Virtual joint EGTI/EGH meeting on the ICT Development Index (IDI)

13 – 15 June 2023 – 13:00-16:00 CET

Context

The joint meeting of the ITU Expert Group on Telecommunication/ICT Indicators (EGTI) and the ITU Expert Group on ICT Household Indicators (EGH) on the ICT Development Index (IDI) was convened in accordance with *instructs 9* of Resolution 131 (Rev. Bucharest, 2022) of ITU's Plenipotentiary Conference by the Director of the Telecommunication Development Bureau (BDT) and announced in Circular BDT/DKH/IDA/005 of 9 March 2023.[1] The invitation to the meeting was sent on 21 March 2023 via Circular BDT/DKH/IDA/007.[2]

Summary report

1. The joint EGTI/EGH meeting on the ICT Development Index (IDI) took place from 13 to 15 June 2023. It was conducted in fully virtual format and in English only.
2. A total of 264 participants attended the meeting – or parts of it –, including experts from regulators, telecommunication operators, ministries and national statistical offices (NSOs) from 76 Member States, as well as ITU-D Sector Members, other UN agencies and regional organizations. The gender distribution was 129 female participants and 135 male participants.
3. The meeting was chaired by Bernard Banda, Manager for Policy and Research with the Zambia Information & Communications Technology Authority (ZICTA) and Chair of EGTI. The Chair gave opening remarks, in which he provided context and objectives.
4. The Chair explained, *inter alia*, that the objective of the meeting was to resolve and seek consensus on any issues identified during the consultation of Member States that took place in April-May.[3]
5. Cosmas Luckyson Zavazava, Director of the BDT gave opening remarks. He reminded participants of the process put in place and the purpose of the meeting.

[1] "to convene a meeting of EGTI/EGH following a formal consultation of Member States as appropriate, with a view to resolving any contentious issues and seeking consensus, while taking into account instructs the Director of the Telecommunication Development Bureau 12, among Member States;"

[2] Invitations were sent to the following ITU recipient groups: Administrations of ITU Member States, Palestine (Resolution 99 (Rev. Dubai, 2018)), ITU Sector Members, ITU Academia, National Statistical Offices, World Telecommunication/ICT Indicators contacts, Regional and Other International Organizations, Regional Telecommunication Organizations, Regulators, United Nations' Funds and Programmes, Specialized Agencies and IAEA.

[3] For more information on the process, refer to Circular BDT/DKH/IDA/005.

6. Linah Ngumba, Chair of EGH, gave brief remarks, offering her support to the process of developing a new IDI and to the Chair of the meeting.

7. The Chair introduced the agenda, which covered all the outstanding methodological issues identified by the Secretariat following the consultations and listed in the 'Version 2' document of the IDI methodology, shared ahead of the meeting.[4] The agenda was approved by the participants.

8. The Secretariat recalled the necessary steps to develop an index, before presenting the conceptual framework of *universal and meaningful connectivity* proposed to guide the development of the new IDI. The participants confirmed the broad support for using this conceptual framework.

9. Moving to the universal connectivity indicators, the first issue for discussion was fixed broadband penetration. The original proposal was to use *fixed broadband subscriptions per 100 population*, consistent with the definition adopted by EGTI and codified in the *Handbook for the Collection of Administrative Data on Telecommunications/ICT*. Many participants considered the number of households to be a denominator that is more aligned with policy objectives than population. This would take into account that fixed-broadband subscriptions are often shared within one household and that the average size of households varies across countries. However, because up-to-date, internationally comparable data for the number of households is very limited, using this indicator in the IDI framework is not feasible.

10. The participants agreed that the indicator *percentage of households with Internet access using fixed broadband*, from ICT household surveys, is the most appropriate indicator to measure household penetration of fixed broadband. However, it was concluded that it was not a feasible alternative due to a lack of sufficient countries collecting and reporting the data. The Secretariat proposed another alternative, the *number of fixed broadband subscriptions per 100 inhabitants aged 18+*. By focusing on adults only, this would lessen disparities in household size that creates comparability issues when using the full population. Based on contributions by voice and in the chat of the meeting, there were about as many experts in favour as against this alternative.

