PRIORITIES FOR ADDRESSING OPPORTUNITIES AND GAPS OF INDUSTRIAL BIOTECHNOLOGY FOR AN EFFICIENT USE OF FUNDING RESOURCES (PROGRESS)

Final Conference September 27th, Brussels

Setting the Scene: Importance, Current Status, Policy Issues of Industrial Biotechnology in Europe

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This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 723687

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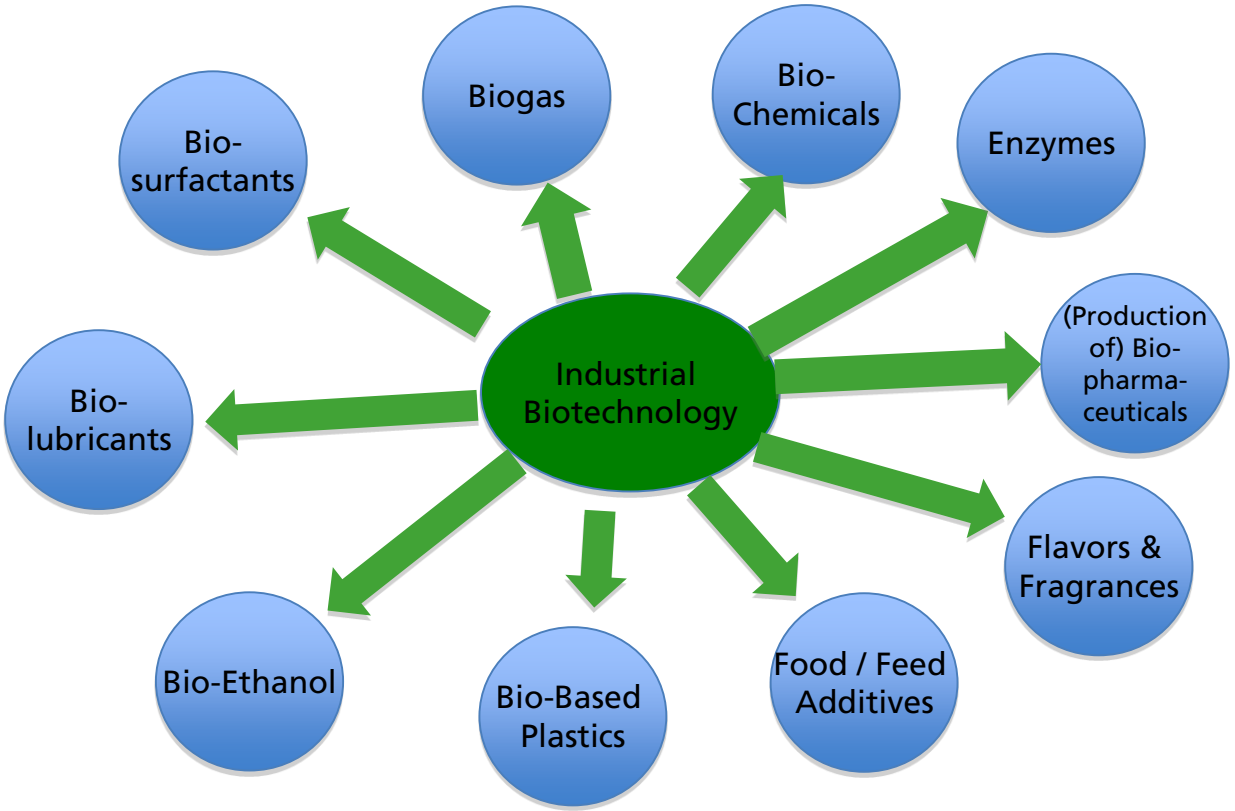
Definition and Applications of IB

Definition of IB in PROGRESS project

Industrial biotechnology (IB) employs organisms or parts thereof such as tissues, cells, cell extracts or isolated enzymes in order to develop/produce a wide range of products or provide services, e.g.:



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IB as a key enabling technology

