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Economics of data sharing: incentives and market failures

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Setting the scene: basic definition

Personal
All the information that would allow for the identification of a natural person ('data subject'). A lawful legal basis is needed to process these data (e.g. **consent**)

Non personal
Catch-all category, which refers to information that does not allow such identification. No legal basis needed to collect and process these date

BUT: the distinction between personal and non-personal is not always straightforward (see technical limits to anonymization)

DATA SHARING

The process by which a company makes its data (generated or collected) available, either at no cost or against some **remuneration** or benefit, to another company that interested in these data for business purposes

REGULATORY FRAMEWORK in place and on the making

- Data Governance Act (B2G)
- Data Act (B2B)
- Sector-specific rules (B2B)
- GDPR (Data Portability, art.20)
- Digital Markets Act (B2B)

The big picture: unlock the potential of data

Meta

Movement Range Maps during Covid-19

Movement Range Maps showed changed in mobility around the world during the first two years of the COVID-19 pandemic, specifically how populations responded to stay-at-home and physical distancing measures. These statistics were produced using mobile devices that have the option of providing their precise location aggregated by territorial units at different spatial level
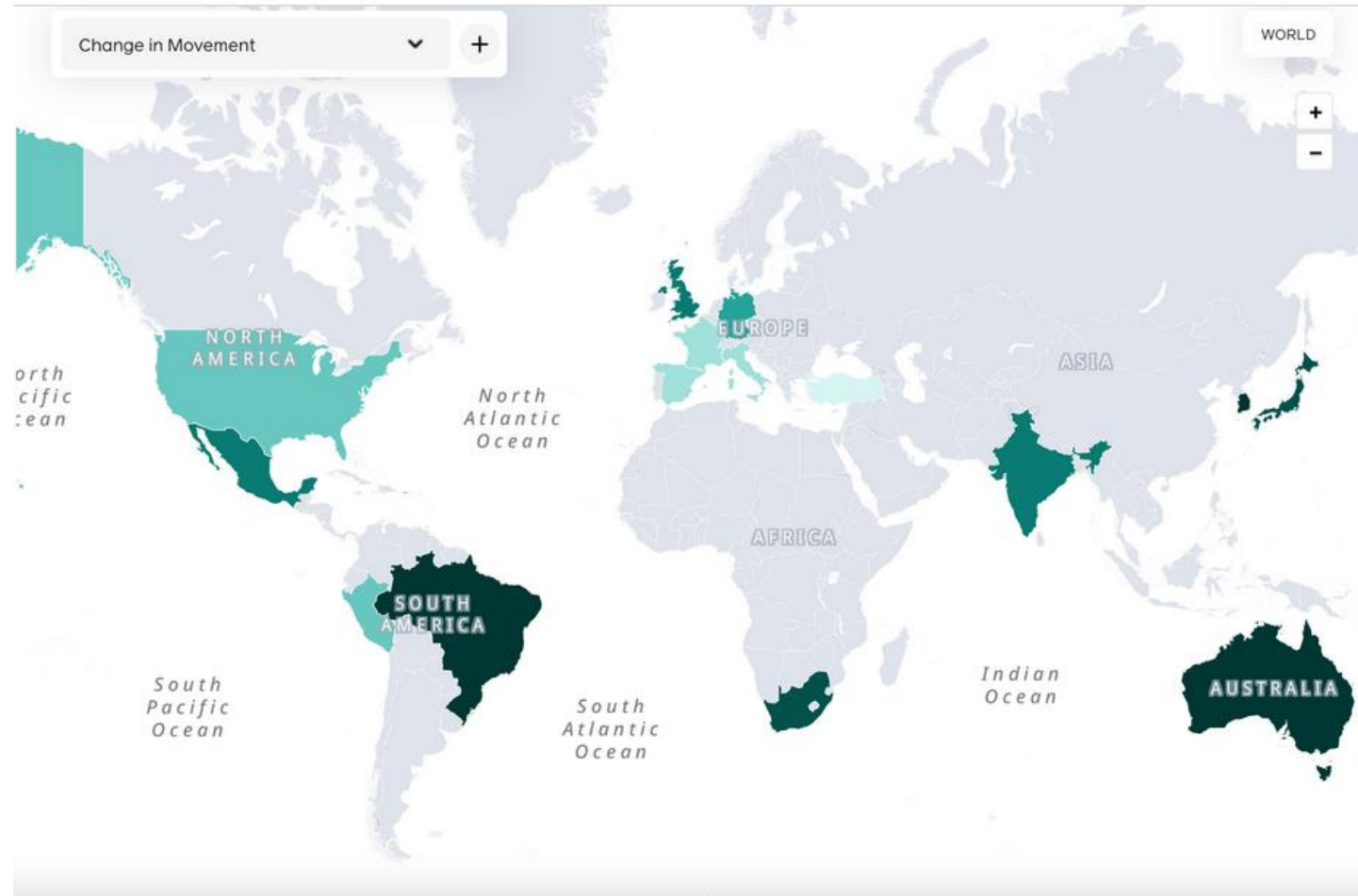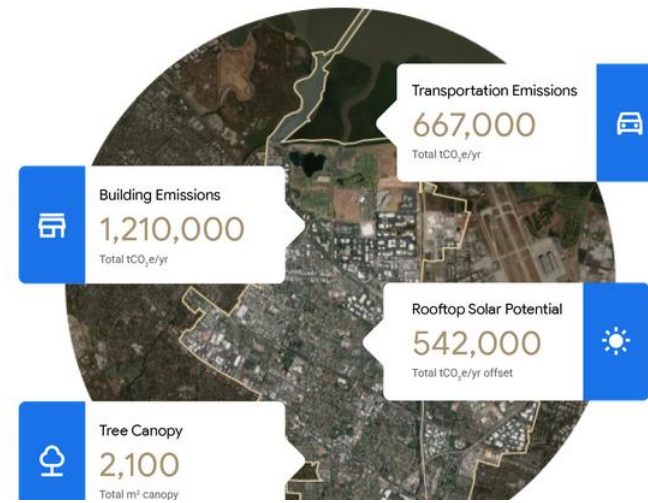