11. As participants shared many different views and no acceptable solution emerged, an indicator on fixed broadband subscriptions will not be included in this edition of the IDI. The participants recognised that this is a big loss for the index, because the indicator is very relevant for the ICT development of countries. The agreement reached was that the indicator is deferred to 2027, when the IDI will be reviewed. It was hoped that by that time there will be sufficient data available on the number of households, or that more countries will collect data on households with Internet access using fixed broadband through household ICT surveys. The ITU Secretariat will encourage Member States to provide these household survey data to the ITU and to provide data on household size to the UN Population Division. The ITU will also continue its dialogue with the UN Population Division on the subject. It was noted that

[4] See Circular BDT/DKH/IDA/010.

an EGTI subgroup is discussing the issue of measurement of fixed broadband penetration and the strengths and weaknesses of different denominators as part of the 2023 EGTI Work Programme. Conclusions of the subgroup may inform decisions on the measurement of fixed broadband penetration for future iterations of the IDI.

12. Next, the meaningful connectivity indicators were presented, starting with the infrastructure enabler. There was one issue for discussion for this enabler: the choice of the denominator to use for *mobile broadband Internet traffic* and *fixed broadband Internet traffic*. The choice was to divide these statistics either by mobile broadband subscriptions, respectively fixed broadband subscriptions, or by Internet users. Dividing by Internet users focuses on assessing traffic at the country level, for the average Internet user. However, it would be less precise, as it would combine data from different sources and it would require estimates for the number of Internet users for a fair number of countries. In addition, no distinction can be made between Internet users using fixed or mobile broadband. Dividing by subscriptions has the advantage that both the numerator and the denominator would come from the same source, being monitored by telecom operators and national regulatory authorities. Traffic per subscription is also a performance indicator used by many regulators. Eventually, the participants agreed to use subscriptions as denominator for both mobile and fixed broadband traffic.[5]

13. The second day of the meeting started with a discussion on the affordability indicators. The topic for discussion was which mobile broadband basket should be used, with a choice between the data-only mobile broadband basket, and a combined data and voice basket. The original suggestion was to use the data-only mobile broadband basket, which is the simplest to collect and interpret, is fairly representative of the affordability measures based on the other mobile broadband baskets published by the ITU, and is also used for the UN Broadband Commission's policy target. Many participants argued that since consumers in many markets typically use combined voice and data rather than data-only mobile broadband services, a bundle basket was a better fit for the framework. The Secretariat explained that data availability is not a limitation to use any of the options, and it was clarified that in many countries the price for a mobile broadband data and voice basket may not be the price of a "bundle".[6] Participants still preferred the data and voice basket over the data-only mobile broadband basket. The participants also decided to use the mobile broadband data and voice high-consumption basket rather than the low-consumption one, due to its relevance for meaningful connectivity.

14. In addition, a clarification was provided by the Secretariat on the necessity of expressing the prices of the baskets as a share of gross national income per capita

[5] An alternative indicator that was proposed was *international bandwidth usage*. However, this indicator suffers from several limitations, as laid out in the 'Version 1' document of the IDI methodology (page 13 of Annex 4) and reiterated during the meeting. The suggestion was therefore rejected.

[6] Bundle in the sense that the services are marketed in one single package. In some cases, bundles are not on the market (yet), while in other cases a combination of different plans and add-on(s) may be cheaper than a bundle.

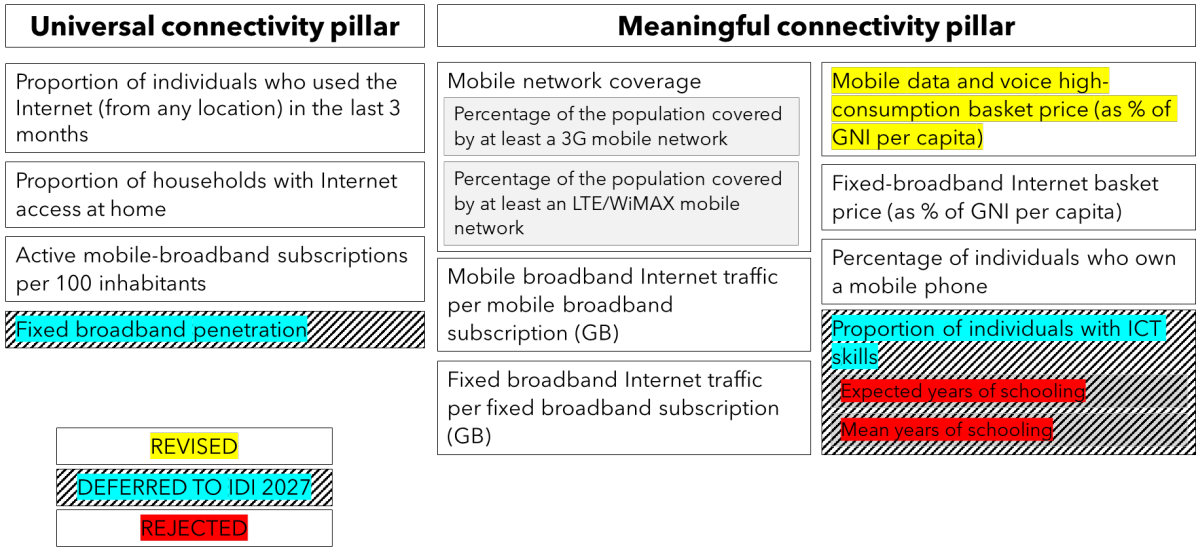
rather than in purchasing power parity (PPP) dollars to measure the affordability of the basket. Price as a percentage of income is a true measure of affordability, whereas PPP is a way of comparing prices internationally but is not a measure of affordability.