- Industrial Biotechnology (IB) is a key enabling technology that facilitates new products and processes and poses disruptive qualities to markets
- Numerous technological and economic advantages of IB compared to classical chemical syntheses, e.g.
  - superior quality, novel functions,
  - higher resource-efficient production processes,
  - enables substitution of environmentally harmful substances,
  - biotechnological production processes typically use renewable, non-fossil raw materials
- Hence, IB has high innovation potential to
  - foster the transition to the bioeconomy and the circular economy
  - tackle environmental and climate challenges
  - contribute highly to quality of life via new or more sustainable products & services

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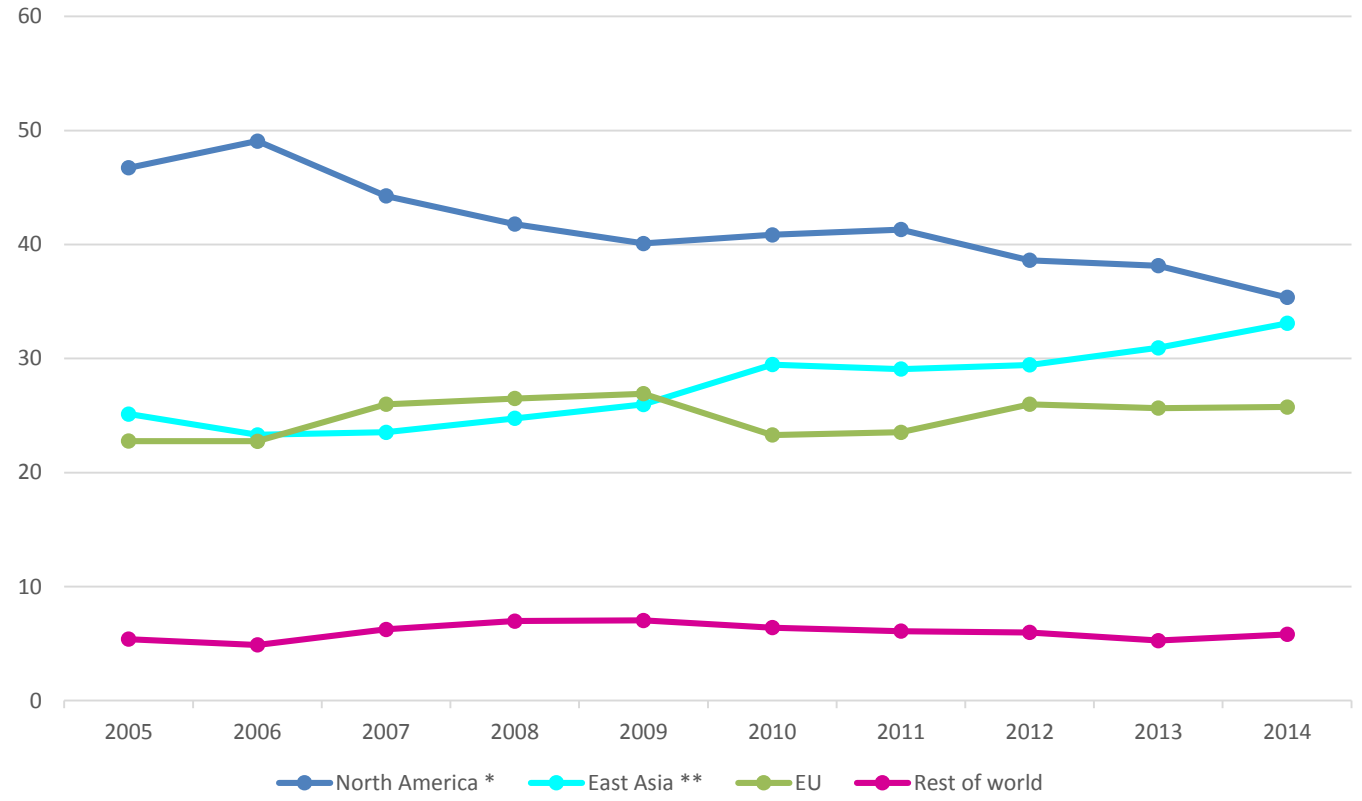
Technological competitiveness of the EU

