Public sector's benefits from using satellite data and barriers to uptake: OECD perspective

ExpandEO workshop

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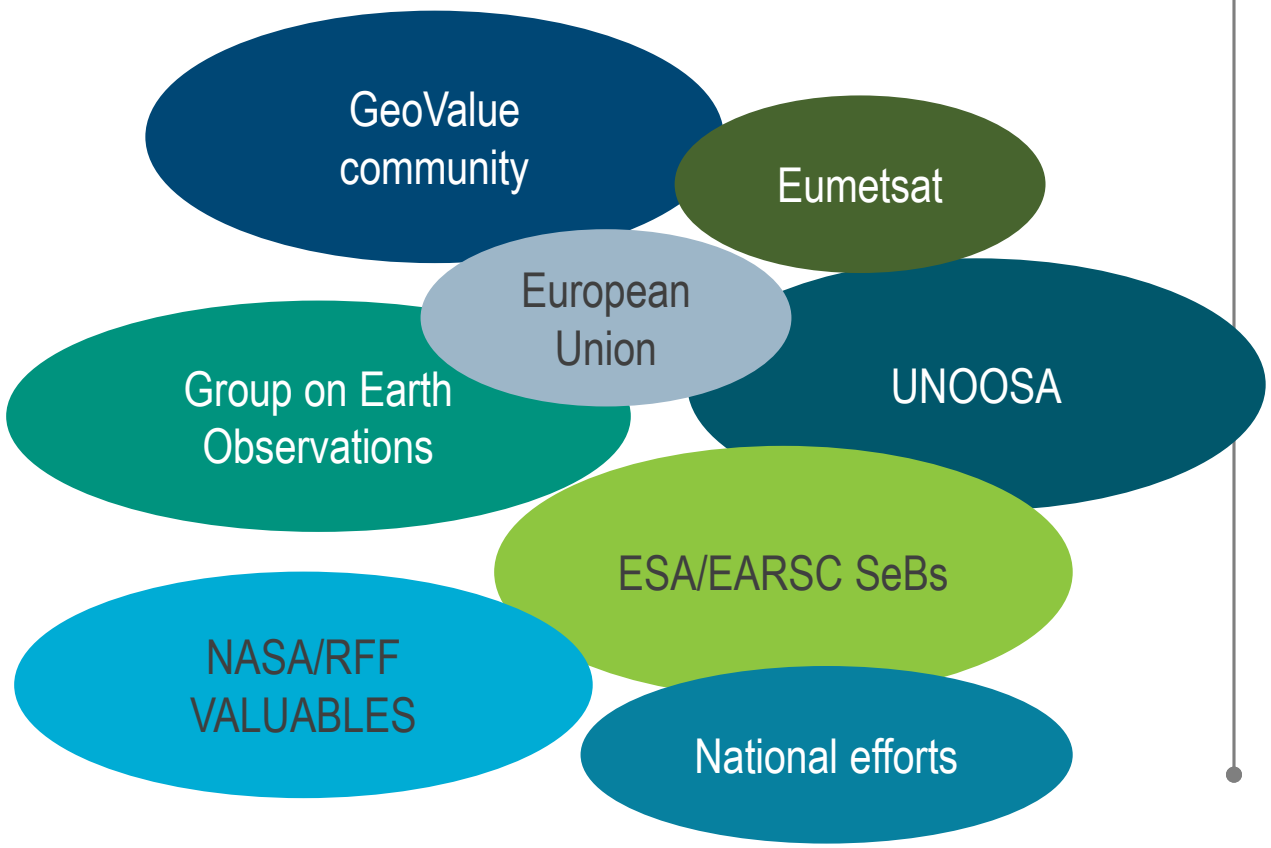
Our starting point: considerable growth in evidence

We know much more about the use and effects of satellite data thanks to targeted efforts in the last 10-15 years

Both national and international efforts



Finding multiple benefits

Most mature applications

- Weather and climate monitoring
- Security and defence
- Environmental protection
- Food production and security