15. For the Device enabler, the topic for discussion was whether to include the *percentage of individuals owning a mobile phone* in the index. Initially, the indicator was excluded because of low data availability. Because there was a broad call for inclusion by EGTI and EGH members, the indicator was included in the 'Version 1' document, supported by the fact that estimates have already been made for this indicator to calculate aggregates for *Facts and Figures*, a practice which will be continued in coming years, using an established methodology. However, during the consultation with Member States, some countries objected based on data availability. Therefore, the indicator was tabled for discussion. During the meeting, there was a clear majority in favor of including the indicator.

16. The next enabler discussed was ICT skills. The participants recognized that the *percentage of individuals with ICT skills*, included in ITU data collection from countries, is the best existing proxy for digital literacy. However, data availability is poor and methodological issues related to aggregation have not yet been resolved by the EGH subgroup working on this topic. Therefore, this indicator cannot yet be included in the IDI. In the previous IDI, three indicators were used as proxy for ICT skills: mean years of schooling, gross enrolment ratio in secondary education and gross enrolment ratio in tertiary education. In the 'Zero draft' document, the two enrolment indicators were proposed, but many EGTI/EGH members objected during the first consultation. In the 'Version 1' document of the proposed IDI methodology, *Mean years of schooling* and *Expected years of schooling* were proposed as alternate proxy indicators. The two indicators make up the *Knowledge pillar* of UNDP's Human Development Index and it was proposed to use the HDI data set, which includes estimates for the missing values. During the meeting, there was some support for including these indicators as proxies for ICT skills, but a larger part of the audience considered these indicators as poor proxies for ICT skills. Eventually, the participants recommended not to include any indicators on ICT skills in this iteration of the index. Instead, the *percentage of people with ICT skills* is retained as indicator, but deferred to 2027, in the hope and expectation that the methodological issues will be resolved and data availability will be sufficient in 2027.

17. During the meeting, concerns were expressed that the enabler 'Safety and security' was not captured in the proposed structure and a proposal was made to use ITU's Global Cybersecurity Index (GCI). In response, the Secretariat acknowledged the critical importance of this enabler and explained that the GCI had been considered in the 'Zero draft' but was rejected, and laid out the reasons (also laid out in the 'Zero draft', 'Version 1' and 'Version 2' documents). The GCI assesses countries' commitments to cybersecurity. As such, it does not fit the framework, which focuses on outputs rather than inputs. In addition, the GCI's methodology is still evolving and is not stable yet. Introducing it in the IDI would affect comparability over time, as a change in this indicator may be due to a change in the methodology rather than a change in the performance. Therefore, the inclusion of the GCI was rejected.

18. As a result of the discussions on the selection of indicators, participants in the meeting agreed to include the following set of indicators in the IDI:



19. The third day was was dedicated to the reference year, country coverage, treatment of missing data and outliers, normalization, and weighting.

20. It was agreed that the reference year for the 2023 edition of the IDI will be 2021. This has the advantage that data collected through the Long Questionnaires of 2022 can be included, as well as the estimates made for *Facts and Figures 2022*.

21. Based on the 10 indicators retained, the table below shows how many economies out of the 196 considered[7] can be included with various thresholds for the percentage of (real, not estimated) data that needs to be available for an economy in order for it to be included in the index. If the criterion will be that data needs to be available for at least 50% of the retained indicators, 165 economies can be included in the 2023 edition of the IDI provided that the methodology is approved. The final coverage could be fewer if some economies, which meet the data availability criteria, decided to opt out from the 2023 edition.

