Data Science for Public Good & SDGs

Key Initiatives at the United Nations and in Switzerland

Prof. Dr. Bertrand Loison
Vice-Director General at the Federal Statistical Office (FSO)
Head of Data Science Competence Center (DSCC)

UNIGE’s Data Science Day 2021

University of Geneva – Uni Mail - September 16, 2021
Agenda

1. The Sustainable Development Goals (SDGs)
   • What are we talking about?

2. Measuring SDGs at the United Nations
   • The UN’s SDGs Annual Report
   • Data Science and the Measurement of SDGs

3. Measuring SDGs in Switzerland
   • Official Statistics and the Measurement of SDGs
   • Data Science for Public Good and Measurement of SDGs
What is the 2030 Agenda for Sustainable Development? - #1

- The Sustainable Development Goals (SDGs) are part of the 2030 Agenda. Adopted in September 2015 by the 193 member states of the UN.
- 17 SDGs to find shared solutions to the world’s greatest challenges, such as extreme poverty, climate change, environmental degradation and health-related crises.
- It applies to all states, and determines international guidelines and priorities for sustainable development up to 2030.
What is the 2030 Agenda for Sustainable Development? - #2

[Diagram of the 17 Sustainable Development Goals]

1. No Poverty
2. Zero Hunger
3. Good Health and Well-being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation and Infrastructure
10. Reduced Inequalities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice and Strong Institutions
17. Partnerships for the Goals
“Without evidence of where we stand now, we cannot confidently chart our path forward in realizing the Sustainable Development Goals (SDGs).”

António Guterres, Secretary-General of the United Nations
What is the role of official statistics?

- The UN Statistical Commission is mandated by the General Assembly to support the 2030 Agenda by providing quality, accessible, timely and reliable disaggregated data.

- On 6 July 2017, the United Nations General Assembly:
  - adopted a global indicator framework to monitor the 2030 Agenda for Sustainable Development as a voluntary and country-led endeavor.
  - stresses that all activities must be conducted in full adherence to the Fundamental Principles of Official Statistics that guarantees transparency, neutrality, independency and comparability of data.
Agenda

1. The Sustainable Development Goals (SDGs)
   • What are we talking about?

2. Measuring SDGs at the United Nations
   • The UN’s SDGs Annual Report
   • Data Science and the Measurement of SDGs

3. Measuring SDGs in Switzerland
   • Official Statistics and the Measurement of SDGs
   • Data Science for Public Good and Measurement of SDGs
The Sustainable Development Annual Report - #1

- Every single National Statistical Institute (NSI) around the world is responsible to transmit data to the UN that reflect the measurement of the SDG’s in their own country.

- NSIs around the world have to ensure that the way the SDGs are measured is in full adherence to the Fundamental Principles of Official Statistics.

- The UNSD (IAEG-SDGs) is responsible to aggregate the transmitted data and to write the UN Sustainable Development Annual Report that gives a global overview about the current achievement of the 17 SDGs.
The Sustainable Development Goals Report 2021

The Sustainable Development Goals Report 2021

Overview

COVID-19 HAS LED TO THE FIRST RISE IN EXTREME POVERTY IN A GENERATION

END POVERTY IN ALL ITS FORMS EVERYWHERE

FURTHER PROGRESS IS NEEDED TO REACH THE 3% TARGET

IN 2020, 4,186 DEATHS AND DISAPPEARANCES WERE REPORTED ON MIGRATORY ROUTES WORLDWIDE

The Sustainable Development Goals Report 2021
Agenda

1. The Sustainable Development Goals (SDGs)
   • What are we talking about?

2. Measuring SDGs at the United Nations
   • The UN’s SDGs Annual Report
   • Data Science and the Measurement of SDGs

3. Measuring SDGs in Switzerland
   • Official Statistics and the Measurement of SDGs
   • Data Science for Public Good and Measurement of SDGs
UN Committee of Experts on Big Data and data science for official statistics

- Created in March 2014 by the UN Statistical Commission
- Mandated to give direction to the use of Big Data and Data Science for Official Statistics
- Inter-governmental body with 31 countries and 16 international organizations
- Collaboration of more than 300 experts from all stakeholder communities

https://unstats.un.org/bigdata/index.cshtml
Current Task Teams

- AIS Data
- Big Data and the SDGs
- Earth Observation Data
- Measuring Rural Access
- Mobile Phone Data
- Privacy-Preserving Techniques
- Training, Competencies and Capacity Development
Using AIS (Shipping Data) to provide faster economic indicators

Producing consumer price indices using Scanner data and webscraping

Producing crop statistics from Earth Observations and data pipelines

Producing tourism, migration, population and transport statistics using mobile phone data

Developing techniques to preserve the privacy of sensitive data
The Global Platform has been built as a cloud-service ecosystem to support international collaboration in the development of Official Statistics using new data sources and innovative methods and to help countries measure the Sustainable Development Goals (SDGs) to deliver the 2030 Sustainable Development Agenda.

