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TRANSFORMING THE RELATIONSHIPS BETWEEN GEOSCIENTISTS AND URBAN DECISION-MAKERS: EUROPEAN COST SUB-URBAN ACTION (TU1206)

Diarmad Campbell^{a*}, Johannes de Beer^b, Susie Mielby^c, Ignace van Campenhout^d,
Michiel van der Meulen^e, Ingelöv Eriksson^f, Guri Ganerod^b, David Lawrence^a, Mario
Bacic^g, Alex Donald^h, Constantin Radu Goguⁱ, Jan Jelenek^j

^aBritish Geological Survey, Lyell Centre, Research Avenue South, Edinburgh, EH14 4AP, United Kingdom

^bNorwegian Geological Survey (NGU), Trondheim, Norway

^cGeological Survey of Greenland and Denmark (GEUS), Denmark

^dCity of Rotterdam, Rotterdam, Netherlands,

^eGeological Survey of the Netherlands (TNO), Utrecht, Netherlands,

^fCity of Oslo, Oslo, Norway,

^gUniversity of Zagreb, Zagreb, Croatia

^hGeological Survey of Northern Ireland, Belfast, Northern Ireland, United Kingdom

ⁱTechnical University of Bucharest, Bucharest, Romania

^jCzech Geological Survey, Prague, Czech Republic

Abstract

The European COST Sub-Urban Action (TU1206) has had the fundamental aim of closing the knowledge gap between subsurface experts and potential users of subsurface knowledge - urban decision- makers, practitioners and researchers. The Action assembled a network involving >30 countries, 23 actively participating cities, researchers, practitioners and urban decision-makers, and brought together the fragmented research and good practice across Europe in sustainable urban sub-surface use. Development of national exemplars has been encouraged, and good practice identified to inspire others, using a lighthouse-follower approach to cascade knowledge and good practice across Europe and further afield.

Experts from both sides of the knowledge gap were brought together to assess and synthesise the state-of-the-art in lighthouse cities with respect to urban sub-surface knowledge, understanding, and use of that knowledge. This was achieved in 19 City Studies, with findings encapsulated in an over-view report “Out of Sight - Out of Mind”.

* Corresponding author. Tel.: +44-650-0215; E-mail address: sdgc@bgs.ac.uk

Expert sub-groups then identified good practice in subsurface data and knowledge locally, nationally, and Europe-wide. These are highlighted in the synthesis report “Opening up the subsurface for the cities of tomorrow”, and expanded on in seven topic review reports. These also identified key gaps in knowledge, and its use. A new concept, GEOCIM is proposed for City Quarter to Conurbation scales, combining subsurface and above-ground models. These enable: a.) holistic urban planning; b.) identifying subsurface opportunities; and c.) saving costs by reducing uncertainty in ground conditions.

Finally, the Action’s reports and outputs were integrated within an online toolbox, and will be further outlined in the Final Report of the Action, to be made available on the Action’s website. The Sub-Urban Toolbox promotes and disseminates the good practice, and decision-support tools: a.) to help better inform and empower city decision- and policy-makers about the sub-surface and the vital importance of its early-stage consideration; and b.) accelerate uptake amongst sub-surface experts of sub-surface modelling workflows. Users with different backgrounds and needs, require different access to, and appropriate translations of, the Sub-Urban Toolbox. Therefore different entry points are provided for sub-surface technical experts, and urban planners, and decision- and policy-makers.

As the critical mass of city decision- and policy-makers that is better aware of the sub-surface and its sustainable use expands, the potential for higher level policy consideration of the subsurface grows, and a wider range of impacts will become achievable.

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1. Introduction

Sub-Urban was initiated in 2013, as a European Cooperation in Science and Technology (COST) Action (TU1206), with the intention of improving understanding and use of the ground beneath our cities.

The Action emanated from an initiative within the North-east Atlantic Group of EuroGeoSurveys, recognizing the increasing importance of urban issues within their strategies, and especially of the impact being achieved by a multi-disciplinary project CUSP (Clyde-Urban Super-Project) then nearing completion at the time by the British Geological Survey. CUSP concentrated on the City of Glasgow (UK) and its surrounding catchment and was led also by the Sub-Urban Action’s proponent.

The background to the Action is the increasing role of cities worldwide as engines for economic growth and as a focus for infrastructure development and investment (e.g. World Economic Forum [1]). Europe’s population is already substantially urbanised, and by 2050, UN-HABITAT [2] estimates two-thirds of the global population will be too. Sustainable urban development (a measure of social, economic and environmental factors) is therefore being challenged globally by this urbanisation.

In contrast to the attention given to the visible (above ground) expressions of cities, there is a marked lack of appreciation of the importance of the subsurface amongst those who plan, develop and manage cities [3, 4], and a lack of integrated policy with respect to the subsurface. For example the European Commission’s Science for Environment Policy [5], addressing indicators for sustainable cities, makes no specific reference to the subsurface. Hence, the ground beneath our cities is: a.) used inefficiently or even unsustainably; b.) urban subsurface ecosystem services are not effectively safeguarded; and c.) conflicting uses of the subsurface are unappreciated and largely unaddressed [6, 7].

Better use of the subsurface can make a significant contribution to urban sustainability, and resilience [8]. This requires, however, the integration of broad-ranging, multi- and transdisciplinary research (under the convenient umbrella of the so-called ‘Science of Cities’) to create improved urban subsurface knowledge which must then be effectively communicated, delivered and accessible to, and useable by, urban planners and other decision- and policy-makers, and practitioners.

Under the EU’s Horizon2020 Framework Programme, the Action has operated through a Memorandum of Understanding (MoU) accepted by 30 COST and 1 COST near-Neighbour countries. The key objective of the Action has been to transform relationships between: experts who develop urban subsurface geoscience knowledge - principally national Geological Survey Organizations (GSOs), but also university researchers and others; and those

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