

Technology snapshot

# ACCIÓ Technology Trends Analysis

2022-2025

## ACCIÓ technology trends target 2022-2025

ACCIÓ

Government of Catalonia (Generalitat de Catalunya)



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The use of trademarks and logos in this report is for information purposes only. The aforementioned trademarks and logos belong to their respective owners and are under no circumstances the property of ACCIÓ. This is a partial illustration of the companies, organisations and entities that are part of the ecosystem. Some companies, organisations and entities may have not been included in the study.

### Execution

ACCIÓ Strategic and Competitive Intelligence Unit

### Collaboration

Anthesis Lavola

Biocat

Eurecat

Barcelona, March 2022 (reviewed, February 2023)

# ACCIÓ technology trends target 2022- 2025


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# 1. Global megatrends


# 10 global megatrends with greatest impact over the coming years

### Demographic growth




- Diversified inequalities
- Growing migration
- Demographic imbalances
- Change in demographic dynamics: ageing

### Urbanisation




- Continued urbanisation
- Mega-urbanisations
- Smart cities
- Private cities
- Rethinking of physical space

### Climate change



- Green infrastructure
- Social transformation
- Blue economy
- Health and food from the land
- Environmental degradation
- Loss of biodiversity

### Scarcity of resources




- Growing consumerism
- Geographic concentration of supply
- Ecological overshoot

### Technological advances



- Global knowledge society
- Scientific innovation as a vector of productivity

### Digitisation




- Quantum technologies
- Empathic AI
- Hyperconnected planet
- Cyberattacks
- Shortage of digital talent

### Reindustrialisation



- Industrial resilience
- Sustainable responsibility
- Technological innovation
- Changes in the nature of work and the office

### Health




- Psychedelic medicine
- Personalised medicine
- Wellbeing/mental health
- Hospital at home
- NCD and cancer
- COVID-19 pandemic

### Changes in global economic power



- New systems of governance
- More influence from the east and the south
- Multipolar globalisation
- Geopolitics of technology

### Consumer behaviour



- Product personalisation
- Demand for speed and agility in services
- Phygital reality
- Change in the social model

## 2. Technological investments and patents around the world

# Main companies by nationality with Foreign Direct Investment (FDI) technology projects

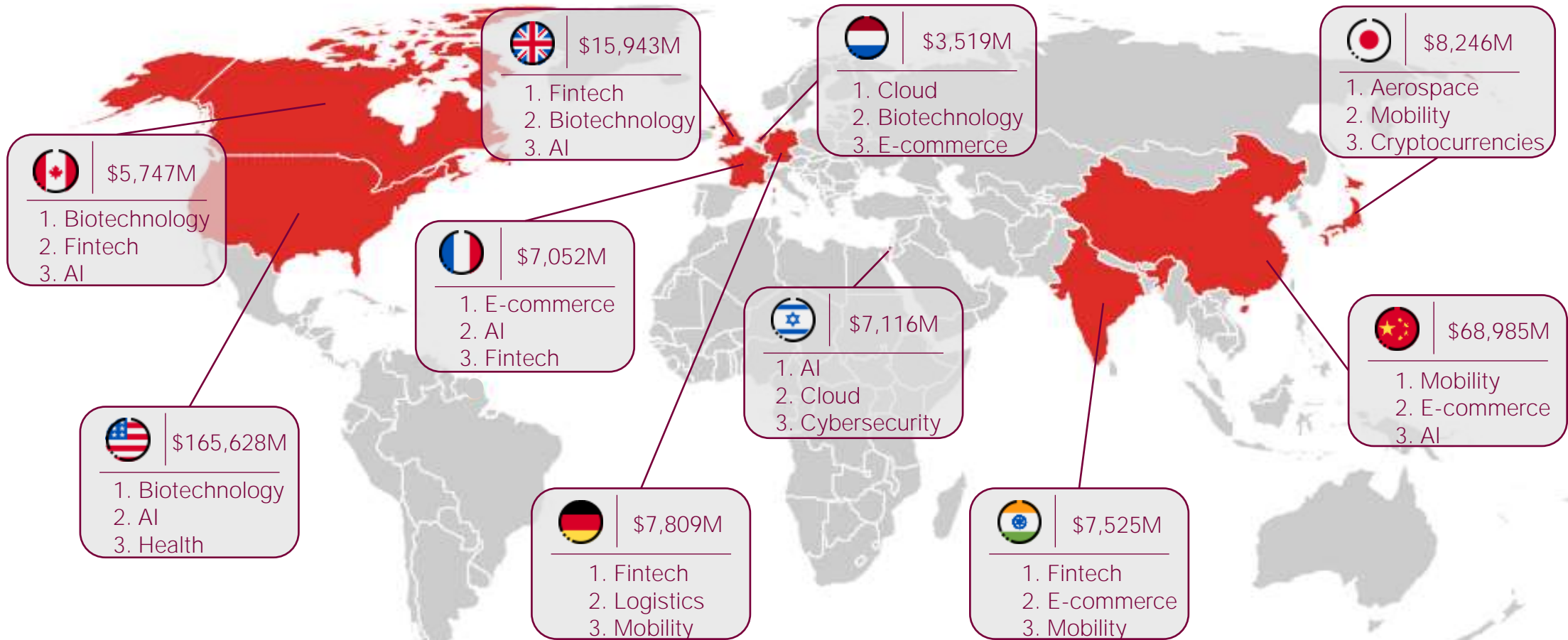
50 main companies leading FDI technology products  
(2016-2020)



