

***V Taller de Armonización de Indicadores de Ciencia y Tecnología  
Panama City, Panama  
17-18 November 2011***

# Objectives of this presentation

- Present the work that UIS does to support the collection and analysis of Science, Technology and Innovation (STI) indicators in developing countries

# UNESCO Institute for Statistics (UIS)

- Formerly UNESCO Office of Statistics; Division of Statistics on S&T
- Established in 1999
- September 2001 - the UIS moved from Paris to Montreal, Canada
- 30 November 2001 – UNESCO Director-General inaugurates the UNESCO Institute for Statistics in Montreal
- Director: Mr. Hendrik van der Pol

# UNESCO Institute for Statistics (UIS)

- United Nations data repository for:
  - Education
  - ***Science, Technology and Innovation***
  - Culture
  - Communication



United Nations  
Educational, Scientific and  
Cultural Organization

UNESCO  
INSTITUTE  
for  
STATISTICS

# UIS Strategy on STI statistics

## International Review of S&T Statistics & Indicators 2002-03

### Resulting priorities:

- Immediate term:
  - R&D personnel & expenditure
  - Human resources devoted to S&T
  - Science education & Higher education
  - International mobility
  - Gender
- Medium term: Innovation data
  - Just started!
- Longer term: Output & Impact
  - Not yet started.

# Lines of action

1. STI survey operation and data guardianship
  - 1.1 R&D Survey
  - 1.2 Innovation Survey
2. Training in STI statistics: workshops & other training activities
3. Standard setting and methodological developments
4. Analysis and publications

# 1. STI Survey operation and data guardianship

- Global survey on statistics of Research and Development (R&D)
- Global database on R&D Statistics
- Data dissemination: on the UIS website and through contributions to other agencies
- 2011: Pilot survey of Innovation Statistics

# 1.1 Survey on Statistics of Research and Development (R&D)

- Biennially.
- 2004, 2006, 2008 and 2010 R&D surveys completed.
- 5<sup>th</sup> round will be launched in June 2012.
- Data and metadata released on UIS website.  
(<http://stats.uis.unesco.org>).
- OECD and Eurostat provide data for their Member States.
- RICYT provides data for Latin America and for a few Caribbean countries.
- RICYT includes UIS annex to its questionnaire



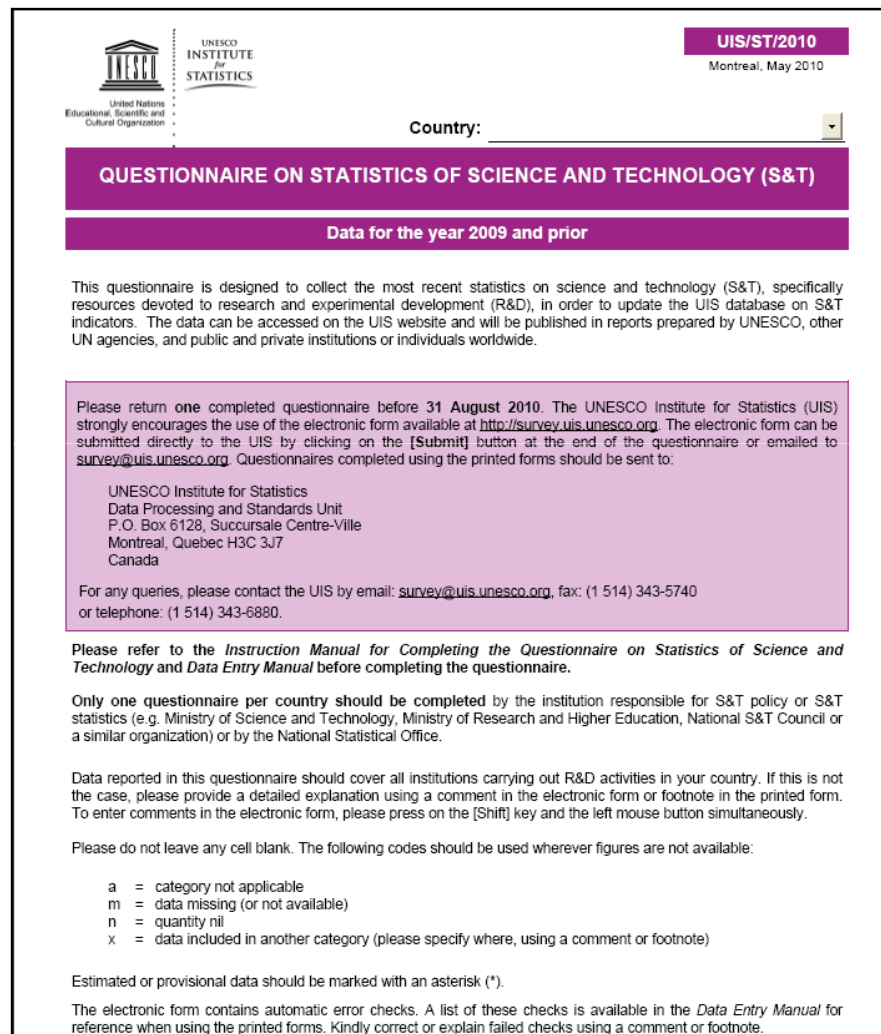
# Data collection: R&D Statistics Survey