Organisational benefits

- Improved quality of products/services
- Improved R&D capabilities
- Productivity and efficiency gains

Societal benefits

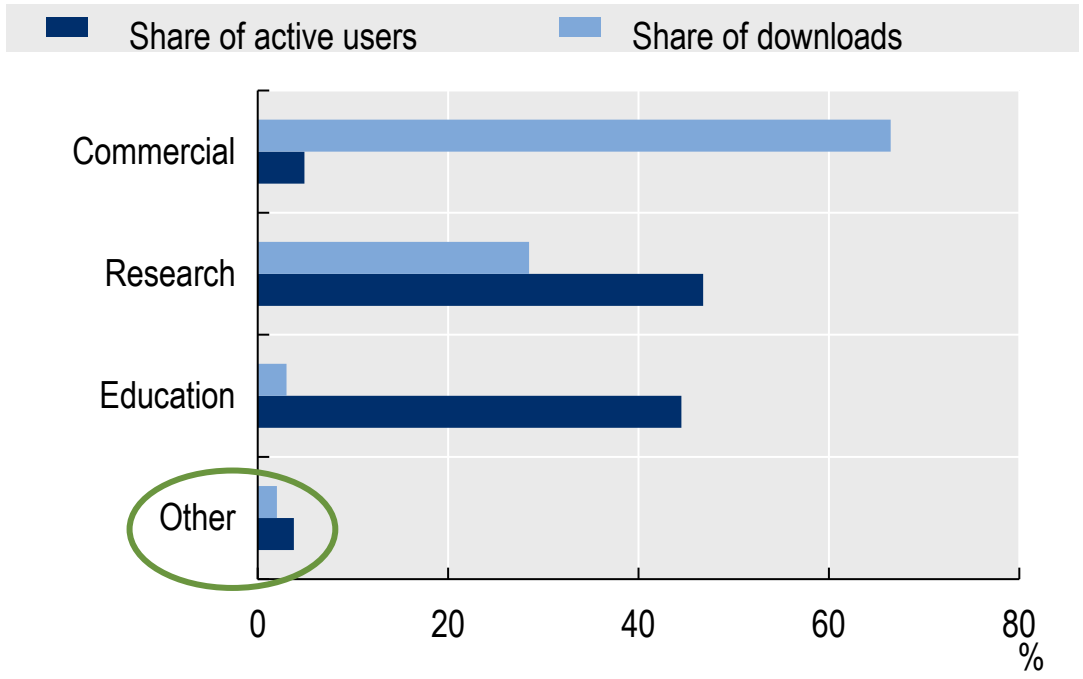
- Avoided costs
- Lives saved
- Improved health
- Improved wellbeing

Evidence of public sector's use of open-access satellite data?

Public sector organisations key markets for EO satellite data in general but poorly visible in open-access download statistics