Source: own compilation based on fDi Markets (2016-2020)

## Areas of technology by country with most investment received by startups

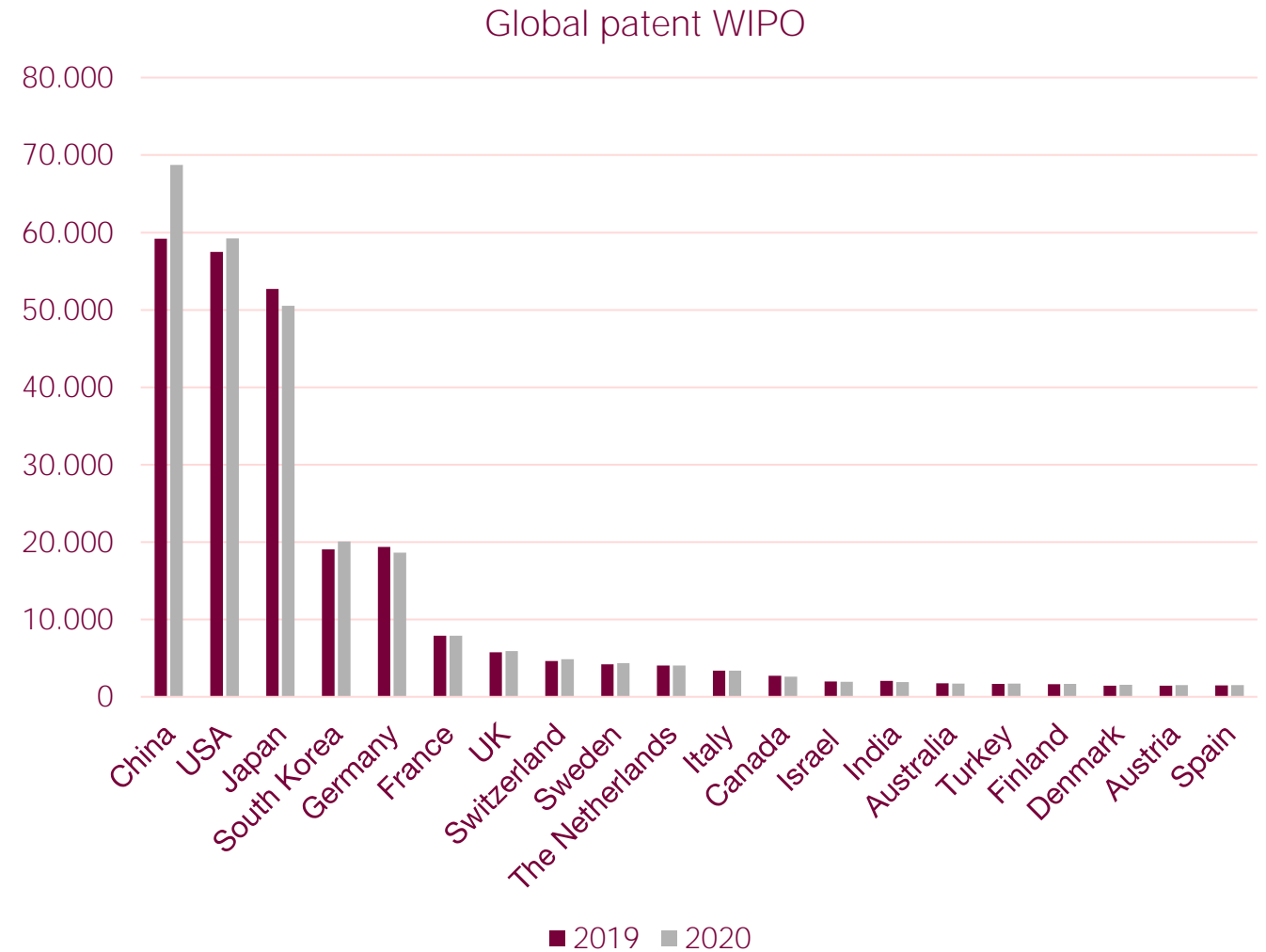
10 main countries of origin of startups with most investment received and main areas of technology (January 2019-March 2021)



Source: own compilation based on Crunchbase. Series A, B and C are included, according to Crunchbase data



- According to the study by the World Intellectual Property Organization (WIPO), the number of patents continued to grow in 2020 (by 4%), despite the pandemic.
- Long-term trends point to the globalisation of innovation, as Asia accounts for 53.7% of all patent applications, ahead of the 35.7% of ten years ago.
- Spain, with 1,502 patents in 2020, stands 20th in this world ranking.



Source: WIPO

# 3. ACCIÓ Technology Trends Analysis



# 50 technology trends

## Digital society



- Digitalisation
- New digital economy



IoT/sensors  
 Big data + artificial intelligence  
 DLT/blockchain  
 Immersive technologies and digital entertainment<sup>H</sup>  
 Cloud/edge  
 Cybersecurity  
 Connectivity  
 Supercomputing  
 Photonics/quantum



Robotics and collaborative robotics<sup>H</sup>  
 Additive manufacturing  
 Simulation/ Digital twin<sup>H</sup>  
 Automation<sup>H</sup>  
 Electric vehicle/micromobility<sup>H</sup>  
 Connected/autonomous vehicle<sup>H</sup>  
 Drones<sup>H</sup>  
 Catalysis and biocatalysis  
 Green Chemistry  
 Chemical recycling  
 Microelectronics and nanoelectronics  
 Semiconductors  
 Frontier materials  
 Sustainable materials