Countries covered are indicated in green scales

The big picture: unlock the potential of data

Google Environmental Insights Explorer

Environmental Insights Explorer (EIE) is a freely available data and insights tool that uses exclusive data sources and modeling capabilities to help cities and regions measure emissions sources, run analyses, and identify strategies to reduce emissions — creating a foundation for effective action.

With EIE, changemakers around the world can continue to make their communities more sustainable, resilient, and adaptive to climate change.

Transportation Emissions
667,000
Total tCO₂e/yr

Building Emissions
1,210,000
Total tCO₂e/yr

Rooftop Solar Potential
542,000
Total tCO₂e/yr offset

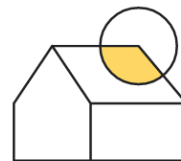Tree Canopy
2,100
Total m² canopy

Core Insights

Building Emissions

Estimated emissions from heating, cooling, and powering residential and non-residential buildings, based on Google Maps data.
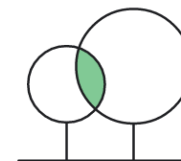
Transportation Emissions

Estimated emissions of all trips that start or end within city boundaries based on aggregated, anonymized Location History data.

Rooftop Solar Potential

Estimated solar energy production potential of buildings based on total sunshine exposure, weather patterns, and roof dimensions.