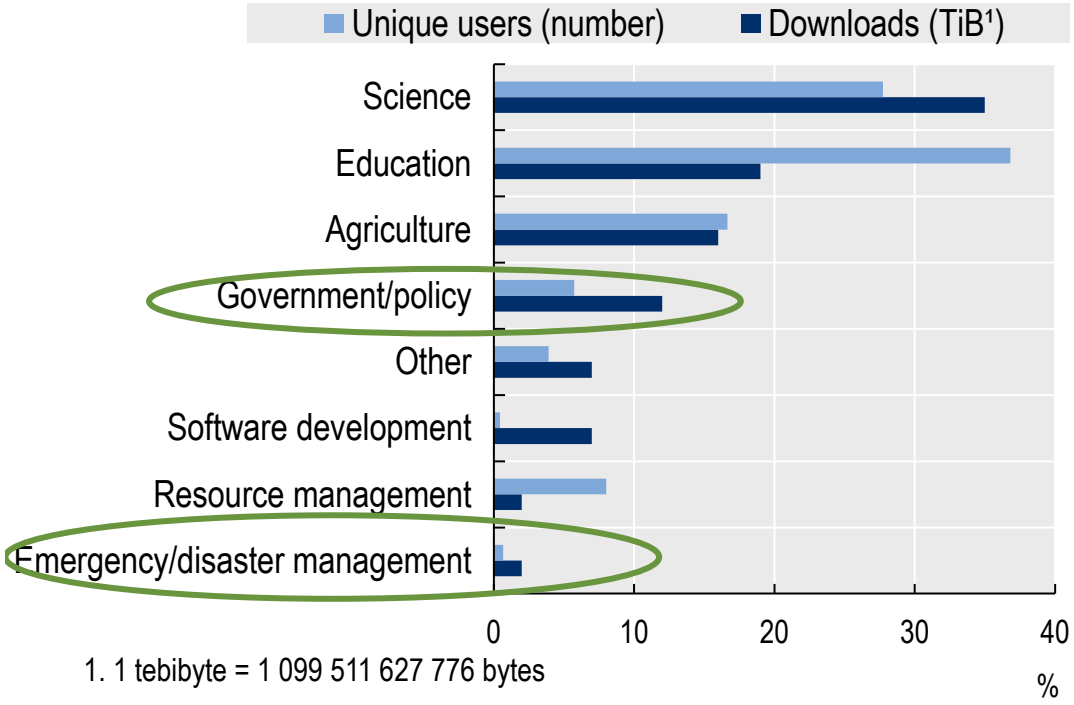
Users of Copernicus data

- Distribution of active users and downloads (by number), 2021



Users of Landsat data

- Distribution of unique users and data volume, 2023



1. 1 tebibyte = 1 099 511 627 776 bytes

Source: OECD (2023), "Space as a provider of critical data and innovative applications" in *The Space Economy in Figures: Responding to Global Challenges*

Barriers to further uptake

Uptake largely depends on the availability of other data and the technological maturity of the organisation

Internal barriers

- User reservations/lack of trust
- Poor understanding of capabilities of data systems
- Limited awareness of technological possibilities
- Poor information-sharing and co-ordination across services
- Poor ICT infrastructure and internet connection

External barriers

- Access to qualified personnel
- Access to high-quality ground data for data model training and validation
- High data cost (radar, high-resolution) and limited possibilities for sharing
- High data storage and processing cost

Satellite data limitations

- In several cases, other approaches/data are better options

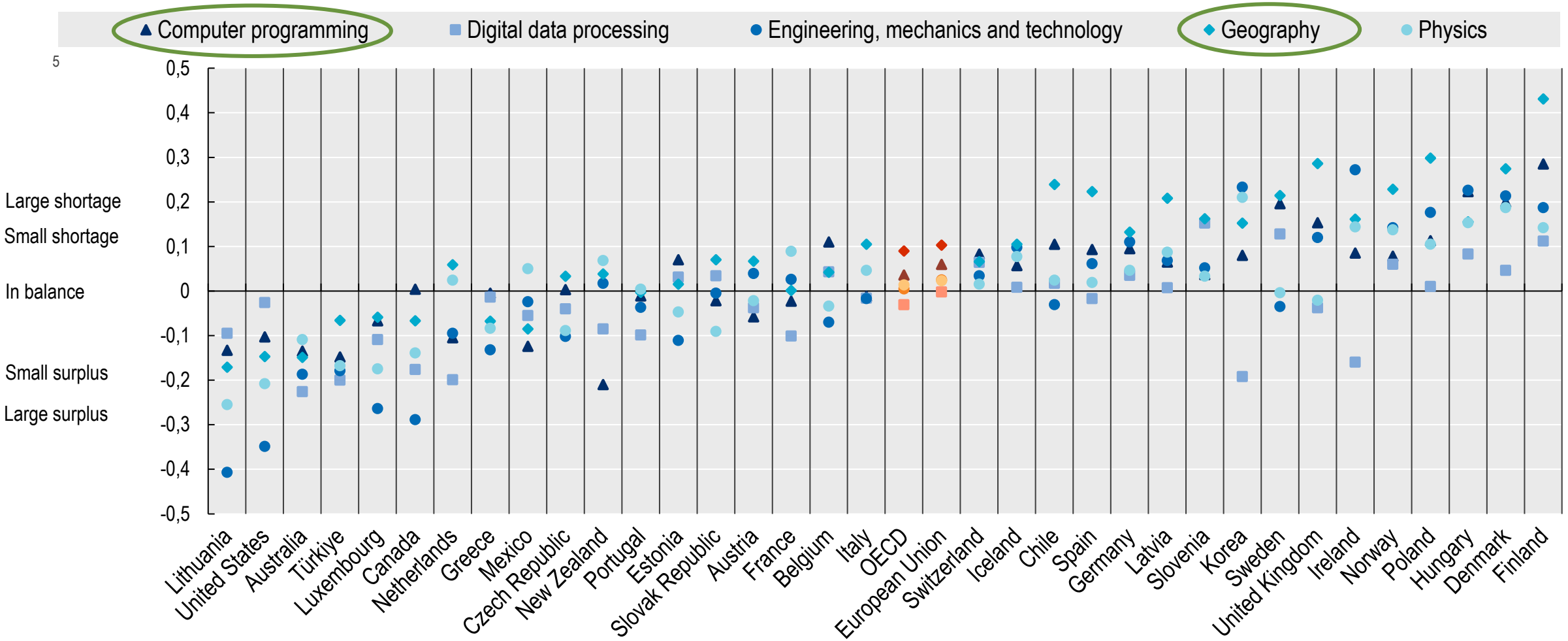
Stronger uptake in fields/regions with less available data

