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UNIVERSITY OF OXFORD

# Commission on Sustainability Data

https://www.kellogg.ox.ac.uk/kellogg-centres/centre-for-mutual-and-co-owned-business/commission-on-sustainability-data/

Following the University of Oxford's October 28th 2022 Conference on Sustainability Finance at Kellogg College, the Commission on Sustainability Data was established to examine how data might be captured and disseminated, so that consumers and investors could judge the environmental sustainability of a company's operations (taking account of their supply chains). The vision of Commission centres on empowering consumers with the means to consciously factor in the environmental footprint of their purchases, and enabling investors to embed sustainability considerations into their investment decisions.

The Commission on Sustainability Data will draw upon previous work on the topic, including the Global Data Commons project from 2018/19 in which Commissioner Dr Nigel Mehdi was involved. The Commission on Sustainability Data is not just about aggregating data; it seeks to be a catalyst for change, sparking new conversations on sustainability and driving global actions. It is responding to the urgent need for comprehensive, reliable data to inform sustainable practices, which will be possible only if world governments take action through the COP and other processes.

**Commissioners:**

**Professor Jonathan Michie** (Chair): President of Kellogg College, and Professor of Innovation and Knowledge Exchange, University of Oxford.

**Professor Jim Davies**: Professor of Software Engineering and Director of the Oxford EPSRC Centre for Doctoral Training in Health Data Science. Jim was Chief Technology Officer for the UK 100,000 Genomes Project, and is clinical informatics lead for the Oxford NIHR BRC and the NIHR Health Informatics Collaborative. He works in the Big Data Institute, part of the Li Ka Shing Centre for Health Information and Discovery, and in the Department of Computer Science.

**Dr Nigel Medhi**: Senior Associate Tutor in Sustainable Urban Development, University of Oxford. Nigel works at the intersection of information technology, the built environment and urban sustainability. He teaches at Oxford on the Sustainable Urban Development programme and on the Software Engineering Programme.

**Dr Ana Nacvalovaite**: Research Fellow working with Professor Michie on whether sovereign wealth funds might diversity their investments globally to include local co-operatives, employee- and co-owned businesses, and social enterprises as a way of enhancing social and environmental sustainability.

**Ian Robertson**: Portfolio Manager and Vice President of Odlum Brown Limited, and founder of a social venture spinout – OxProx – a global public access database of investors' (asset owners and asset managers) proxy voting records, bringing transparency and accountability to investors' votes on environmental, social, and governance (ESG) issues.

**Professor Niki Trigoni**: Established the Sensor Networks Group, and has conducted research in communication, localization and in-network processing algorithms for sensor networks. Her projects span a wide variety of sensor networks applications, including indoor/underground localization, wildlife sensing, road traffic monitoring, autonomous (aerial and ground) vehicles, and sensor networks for industrial processes.

## Oxford's Commission on Sustainability Data

Ideally sustainability involves making choices and taking actions that consider the long-term consequences for environmental well-being, rather than just focusing on short-term benefits. But is that the behavior the sustainability movement is currently driving? Despite the talk of "Sustainability" being a top strategic initiative for companies, we have seen a lack of progress. Sustainability software solutions that software vendors have built are advanced and helpful, but corporations are not engaging sustainability with software-first solutioning despite it being the only way to integrate sustainability into employee choices and actions made across their company. An effort is underway at Oxford that puts the blame for this lack of progress on the absence of standardized, auditable data across the business world and is working towards a solution.

Because of a lack of standardized, auditable data to support sustainability reporting globally, the sustainability community has focused on driving down sustainability metrics in a small subset of public companies, government owned companies and large private companies where some leverage exists to effect behavior. This has created a few "carbon pressured" companies and left most to be defined as "non-carbon pressured" companies. "Carbon pressured" companies are selling off high carbon portions of their business and outsourcing aspects of their business to "non-carbon pressured" companies because that is a less costly process than addressing carbon use within the company. While this cleans the carbon balance sheets of the carbon pressured companies, it doesn't result in actual sustainability progress.

Do we have to accept this reality and hope that democracies will implement blunt instruments to force sustainability on the public or is there a market driven solution that uses consumer choice to bring change?

