

INDUSTRY, RESEARCH AND ENERGY

INDUSTRY 4.0

BACKGROUND

In the context of the increased integration of physical objects into the information network, the concept of Industry 4.0 refers to the organisation of production processes based on technology and devices autonomously communicating with each other along the value chain.

The underlying view is that a fourth disruptive innovation movement is reshaping industry and manufacturing processes, after steam power in the late 1700s, electricity and assembly lines in the mid-1800s, and electronics, IT and globalisation from the 1970s.



Related terms include Internet of Things, Internet of Services, Industrial Internet, Advanced Manufacturing and Smart Factory.

FOCUS OF THE STUDY

The study **Industry 4.0** explores three key dimensions of change relevant to Industry 4.0: technological, social and the business paradigm, outlines policy implications and makes recommendations.

KEY FINDINGS

1. Technological change

There are significant costs and risks for firms as regards digital security in: intellectual property protection, personal data and privacy; operability of systems; environmental protection and health and safety. While many businesses recognise these challenges, far fewer, especially among SMEs, are sufficiently prepared.

2. Social change

Unions remain cautious and have reservations. Semi-skilled unemployment might be compensated by growth in high-skilled and -paid jobs.

The gap in supplies of skills through training and education is currently being addressed through sophisticated immigration strategies and intra EU mobility.

An increased concentration in existing industry centres is likely to increase due to the uneven distribution of skills relevant to Industry 4.0.

3. Change in the business paradigm

Larger firms tend to be more positively disposed towards Industry 4.0 and are already in the process of implementing it. They need SMEs in their supply chains to participate in Industry 4.0, by adapting to new standards and methods in the sector in order to remain competitive.

SMEs expect Industry 4.0 to provide for improvements in productivity, enhanced innovation capability, customised products and services, new sales channels and a more extensive market. On the downside, the operational and strategic independence of SMEs might be affected.

The public sector and public investment in R7D may play a vital role by lowering entry barriers for SMEs to the industry 4.0 market.

4. Gaps in industrial EU and national policy

An efficient implementation of Industry 4.0 is comprehensive and ambitious. Germany has a targeted, co-ordinated, structured approach, because it is strongly dependent on manufacturing. Other Member States with different economic and industrial goals may not have the same incentives.

There seems to be a tendency for industrial policy to emphasise the technical aspect, and to underestimate the necessary changes required from managers and staff.

RECOMMENDATIONS

The study makes recommendations for new policies to be developed, with the caveat that many existing policies are not yet fully implemented and will need to be assessed before:

- There should be a holistic and yet tailored approach.
- Policies and supporting funding should be dedicated to developing pilots, education, migration or research in digital manufacturing.
- SMEs should be specifically targeted by awareness-raising, improving access to finance, supporting regional clusters and partnerships.
- Lead markets for industry 4.0 products and services should be identified and developed.
- The swift adoption of standards should be developed whilst safeguarding data protection and IT security.
- Fora and platforms should be provided for stakeholders to become involved and exchange best practices, including the chambers of industry, research institutions, etc.
- Member States should collaborate, e.g. by sharing best practices and developing joint initiatives for specific sectors.
- European institutions such as ERDF and ESF should be involved, and appropriate support possibilities identified within the Horizon 2020 framework.

Scan QR code to access the study



Disclaimer

The content of this document is the sole responsibility of the author and any opinions expressed therein do not necessarily represent the official position of the European Parliament. It is addressed to the Members and staff of the EP for their parliamentary work. Reproduction and translation for non-commercial purposes are authorised, provided the source is acknowledged and the European Parliament is given prior notice and sent a copy.

This document is available on the Internet at: www.europarl.europa.eu/supporting-analyses

Contact: Poldep-Economy-Science@ep.europa.eu