## R&D Personnel

- By sector of employment, occupation, qualification, and field of science
- In headcount and FTE
- By gender

## R&D Expenditure

- By sector of performance and source of funds
- By type of activity and field of science



UNESCO INSTITUTE for STATISTICS  
United Nations Educational, Scientific and Cultural Organization

UIS/ST/2010  
Montreal, May 2010

Country: \_\_\_\_\_

**QUESTIONNAIRE ON STATISTICS OF SCIENCE AND TECHNOLOGY (S&T)**

**Data for the year 2009 and prior**

This questionnaire is designed to collect the most recent statistics on science and technology (S&T), specifically resources devoted to research and experimental development (R&D), in order to update the UIS database on S&T indicators. The data can be accessed on the UIS website and will be published in reports prepared by UNESCO, other UN agencies, and public and private institutions or individuals worldwide.

Please return **one** completed questionnaire before **31 August 2010**. The UNESCO Institute for Statistics (UIS) strongly encourages the use of the electronic form available at <http://survey.uis.unesco.org>. The electronic form can be submitted directly to the UIS by clicking on the [Submit] button at the end of the questionnaire or emailed to [survey@uis.unesco.org](mailto:survey@uis.unesco.org). Questionnaires completed using the printed forms should be sent to:

UNESCO Institute for Statistics  
Data Processing and Standards Unit  
P.O. Box 6128, Succursale Centre-Ville  
Montreal, Quebec H3C 3J7  
Canada

For any queries, please contact the UIS by email: [survey@uis.unesco.org](mailto:survey@uis.unesco.org), fax: (1 514) 343-5740 or telephone: (1 514) 343-6880.

Please refer to the *Instruction Manual for Completing the Questionnaire on Statistics of Science and Technology* and *Data Entry Manual* before completing the questionnaire.

Only **one** questionnaire per country should be completed by the institution responsible for S&T policy or S&T statistics (e.g. Ministry of Science and Technology, Ministry of Research and Higher Education, National S&T Council or a similar organization) or by the National Statistical Office.

Data reported in this questionnaire should cover all institutions carrying out R&D activities in your country. If this is not the case, please provide a detailed explanation using a comment in the electronic form or footnote in the printed form. To enter comments in the electronic form, please press on the [Shift] key and the left mouse button simultaneously.

Please do not leave any cell blank. The following codes should be used wherever figures are not available:

a = category not applicable  
m = data missing (or not available)  
n = quantity nil  
x = data included in another category (please specify where, using a comment or footnote)

Estimated or provisional data should be marked with an asterisk (\*).