Water cycle technologies  
 Hydrogen  
 Batteries and storage  
 Clean energy<sup>H</sup>  
 Energy harvesting<sup>H</sup>  
 Smart grid/distributed networks<sup>H</sup>  
 Smart building<sup>H</sup>

Decarbonization  
 Urban mining  
 Recycling and recovery<sup>H</sup>  
 Smart city<sup>H</sup>

NBS (nature-based solutions)  
 Bioeconomics  
 Blue economy<sup>H</sup>

Foodtech<sup>H</sup>  
 Agritech<sup>H</sup>

Biotechnology<sup>H</sup>  
 Omics  
 New biological design/Vaccines<sup>H</sup>  
 Personalized medicine

Digital health<sup>H</sup>  
 POCT<sup>H</sup>  
 Medical devices<sup>H</sup>



Water

Energy

Circularity

Climate resilience

Food of the future

Emerging therapies

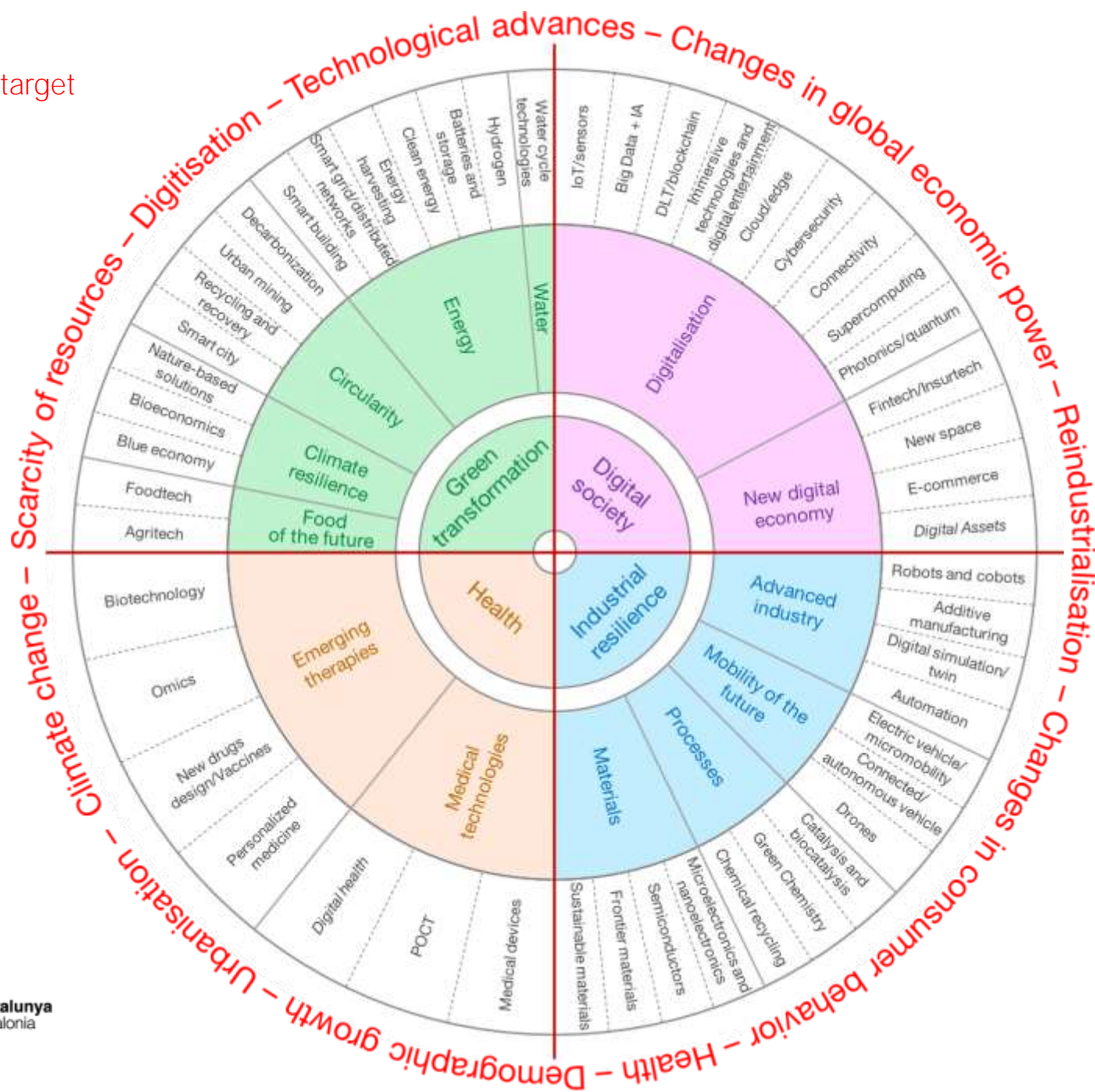
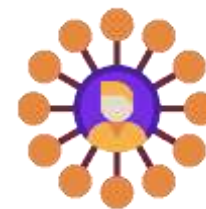
Medical technologies

