



INTERNATIONAL TELECOMMUNICATION UNION

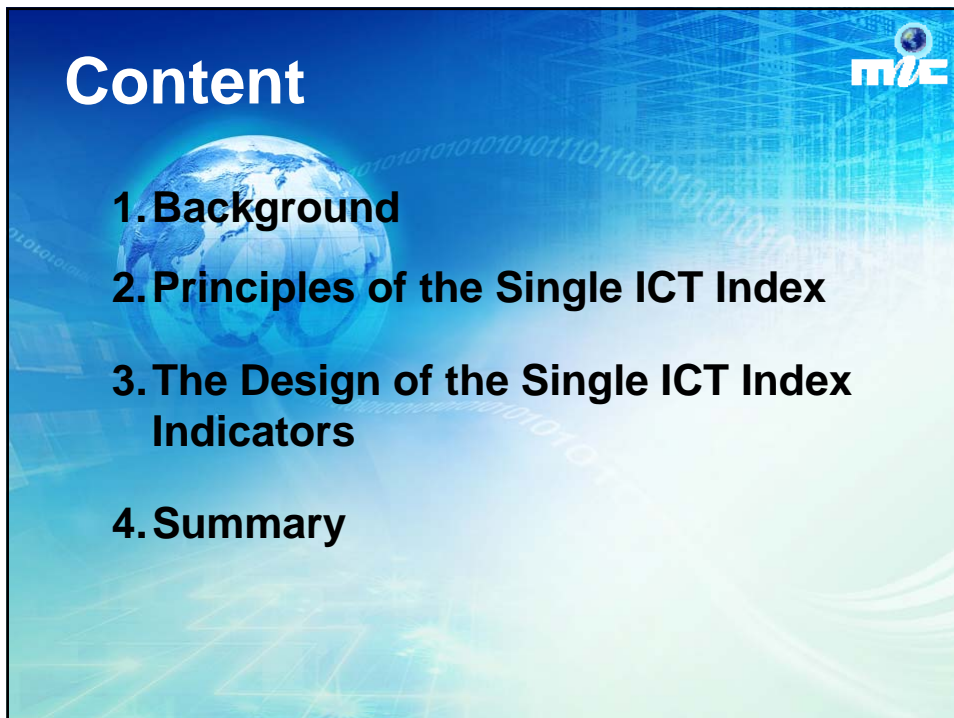
**TELECOMMUNICATION
DEVELOPMENT BUREAU**

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SOURCE: Ministry of Information and Communication, Korea (Rep.)

TITLE: Further Suggestions on the Single ICT Index: Rep. of Korea





1. Background



- ❖ **Objective of a Single ICT Index**
 - As a key methodology to achieve the goal of WSIS to implement '[a] realistic international performance evaluation and benchmarking, through comparable statistical indicator...taking into account different national circumstances' (para. 28 Plan of Action)
 - ↳ **Facilitate the efforts to achieve the goal of the WSIS and serve as a measure to evaluate its progress**

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2. Principles of a Single ICT Index

- ❖ **Provide policy implications and development**
 - Identify the obstacles of ICT development and provide policy implications
 - Not to simply report on the rankings and progress of countries' ICT development level
 - But to analyze the countries' status and problem in order to develop relevant policies
 - ↳ Therefore, take into account obstacles factors deterring ICT usage and promotion
- ❖ **Challenge to comply and accommodate the rapid transition of ICT development**
 - Consider the changing trend from PSTN to the application of IP-based data transition and VoIP
 - ↳ Therefore, shift its focus on indicators of current trend (eg., broadband and mobile technologies)

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2. Principles of a Single ICT Index



- ❖ **Utilize diverse data source based on its availability and contextual reliability**
 - Rigid approach may restrict availability of data resource
 - A more flexible approach must be taken to allow flexible utilization of diverse data sources based on different country context
 - ↳ A modular approach will be appropriate which enables additional components to complement and create for its specific purposes
- ❖ **Encourage to improve nation's data collection method**
 - Importance of countries' availability of data source and credibility of the Index
 - ↳ An active involvement of ITU to encourage countries to yield the necessary data would be required rather than passively rely on the existing sources

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2. Principles of a Single ICT Index



- ❖ **Measure not only the 'digital divide' between countries but also within countries (including gender inequality)**
 - Need for social survey to measure ICT status of each individuals and social groups within a country
 - ↳ Can be supported through ITU's support to assist statistical techniques and knowledge for its member countries to conduct social survey
- ❖ **Index that is applicable to different context with transparent methodology**
 - Keep the Index as simple as possible to easily replicable
 - ↳ Allow each country to input their own data online and have access to the source code on the model

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3. The Design of Single ICT Index Indicators