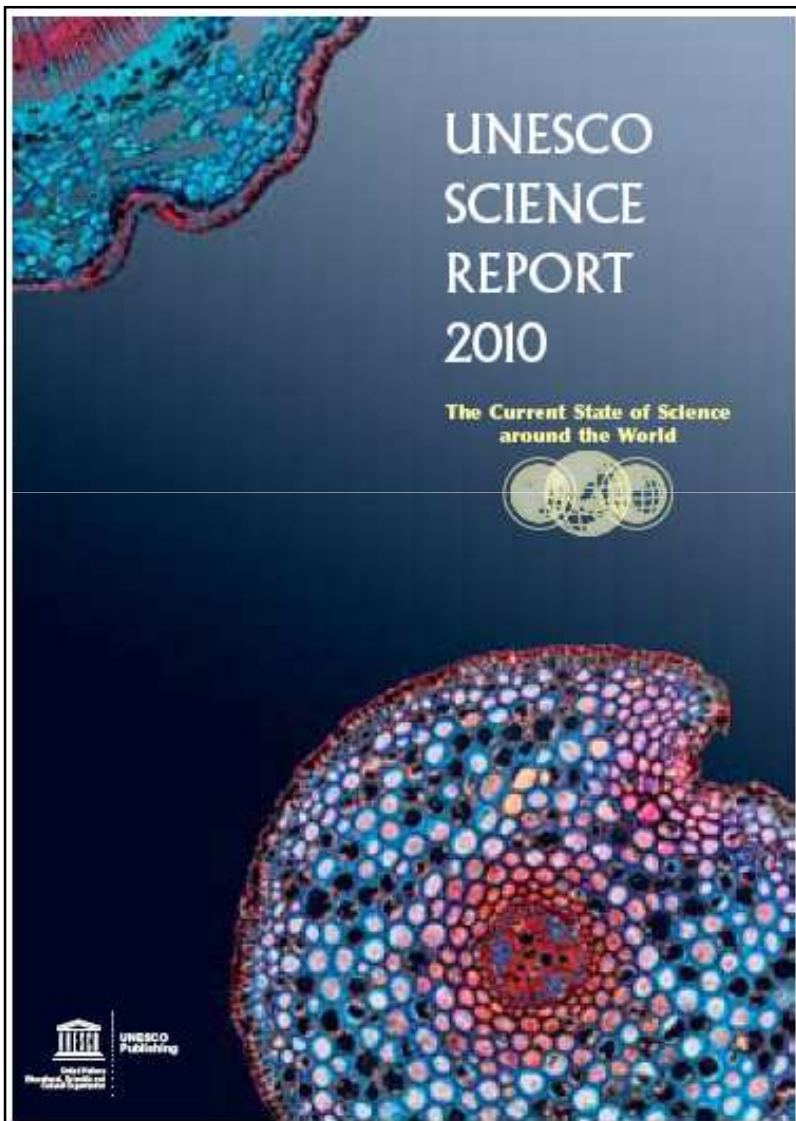
The electronic form contains automatic error checks. A list of these checks is available in the *Data Entry Manual* for reference when using the printed forms. Kindly correct or explain failed checks using a comment or footnote.

# UNESCO Institute for Statistics (UIS) is the UN lead agency for STI statistics

## Official S&T data source for:

- UN Statistical Division: UN Statistical Year Book
- UNDP: Human Development Report
- World Bank: World Development Indicators
- Data publicly available at: <http://www.uis.unesco.org>
- UIS Publications (can be downloaded from the UIS website): S&T Bulletins; Fact sheet on R&D statistics
- UNESCO Reports:
  - UNESCO Science Report
  - UNESCO World Report - Towards Knowledge Societies
  - International Report on S&T and Gender
  - History of Science Statistics at UNESCO

# UNESCO Science Report 2010



- Released November 2010
- Uses many of our data
- Contains a Statistical Annex prepared by the UIS

## 1.2 Innovation Statistics: Why?

- Medium-term objective of the International Review of S&T Statistics & Indicators 2002-03;
- May provide information on the business sector in developing countries that R&D statistics won't supply;
- Many developing countries recently starting to carry out innovation surveys;
- UIS has a natural coordinating role as UN lead agency on STI statistics.

# The UIS strategy on Innovation Statistics

- Inventory of innovation surveys in developing countries;
- Pilot data collection (around 20 countries in June 2011);
- 2013: Regular data collection every two years;
- Online worldwide database;
- Analysis and publications;
- Capacity building and training activities;
- Methodological developments and survey help;
- In partnership with international and regional organisations (ASEAN, AU/NEPAD, Eurostat, OECD, RICYT, ...).

