Maps and sustainability

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The International Map Year [mapyear.org]

Maps

- A map is a visual representation of an environment
  - maps tell stories
  - maps invite
  - maps show patterns
  - maps reveal relationships
  - maps explain
  - maps provide overview
  - maps offer insight
- Maps that matter should arouse interest, be instantly understandable, and be relevant to society

Cartography and maps

CARTOGRAPHY
- art
- science
- technology
- making
- using

Maps

Tools

Process
About Cartography (tools)

• ...the art, science, and technology of making and using maps

Many ‘correct’ design options

Bertin’s Data Analysis

About Cartography (process)

• ...the art, science, and technology of making and using maps

Internet, Displays, Mobile

update coastline

Professionals & Crowd
About Cartography (process)

- The art, science, and technology of making and using maps

Changes

- Objective of Cartography:
  Design and create maps that are ‘authoritative’ and offer insight and support decision making

- Yesterday
  - Filling gaps to present the essence of the message

- Today
  - Retrieve the essence and present it interactively in multiple alternatives allowing the user to interact, change, and ultimately understand

ICA's International Map Year

- How can maps be relevant for the global goals?

How can maps be relevant for the global goals?

ICA’s International Map Year

- How can maps be relevant for the global goals?

WEMAPS

INTERNATIONAL MAP YEAR 2015–2016

THE GLOBAL GOALS
For Sustainable Development

How can maps be relevant for the global goals?
Example: Goal 4 Education

- Goals
  - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

- Targets
  - 4.1
  - 4.2
  - 4.3
  - 4.4
  - 4.5
  - 4.6
  - 4.7

- Indicators
  - 4.1.1
  - 4.2.1
  - 4.3.1
  - 4.4.1
  - 4.5.1
  - 4.6.1
  - 4.7.1

http://www.un.org/sustainabledevelopment/education/

Goal 4: Education - Sample Targets

- 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes
- 4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education
- 4.3 By 2030, ensure ............
- 4.4 By 2030, ensure ............


Goal 4: Education - Sample Indicators

- 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes
  - Indicator 4.1.1 Percentage of children who achieve minimum proficiency standards in reading and mathematics at end of: (i) primary (ii) lower secondary
  - Indicator 4.1.2 Completion rate (primary, lower secondary, upper secondary)
- 4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education
  - Indicator 4.2.1 Early Childhood Development Index
  - Indicator 4.2.2 Participation rate in organized learning (one year before the official primary entry age)

Goal 4: Education - Getting the data

<table>
<thead>
<tr>
<th>Target</th>
<th>Indicator</th>
<th>Feasibility</th>
<th>Suitability</th>
<th>Relevance</th>
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<tbody>
<tr>
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</table>
### Goal 4: Education - Analyzing the Data

<table>
<thead>
<tr>
<th>Objective</th>
<th>Description</th>
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<tr>
<td>4.1</td>
<td>% minimum proficiency</td>
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<td>4.1.2</td>
<td>Completion rate levels of education</td>
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<tr>
<td>4.2</td>
<td>Early Childhood Development Index</td>
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<tr>
<td>4.2.2</td>
<td>Participation rate in organized learning</td>
</tr>
<tr>
<td>4.3</td>
<td>Enrollment ratios by level and type</td>
</tr>
<tr>
<td>4.4</td>
<td>Participation rate among 25-65 years</td>
</tr>
<tr>
<td>4.4.1</td>
<td>% of computer and information literate</td>
</tr>
<tr>
<td>4.4.2</td>
<td>% of proficient</td>
</tr>
<tr>
<td>4.5</td>
<td>Parity indices (female/male, urban/rural, ...)</td>
</tr>
<tr>
<td>4.6</td>
<td>% of proficient</td>
</tr>
<tr>
<td>4.6.2</td>
<td>Youth/adult literacy rate</td>
</tr>
<tr>
<td>4.7</td>
<td>% of 13yrs promoting governance</td>
</tr>
<tr>
<td>4.7.2</td>
<td>% of 15yrs proficiency of environmental science and geoscience</td>
</tr>
</tbody>
</table>

### ICA and its Commissions and Working Groups

- Visual Analytics
- Map Production & Geoinfo Management
- Map Design
- Location Based Services
- History of Cartography
- GI for Sustainability
- Geospatial Analysis & Modelling
- Generalization & Multiple Reprs
- Education and Training
- Cognitive Issues in GeoInfoVis
- Early Warning and Crisis Management
- Cartography and Children
- Cartographic Heritage into the digital
- Atlases
- Art and Cartography
- Maps & Graphics for Blind
- Map Projections
- Maps and the Internet
- Marine Cartography
- Mountain Cartography
- Open Source Geospatial Technology
- Planetary Cartography
- SDI & Standards
- Sensor-driven Mapping
- Topographic Mapping
- Toponomy
- Ubiquitous Mapping
- Use, User and Usability Issues
- Visual Analytics
- Universal Mapping
- Ubiquitous Mapping
- Multiple Reprs
- SDI & Standards
- Sensor-driven Mapping
- Topographic Mapping
- Toponomy
- Ubiquitous Mapping
- Use, User and Usability Issues
- Visual Analytics
- Universal Mapping

### Commissions and Goals

- Goal 1: SDG 1 - No Poverty
- Goal 2: SDG 2 - Zero Hunger
- Goal 3: SDG 3 - Good Health and Well-being
- Goal 4: SDG 4 - Quality Education
- Goal 5: SDG 5 - Gender Equality
- Goal 6: SDG 6 - Clean Water and Sanitation
- Goal 7: SDG 7 - Affordable and Clean Energy
- Goal 8: SDG 8 - Decent Work and Economic Growth
- Goal 9: SDG 9 - Industry, Innovation and Infrastructure
- Goal 10: SDG 10 - Reduced Inequalities
- Goal 11: SDG 11 - Sustainable Cities and Communities
- Goal 12: SDG 12 - Responsible Consumption and Production
- Goal 13: SDG 13 - Climate Action
- Goal 14: SDG 14 - Life Below Water
- Goal 15: SDG 15 - Life on Land
- Goal 16: SDG 16 - Peace, Justice and Strong Institutions
- Goal 17: SDG 17 - Partnerships for the Goals
The sustainability goals and their targets can be mapped based on their indicators.

Seventeen Commission have mapped each of the sustainability goals. They have done this often as a multi-commission effort from their particular perspective.

The resulting poster collection created gives an overview of the strength of cartography. It shows how maps can give insight in the data.

Obviously not all indicators are available as of today, so in some cases the maps are based on fictional or older data.
Maps matter because they combine spatial statistics with visualization. The choice of a map projections matters. Let's make the world a better place with maps.