❖ Standardization of indicators through Z-score method

- Although method suggested by the Background Paper avoids weighting, problems of difference in measurement units and distribution range occurs.
- A particular indicator with a large unit and high distribution range will predominate the overall index score and its ranking
- For example:
 - International voice/tariff volume ranges: 30 ~1600
 - Literacy rate ranges: 20 ~ 120
- A country with a very high volume of International voice/data traffic will score high in the total Index entirely based on one indicator

⇒ Standardizing methodology Z-score, simple and easily replicable, will allow equal contribution of all indicators

$$\text{Z-score} = (\text{actual value} - \text{average value}) / \text{standard deviation}$$

3. The Design of Single ICT Index Indicators



❖ Inappropriateness of *International voice and Internet bandwidth* indicators

- Consider the main goal for ICT development is to facilitate communication between its people and rich contents created by domestic users in local language
- Focus on measuring interaction between people within the nation rather than inter-nation
- Telecommunication trend moving from voice calls via PSTN to VoIP and data transition (emails, messengers)
- However, VoIP yet not included in the voice call measurement

↪ Use only domestic Internet traffic as a indicator for measuring of ICT utilization

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3. The Design of Single ICT Index Indicators



❖ Separating fixed and mobile Internet subscribers

- According to the background paper, the Usage-Intensity sub-index includes *Broadband Subscribers*
- However, needed to separate fixed and mobile broadband subscribers to match the recent explosive use of mobile broadband
- Also needed to use the ratio of broadband subscribers to total Internet subscribers rather than just broadband subscribers in order to measure usage intensity

↪ Thus, use fixed/mobile Internet subscribers for measuring infrastructure and use the ratio of fixed/mobile broadband subscribers to total fixed/mobile Internet subscribers for measuring utilization

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3. The Design of Single ICT Index Indicators



❖ Adoption of 'goal post' methodology

- Since the universal access condition for mobile service is 100%, any country exceeding 100% does not always represent high ICT opportunity
- Countries using prepaid card subscription and having many foreign residents will exceed the 100%
- Such problem will not occur if survey method is conducted
 - ↳ When using data of service operators, set a 'goal post' of 100% and assign 100% rate to any cases exceeding this rate
 - ↳ Using a 'goal post' will enhance credibility of measuring *mobile subscription rate*

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3. The Design of Single ICT Index Indicators



❖ Re-composing sub-indices

- First, ICT infrastructure must be established; secondly, accompanied by an appropriate environment to utilize the infrastructure; lastly, followed by active utilization
- ↳ More appropriate for the composite of the Index to include sub-indices of *infrastructure, opportunity, and utilization* rather than *user-density, opportunity, and usage-intensity*

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3. The Design of Single ICT Index Indicators



❖ Household as a unit of fixed telephone and Internet service

- Subscription rate by household is more appropriate than individual units since fixed-line telephone and Internet services are provided at a household level
- ↪ Given the absence of such survey statistics in many countries, dividing the total number of subscribers of fixed-line telephone and Internet services by the number of household would be the most relevant alternative

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3. The Design of Single ICT Index Indicators



❖ Re-composing sub-indices: User-Density and Usage Intensity

- According to the background paper, *Internet User per capita* is included as a sub-indicator of User-Density measuring network infrastructure
- Rate of Internet users directly relates to ICT use
- ↪ Re-locating *Internet User per capita* under Usage-Intensity (Utilization) & *Subscribers data* under User-Density (Infrastructure) is appropriate
- Take into account the increasing trend of wireless Internet use
- ↪ Separate Internet subscription rate into fixed (by households) and mobile service (by individuals)