Share in IB patents for world regions (in %)



Source: Fraunhofer ISI

* North America includes US and Canada ** East Asia includes China, Japan, and Korea

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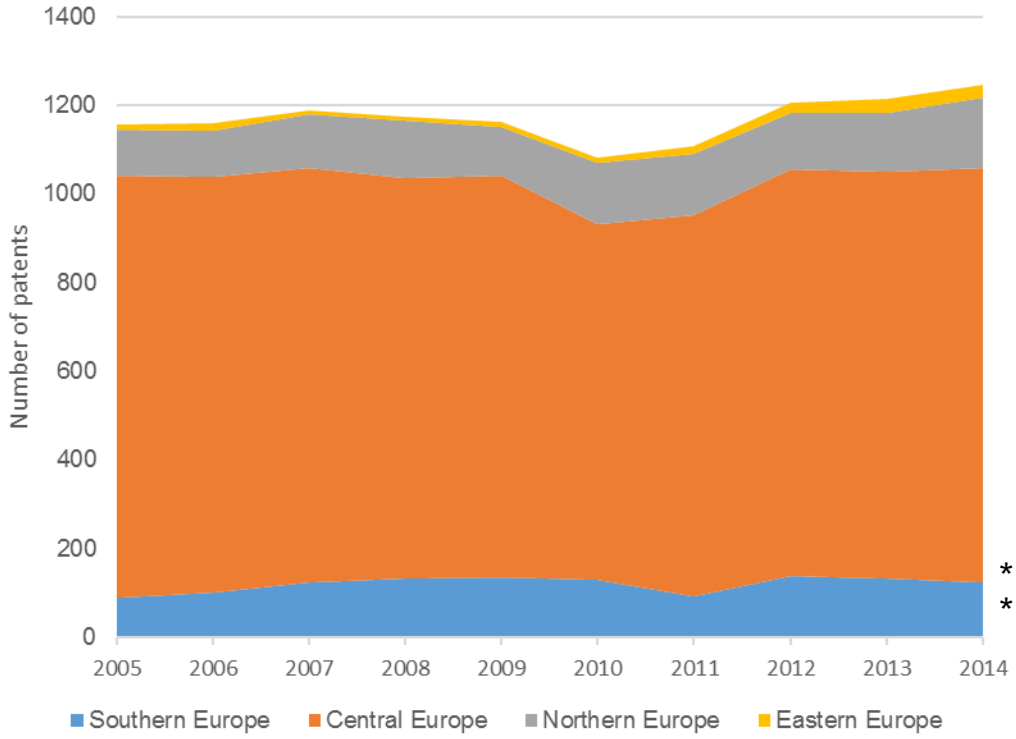
Devlopments of patents across Euroepan regions

Patents in industrial biotechnology between 2005 and 2014



Source: Fraunhofer ISI

* North America includes US and Canada
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⇨ Innovation and commercialisation activities in innovative biotechnology products and processes are geographically highly concentrated in the EU

