Role of the UNESCO Institute for Statistics (UIS) in ICT in education statistics

ICT in Education Technical Advisory Panel

Paris, France

9-10 December 2014

UNESCO Institute for Statistics

- ☐ Founded in 1999 in Paris

- ☐ Relocated to Montreal in 2001

- ☐ Located on the campus of Université de Montréal

- ☐ Has grown from 8 to 100 employees

- ☐ Mandated to maintain international databases for:
    - ■ Education
    - ■ Science, technology and innovation
    - ■ Culture
    - ■ *Communication and information*

www.uis.unesco.org

UIS mandate

- Collection and dissemination of cross-nationally comparable data

- Analysis of comparative data

- Development of international classifications/frameworks

- Technical capacity building within countries

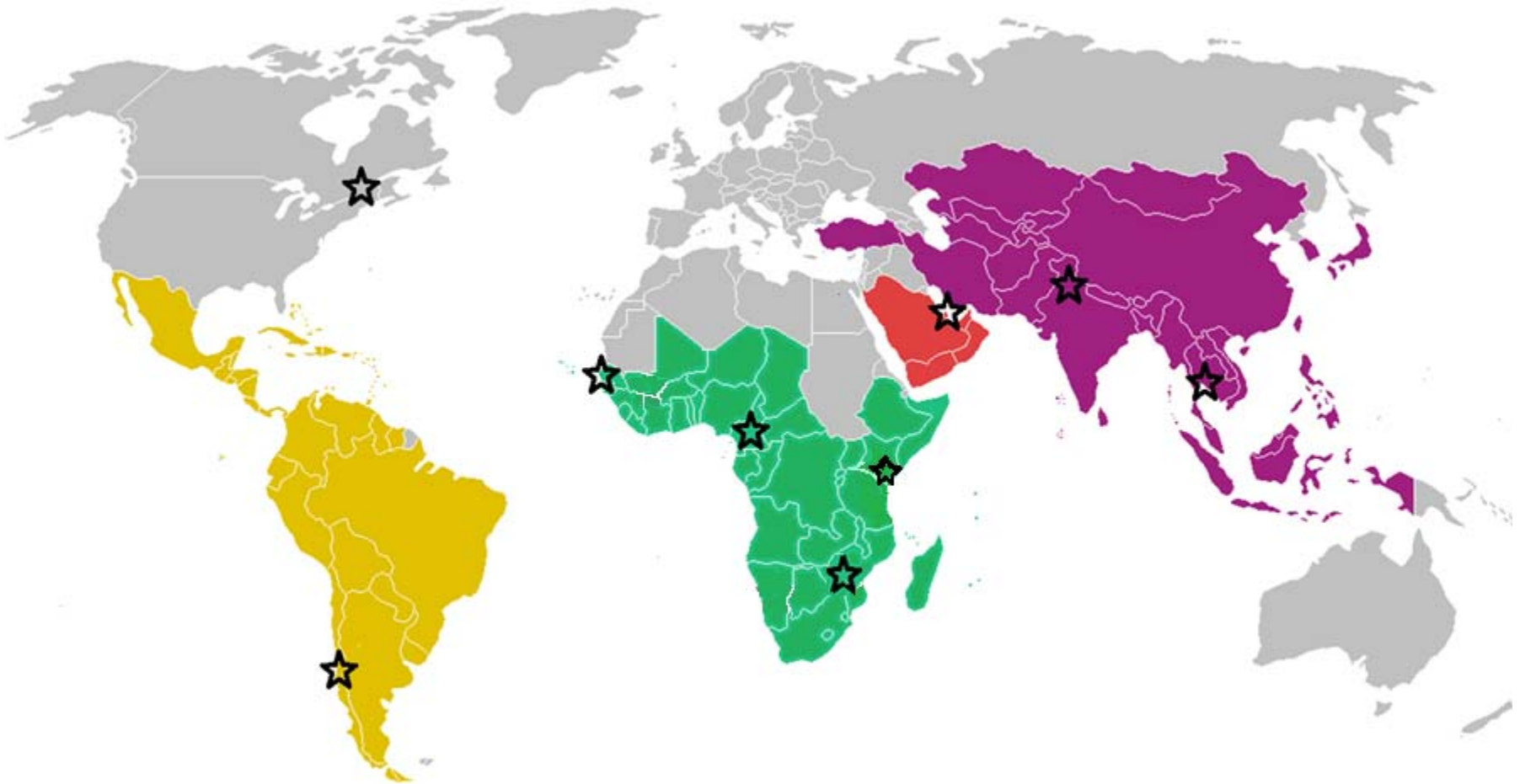- Advocacy for statistics in relation to UNESCO's areas of interest