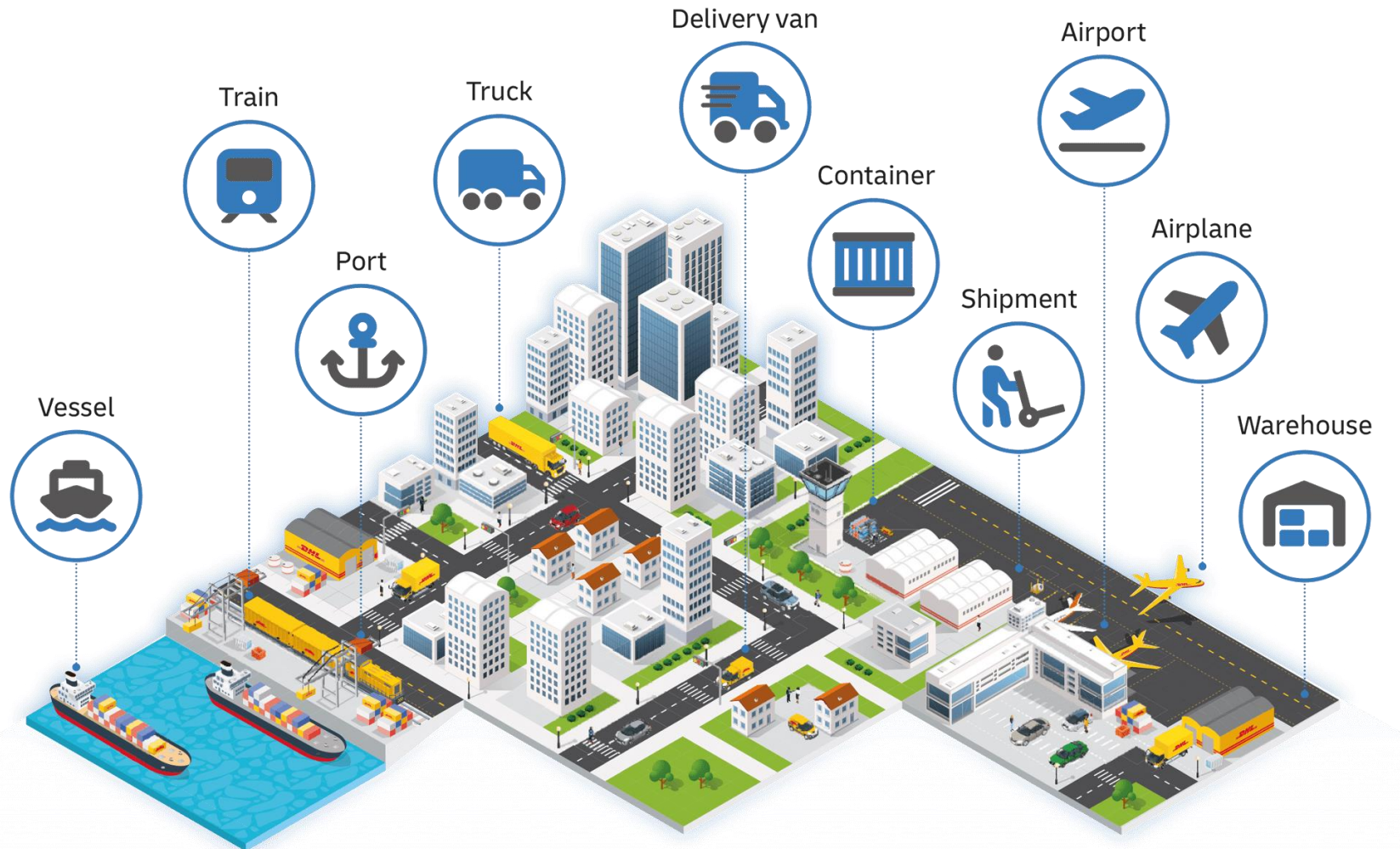
Tree Canopy

Estimated tree canopy coverage across city regions, based on aerial imagery and machine learning algorithms.

The big picture: unlock the potential of data

Digital Twin and smart cities- the future of logistics

- Tracking product or conditions along the value chain

- Exchanging information on the product specifications

- Improve supply chain transparency

Source: DHL

Data Sharing Business Models (focus on B2B)

In the context of **B2B**, are emerging three models:

➢ <u>Data platforms</u>: large data pools where companies share **non-personal** data in a secure environment, overcoming some technical obstacles such as those related to security and interoperability (e.g. Skywise, for air companies).

➢ <u>Marketplaces</u>: open framework operating as matchmaker, in which data transaction/exchange can take place between potential data suppliers and buyers (e.g. Snowflakes, multisectoral data repository)

➢ <u>Technical enablers</u>: intermediaries providing a number of services to both the data suppliers and recipients, in addition to facilitating the trasaction (e.g. Nallian, for cargo transportation).

In the context of **G2B** and **B2G** other models are emerging: open data model, civic data sharing/data altruism, prize/award, data philantropy.

