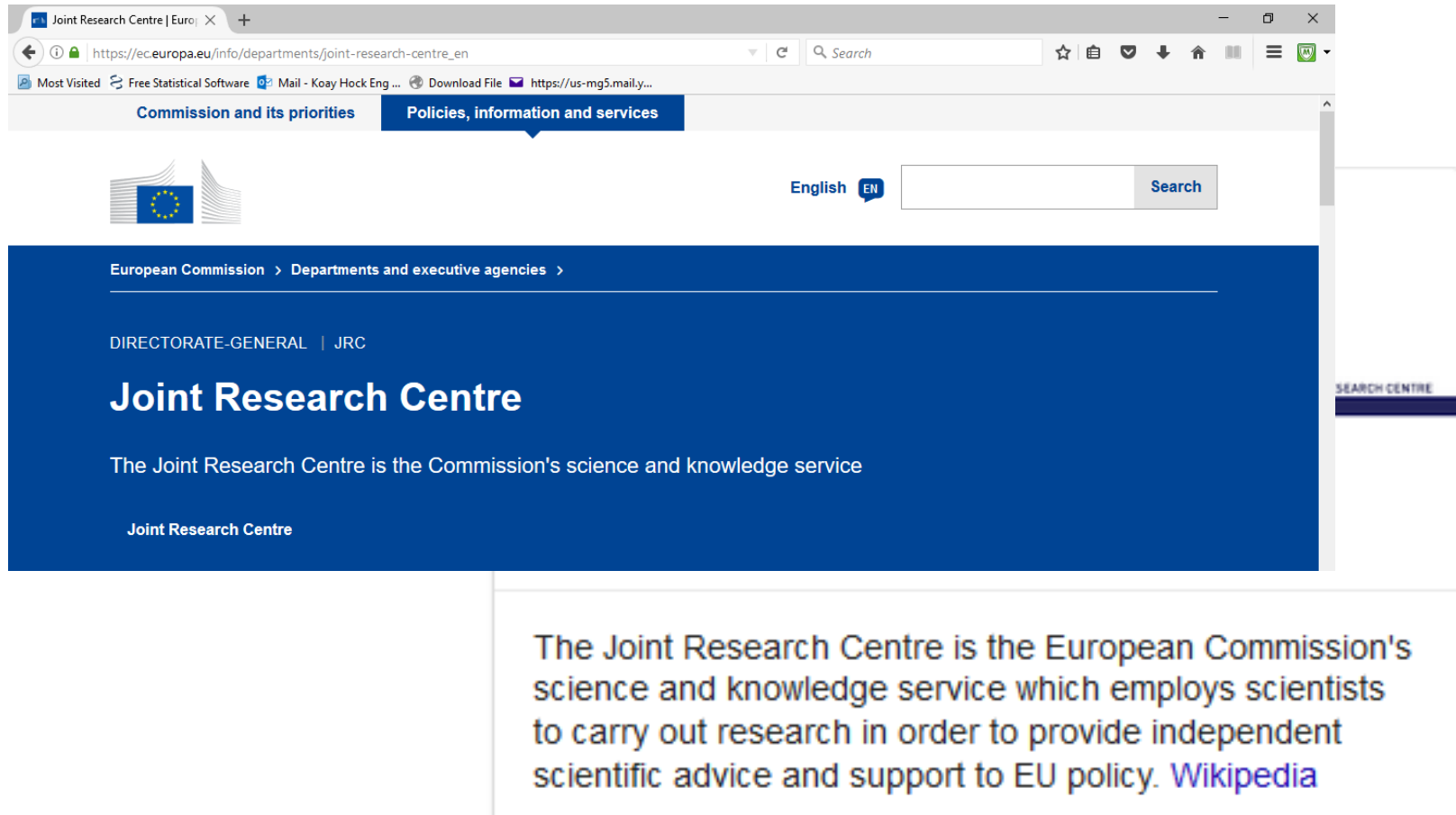
Adapted from: Saisana and Tarantola, 2012