Field presence

Regional teams in: Bangkok, Dakar, Santiago
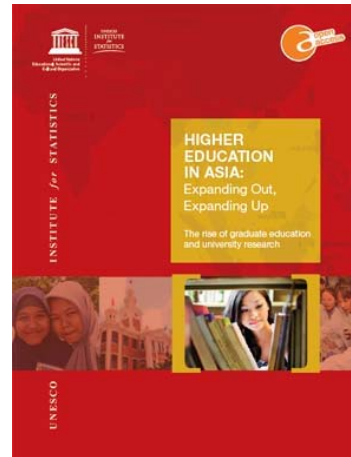Cluster advisors in: Doha, Nairobi, New Delhi, Harare, Yaoundé
Statistical advisor: Apia

UIS data are widely used for:
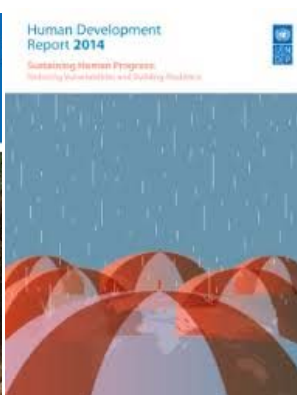
UIS publications

- Thematic reports
- Factsheets
- Information notes
- Technical papers

UIS on-line data centre

Over 1,000 types of indicators and raw data on education, literacy, science and technology, culture and communication
from more than 200 Member States and international organizations

Other international high-profile publications
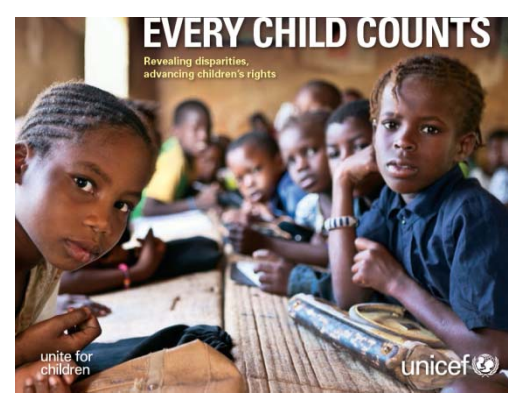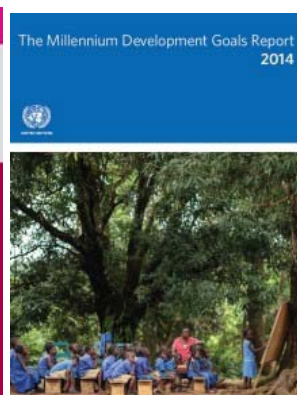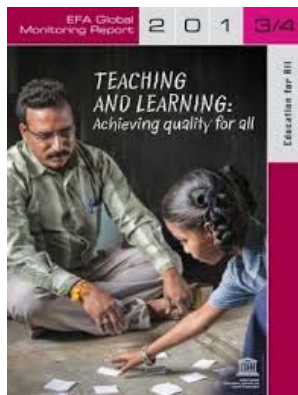
UIS data are used to measure key development issues

Human Development Index

Gender Inequality Index

Education for All

Knowledge Index

Knowledge Economy Index

ICT Development Index

Global Gender Gap

Global Innovation Index

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Why measure ICT in education?

□ UNESCO sector demands, vision and mission

□ Support policy making

□ Demands from analytical community

□ International Commitments and Benchmarking:

  ■ WSIS (Geneva, 2003) Plan of Action

  ■ eLAC2010 (Strategy for the Information Society in Latin America and the Caribbean)

  ■ Education for All (EFA) goals

  ■ Millennium Development Goals (MDGs)

□ Partnership on Measuring ICT for Development

Why measure ICT in education?