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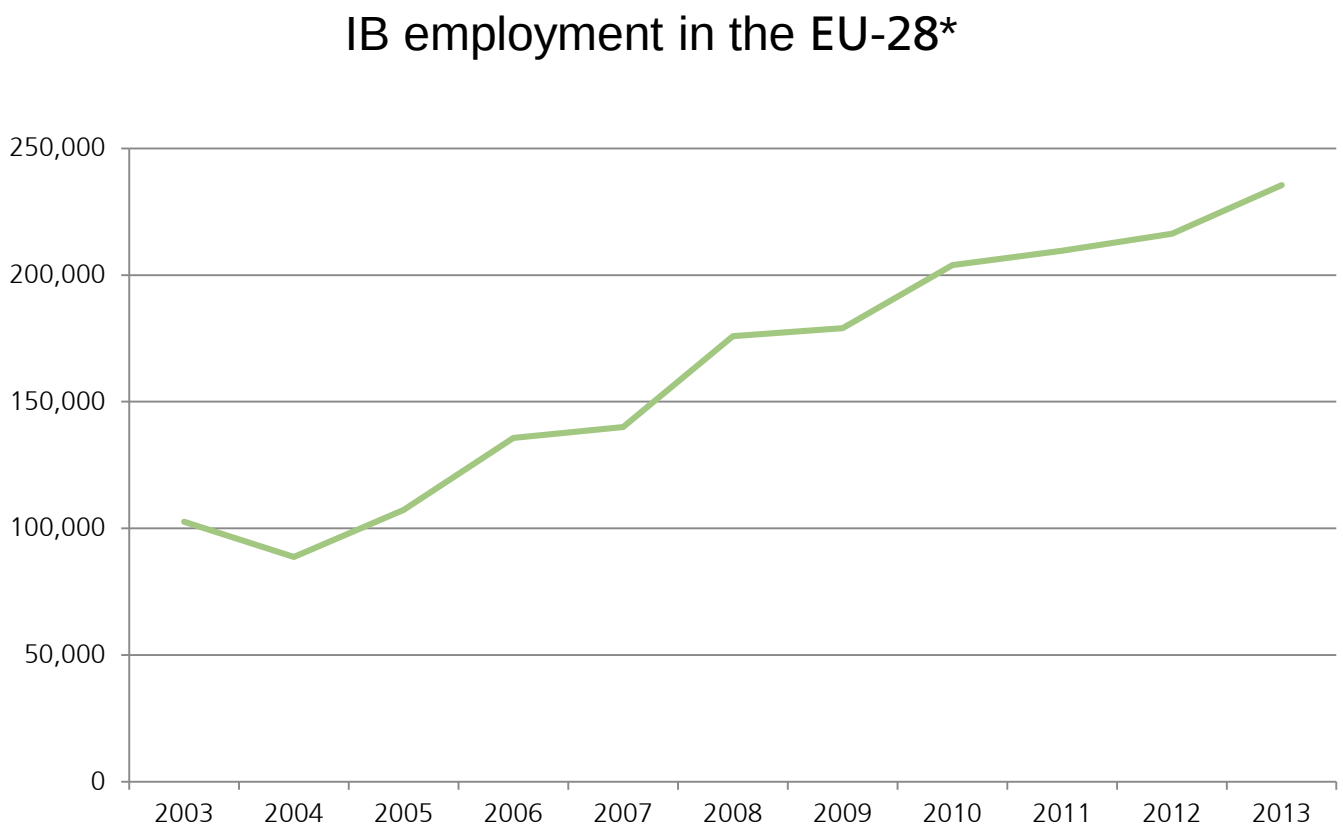
IB Employment in Europe



Source: KETs Observatory

*The related employment is estimated with the Technology Diffusion approach and it is interpreted as employment that is dependent on the production and use of KETs based products

⇨ Increase reflects steadily rising importance of IB for commercial production & services; potential for significant increase in the future

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Trends and challenges for Innovation in IB in the EU

- Increasing integration of different technological paths for problem solving
- Low oil price leads to missing cost competitiveness of large-volume bio-based mass products (drop-in), stronger focus on products with high value added, novel functionalities
- Non-food feedstocks (e.g. lignocellulose, side-streams in industrial production, waste, CO_2) assumed to bear a high, yet untapped potential for IB in the EU
- The contribution of the bioeconomy to sustainability is gaining importance and key for legitimacy of support
- Awareness of IB products and trust in the claimed benefits by the general public as well as decision makers key conditions for successful commercialisation of IB

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Conclusion

- IB is one of the key enabler for modernization of industry to address the grand challenges (climate change, substitution of fossil resources, etc.)
- Transition process is still in an early phase
- EU well positioned with strong technological basis, but challenge to maintain this position and transfer R&D result into commercial products, processes and services