10 steps

Step 1: Theoretical framework

Step 2: Data selection

Step 3: Imputation of missing data

Step 4: Multivariate analysis

Step 5: Normalisation

Step 6: Weighting and aggregation

Step 7: Uncertainty and sensitivity analysis

Step 8: Back to the data

Step 9: Links to other indicators

Step 10: Visualisation of the results

Handbook on Constructing Composite Indicators
METHODOLOGY AND USER GUIDE

OECD   JRC EUROPEAN COMMISSION

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 14 indicators (11 until 2017)

- Designed to be global and reflect changes taking in place in countries with 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

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
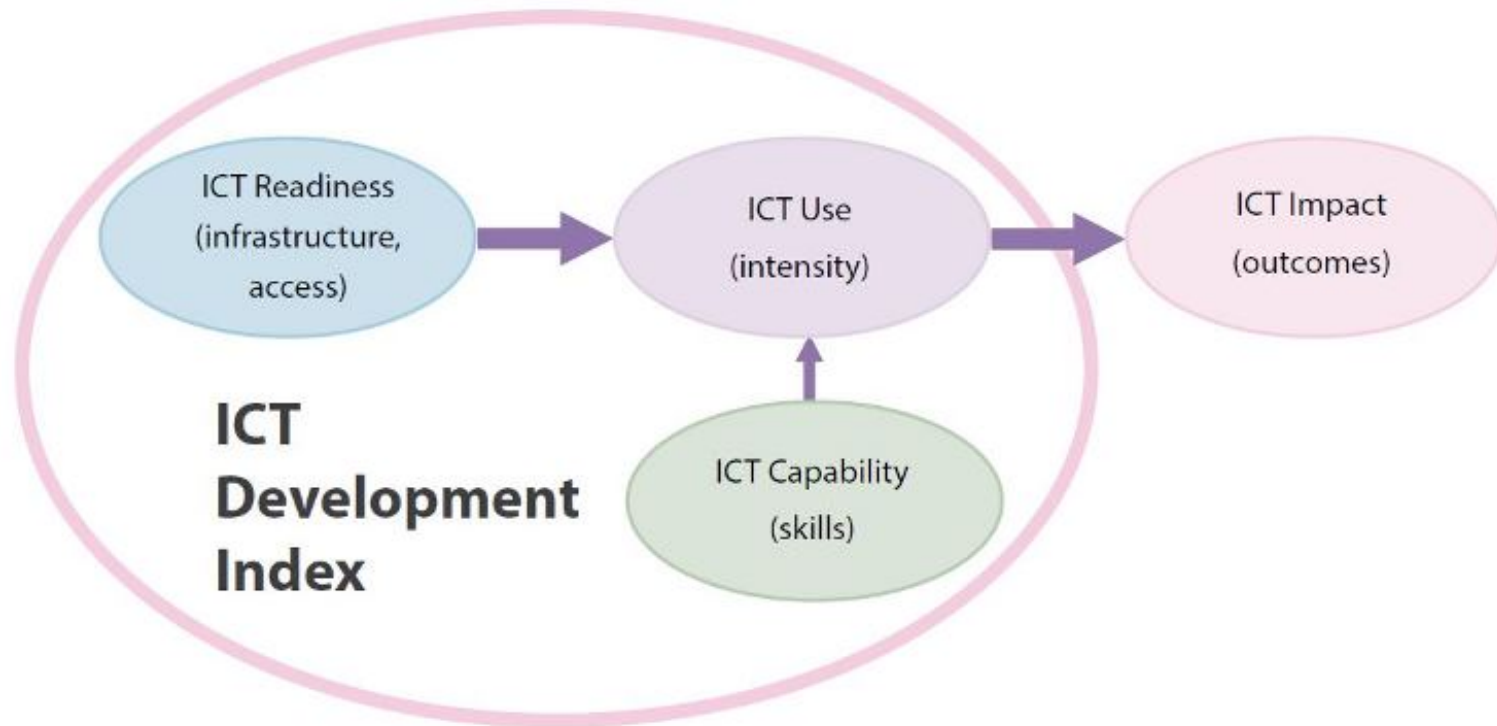
JRC Assessment of the IDI