❑ To support countries in choosing education priorities and developing policies

- Improving student learning and teaching as related to educational reform;

- Enhancing curricula to improve student outcomes (achievement, survival rate, graduation);

- Expanding learning opportunities and ensuring equity for inclusive education (targeting marginalized groups);

- Enhancing learners' employability and for diversity of life skills;

- ICT integration in education with private partnerships.

Why measure ICT in education?

International Commitments:

☐ Millennium Development Goals (MDGs) Target 8.F

- ◼ "In cooperation with the private sector, make available the benefits of new technologies, especially information and communications".

☐ Education for All (EFA) goals

- ◼ While not mentioned explicitly in the Education for All goals (EFA), it is argued they fulfill a pivotal role in their achievement including broadening access, eliminating exclusion, and improving quality in education.

Why measure ICT in education?

International commitments:

□ **WSIS Targets on education and their related indicators**

- ■ Target 2. Connect all secondary schools and primary schools with ICTs.

    2.1 Proportion of schools with a radio used for educational purposes;

    2.2 Proportion of schools with a television used for educational purposes;

    2.3 Learners-to-computer ratio;

    2.4 Proportion of schools with Internet access, by type of access.

Why measure ICT in education?

International commitments:

☐ WSIS Targets on education and their related indicators

  ■ Target 7. Adapt all primary and secondary school curricula to meet the challenges of the information society, taking into account national circumstances.

    7.1 Proportion of ICT-qualified teachers in schools;

    7.2 Proportion of teachers trained to teach subjects using ICT;

    7.3 Proportion of schools with computer-assisted instruction (CAI);

    7.4 Proportion of schools with Internet-assisted instruction (IAI).

Why measure ICT in education?

Regional commitments:

- ▫ eLAC 2015: Connect all schools to the Internet (preferably by broadband) by 2015.

National commitments:

- ▫ Kazakhstan to train all teachers to be able to teach using ICTs and to supply 48% of schools with interactive whiteboards by 2014;

- ▫ Azerbaijan, where computer-assisted instruction (CAI) was available in 84 per cent of schools in 2012, aims to provide a computer classroom to every school (that is, CAI in 100 per cent of schools) (ADB, 2012);

- ▫ Georgia (Deer Leap Programme/ "Georgia without Poverty") to provide access to computers and the Internet in all schools;

- ▫ In South Africa, to connect all schools with broadband Internet by 2020 (Department of Communications, 2013).

How we measure ICT in education on a cross-national basis

S-CURVE:

Non-linear relationship between information needs at national level and ICT development in education system

Information requirements for policy-making

ICT4E and economic productivity

Tracer studies on ICT-skilled students in labor market

ICT and student achievements

e-impact

ICT for lifelong learning

Webcasting, podcasting, video/visio-conferencing, etc.

Expansion of ICT-related fields of studies

Internet-enabled self-learning

New ICT vocational skills development

e-intensity

ICT-enhanced content development and innovative pedagogy management

Distance education, virtual/open universities, virtual high schools, virtual laboratories and online simulations, digital libraries etc.

Access to and use of basic ICT infrastructure

e-readiness

ICT trained teachers and ICT support staff

Radio and TV instruction, educational software, e-mail etc.

Time - Level of education system development -National ICT environment

Lines of action

- ☐ Data collection

- ☐ Capacity building

- ☐ Standard setting

- ☐ Analysis and publications

Regional data collections/reports

- Latin America and Caribbean (2010)/ 38 countries
  - Published in 2012
- Arab States (2011)/ 5 countries
  - Published in 2013
- Asia (Central, South and West, Eastern, Pacific) (2012)/ 32 countries
  - Published in 2014
- Sub-Saharan Africa (Francophone, Lusophone and Anglophone) (2013/ 2014)/ 44 countries
  - To be published in 2015

