Advanced Technologies for Industry

Europe's potential in advanced technologies in times of COVID-19

Online policy seminar

10 September 2020, 9:45 – 12:30, webex

Organised on behalf of:
European Commission DG GROW
Executive Agency for Small and Medium sized Enterprises
by Technopolis Group, Fraunhofer ISI and IDC

The policy seminar on '*Europe's potential in advanced technologies in times of COVID-19*' was the first in a series of 8 policy seminars organised within the Advanced Technologies for Industry (ATI) project (https://ati.ec.europa.eu) commissioned by the Executive Agency for Small and Medium-Sized Enterprises and the European Commission DG GROW.

The event discussed the first findings of the ATI analysis with regard to the development and uptake of advanced technologies, the related skills supply, demand and investments based on various traditional and novel data sources. The webinar presented national policy strategies addressing advanced technologies. Finally, it showcased the ATI data dashboard and online tools.

Presentations and key points:

1. **Introduction to the Advanced Technologies for Industry project**:
   Gabriella Cattaneo, IDC
   - The ATI project provides a systematic monitoring of technological trends and reliable, up-to-date data on advanced technologies to properly support the implementation of policies and initiatives and promote a competitive European industry.
   - It monitors 16 advanced technologies including Advanced Materials, Advanced Manufacturing, Artificial Intelligence, Augmented and Virtual Reality, Big Data, Blockchain, Cloud Technologies, Connectivity, Industrial Biotechnology, the Internet of Things (IoT), Micro and Nanoelectronics, Mobility, Nanotechnology, Photonics, Robotics and Security.
   - The main deliverables of the project include the ATI Data dashboard, analytical reports, the ATI Technology Centres mapping.
   - AT Sectoral Watch analyses trends in selected sectors: https://ati.ec.europa.eu/reports/Sectoral-Watch
   - AT Watch analyses trends in advanced technologies such as AI or Green cloud computing https://ati.ec.europa.eu/reports/Technology-Watch
   - ATI Technology Centres include a mapping of technology centres relevant for advanced technologies : https://ati.ec.europa.eu/technology-centre/mapping

2. **The new industrial strategy in the context of COVID-19**, Lorena Ionita, Deputy Head of Unit Industrial Strategy and Value Chains, European Commission DG GROW
   - Key drivers of industrial transformation include the green transition, global competitiveness and digital transformation
   - European industrial ecosystems bring together all crucial players for greener, more digital and more resilient industry
   - 7 fundamental factors to achieve industrial transformation are: digital single market, global competitiveness, climate neutrality, building of the circular economy, industrial innovations, skills and reskilling, investing and financing of the transition
   - New concept of industrial ecosystems: working with industry and stakeholders, 14 industrial ecosystems have been identified that are related to long term transformation (tourism being the most affected)
   - Total EU public & private investment gaps of at least €1.5 trillion in 2020-2021, including: investment shortfall caused by crisis and delivering green & digital transitions, strategic investment for critical value chains

3. **EU's strength, risks and opportunities in advanced technologies in times of covid**, Kincsö Izsak, Technopolis Group and Henning Kroll, Fraunhofer ISI
   - In the quest for technology sovereignty as highlighted in the European Commission's recently published new industrial strategy, Europe needs to take more actions to defend its industrial competitiveness.
   - The ATI project investigated the performance and opportunities of the EU and its industries in the field of sixteen advanced technologies based on patents, firm-level data and novel data sources such as LinkedIn.
   - The strengths of the EU27 lie especially in Advanced Manufacturing, but also in the Internet of Things and Advanced Materials. The EU27 is, however, lagging behind in the fields of AI (even if catching up) and in particular in Big Data, Cybersecurity and Micro- and nanoelectronics.
   - It holds a high share of global patent applications in Security, Nanotechnology and Industrial Biotechnology but it lags behind the US ; High shares in Advanced materials and Photonics but lags behind Japan.
   - Analysis of LinkedIn data provided insights into the share of professionals employed in specific industries in the EU and US. This indicator can be used as a proxy about technology uptake. For instance, the data analysis shows that the automotive industry in the EU has a competitive advantage in AT skills over the US in Advanced manufacturing, Internet of things, AI, Robotics, Advanced materials.
   - The report also calls the attention to focus on the important pieces of the puzzle such as the relevance of investing in IoT, related infrastructure, standards and skills in order to safeguard EU's strengths in advanced manufacturing; strengthening investment in Big Data skills and Cybersecurity which are current important weaknesses and will underpin technological transformation; Focusing AI strengths on specific areas such as healthcare and manufacturing; Becoming pioneer in Blockchain applications an area that shows EU strengths.

4. **The Dutch key enabling technology policy as part of mission oriented innovation policy** by Richard Roemers, Directorate Innovation & Knowledge – Ministry of Economic Affairs & Climate Policy
    - Since 2019 innovation support in the Netherlands has been shifted towards 4 main societal challenges notably: Energy transition & sustainability; Agriculture, Healthcare, Security;
    - Supported by the topsectors and key enabling technologies (KET) implementation of the policy started in 2020;
    - 8 technology categories focused on include Advanced Materials, Photonics and Light technologies, Quantum technologies, Digital technologies: big data, blockchain, AI, security, high performance computing, Chemical technologies, Nanotechnologies, Life science technologies, Engineering and Fabrication technologies;
    - 9 top sectors bring together public and private parties together in the area of agri-food, chemistry, creative industry, high tech systems and materials etc.
    - Criteria to prioritise KET programmes include Societal impact, Economic impact, Position NL / strategic considerations, Strength of ecosystem / alliances, Quality Research / scientific impact, Inter-disciplinarity /public values

Questions and Answers:
What are the recent plans to better align digital and green transition objectives? - The recovery plan is focused on both green and technology transition, where investments pipelines will be planned wisely.