Measuring
the Information
Society Report
2015

List of references

> Annex 1. ICT Development Index (IDI) methodology

> Annex 2. JRC Statistical Assessment of the 2015 ICT Development Index

> Annex 3. ICT price data methodology

> Annex 4. Statistical tables of indicators used to compute the IDI

Regional IDI – Arab States vs world
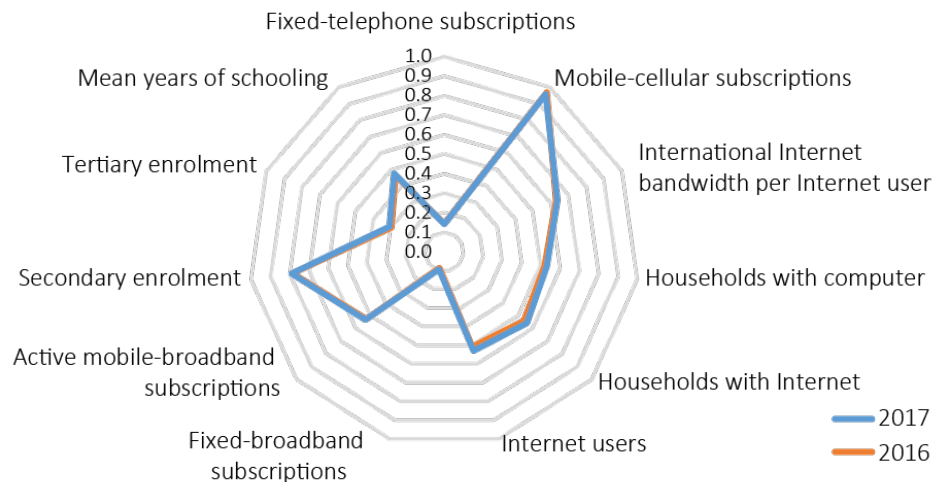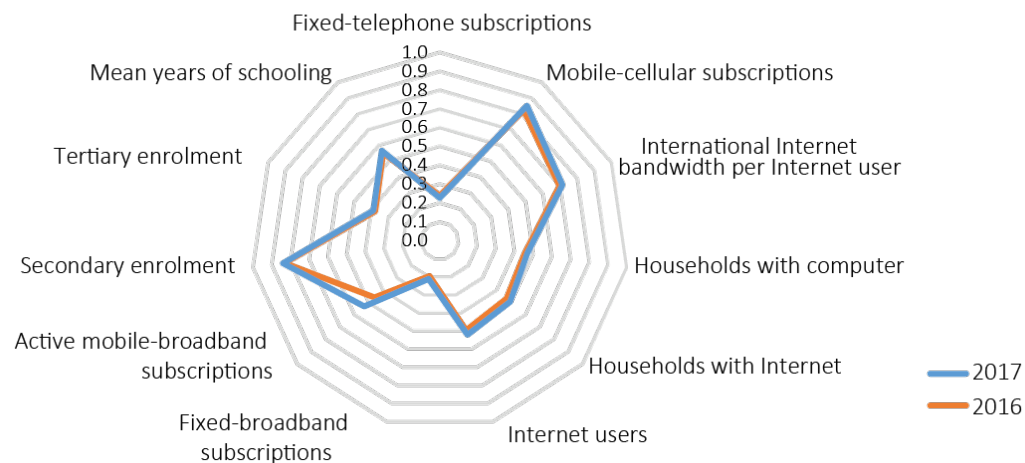
IDI 2017 values – Arab States
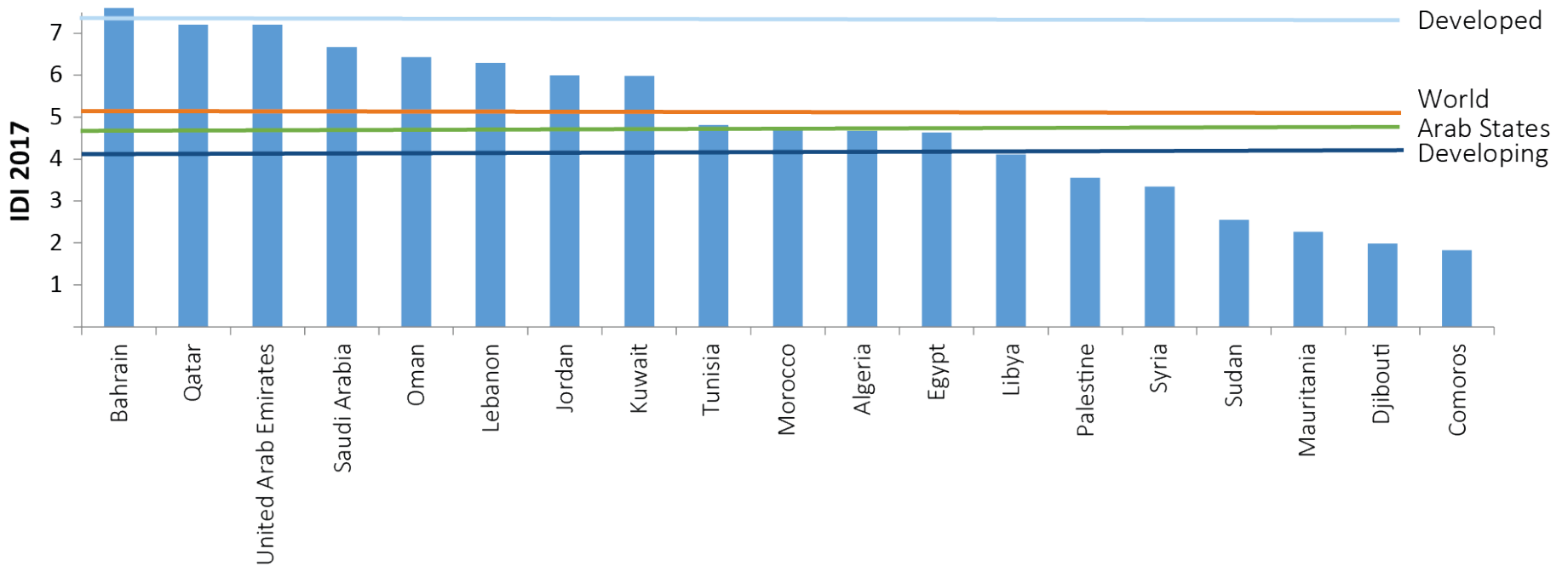
Most dynamic countries – Arab States