Economy inclusion threshold (% of 10 indicators available in the 2021 reference period)	% of indicators available					
	50%	60%	70%	80%	90%	100%
Nr. of economies meeting the threshold requirement	165	149	130	89	75	40
Nr. of missing data points to be estimated	342	262	186	63	35	0
% of total data points to be estimated	21%	18%	14%	7%	5%	0%

22. The meeting continued with an overview of the procedures and models, which the ITU Secretariat would apply to estimate missing data. The two traffic indicators are a special case. It is very difficult to make high-quality estimates for missing Internet traffic data. Instead, missing data will not be modelled, but will be imputed using a 'hot deck' imputation method.[8] It was agreed that the estimates would be used to calculate the

[7] The 193 ITU Member States plus Hong Kong (China), Macao (China) and Palestine.
[8] 'Hot deck' imputation is a method for handling missing data in which each missing value is replaced with an observed response from a similar unit.

index, but the underlying estimates would not be published. All the values that will be used to calculate the IDI score for an economy, including unpublished hot deck estimates, will be sent to that economy for information before the calculation and publication of the IDI.

23. The Secretariat then gave an overview of the statistical assessment of the indicators, the detection of outlying values, and the methods and solution to treat these. In addition, a preliminary correlation analysis was shown, which revealed that an aggregation of the selected indicators is expected to provide a fairly good summary of the information provided in the underlying data.

24. This was followed by a presentation on the normalisation of indicators. The Secretariat explained that the most common and intuitive approach to transform (or 'normalize') indicator values onto a scale ranging from 0 to 100 for all indicators is the min-max method. This method consists in subtracting the minimum value (or threshold value) for the given indicator across all economies from each value and dividing by the range of the indicator values, where the range is the difference between the maximum value (or a different goalpost, where appropriate) and the minimum value (or a different threshold, where appropriate).

25. An issue for discussion was the goalpost for the three usage indicators considered for inclusion. For the universality indicator *percentage of individuals using the Internet*, it is neither expected nor desirable that all children use the Internet. Furthermore, some individuals do not want to use the Internet, even if they have access to it and can afford it. The same argument goes for the *percentage of households with Internet* and the *percentage of individuals owning a mobile phone*. For these indicators, the proposal to set the goalpost at 95% rather than the theoretical maximum of 100% was accepted by the participants.

26. For the two traffic indicators, values will be log-transformed to reduce the variability of the data, and goalposts will be defined based on the projected values considering the double-digit annual growth of global median traffic. For the affordability indicators, goalposts will reflect the reverse directionality, where a higher cost corresponds to a worse outcome. The min-max formula still applies, but the minimum value is the goalpost, and the maximum value is the threshold. Many participants suggested applying a threshold lower than the 2% of GNI per capita in order to further incentivize affordability improvements and distinguish performance.

27. On weighting, two alternatives were proposed. The first one was a weighting scheme that mirrors the two dimensions of the UMC concept. In that case, pillar scores will be the average of the indicator scores in each pillar (step 1) and the IDI score will be the average of the scores of the Universal connectivity pillar and the Meaningful connectivity pillar (step 2). As a consequence, each pillar will weigh 50% in the IDI score. A possible alternative presented was that the IDI score would be the average of individual indicator scores. In that case, all individual indicators contribute equally (i.e., with the same weight) to the overall IDI score. In this proposal, the two dimensions of connectivity would then have different weights in the index, with the Meaningful connectivity dimension weighing more than the Universal connectivity dimension,

since the former contains more indicators than the latter. After some debate, the participants agreed to use the first approach.

28. At the end of the meeting, the Chair presented the next steps:

- Secretariat to post the report of the meeting on the meeting's page;
- Secretariat to produce the final version of the IDI methodology (Version 3);
- Statistical assessment by Joint Research Centre;
- Consultation of Member States in August-September:
    a. if they approve the index methodology as presented in Version 3; and
    b. if they want to opt out from the 2023 edition of the index (in which case, they will be able to join in subsequent editions);
- If at least 70 per cent of responding Member States approve the methodology, the Secretariat will send the data for use in the IDI to countries for information in early October;
- If the methodology is approved, the 2023 edition of the IDI is expected to be published in November.

29. Sofie Maddens, Chief a.i. of the Digital Knowledge Hub, provided closing remarks, on behalf of the BDT Director. She thanked the Chair, the participants and the ITU team for their efforts, after which the meeting was closed by the Chair.