Satellite-based approaches complementary to more conventional ones

Reductions in data costs may stimulate uptake in certain organisations

Illustration: Shortage of geography and digital skills in multiple OECD countries

Data from 2019 or latest available year



Notes: The index reposes on three fundamental pieces of information: i) the importance of that skill category in each occupation based on the normalised Relative Comparative Advantage (RCA – which relies here on cross-country pooled data), ii) a measure of the size of the occupational imbalance in the country (i.e. whether each occupation is in shortage or surplus), iii) and the relative size of the occupation in the country's total employment. The value of 1 represents the largest shortage and the value of -1 the largest surplus across OECD countries, skill categories and years. The graph shows each country's most recent available year before 2020, which is 2019 with the following exceptions: 2018 for CHE, FRA, IRL, ITA, POL, and THA; 2017 for DEU, GBR, KOR; 2016 for AUS; 2015 for BRA, TUR; and 2012 for ISL, SVN.

OECD (2023), "The growth and sustainability of the space economy under threat", in *The Space Economy in Figures: Responding to Global Challenges*

Satellite data has considerable potential for further uptake

How to extend use beyond "expert agencies"?

User communities

- Improve **diffusion of existing products** for open EO data to other services
- Explore possibility of **co-ordinated data procurement**
- Enhance **knowledge sharing and collaboration** across government services
- Consider **consolidated approaches** to EO data processing

Data providers

- **Lower end-user expectations** about the promise of EO applications
- Report transparently about **technical prerequisites (costs)**
- Where possible, support **enabling factors**
- Ensure **continuity of observations and data products**

Thank you!

For further reading

- OECD (forthcoming end of June 2024), *The Economics of Space Sustainability: Delivering Economic Evidence to Guide Government Action*
  - Catalano, G. and V. Morretta, “The socio-economic benefits of earth observation (EO): Insights from the end users of EO services and applications in Italy”
  - Paravano, A., G. Locatelli and P. Trucco, “Value mechanisms of satellite infrastructure in the “new space” economy””
- OECD (2023), "Space as a provider of critical data and innovative applications“ in *The Space Economy in Figures: Responding to Global Challenges*
- Lupi, V. and V. Morretta (2022), "Socio-economic benefits of earth observation: Insights from firms in Italy“, in *Earth’s Orbits at Risk: The Economics of Space Sustainability,* OECD
- OECD (2021), Space economy for people, planet and prosperity, background paper for the G20 Space Economy Leaders' meeting