Change in IDI ranking				Change in IDI value (absolute)			
IDI rank 2017	Rank region	Country	IDI rank change	IDI rank 2017	Rank region	Country	IDI value change
102	11	Algeria	4	102	11	Algeria	0.34
158	18	Djibouti	3	62	5	Oman	0.29
62	5	Oman	2	71	8	Kuwait	0.23
64	6	Lebanon	1	64	6	Lebanon	0.20
103	12	Egypt	1	100	10	Morocco	0.19
151	17	Mauritania	1				

Source: ITU.
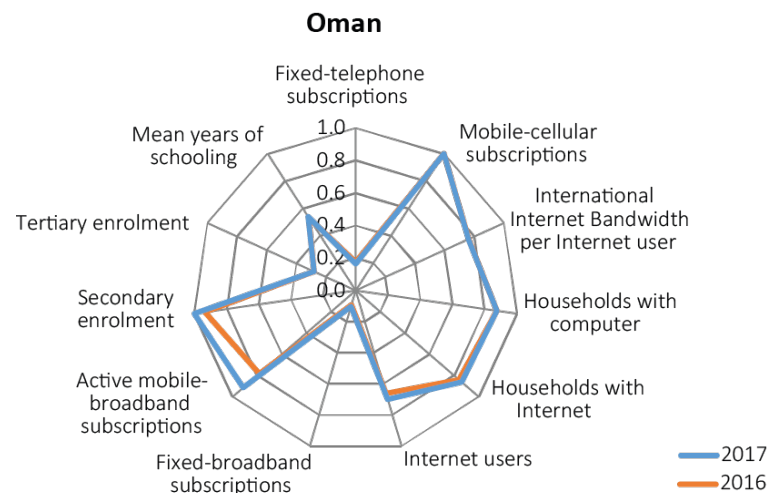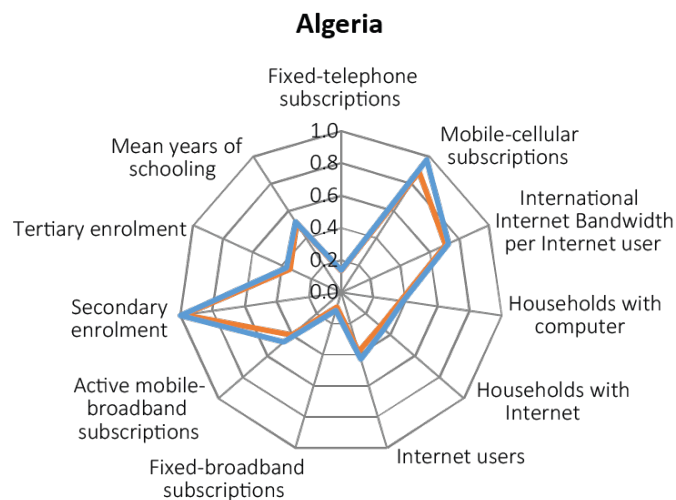
Extraordinary meeting of EGTI/EGH
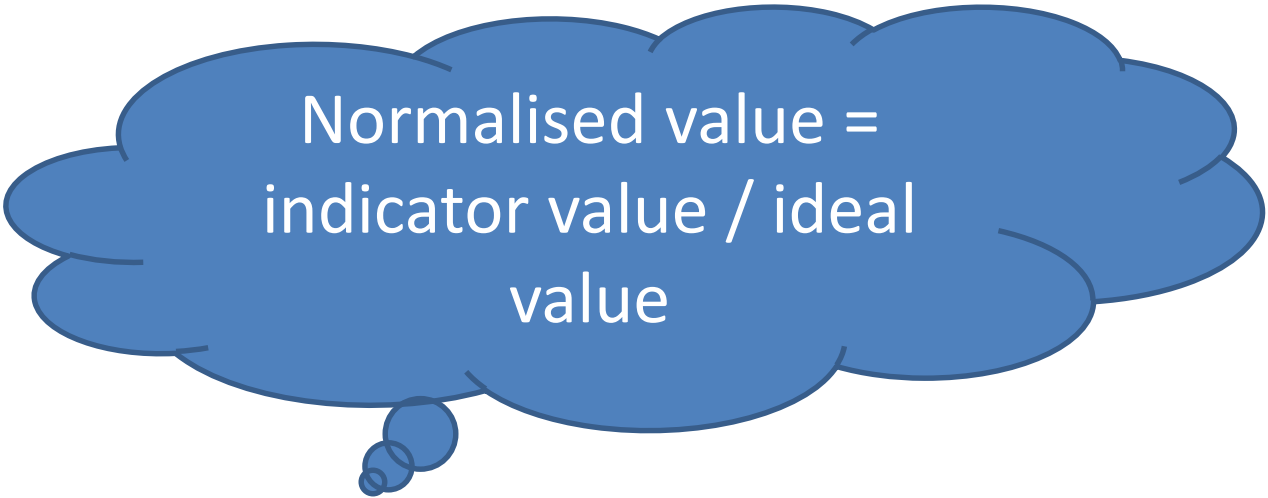
- Held in Geneva, Switzerland, on 1-3 March 2017
- Meeting was open to all ITU members and experts in the field of ICT statistics and data collection
- Objective - to discuss, debate and agree on a revised set of indicators to be included in the IDI
- Two input documents prepared by the sub-group and 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