## Green transformation



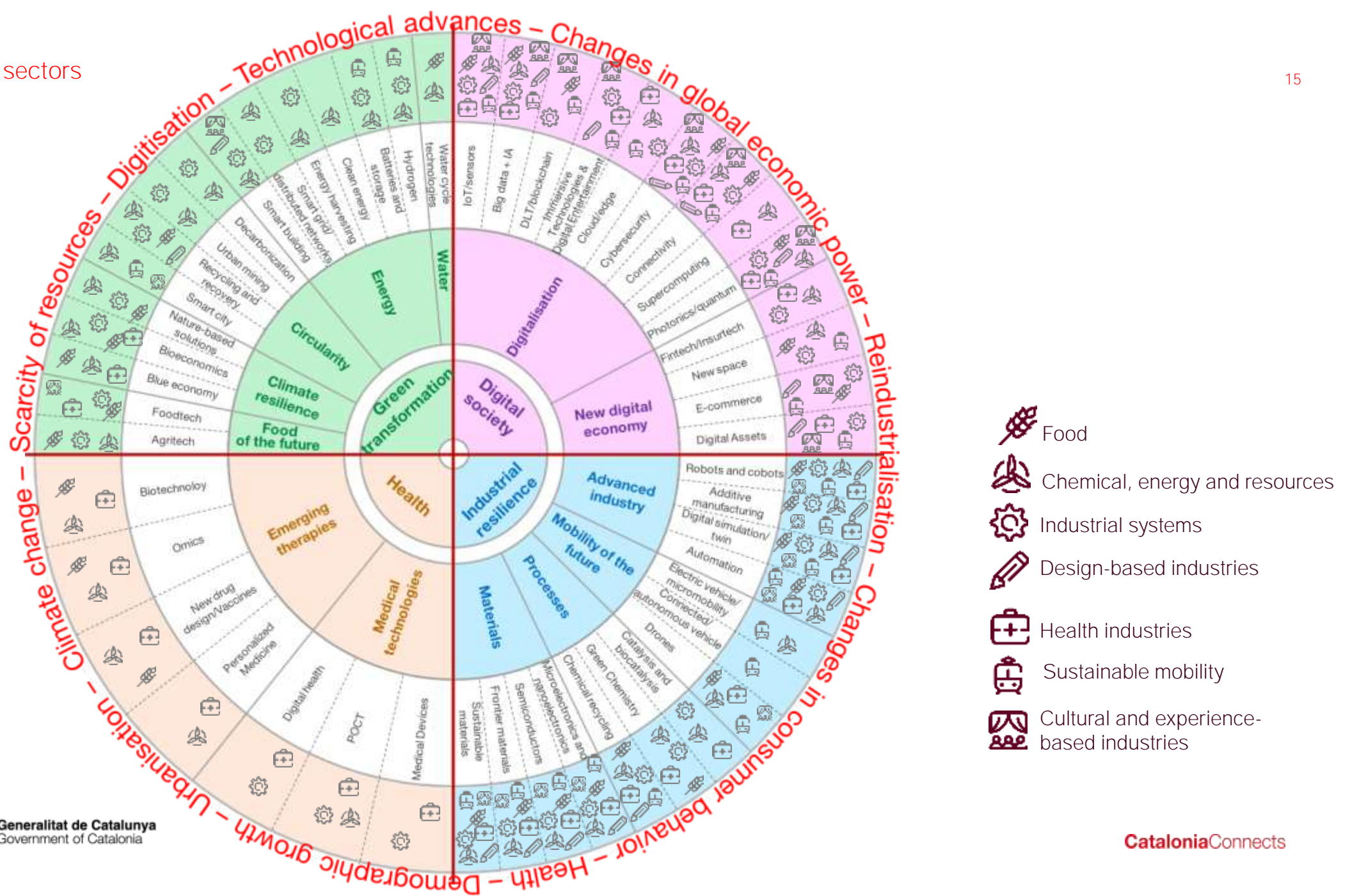
## Health





## 4. Impact on sectors



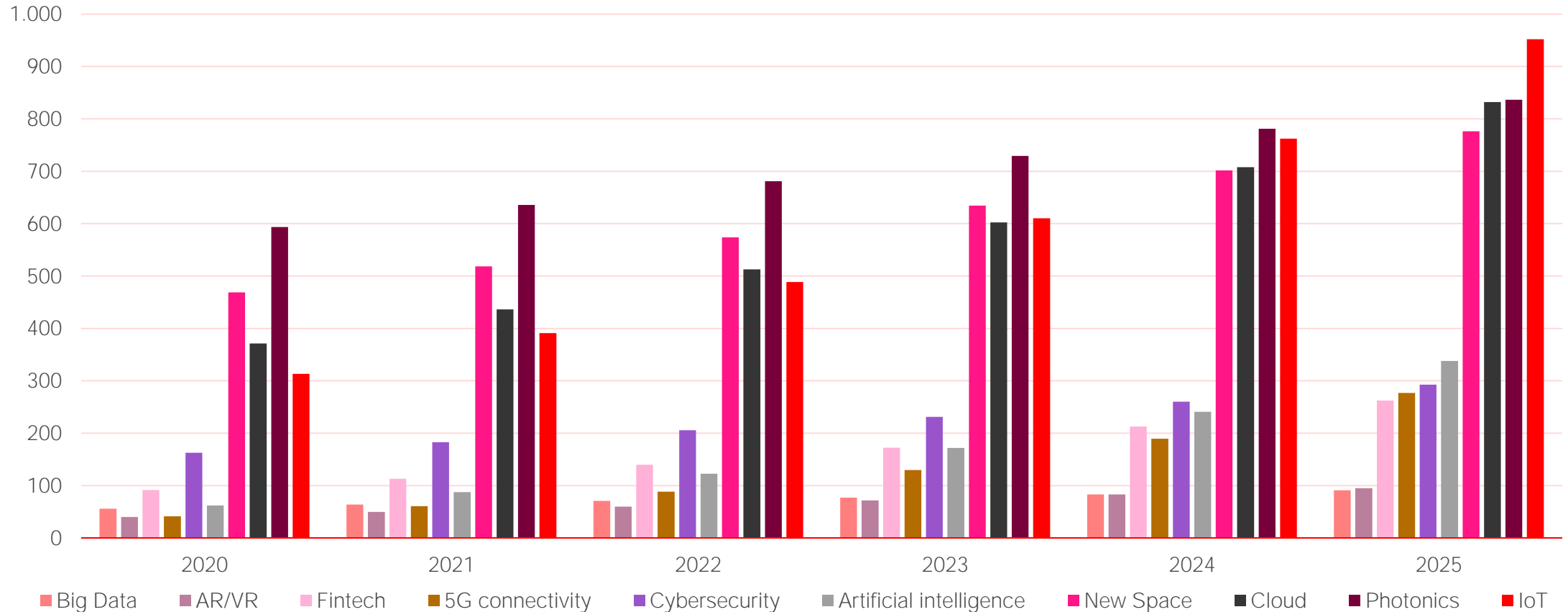


## 5. Analysis and estimate of technological evolution



Billions of \$

Growth of the Top 10 technologies with the highest market value in 2025 on the Digital Society axis

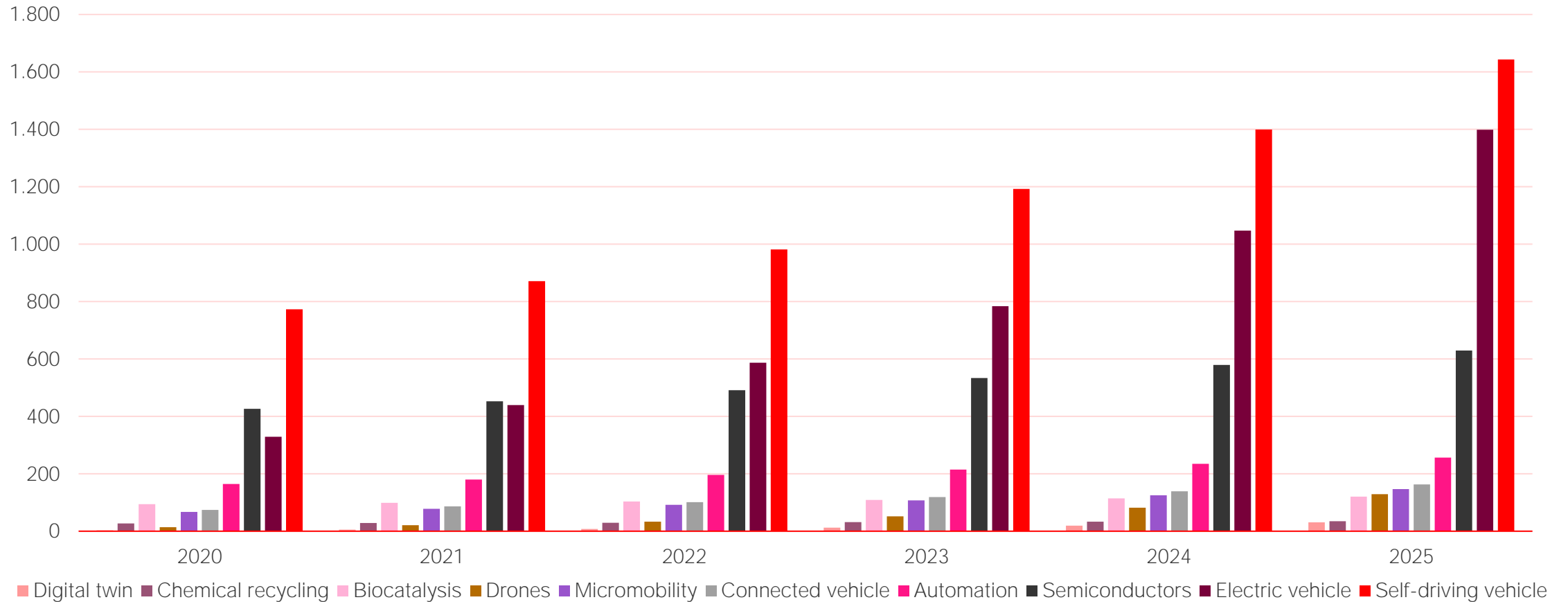


Note: E-commerce is not included so as not to distort the graph; it is foreseen that its market value will exceed 5,800 million USD by 2025 (with a CAGR of 11%)

Sources: own compilation based on data from Fortune Business Insights, Markets and Markets, Grand View Research, Statista, Quince Market Insights, Market Data Forecast and CNBC