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BACKUPS, RESERVE

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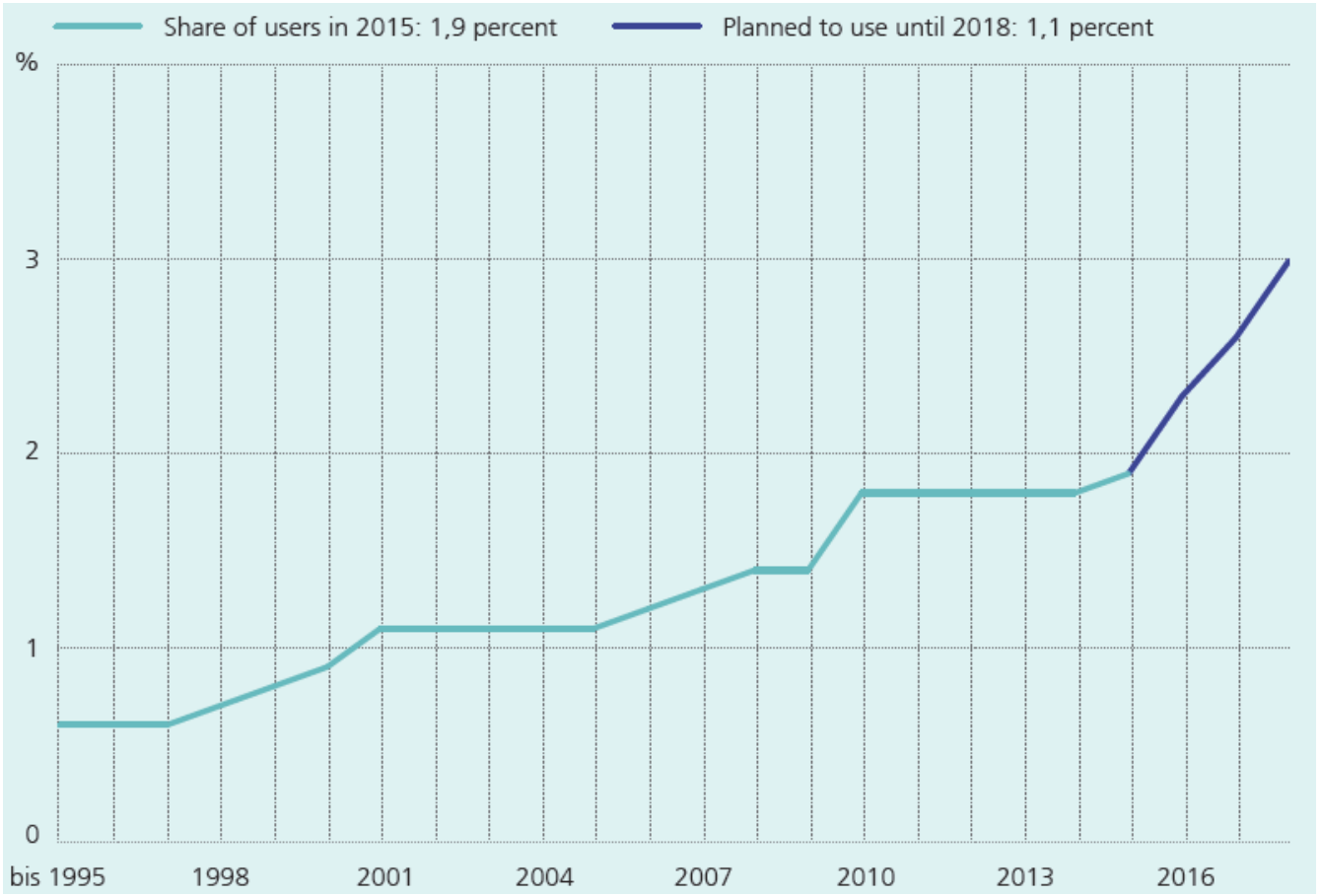
Adoption of IB in Manufacturing

Shares of manufacturers using biotechnology methods in their production processes (in %)



Source: European Manufacturing Survey 2015, eight countries, compiled by Fraunhofer ISI, weighted data