New IDI composition

ACCESS	USE	SKILLS
1. Percentage of households with a computer	1. Percentage of individuals using the Internet	1. Mean Years of Schooling
2. Percentage of households with Internet access	2. Active mobile-broadband subscriptions per 100 inhabitants	2. Gross enrollment ratio (secondary level)
3. International Internet bandwidth (bit/s) per Internet user	3. Mobile-broadband Internet traffic per mobile-broadband subscription	3. Gross enrollment ratio (tertiary level)
4. Percentage of the population covered by mobile networks - at least 3G - at least LTE/WiMAX	4. Fixed-broadband Internet traffic per fixed-broadband subscription	4. Proportion of individuals with ICT skills
5. Fixed-broadband subscriptions by speed tiers as a % of total fixed-broadband subscriptions -256kbit/s to 2Mbit/s -2 to 10 Mbit/s -Equal to or above 10 Mbit/s	5. 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

Normalised value = indicator value / ideal value

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 <u>may OR may </u>not change every year

Normalising International Internet bandwidth (IIB)
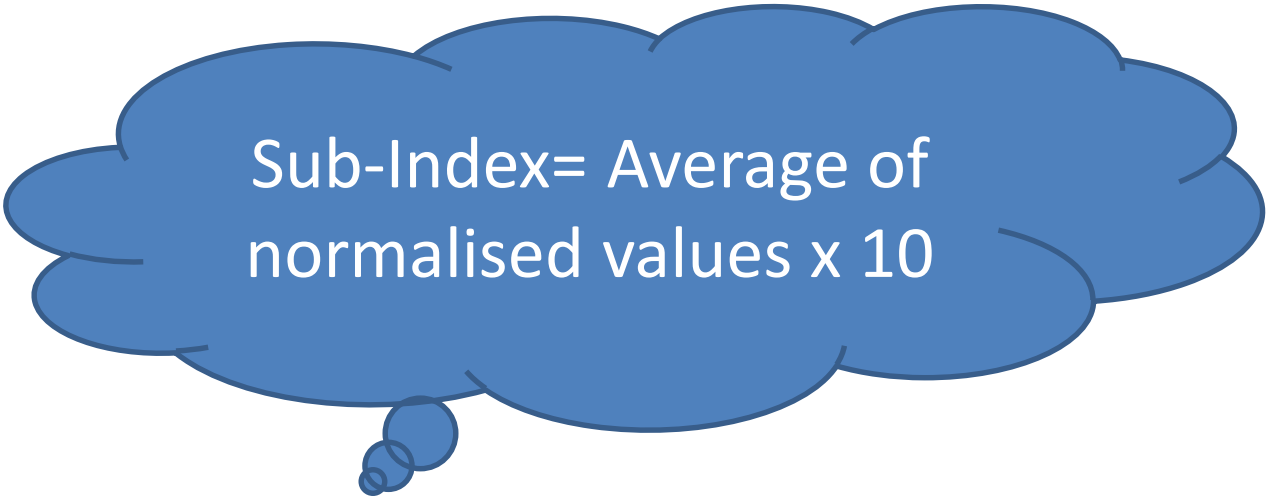
- Normalised value = log (IIB for economy) /log (ideal value for IIB)

