

DSC-69 National Materials Datahub

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The long-term vision of a National Materials Datahub (NMD) is to provide the UK 1st single version of truth for materials information in the UK, open for public good. The NMD is an innovative research project at its early phase to investigate feasibility, developing a Minimum Viable Product (MVP) to validate users need with a minimum set of features.

Initial focus will include,

Can we apply innovative data science techniques to: * better leverage materials data and information that are already out there? * better shape a datahub for an enduring, sustainable future in the UK?

The creation of a NMD would enable the measurement of resource economy, the design of new statistics and indicators, which reflect a rapidly evolving world and our complex relationship to materials. This would include supporting future policy decisions and industrial strategy for issues such as sustainable materials, economic growth, carbon savings, and overall global competitiveness, which is even more relevant in the context of the UK leaving the EU.

Team members

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The need

The August 2016 scoping study “Materials Flow Planning”, commissioned by BEIS (then BIS) confirmed that a lack of coordinated and usable data on the availability of non-virgin resources in, and to, the UK makes the identification

of secure and reliable domestic feedstock supply difficult. This prevents industry from making the investments needed to realise clean growth and competitiveness opportunities. This also impedes industrial transformations required to deliver against key Government industrial strategy, resource efficiency and bio economy policy agendas.

The more recently published 2017 “Report of the Government Chief Scientific Adviser 2016, From Waste to Resource Productivity, The Government Office for Science” co-authored by Sir Mark Walport (former Government Chief Scientific Adviser (GCSA) and Professor Ian Boyd, (Chief Scientific Adviser at DEFRA) further highlighted these issues. The report identified a number of areas where the government could bring leadership, direction and co-ordination , for example, > to drive market behaviour, and create “data with a purpose initiative” to map data needs and prepare a roadmap of the administrative and legislative action necessary. This would enable the government to put in place a comprehensive and modern waste and resource data regime in the UK. Defra could lead this and involve representatives from Office for National Statistics, industry, the waste sector and academia.

Impact

Materials availability will be visible to industry and government for public good. The impacts, which will be realised over time as discoveries are made, will include:

- identify materials across the UK and where the data gaps are
- identify, improve and invest on data collection methods
- identify alternative or complementary industrial applications and processes
- identify critical and scarce materials
- modelling of policy decisions, investment opportunities (road infrastructure, waste streams), and pre-empting unintended consequences

Data science

By gathering materials information from industry and government, the data science feasibility can be assessed over time as discoveries are made, will explore:
* combining large, diverse datasets and disseminate via a geospatial platform * facilitating “what-if” scenarios in relation to materials accessibility by geolocations and road infrastructure * exploring the possibility of tracking materials flow at transnational levels * exploring the possibility of bridging data gaps and granularity using satellite imagery * exploring the possibility of an Observatory of Economic Complexity tool that allows users to quickly compose a visual narrative of the countries and products they exchange.

Stakeholders

- Advisory Board - consists of the most senior stakeholders in the industry and government, providing access to data and modelling know-how, advice the direction of this project.
- Virtual Team - consists of subject matter experts (SMEs) in the industry and government, providing technical knowledge and domain expertise related to data collection, statistical modelling for material information.

Code and outputs

- A technical feasibility report, blogs and, code sharing that enables scoping of the next phase.
- GitHub repository

Related and existing work

Observatory of Economic Complexity tool that allows users to quickly compose a visual narrative of the countries and products they exchange. A project completed at the MIT Media Lab. This is an excellent example to demonstrate the huge range of materials could be included in the NMD project. Note that, this example only covers the import and export aspect, which is only one of the four aspects for the NMD. This product relationship network “what are the export opportunities of the UK in 2016?” is very interesting.

Further information

Please contact datasciencecampus@ons.gov.uk for more information.

Updates

- No updates yet.