## 2. Capacity building: STI statistics workshops

- Increase the number of countries regularly producing quality S&T indicators.
- Create local capacities and establish sustainable local S&T statistics systems.
- Promote the use of S&T indicators for evidence-based S&T policy making.
- Share experiences with other developing countries and address problems.
- Gain knowledge about the particular characteristics of S&T statistics data.
- Demonstrate good practices in other countries of the region.

# UIS S&T Statistics workshops

- 2005: Uganda, India
- 2006: Indonesia, Senegal, Kazakhstan
- 2007: Tunisia, FYR of Macedonia, Jordan, Russia, Cameroon
- 2008: Oman, Cambodia, Botswana
- 2009: Kenya, Egypt
- 2010: Mali, Syria, Jordan\*, Uzbekistan, Ethiopia\*, Nepal
- 2011: Grenada, Gabon, Azerbaijan\*, Vietnam

But also contributing to similar workshops of partner organisations (e.g. RICYT, AU-NEPAD ASTII, other partner orgs)

## Results of workshops

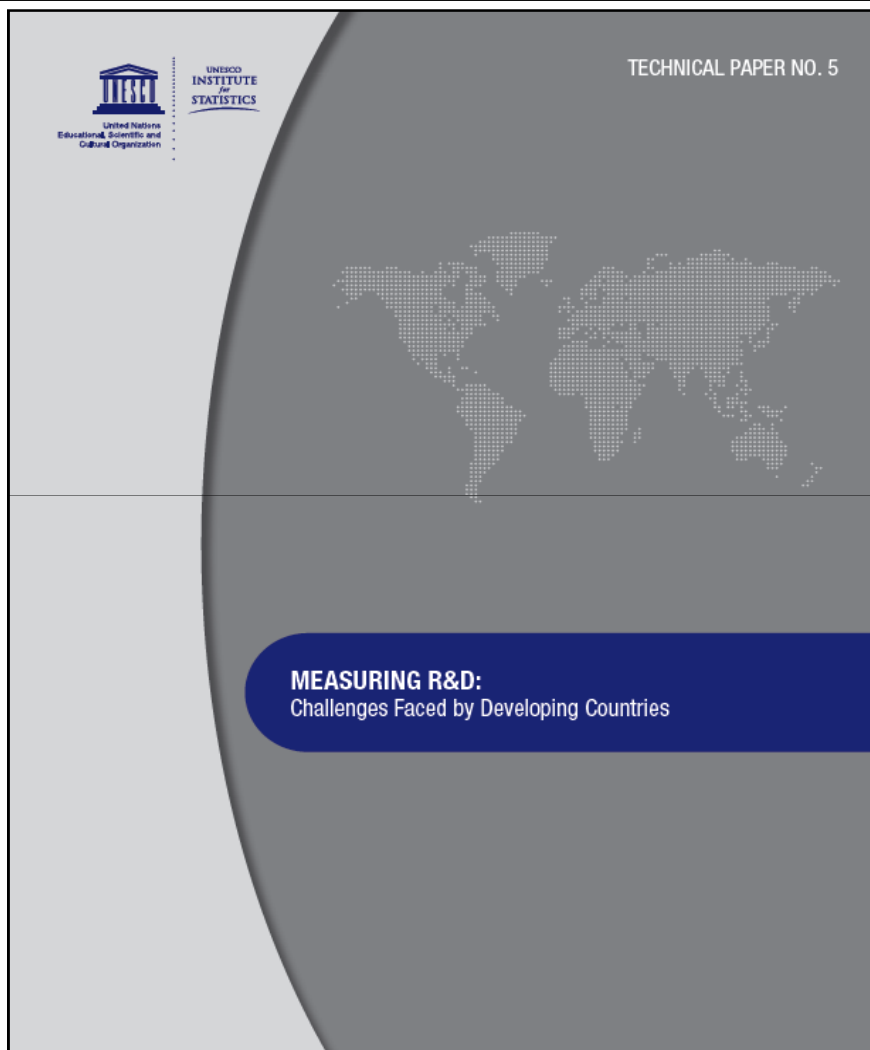
- Increased response rate – non-responding countries learn how to do it from UIS and neighbours.
- Immediate problems solved.
- Increased data quality – improved understanding of application of international standards.
- Face to face contacts = more effective networking.
- Inputs to UIS programme development.