WISE: developing methodologies and setting standards

- ☐ UIS established the international Working Group for ICT Statistics in Education (WISE) to develop the UIS data collection instrument and Guide to Measuring ICTs in education
- ☐ Membership included 25 countries
- ☐ Development of an initial core of 10 ICT in education indicators:
  - ■ Adopted by the United Nations Statistical Commission (UNSC) through the Partnership on Measuring ICT for Development at its 40th session in February 2009
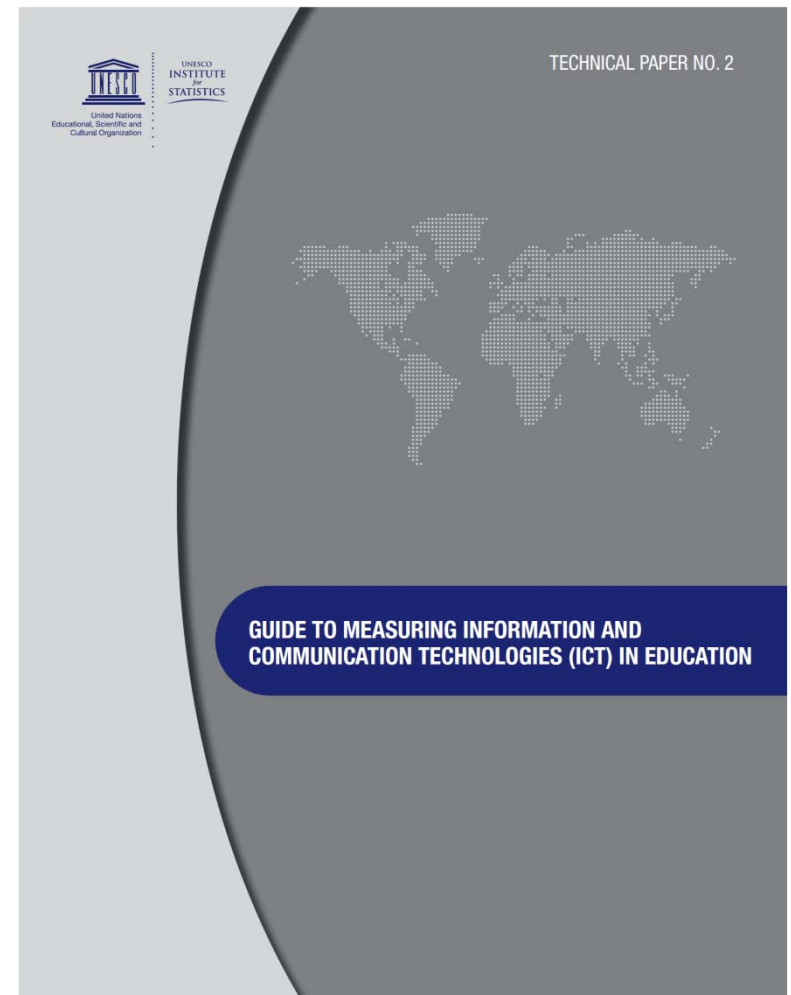
Arab States	Bahrain
	Egypt
	Jordan
	Morocco
	Oman
	Palestine
	Tunisia
East Asia and Pacific	Malaysia
	Republic of Korea
	Thailand
Latin America and the Caribbean	Argentina
	Bolivia
	Costa Rica
	Dominican Republic
	Guatemala
	Paraguay
	Uruguay
Sub-Saharan Africa	Ethiopia
	Ghana
	Mauritius
	Rwanda
	Senegal
Central and Eastern Europe	Belarus
	Russian Federation
	Estonia

Initial core indicators

ED1 **Proportion of schools with a radio used for educational purposes (for ISCED level 1-3)**

ED2 **Proportion of schools with a TV used for educational purposes (for ISCED level 1-3)**

ED3 **Proportion of schools with a telephone communication facility (for ISCED level 1-3)**

ED4 **Learner-to-computer ratio in schools with CAI (for ISCED level 1-3)**

ED4. bis **Learner-to-computer ratio (for ISCED level 1-3)**

ED5 **Proportion of schools with Internet access at school, by type (for ISCED level 1-3)**
- Fixed narrowband Internet access (using modem dial-up, ISDN)
- Fixed broadband Internet access (DSL, cable, other fixed broadband)
- Both fixed narrowband and broadband Internet access