Billions of \$

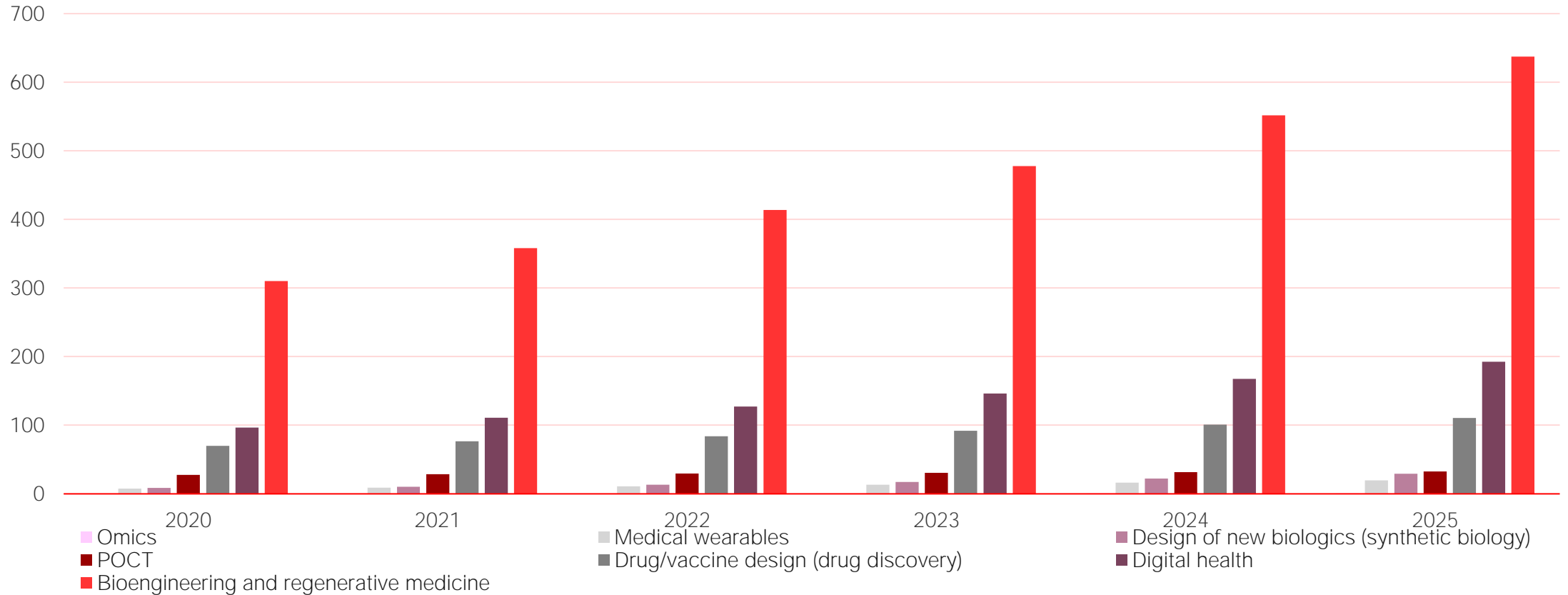
Growth of the Top 10 technologies with the highest market value in 2025 on the Industrial Resilience axis



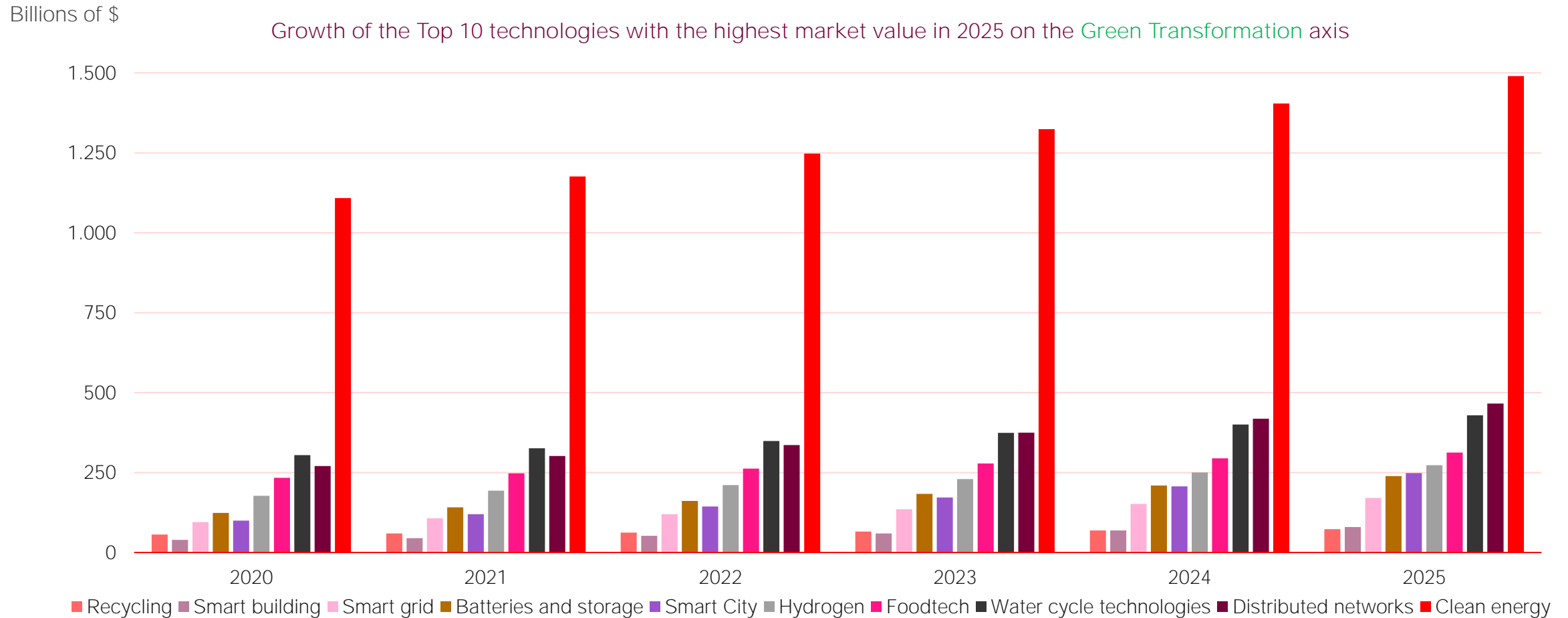
Sources: own compilation based on data from Allied Market Research, Grand View Research, Research and Markets, ReportLinker, Fortune Business Insights, Industry ARC, Global Market Insights, Lux Research, Markets and Markets, Meticulous Research and Market Research Future