How do you see the role of Common European data spaces, a key action of the data strategy for promoting innovation in European industrial value chains? - The data strategy remains very important with regard to making Europe resilient and it will be key in the future to build more resilient supply chains in Europe.

Do you have a timeline for announcement of an industrial alliance on dataspaces? – There is unfortunately not yet a timeline for a possible industrial alliance on dataspaces.

How many of these patent applications are from multinational enterprises operating globally? – We have not conducted an analysis about the type of applicants, Patents have been localised based on the location of the legal owner of the patent application and hence the analysis reflects the owner/applicant of the technology.

What is your take on personal data (in relation to IoT, as an enabler of AI)?- Personal data can be only used in line with the General Data Protection Regulation. Innovation in health care data is hobbled by lack of standards (de facto or not), small and diverse solutions, uncertainty about GDPR and how to handle personal data, lack of human-centred design (solutions do not address real needs).

Are these data used in preparing and prioritising the Commission's work on industrial alliances/sectors/ecosystems going forward with the industrial strategy? — the analysis is still new and novel indicators are used, thus for the time being they have not replaced traditional indicators coming from Eurostat.

Are you planning to update e.g. the skills (LinkedIn) data this or next year? – Yes, LinkedIn data analysis will be updated by the end of the year following up the covid period.

Is there a possibility to scale numbers based on population, eg? – Yes, some of the indicators are already corrected for population such as the LinkedIn data.

Is it possible in the ATI database to link data on technology uptake to the societal challenges, or - more concrete e.g. to the implementation of the Green Deal? – IOT solutions in what areas using IoT in agri? - Some of the questions in the ATI survey are related to societal challenges, we can look into this in the next edition of our analysis.

What about the private sector funding for the actions stemming from or supporting these agendas/missions? Is it only in kind or else? – Private funding is in cash, public-private partnerships top subsidy from the ministry, this is a good incentive to invest.

Are there any links of the Dutch KET programme to IPCEIs? – yes there are, we are currently discussing the options

Do you use data from the European Innovation Scoreboard in the Dutch KET programme? - TNO is in charge, the exports should use such data.

Panel discussion – ***by Hugo Hollanders, UNU-MERIT and Attila Havas, Hungarian Academy of Sciences***

The European Innovation Scoreboard 2020 report shows that the EU has an innovation performance lead over the United States and China, and a performance gap with South Korea and Japan. Between 2012 and 2019, the EU's performance lead over the United States and China has decreased and its performance gap towards South Korea and Japan has increased. The EU is thus losing ground towards major global competitors.

The EU compares less well to these countries on among others R&D expenditures in the business sector, patent applications, trademark applications, and exports of medium-high-tech products. The EU's business sector is thus doing relatively poorly on developing new technologies thereby facing difficulties in maintaining its competitive position. Compared to China, Japan and South Korea the share of the manufacturing sector in the EU's total value added is relatively small and compared to China, South Korea and the US entrepreneurial activities in the EU are also below average.

We need to further strengthen our industrial base and not just by producing more of the same, no, the EU needs to prepare itself for the future by investing in and building competitive advantages in the technologies of the future as these will both enlarge and transform our industry into modern, innovative and competitive industries.

The 2020 Future Possibilities Report[1], by the Government of the United Arab Emirates in partnership with the UN75, identified six global transformational trends for the post-COVID world. Reaping the benefits that these six transformational trends offer requires a change from traditional industrial policies to transformational public policies fostering a dynamic co-investment between the public and private sector, taking the entire value chain into account, supporting collaboration across disciplines

[1] https://www.un.org/sites/un2.un.org/files/20200720_un75_uae_futurepossibilitiesreport.pdf

and stakeholders, seeking solutions that benefit society more broadly, fostering experimentation and risk-taking, and these policies should be based on broad societal support.

The Future Possibilities Report shows that, based on a survey among business executives, Europe is expected to have a below average growth potential (% of business executives who rated the likelihood of their country to leverage this trend for growth possibilities as likely or certain) and demand potential (% of business executives who rated potential demand in their country for new products and services related to this trend as considerable or great) and highest expectations are for the Circular Economy, BioGrowth Economy and Wellbeing Economy.

The post-COVID world will ask for "not doing business as usual" and is offering new opportunities. Europe and the EU is in a relatively good starting position to face global competition, but further improvements are needed to strengthen and transform our economies by increasing investments in Advanced Technologies for Industry. But government guidance and support are needed as many of the new trends are responding to societal challenges also requiring governments to change the they business of designing policies.

ATI data dashboard demonstration:

All data collected in the framework of the ATI project can be accessed online: https://ati.ec.europa.eu/data-dashboard/overview