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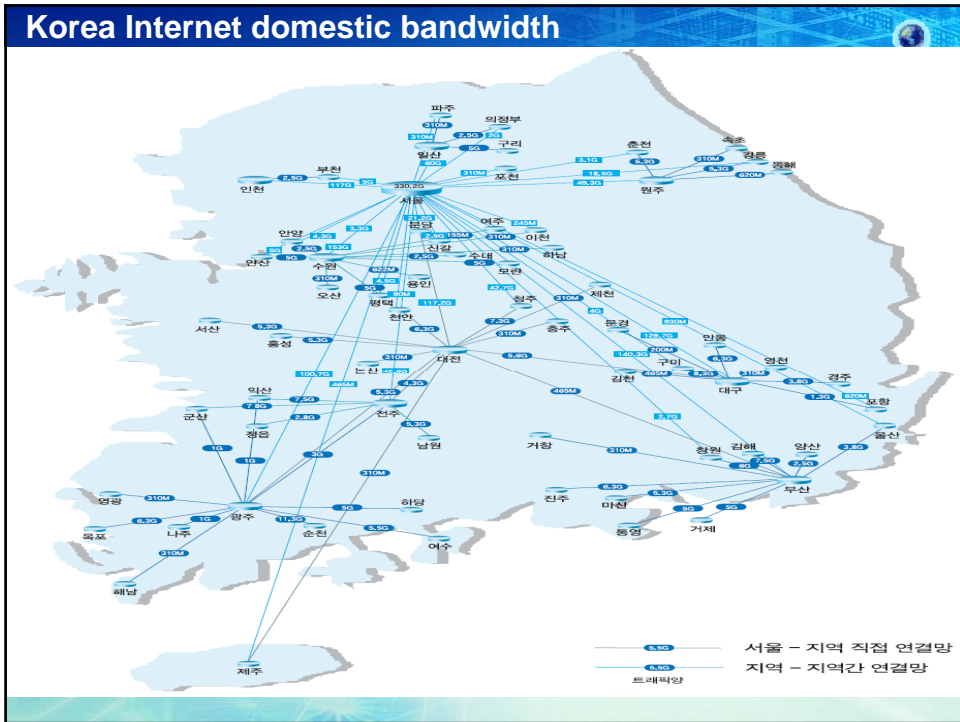
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Categories	Background Paper	Rep. of Korea	Comparison
User-Density/per capita (Infrastructure)	<ul style="list-style-type: none"> - Mobile subscribers - Fixed line households - Internet users 	<ul style="list-style-type: none"> - Mobile subscribers - Fixed line households - Fixed Internet subscribers (by households) - Mobile Internet subscribers (by individuals) 	<ul style="list-style-type: none"> - Goal post - No change - Change - Change
Usage-Intensity (Utilization)	<ul style="list-style-type: none"> - International voice + Data bandwidth - Broadband subscribers 	<ul style="list-style-type: none"> - Domestic Internet bandwidth(/capita) - Ratio of fixed broadband subscribers to total fixed Internet subscribers - Ratio of mobile broadband subscribers to total mobile Internet subscribers 	<ul style="list-style-type: none"> - Change - Change - Change
Opportunity	<ul style="list-style-type: none"> - Mobile population coverage - Internet + mobile affordability - Adult literacy 	<ul style="list-style-type: none"> - Percentage of population covered by mobile telephony - Internet and mobile phone tariffs - Adult literacy rate 	<ul style="list-style-type: none"> - No change - No change - No change



5. Appendix



Korea Internet domestic bandwidth

City	City	ISP									Sum
		Dacom	Dreamline	SK Networks	SK telecom	Onse telecom	KT	Hanaro telecom	Samsung Networks	Enterprise	
Within Seoul	-		6G				(25G*16)+(16G*20)		4.2G	80G	330.2G
Seoul	Kangrung			4G*4		310M				2.5G	18.5G
Seoul	Kwangju	5G	1G	2G		2.7G	10G*8	2.5G*4			100.7G
Seoul	Koomi							4G			4G
Seoul	Daegu	5G	10G	2G		2.7G	10G*10	2.54G			129.7G
Seoul	Daejon	5G	1G	5G	622M*2	1G	10G*8	2.5G*8	4G	10G	117.2G
Seoul	Pusan	5G	10G	5G		5.3G	10G*8	2.5G*8		15G	140.9G
Seoul	Bundang				622M*2	16				4G	21.2G
Seoul	Singal									2.5G	2.5G
Seoul	Suwon					3G	10G*14			10G	15.3G
Seoul	Pyeongtag			2G						2.5G	4.5G
Seoul	Incheon		1G		310M	2G	10G*8	2.5G*8		10G	11.7G
Seoul	Ansan									5G	5G
Seoul	Suwon	310M	1G	2G							3.3G
Seoul	Paju	310M									310M
Seoul	Pocheon	310M									310M
Seoul	Uijeongbu									2G	2G
Seoul	Anyang	310M								4G	4.3G
Seoul	Ulsan					930M					930M
Seoul	Wonju	310M	1G	5G	310M	200M	10G*4			2.54G	49.3G
Seoul	Icheon					245M					245M
Seoul	Ilisan						10.6G*6				60G
Seoul	Jundgu	310M		2G		310M	10G*4				42.6G
Seoul	Jeju					465M					465M
Seoul	Changwon					2.7G					2.7G
Seoul	Cheonan					90M					90M
Seoul	Cheongju					2.7G	10G*4				42.7G
Seoul	Chuncheon					620M				2.5G	3.1G
Seoul	Pohang					620M					620M
Seoul	Bucheon									5G	5G
Suwon	Yongin						622M				622M
Suwon	Heon						155M*2				310M