Billions of \$

Growth of the Top 10 technologies with the highest market value in 2025 on the Health axis



Sources: own compilation based on data from Allied Market Research, Grand View Research, Fortune Business Insights, Markets and Markets, BCC Research, Precedence Research, Acumen Research and Consulting and Market Data Forecast

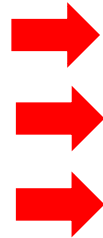


Sources: Own compilation based on data from Allied Market Research, Grand View Research, Power Engineering International, Research and Markets, ReportLinker, Fortune Business Insights, Emergen Research, VinZ Research, Facts & Factors and The Courier

## 6. Technology with shared values

Deep tech refers to companies based on a scientific discovery or significant engineering innovation that aim to solve major problems that have a negative impact on the world around them

Examples



Medical or technical devices to fight cancer.

Data analysis to help farmers grow more food sustainably.

Clean energy solutions to decrease human impact on climate change.



Deep tech companies generally operate in sectors such as agriculture, life sciences, chemical, aerospace, and green energy to provide innovation solutions based on fields of technology related to the ACCIÓ technology trends target technologies.



Source: Swati Chaturvedi, Propel(x)

## Technology with purpose

Technology has a huge potential to make the world a better place

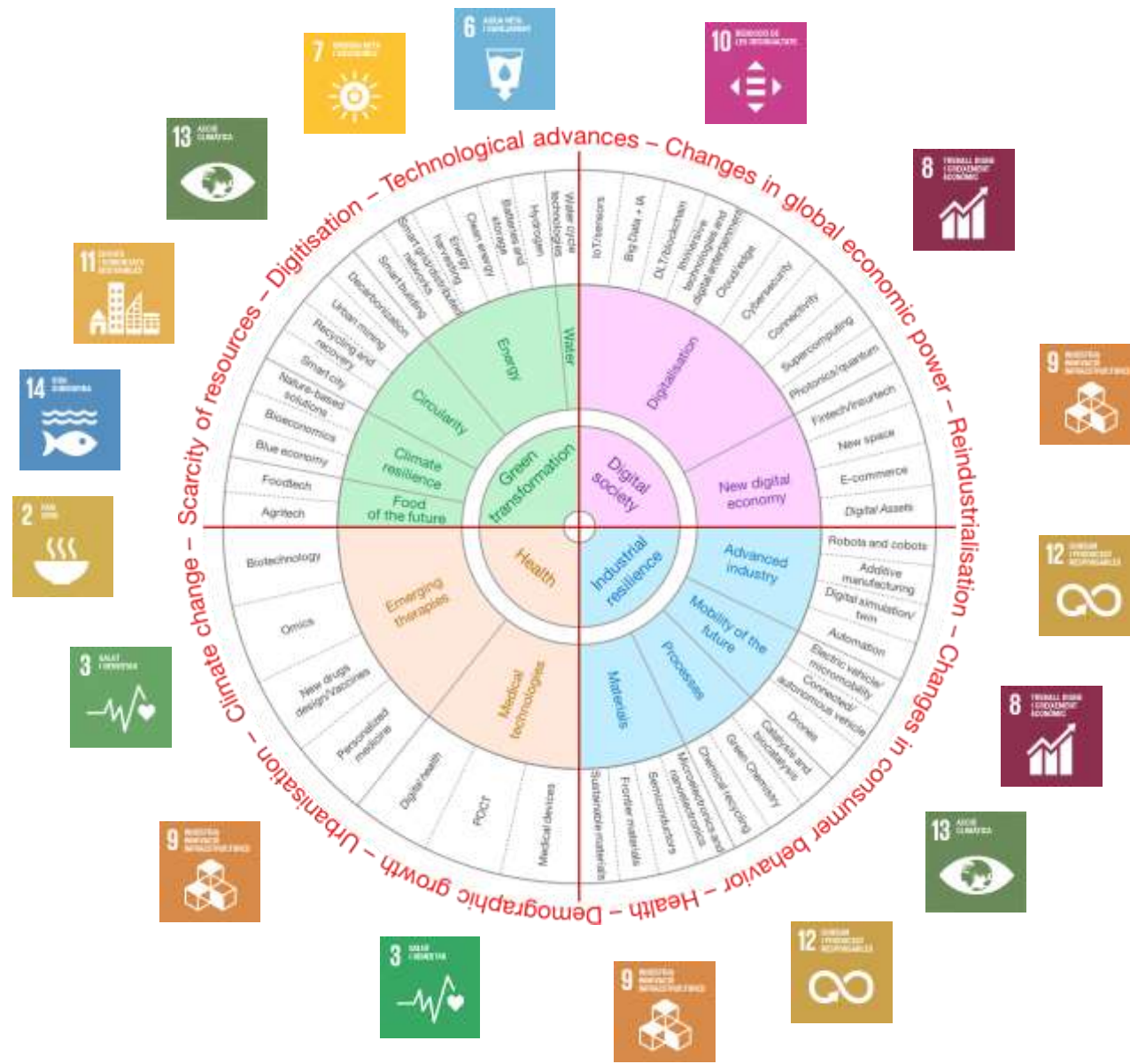
It can help people live longer and healthier, and provide solutions to face challenges such as climate change, transformation towards a clean energy system, health or the scarcity of resources.