ED6 **Proportion of learners who have access to the Internet at school (for ISCED level 1-3)**

ED7 **Proportion of learners enrolled by gender at the post-secondary non-tertiary and tertiary level in ICT-related fields (for ISCED level 4 and level 5- 6)**

ED8 **Proportion of ICT-qualified teachers in primary and secondary schools (for ISCED level 1-3)**

EDR1 **Proportion of schools with electricity (for ISCED level 1-3) --- *Reference indicator***

WISE: beyond the core indicators

- Development of an international questionnaire and instructional manual for ICTs in education
- Guide to Measuring ICTs in education, which covers 10 core indicators as well as an extended 43 indicators covering:
  - Political commitment
  - Curriculum
  - Infrastructure
  - Teaching staff and development
  - Participation, skills and output
  - Outcomes and impact

TECHNICAL PAPER NO. 2

UNESCO INSTITUTE for STATISTICS

United Nations
Educational, Scientific and
Cultural Organization

GUIDE TO MEASURING INFORMATION AND
COMMUNICATION TECHNOLOGIES (ICT) IN EDUCATION

Content of the guide on ICT in education

- **Detailed specifications:**
  - Statistical definitions
  - Purpose
  - Data requirement
  - Interpretation
  - Methodological issues and limitations
- **Serves as methodological reference material and facilitates operational implementation**

ED5	PROPORTION OF SCHOOLS WITH INTERNET ACCESS, BY TYPE (FOR ISCED LEVELS 1-3)
	• Any type of Internet access • Fixed narrowband Internet access (using modem dial-up, ISDN) • Fixed broadband Internet access (DSL, cable, other fixed broadband) • Both fixed narrowband and broadband Internet access

Definition:	Purpose:
Number of schools with access to the Internet expressed as a percentage of the total number of schools in the country for ISCED levels 1-3, by type of Internet access.	To measure the overall level of access to the Internet in schools, the opportunities or limits for the use of computers in primary and secondary schools, by type of Internet access.

Data requirement:	Method of collection:
(EII) Number of educational institutions (public and private) with access to the Internet by type of Internet access for ISCED levels 1-3. *(refer to questionnaire item C.1.9, C.1.9.1, C.1.9.2, C.1.9.3)* *(EI)* Number of educational institutions (public and private) for ISCED levels 1-3. *(refer to questionnaire item C.1)*	Administrative data collection through annual school census (or extract data from school records). **Data source(s):** Statistical unit of the Ministry of Education or, alternatively, the national statistical office.

Formula :

$$\frac{\sum_{h=1}^{3} EII_{h,s}^{t}}{\sum_{h=1}^{3} EI_{h}^{t}} * 100$$

Where:

$EII_{h,s}^{t}=$ Number of educational institutions with access to the Internet at level of education h by type of Internet access s in school-year t

$EI_{h}^{t}=$ Number of educational institutions at level of education h in school-year t

Analysis and interpretation:	Methodological and definition issues or operational limitations:
A high percentage or value for this indicator shows a high degree of access to the Internet among the schools in a given country, and vice versa. The percentages by type of Internet access can inform policies and decisionmakers to expand and/or upgrade Internet connections in schools. This indicator can also be calculated and analysed by ISCED levels, geographical regions, and urban/rural areas to identify issues and priorities.	This indicator measures only the availability of Internet access in schools, and not the intensity of use or the time that learners spend on the Internet for educational purposes. The type of Internet connection and access in schools may also depend on existing national and sub-national telecommunication infrastructures and may sometimes be constrained by technological limitations.