Economics of Data sharing
The existing paradox

Low level of data sharing

Growing data generation

Data Sharing   Benefit

👍 **Re-usable input** → **e.g. through API**

👍 **Lower production cost for firms** → **strategic adjustment calibrated on precise estimations**

👍 **New market entry** → **firms can exploit and combine existing date repurposing them in different contexts**

👍 **Social/environmental challenges** → **e.g. detection and monitoring of crises (e.g. pandemic, natural extreme events, wars), management of urban life (traffic congestion, pollution), agriculture 4.0**

Data Sharing   Technical Obstacles

👎 **Lack of interoperability** → **technical and semantic**

👎 **Lack of compatibility** → **problems to integrate data due to different degrees of granularity and divergent taxonomies**

👎 **Cybersecurity risks** → **especially for real-time data sharing via cloud solutions**

👎 **Privacy concerns** → **related to possible unawareness of the sharing process (e.g. through mobile phones)**

Data Sharing Economic obstacles: possible market failures

👎 **Non-rival good** → simultaneous use without depletion and multi-sides sharing (from users to buyers and from buyers to users)

👎 **Economies of scale and scope** → single information acquires value as part of a wider network and its value increases if combined with other observations and variables (more accuracy of models can generate more revenues)

👎 **Control of few data holders** → data can be excludable, as the indirect network effect and economies of scale and scope create entry barriers and market concentration

👎 **Transaction costs and information asymmetry** → imbalances between sellers and buyers towards the latter

Data Sharing — Formal and Informal Institutional barriers

👎 **Lack of experience** → firms active in traditional sectors (especially SMEs) and local government authorities are often unfamiliar or unaware of the opportunities of data sharing

👎 **Reputational risk** → firms can experience a loss of reputation if data of their customers are used by third parties for marketing purposes

👎 **Legal uncertainties** → The presence of fragmented and non-harmonised regulatory national frameworks cause lack of trust at the European level

👎 **Legal concerns** → uncertain legal borders between data holders and data recipients in terms of ownership rights

Questions for the Debate

- What are the major market failures for data sharing?

- What are the main business models that can support the design of new market solutions?

- How to avoid the so-called "one size does not fit all" policy approach, given the wide set of market failures and types of data?

- What institutional model(s) can favor a win-win scenario for public and private spheres?

- What is a possible role of intermediaries and which kind of incentives are needed to stimulate their emergence?

- Is the European Union's regulation on data sharing on the right track to address market failures?

- Which major tradeoffs are at play in the current scenario (e.g. data silos versus data sharing; privacy regulation versus data-driven innovation)?

The Panelists

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Bibliography and food for thoughts

- Bezuidenhout, L. M., Leonelli, S., Kelly, A. H., & Rappert, B. (2017). Beyond the digital divide: Towards a situated approach to open data. Science and Public Policy 44(4), 464-475.

- Botta, M. (2023). Shall we share? The principle of FRAND in B2B data sharing, EUI RSC, 2023/30, Centre for a Digital Society - https://hdl.handle.net/1814/75507

- Carriere-Swallow, M. Y., & Haksar, M. V. (2019). The economics and implications of data: an integrated perspective. International Monetary Fund.

- Coyle, D., Diepeveen, S., Wdowin, J., Tennison, J. and Kay, L., (2020), The Value of Data – Summary report 2020, Bennett Institute for Public Policy, Cambridge.

- European Commission Communication, A European Data Strategy. Published in Brussels on 19.02.2020. COM/2020/66 final

- European Commission, Directorate-General for Communications Networks, Content and Technology, Scaria, E., Berghmans, A., Pont, M.et al., Study on data sharing between companies in Europe – Final report, Publications Office, 2018, https://data.europa.eu/doi/10.2759/354943

- Gelhaar, J., Gürpinar, T., Henke, M., & Otto, B. (2021). Towards a taxonomy of incentive mechanisms for data sharing in data ecosystems. In PACIS (p. 121).

- Kazantsev, N., Islam, N., Zwiegelaar, J., Brown, A., & Maull, R. (2023). Data sharing for business model innovation in platform ecosystems: From private data to public good. Technological Forecasting and Social Change, 192, 122515.

- Manyika, J., Chui, M. & Farrell, D., Kuiken, S., Groves, P., & Doshi, E. (2013). Open data: Unlocking innovation and performance with liquid information.

- Mariniello, M., (2022) 'The Data Economy', Digital Economic Policy: The Economics of Digital Markets from a European Union Perspective, Oxford

- OECD (2020), OECD Digital Economy Outlook 2020, OECD Publishing, Paris, https://doi.org/10.1787/bb167041-en.

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