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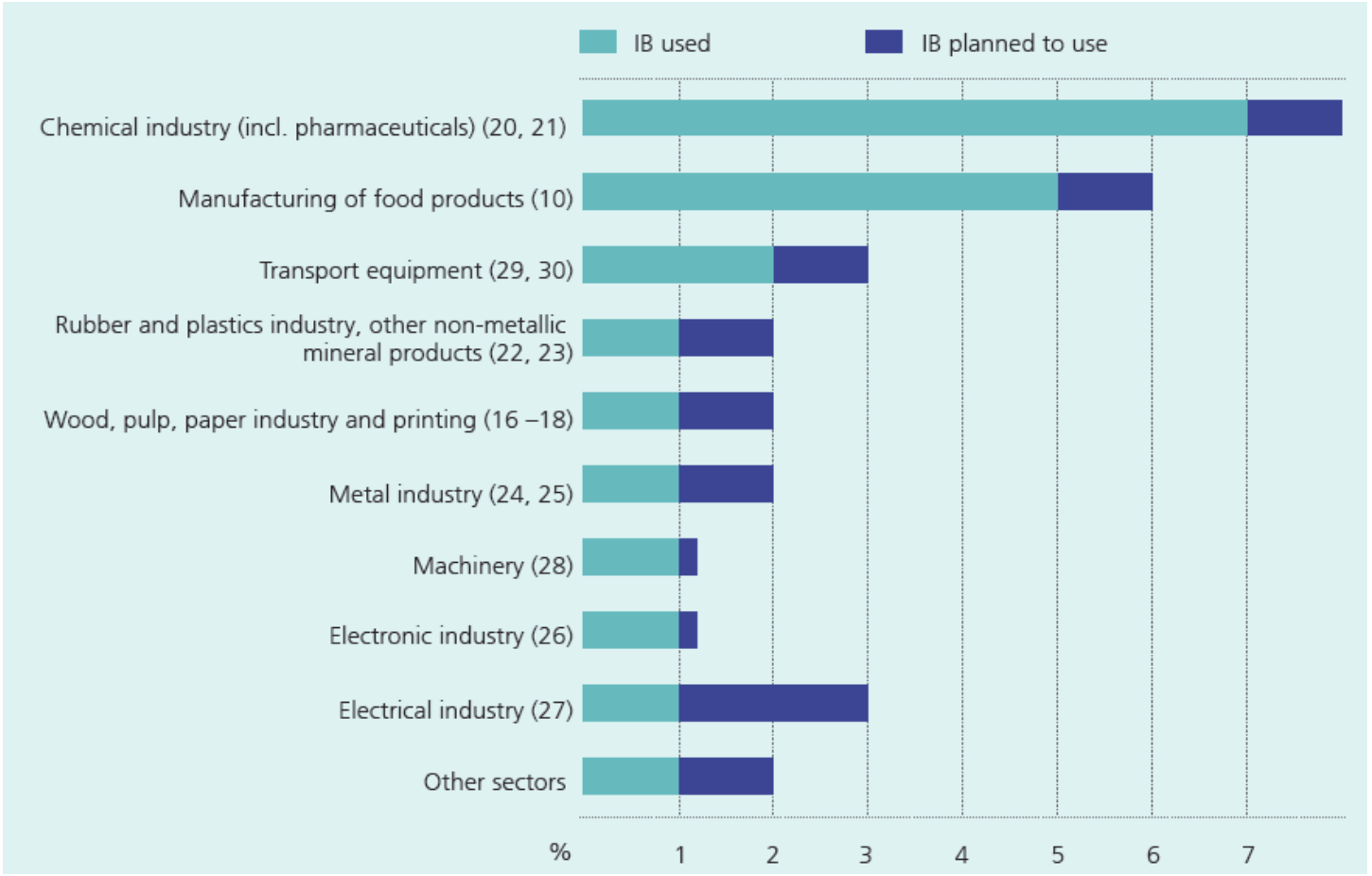
Adoption of IB in Manufacturing by sector

Shares of manufacturers using biotechnology methods in their production processes (in %), by sector



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