

EO OPEN DATA IN EUROPE - INTELLECTUAL PROPERTY & SERVICES MARKET IN CHINA & THE U.S.



Europe is world-leading in space-based Earth Observation **Systems**, helping in the understanding of climate change, in the green transition, in protecting bio-diversity and commercial applications. The EU Copernicus Programme, in partnership with ESA, EUMETSAT and Member States is the world's most comprehensive satellite Earth observation programme, based on an open data policy. It provides data for services, like land management, the marine environment, the atmosphere, emergency response, security, and climate change. It is institutionally driven, with past and ongoing public investments exceeding €15B.

In recent years however, a global earth observation data & **Services** market has been developing, forecasted by Euroconsult, to reach \$7.9B by 2031, with a CAGR of 6 % over the next decade. It is evident that the sustained public investment and emerging business dynamics will likely create a fertile ground worldwide for the uptake of a global market of remote sensing information services. These services are of strategic importance also in support to national security and energy transition, in rapid crisis response, extreme events and disaster management, for food security and crop productivity, and clean water. Far beyond their market impact, the **catalytic impact** of these services to reduce the costs of disasters and of climate change and to mitigate risks of geopolitical conflicts can only be measured in % of GDP. The impact of climate change on the economy in Germany alone is estimated up to €900B by 2050, according to a study of the Federal Ministry for Economic Affairs and Climate Action of Germany.

Globally, it is the private sector, which is increasingly providing the required services, relying on tailored and **proprietary software solutions**. Competitive advantage of these emerging enterprises relies on their expert knowledge in data processing and analytics, data fusion, incl. networked data of IoT/in-situ, AI, algorithms for automated feature extraction, intelligent data mining and service delivery to customers. To reap the full benefit of institutional investments, the private enterprise needs to be empowered.

However, recent evidence suggests that Europe fails to develop and protect the excellence of this private sector in Europe, and to leverage its multi-billion Euro public investments in space infrastructure to also develop an equally powerful European commercial base of entrepreneurs providing critical services to governments and the market. The **2022 Patent Insight Report "Space-borne sensing and green applications"**, a study conducted by the European Patent Office and ESPI, in collaboration with ESA shows that **77% of global patent filing related to space-borne sensing and green applications are from outside Europe, with a striking presence of China** prevailing with approx. two-thirds share in the overall perspective (mostly domestic) and with the U.S. leading in international filings. About 70% of patent applications are related to processing and value-add software (rather than satellite hardware), with a growth in Chinese filings by a factor of 10 since 2011. European activity, even when considering international patent filings only, remains limited and stagnates close to 25% in the global outlook. The global industrial top players include NEC, IBM, Mitsubishi, Hitachi and for Europe Airbus and Thales. A relatively high European share is dominated by institutional actors, led by DLR, CNES and ESA - and not by newly emerging commercial enterprises and service companies.

This industrial situation risks depriving Europe from its autonomy of action to effectively implement its green policy objectives.

Should Europe fail to develop a strong industrial base in Earth Observation, and to develop and protect its competitive advantage, in particular in value-add-processing, its industrial sector may not be sustainable and thus may become target for mergers and acquisitions driven from outside Europe, seeking vertical integration of satellites and processing capabilities. A still fragile EO industry, which represents less than 10%, when compared to the booming satellite-based connectivity market driven by the U.S. and China with LEO constellations, could become target of strong global market players in connectivity, aiming at acquiring integrated solutions combining remote sensing with connectivity and other space-based services.

The **Chinese National Patent Development Strategy of 2011-2020** established strategic measures to incentivise the protection of intellectual property for high and new-technology enterprise, including space. As part of a general strategy in response to the above, also Europe will need to develop new approaches to protect intellectual property, which not only protects the public owner of space systems, like Copernicus. It needs to encourage and allow entrepreneurs to protect their know-how and business case, to develop economically sustainable Earth observation solutions as basis for private investment and growth. This is increasingly critical, considering the open-data policy in the economy at large and the digitalisation of the space sector.

Yours sincerely,



Hermann Ludwig Moeller
Director of ESPI