- 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
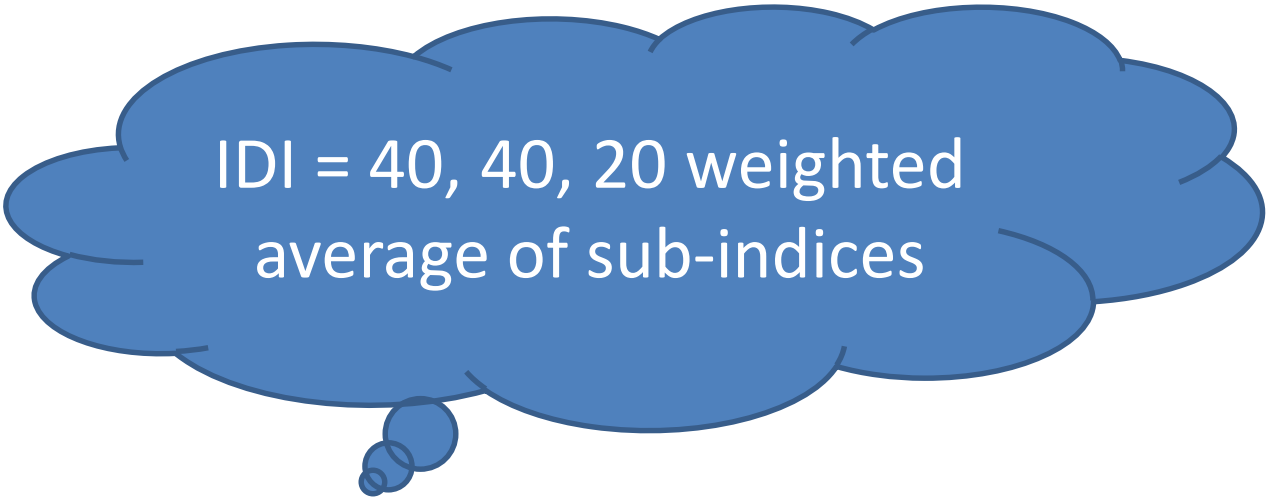
- Sub-index = simple average of normalised values of indicators within that sub-index

- 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

IDI = 40, 40, 20 weighted average of sub-indices

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

IDI 2018 – aggregation methodology (ongoing)

ICT access	Reference value	(%)
1. % households with a computer		20
2. % households with Internet		20
3. International Internet bandwidth per Internet user		20
4. % population covered by 3G / LTE mobile network [1,2,3]		20
5. Fixed-broadband subscriptions by speed [1,2,3] as a % total fbb		20

ICT use	Reference value	(%)
1. % individuals using the Internet		20
2. Active mobile-broadband subscriptions per 100 inhab		20
3. Mobile bbroadband Internet traffic per mobile-bb subs		20
4. Fixed-broadband Internet traffic per fixed-bb subs		20
5. % individuals who own a mobile phone		20

ICT skills	Reference value	(%)
1. Mean years of schooling		25
2. Gross enrollment ratio (secondary level)		25
3. Gross enrollment ratio (tertiary level)		25
4. Proportion of individuals with ICT skills [1,2,3]		25

40

40

20

ICT Development Index

[1, 2, 3] : indicator composed of sub-indicators

Availability IDI and SDG data

	Intntl. Internet bandwidth	Mobile broadband	Mobile bb traffic	Fixed bb traffic	Fixed bb by speed	3G coverage	LTE/WiMAX coverage		% individuals with ICT skills	% individuals own mobile	% individuals using Internet	% households w/ computer	% households w/ Internet
Algeria	G	G	R	G	G	G	G		R	R	R	2015	2015
Bahrain	G	G	R	R	G	G	G		G	G	G	G	G
Comoros	G	R	R	R	G	R	R		R	R	R	R	R
Djibouti	R	R	R	R	R	R	R		R	R	R	R	R
Egypt	G	G	G	G	G	G	R		G	G	G	G	G
Iraq	R	R	R	R	R	R	R		R	R	R	R	R
Jordan	G	G	G	R	G	G	G		R	R	R	R	R
Kuwait	G	G	G	G	G	G	G		R	R	R	R	R
Lebanon	R	R	R	R	R	R	R		R	R	R	R	R
Libya	R	R	R	R	G	R	R		R	R	R	R	R
Mauritania	R	G	R	R	R	G	G		R	R	R	R	R
Morocco	G	G	R	R	G	G	G		G	G	G	G	G
Oman	G	G	G	G	G	G	G		R	R	G	G	G
Palestine	G	G	G	R	G	G	G		R	R	R	R	R
Qatar	G	G	G	G	G	G	G		G	G	G	G	G
Saudi Arabia	G	G	G	G	G	G	G		R	G	G	G	G
Somalia	R	R	R	R	R	R	R		R	R	R	R	R
Sudan	G	R	R	R	G	G	R		G	G	R	R	R
Syria	G	G	R	G	G	G	G		G	G	G	G	G
Tunisia	G	G	G	G	G	G	G		R	R	G	G	G
UAE	G	G	G	G	G	G	G		G	G	G	G	G
Yemen	R	R	R	R	R	R	R		R	R	R	R	R