The United Nations Global Platform was established as a collaborative environment to work together as a global statistical community and to learn together sharing knowledge, data and methods for all countries in the world.
UN Global Platform - #2

UN Global Platform’s Main Purposes

• Trusted Data
• Trusted Methods
• Trusted Partners
• Trusted Learning

Trust is achieved through collaboration, peer review and approval of all work undertaken on the platform.

The UN Global Platform is open to Universities as well as the Private Sector

Agenda

1. The Sustainable Development Goals (SDGs)
   • What are we talking about?

2. Measuring SDGs at the United Nations
   • The UN’s SDGs Annual Report
   • Data Science and the Measurement of SDGs

3. Measuring SDGs in Switzerland
   • Official Statistics and the Measurement of SDGs
   • Data Science for Public Good and Measurement of SDGs
The MONET 2030 indicator system - #1

- The MONET 2030 indicator system gives an overview of sustainable development in Switzerland, providing a picture of the progress made towards the 17 sustainable development goals (SDGs) of the United Nations 2030 Agenda as well as in relation to the Federal Council’s sustainable development strategy 2030 and to certain topics specific to Switzerland.

MONET 2030 key indicators - #2

1. Poverty rate
2. Fruit and vegetables consumption
3. Nitrogen balance from agriculture
4. Years of potential life lost
5. Reading skills of 15-year-olds
6. Wage gap between women and men
7. Domestic violence
8. Nitrate in groundwater
9. Renewable energies
10. Labour productivity
11. Young people neither in employment nor in training
12. Material intensity
13. Expenditure on research and development
14. Distribution of equivalised disposable income (S80/S20)
15. Duty-free imports from developing countries
16. Housing costs
17. Total municipal waste generation
18. Greenhouse gas emissions
19. Nitrogen load exported
20. Soil sealing
21. Populations of breeding birds
22. Violent offences
23. Official Development Assistance
Cercle Indicateurs - Indicators of sustainable development for cities and cantons - #1

• Le Cercle Indicateurs est une plateforme destinée au développement et à la mise en oeuvre d'indicateurs de développement durable pour les cantons et les villes.


• [https://www.bfs.admin.ch/bfs/fr/home/statistiques/developpement-durable/cercle-indicateurs.html](https://www.bfs.admin.ch/bfs/fr/home/statistiques/developpement-durable/cercle-indicateurs.html)
Cercle Indicateurs - Indicators of sustainable development for cities and cantons - #2

Niveau cantonal

Niveau des villes
Cercle Indicateurs - Indicators of sustainable development for cities and cantons - #3
Agenda

1. The Sustainable Development Goals (SDGs)
   • *What are we talking about?*

2. Measuring SDGs at the United Nations
   • *The UN’s SDGs Annual Report*
   • *Data Science and the Measurement of SDGs*

3. Measuring SDGs in Switzerland
   • *Official Statistics and the Measurement of SDGs*
   • *Data Science for Public Good and Measurement of SDGs*
Federal Administration’s Data Science Competence Center (DSCC)

Vision

“We use data science and develop skills for the public good in the whole of Switzerland.”

Mission

“We work at the crossroads between data science and artificial intelligence – we build skills and apply the appropriate methods, techniques and practices to obtain a new understanding and to improve decision-making for the public good.”
A center of excellence in DSaaS for the Federal Administration

Data Science as a Service (DSaaS)

1. Consulting
   Innovative methods in data science and AI

2. Methodological support
   On the job training (coaching)

3. Project execution
   Complete project execution

4. Training
   Off the job training

Basic services
Quality standards, guidelines on data protection and basic infrastructures ("sandboxes")
What is the DSSC’s Unique Selling Proposition (USP)?

“Support for government use of AI correlates moderately with trust in government. Trust in institutions is essential if governments are to gain the support needed to roll out AI capabilities.”

Source: Boston Consulting Group (BCG), The Citizen’s Perspective on the Use of AI in Government

DSSC’s Core values

In the implementation of all data science services, utmost importance is attached to the core values of information security, data protection, data security, data governance, non-discrimination, explainability, transparency, reproducibility, neutrality, objectivity, ethical handling of data and results, and public confidence.
Promoting community and knowledge building

Academic partners

Partnerships with the Swiss Data Science Center (EPFL/ETHZ) & Universities:
1. Data science expertise
2. Platforms as a Service for collaborative data science

DSCC at the FSO

1. Data Science as a Service for the entire Federal Administration
2. Building connections with similar international initiatives

Federal Offices

1. Data science questions and requests for collaborations from Federal Offices, Cantons, Communes, ...
2. Compliant IT platforms to deliver Data Science as a Service