UIS outputs

- UIS database on ICT in education statistics
- Regional reports
- International reports
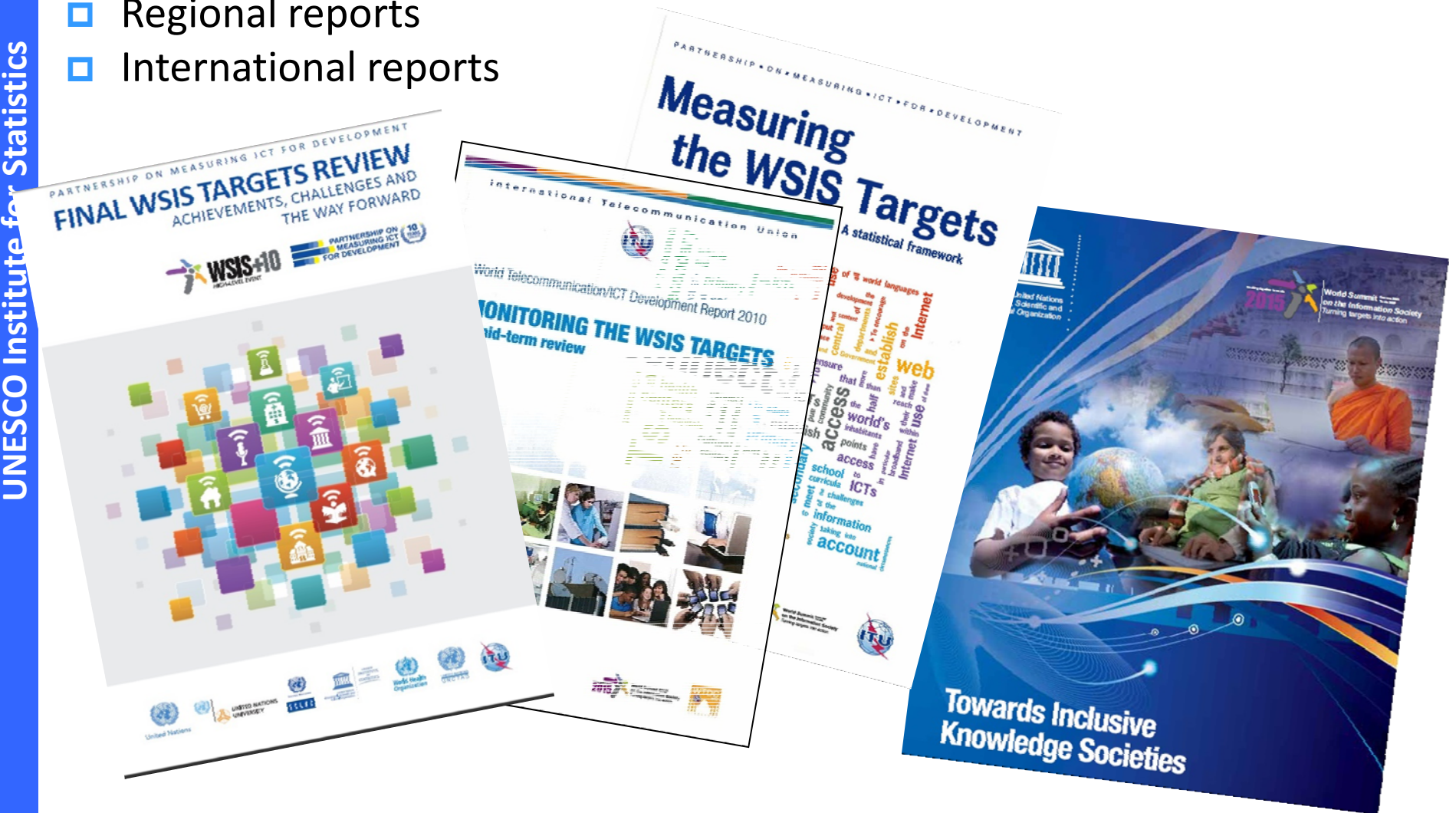
Way forward

- ☐ Technical Advisory Panel meeting on ICT in education statistics: December 2014
  - ■ Bring together specialists on ICT in education to discuss emerging policy needs and statistical perspectives to collect data in the post-2015 context
  - ■ Will inform the survey redesign and identification of new UIS core indicators
- ☐ Global data collection: September 2015
  - ■ UIS to conduct its first global data collection to all UNESCO Member States
- ☐ Revised UIS manual on UIS core ICT in education indicators: 2015

Thank you!

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