SDG indicators

Data gaps

- Greater gaps in demand-side than supply-side data

- Timeliness, breakdowns

- Data gaps can lead to non-official data

- Need to coordinate data production and work with governments and data users

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Monitoring the ITU Connect 2020 Agenda

Goal 1 Growth – Enable and foster access to and increased use of telecommunications/ICTs

- **Target 1.1**: Worldwide, 55% of households should have access to the Internet by 2020
- **Target 1.2**: Worldwide, 60% of individuals should be using the Internet by 2020
- **Target 1.3**: Worldwide, telecommunication/ICTs should be 40% more affordable by 2020

Goal 2 Inclusiveness –Bridge the digital divide and provide broadband for all

- **Target 2.1.A**: In the developing world, 50% of households should have access to the Internet by 2020
- **Target 2.1.B**: In the least developed countries (LDCs), 15% of households should have access to the Internet by 2020
- **Target 2.2.A**: In the developing world, 50% of individuals should be using the Internet by 2020
- **Target 2.2.B**: In the least developed countries (LDCs), 20% of individuals should be using the Internet by 2020
- **Target 2.3.A**: The affordability gap between developed and developing countries should be reduced by 40% by 2020
- **Target 2.3.B**: Broadband services should cost no more than 5% of average monthly income in developing countries by 2020
- **Target 2.4**: Worldwide, 90% of the rural population should be covered by broadband services by 2020
- **Target 2.5.A**: Gender equality among Internet users should be reached by 2020
- **Target 2.5.B**: Enabling environments ensuring accessible telecommunications/ICTs for persons with disabilities should be established in all countries by 2020

Goal 3 Sustainability – Manage challenges resulting from the telecommunication/ICT development

- **Target 3.1**: Cybersecurity readiness should be improved by 40% by 2020
- **Target 3.2**: Volume of redundant e-waste to be reduced by 50% by 2020
- **Target 3.3**: Green House Gas emissions generated by the telecommunication/ICT sector to be decreased per device by 30% by 2020

Goal 4 Innovation and partnership – Lead, shape and adapt to the changing telecommunication/ICT environment

- **Target 4.1**: Telecommunication/ICT environment conducive to innovation
- **Target 4.2**: Effective partnerships of stakeholders in telecommunication/ICT environment

Broadband Commission 2025 Targets

1. By 2025, all countries should have a funded National Broadband Plan or strategy or include broadband in their Universal Access and Service (UAS) Definition

2. By 2025, entry-level broadband services should be made affordable in developing countries at less than 2% of monthly Gross National Income (GNI) per capita

3. By 2025, Broadband-Internet user penetration should reach:
   a) 75% worldwide
   b) 65% in developing countries
   c) 35% in Least Developed Countries

4. By 2025, 60% of youth and adults should have achieved at least a minimum level of proficiency in sustainable digital skills

5. By 2025, 40% of the world's population should be using digital financial services

6. By 2025, overcome unconnectedness of Micro-, Small- and Medium-sized Enterprises (MSMEs) by 50%, by sector

7. By 2025, gender equality should be achieved across all targets

Thank you

For more information
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