SESSION DESCRIPTION

B4   The data integration challenge: 'FAIR' data for city resilience

Panel discussion

Date: Wednesday, 26 June 2019
Time: 16.00-17.30
Rooms: S25-S26

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Organized by: Resilience Brokers; CODATA (International Science Council)

OBJECTIVE

Tackling the pressing scientific and human issues of the 21st century (including climate-change adaptation, urban resilience, infectious-disease outbreaks and public health, sustainable development, disaster-risk reduction) can only be addressed through practice-driven research that works across disciplines to understanding complex systems, and which uses a transdisciplinary approach to turn data into knowledge and then into policy and societal action.

However, there is a major, largely unrealized potential to merge and integrate the data from different disciplines of practice and science in order to reveal deep patterns in the multifaceted complexity that underlies most of the domains of applications that are intrinsic to the major global challenges that confront human society.

A barrier is that varying and incompatible data standards have been used across different disciplines and, in the context of cities, by different municipal administrative departments, often leading to data infrastructures and platforms that result in incompatibility of services.

The International Science Council, through its influential CODATA (Committee on Data), which was established by ICSU in 1966, has embarked on a major initiative with leading data scientists and researchers to identify, promote and implement a long-term, collaborative programme that is to substantially increase the capacity of the international scientific and practitioner communities to achieve rigorous, interdisciplinary integration of data to support on major global challenges as a matter of routine.

The vision is to ensure that more crucial data are 'FAIR' (findable, accessible, interoperable, reusable); that good-practice metadata specifications, ontologies and semantic technologies as well as participatory data-collection methods such as citizen science are maximally applied; and that emerging technologies (including machine learning to assist programmatic analysis at scale) are facilitated.

Full session presentations:
https://resilientcities2019.iclei.org/wp-content/uploads/RC2019_Presentations_B4_FullSession.pdf

OUTCOMES

The session introduced CODATA's Data Integration Initiative for global challenges and explored the aforementioned issues and opportunities with the presenters who walked through their related initiatives and projects, together with an open dialogue. The session's overarching objectives were to:

- demonstrate the power of data integration to provide practical benefit to the resilient cities domain as well as to demonstrate mechanisms to support reporting of the SDGs and Sendai Framework;
- demonstrate effective research approaches that are participatory and practice-driven, data collection, processing and dissemination used for municipal decision-making;
- identify interdependence in data analysis frameworks used for the monitoring and evaluation of urban services;
- provide knowledge of accessible resources and relevant actors to build capacity and assist city regions in utilising integrated data and interdisciplinary research to underpin integrated approaches to project delivery and administration to maximize societal benefit;
- encourage appreciation and adoption of the importance of 'FAIR' data principles (findable, accessible, interoperable, reusable) and open-data approaches and infrastructures as key enablers of collaborative problem definition, risk analysis and societal response that resilience-action planning requires.
- identify together the need for further data and practical approaches that can enhance the potential of data integration to achieve major new insights in the resilient cities domain.

METHODOLOGY

Welcome, introductory presentation, and case study on the data integration pilot for resilient cities

> The facilitators introduced the session followed by a (i.) framing presentation from Simon Hodson on the role and activities of CODATA and the International Science Council and CODATA's Data Integration Initiative for global challenges, with pilots on infectious diseases (IDDO, Oxford University), disaster-risk reduction (Virginia Murray, Public Health England/UNU), and resilient cities (Resilience Brokers with pilot partners Ruta-N Medellin and National University of Colombia).

> (ii.) Resilience Brokers on systems modelling and the highly-collaborative process of the CODATA Data Integration Initiative pilot in Medellin on the locally-defined areas of the linkages between air quality and public health (including urban green space, vehicular emissions, and social and economic outcomes).

Presentations on related initiatives and case studies

> (iii.) The new British standard for city resilience (BS 67000 Resilience Framework) and its lessons and applicability in other contexts (e.g., population data and the health value chain in Beirut).

> (iv.) How Milan is going about developing an Emergency Management Information System (EMIS) to tackle challenges like the coordination of multiple actors and how the constant flow of real-time data from diverse sources must be integrated to optimize response and predict scenarios.

(v.) The World Bank on the activities of the Bank's City Planning Labs (CPL) with municipalities in Indonesia, including the introduction of municipal data portals in Indonesia and operationalization of the new 'Municipal Spatial Data Infrastructure' (MSDI) framework.

(vi.) An example from a solutions provider, Green City Watch (GCW), which develops open indicators for urban green space ('Urban Nature Index'), leverages diverse data inputs (e.g., crowd-sourced, open data like OpenStreetMaps integrated with drone imagery), uses open-source and open-access AI algorithms, and high-resolution satellite imagery to plan, monitor, benchmark and visualize urban green space for urban planning and land policy development. GCW presented use cases in Indonesia for the World Bank's City Planning Labs (CPL).

Moderated Q&A with audience discussions

CONTRIBUTORS

Facilitators   **Andrew Simmons,** *Director of Research, Resilience Brokers, London*

Simon Hodson, *Executive Director, CODATA, International Science Council, Paris*

Panelists   **Stephen Passmore,** *Chief Executive Officer, Resilience Brokers, London*

Caroline Field, *Committee Chair, British Standard for City Resilience; and Associate Director, Arup, London*

Piero Pelizaro, *Chief Resilience Officer (CRO), Comune di Milano*

Gayatri Singh, *Senior Urban Development Specialist, World Bank, Jakarta*

Chris van Diemen, *Cofounder & Chief Data Officer, Green City Watch, Amsterdam*

Further recommended reading and media

1. FAIR Principles (GO FAIR Initiative). https://www.go-fair.org/fair-principles/
2. "Roadmap 2030: Financing and implementing the Global Goals in human settlements and city-regions" (Resilience Brokers / Ecological Sequestration Trust). http://ecosequestrust.org/roadmap2030.pdf
3. ODIR: "Open data infrastructure for city resilience: A roadmap showcase and guide" (Resurgence, Resilience Brokers, ESRI, OpenNorth, GeoSUMR). https://www.unisdr.org/campaign/resilientcities/toolkit/article/open-data-infrastructure-for-city-resilience
4. Video on Medellin's open data and data integration initiatives. (Ruta-N Medellin with Resilience Brokers and CODATA). https://www.youtube.com/watch?v=71-FT-wG4B8
5. "Municipal Spatial Data Infrastructure" Pillars and Toolkit (World Bank). https://c4dcommunities.worldbank.org/content/sites/collaboration-for-development/en/groups/city-planning-labs.html
6. "The value of open data" (Group on Earth Observations and CODATA). https://www.earthobservations.org/documents/dsp/20151130_the_value_of_open_data_sharing.pdf
7. "Public Life Data Protocol" (Gehl Institute Copenhagen) https://gehlinstitute.org/tool/public-life-data-protocol/
8. TReNDs - Thematic Research Network on Data & Statistics (SDSN). https://www.sdsntrends.org/