From a data perspective, any company can be viewed as a collection of software driven processes, whether conducted internally or outsourced to a vendor. These software driven processes are so intertwined at the data level that access to transactional level data from these systems would give you a near perfect, auditable view of what a company's sustainability footprint is. This fact gives us a new, data driven option to tackle sustainability issues globally.

### 1. Sustainability viewed through a series of processes – procurement, inventory, e-commerce

Shifting our efforts away from pressuring companies and instead to identifying and securing data from processes provides us a path to the data we need to drive sustainability. For example, buying a basketball involves a series of steps or processes - How did it get to your door? Where was it stored before getting to you? How did it get there? What was energy composition of the utility company that provided electricity to the factory that made it? How did the raw materials get to that factory? All these processes (shipping, electrical generation, etc.) have sustainability problems. It doesn't matter who is doing it, it matters that it is being done. Once you make this shift in thinking you can walk right though the economy and focus on getting the data from defined processes and adjacent processes that can be used to audit what you are being told. That data already resides in software systems across the companies that, together, brought that basketball to you. We need to normalize/standardize that data and create an auditable framework for getting it to the end consumer, so sustainability becomes part of the consumer's buying decision.

### 2. Treating "sustainability" like money

Asking companies for their sustainability data is the wrong path, if done honestly it is an expensive process that will have to be asked of millions of companies who will each approach it differently. If done dishonestly we will fail to create a sustainable economy due to fraud. Unfortunately, we are guaranteed to get a mix of both. We must create a situation where companies only have to enable automated logging of their transactional data from which auditable sustainability data can be pulled. Currently the few companies that are engaging in comprehensive sustainability efforts are asking their vendors and supply

chains to manually upload data to drive their sustainability reporting. If we want to scale this effort, we must understand what we are trying to do. We are trying to put a monetary value on sustainability, hoping to make sustainable investments and choices valuable. But we have a framework built out to prevent fraud in the monetary system. If that monetary framework didn't exist money would be worthless. We have no framework to prevent fraud in sustainability, certainly not when you get to small and medium businesses and until this is fixed, we limit the value of sustainability investment and choices. Trying to make sustainability practices valuable without an auditable data layer will result in the same behavior we are seeing today. Companies unwilling to make false sustainability claims will outsource environmentally expensive processes to companies that are willing to make false claims or don't have the burden of having to make claims. Why? The market automatically adopts better, faster, and cheaper. The market will only adopt sustainability if we provide a framework that brings a level of certainty to sustainability claims so companies can be compensated for more expensive processes. Consumers keep telling us they are willing to pay for a sustainably made product. Efficient markets require consumers to have quality information. If we want to take sustainability seriously, we need to give consumers that data. We are closer to being able to do that than you might think.

## 3. Structural changes needed

We have spent the last 50 years using software to automate process tasks both within a company and between companies. When a company receives an order from a customer, so many systems (in that company's control and outside that company's control) and vendors become involved in fulfilling that order that a company lying about their sustainability data would be challenging if each of those systems' transactional logs were available to an auditor. If those transactional logs were standardized across companies, the intertwined nature of those logs would provide a dataset that software systems and auditing firms can efficiently audit while calculating data certainty by the number and nature of the intertwined tables. That allows auditors to only extract a calculation from a company's data (the carbon footprint of your activities) vs. having to share the underlining data or which company it came from.

## 4. Using the sustainability impact of "last mile ecommerce" as a working example

When a purchase is made on an ecommerce site, a series of intertwined processes occur:

- To execute a transaction:
    - The ecommerce system records the transaction.
    - The ecommerce solution calls to a tax calculation engine, passing on almost the entirety of the purchase information to calculate taxes correctly.
    - The ecommerce engine calls to a shipping provider to get a rate, passing information related to where the package will be picked up and where it will be sent to.
    - Payment provider is called to execute the transaction at a specified dollar amount.

In this scenario, even if the ecommerce company was hosting their own ecommerce website, we have at least three external entities that have relevant data to audit the commerce data provided by the ecommerce system. If all four software systems were logging data relevant to the ecommerce provider's transaction to a database that the ecommerce provider owned but was unable to edit, we have a situation where the ecommerce provider could automatically create an auditable data set that proves their sustainability claims.