### 3. Standard setting/methodological developments

- Measuring R&D in Developing Countries: Technical Guide and Annex to the Frascati Manual (2010)
- Measuring Innovation in Developing countries: Annex to the Oslo Manual (2005)
- Careers of Doctoral Holders – CDH (since 2004)

# Measuring R&D in Developing Countries: Annex to the Frascati Manual (2010 / 2011)



EN: <http://www.uis.unesco.org/Library/Documents/tech%205-eng.pdf>

SP: [http://www.uis.unesco.org/Library/Documents/TechPaper5\\_RD\\_SP\\_finalwc%20\(2\).pdf](http://www.uis.unesco.org/Library/Documents/TechPaper5_RD_SP_finalwc%20(2).pdf)

## Objectives are to provide:

- Guidance to developing countries on how to adapt the FM standards
  - Recommendations for specific situations that fall outside FM framework
  - Suggestions on how to strengthen S&T statistical system in developing countries
- 
- Stay within boundaries of Frascati Manual (FM)
  - Some of the measurement challenges may be considered for a future revision of the FM

## Measuring Innovation in Developing Countries: Annex to the Oslo Manual (2005)

- After the publication of the 2<sup>nd</sup> Oslo Manual, also developing countries started conducting innovation surveys.
- The design of the surveys was intended to comply with Oslo Manual standards, with adaptations for capturing the particular characteristics of innovation processes. Adaptations were prepared by each country separately and with different approaches.
- Bogotá Manual published by RICYT (Ibero American Network on S&T Indicators) first effort to compile particularities and guide the design of cross-nationally comparable innovation surveys.
- Oslo Manual 3<sup>rd</sup> edition: UIS drafted the annex on Innovation surveys in developing countries.

<http://213.253.134.43/oecd/pdfs/browseit/9205111E.PDF> (page 135)

# The careers of doctorate holders survey (CDH)

- A joint project with the OECD and Eurostat.
- Methodology developed “from scratch”.
- Aimed both at developed and developing countries.
- With participation from experts from both developed and developing countries.
- Promoting the methodology by encouraging developing countries to conduct such surveys and produce cross-nationally comparable statistics on careers of doctorate holders.

# Objectives of CDH

## Objectives:

- To design an internationally comparable tool for tracking the careers of doctorates holders and highly qualified people in different countries.
- To collect and exchange information on the career paths of holders of doctorates from existing data sources and the new survey tool.

## Components:

- Model questionnaire and Instruction Manual
- Output tables and variables definitions
- Methodological guidelines
- Bridge table model questionnaire - output tables

See:

[http://www.uis.unesco.org/ev.php?URL\\_ID=5219&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201](http://www.uis.unesco.org/ev.php?URL_ID=5219&URL_DO=DO_TOPIC&URL_SECTION=201)

and [www.oecd.org/sti/cdh](http://www.oecd.org/sti/cdh)

## Current / Future methodological work

- Reviewing the concepts on Science and Technology Activities (STA): 2011-2013
- Guide to R&D Surveys in Developing Countries: 2012-2013
- Guide to Innovation Surveys in Developing Countries: 201?



## 4. Some publications

- Data publicly available at:  
UIS Website: <http://www.uis.unesco.org>.  
UIS Data Centre:  
([http://stats.uis.unesco.org/unesco/ReportFolders/ReportFolders.aspx?IF\\_ActivePath=P,54&IF\\_Language=eng](http://stats.uis.unesco.org/unesco/ReportFolders/ReportFolders.aspx?IF_ActivePath=P,54&IF_Language=eng))
- UIS Fact Sheets
- UNESCO Science Report 2010
- International Report on Science, Technology and Gender 2007
- *Planned*: Global R&D e-publication 2011

# Collaborations / Partnerships

- UNESCO HQs
- UNESCO offices worldwide
- OECD
- RICYT (Latin America)
- Eurostat
- AU-NEPAD
- ALECSO
- ISESCO
- World Bank
- ADB
- Arab Academy of Science
- Inter-Academy Council
- INRS (Quebec, Canada)
- ASEAN
- Centre for Social Innovation (ZSI), Austria
- ECO
- ATPS
- ISDB
- IDRC (Canada)
- IRD (France)
- EU-Medibtikar

# Thank you!

<http://www.uis.unesco.org>

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