With that auditability established, calculating carbon cost of final ecommerce delivery for an ecommerce company becomes a check to see the source of the logs, if the tables validate each other, and a calculation. This intertwining, redundant data related to important processes is persistent across most sustainability

concerns. Any attempt to commit fraud becomes a complex act with a smaller and smaller possible footprint as more transactional data is added.

## 5. The Solution

Software driven processes today are so intertwined with other internal and external software processes that – given enough process data – the data can audit itself; this enables companies to provide standardized, auditable, data when it comes to sustainability, while maintaining corporate privacy. What are we missing?

There are three things still missing:

1) Transactional data is not standardized. Vendors and software systems output transactional data in different formats. Data formats for sustainability related processes, and adjacent processes that naturally intertwine with them, must be standardized.

2) Burden of standardization is in the wrong place. Currently, when companies want to report on sustainability, they are burdened with finding and aggregating relevant data within their company. This is a process that is expensive and un-auditable. Shifting the burden of standardizing data to vendors and software companies provides us a highly leveraged method for substantiating sustainability claims. Software companies and vendors are currently created to impact better, faster, cheaper. To impact "more sustainability" they first must enable their customers to check a box to output standardized transactional data directly from the software system or from the vendor to a customer's database of choice.

3) To ensure a company doesn't modify their transactional data, vendors and software companies will need to write a hash value of the transactional data they are logging to a customer's private database to a single entity that will allow the market to verify that the data a customer is representing as their sustainability data hasn't been altered. Oxford will lead the effort in creating a mutualized entity that will serve this role.

This Oxford effort is located in the Centre for Mutual and Co-owned Business to provide the framework and vocabulary necessary to bring together the most important data players to create a sustainability data framework and enabling infrastructure – and do so in a way that would be considered one of the largest partnership efforts undertaken by private industry, with an ownership model that is acceptable to participants.

## 6. The Role of Government

If we can make sustainability claims valuable, false claims of sustainability are an explicit theft of value. One of the primary roles of government is the protection of personal property. Companies, and by extension investors, that invest heavily in sustainability to gain a market advantage have value stolen from them by companies that would make false sustainability claims. Governments need to understand how their current actions can create higher costs for sustainability fraud and reinforce the inherent auditability of transactional level data. Many government filings have an inherent requirement for transactional level data to exist. If a company is going to make sustainability claims related to its supply chain, governments requiring those filings to source from a company's sustainability database creates a large increase in the potential cost of sustainability fraud. One focus area of the Oxford effort will center on how government filings can add additional certainty and increase cost of fraud to a global sustainability data effort. Enabling governments to support the free market pursuit of sustainable practices through the protection of personal property is a blame free way of supporting sustainability, contrasting with government efforts to impact sustainability via micromanaging behavior.

## 7. Goals of the Commission

The Oxford Commission will seek to:

i. Bring together influential software and vendor companies to prototype universal and auditable datasets from which sustainability data can be drawn.

ii. Promote the idea that auditable datasets can be constructed via the mass auto logging of transactional data.

iii. Work with auditing firms and sustainability standards groups on how auditing can be done while ensuring appropriate corporate privacy.

iv. Inform governments how they can improve the certainty in sustainability datasets by understanding how their requests for information trace back to transactional data.

v. Ultimately pull together a large, diverse group to mutualize a singular effort to give companies the ability to secure a database to which their systems and vendors will automatically log transactional data at the click of a button.

## 8. Purpose of this effort

We want to shift the world from running on better, faster, cheaper – to better, faster, cheaper, more sustainable. To bring sustainability deep into supply chains we need a framework to bring the data out of those supply chains in a standardized, auditable framework. Utility companies are not going to receive the money they need to change their energy mix, logistic company are not going to receive the money they need to change over their vehicles, companies won't use their software systems to analyze every choice for its sustainability impact until the data related to those choices are ultimately reported to the consumer, impacting all business partners in a supply chain. By establishing a structure where consumer choice forces a supply chain to maximize sustainability across every choice, will create the most efficient mechanism to promote environmental sustainability globally.