Investors are beginning to notice the companies and technologies that provide value, beyond the novelty of their products.

In Europe, the main focus is on finding solutions to fight climate change.

Technologies as a vector to meet the Sustainable Development Goals

Technology offers innovative and disruptive solutions to tackle social and global challenges.



## 7. Technological potential in Catalonia

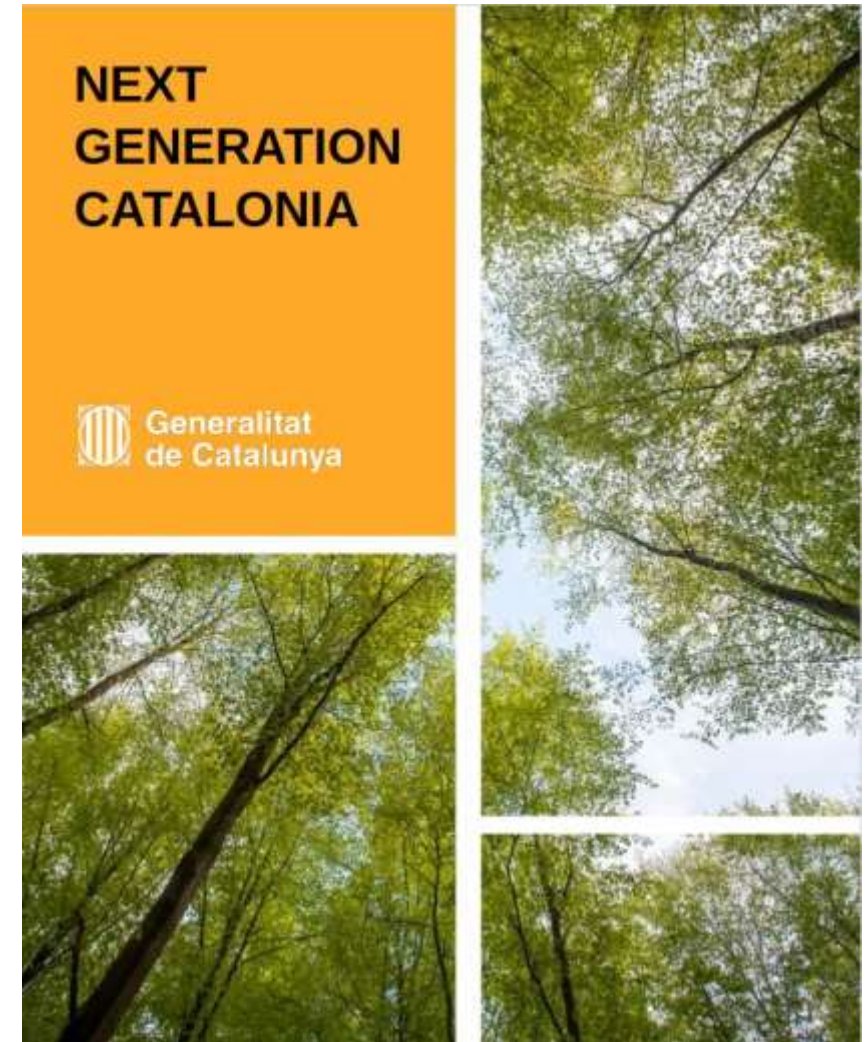


## Next Generation Catalonia

The Next Generation EU programme provides a unique opportunity for Catalonia to implement the necessary transformations to adapt to the new times and new trends, such as the energy transition, the digitisation of companies and the Authorities, and reindustrialisation.

The Next Generation Catalonia document presents 27 emblematic projects that the Regional Government of the Generalitat has identified with the collaboration with experts and economic and social players in the country.

Among the 27 projects included in the Next Generation Catalonia document, 18 are directly related to technologies of the ACCIÓ technology trends target.



## Digital Innovation Hub of Catalonia (DIH4CAT)

The DIH4CAT is a system for connection with innovative international ecosystems aimed at promoting digitisation in Catalonia, which remains the model of the Digital Innovation Hubs established by the European Commission.

It is a connected network of assets, infrastructure and knowledge in Catalonia, which can be accessed by industry and public institutions to obtain technological and non-technological solutions and to speed up the digital transformation of Catalan industry.

The DIH connects with 7 areas of technology that are significant in Catalonia and a significant critical mass in terms of capacities and the technology supply available:

- 1 Artificial intelligence
- 2 Supercomputing
- 3 Cybersecurity
- 4 *Smart connectivity*
- 5 Additive/3D manufacturing
- 6 Advanced robotics/manufacturing
- 7 Photonics



Green transformation

**ECONOMIA VERDA I CIRCULAR**  
Llei 16(2017, de l'1 d'agost del Canvi Climàtic)

**Estratègia catalana d'ecodisseny**  
per a una economia circular i ecoinnovadora

Pacte nacional per a la transició energètica de Catalunya

**2030**  
#Catalunya2030

ESCACC  
Adaptació 2021-2030

Digital society

**Estratègia 5G de Catalunya**

**Estratègia Blockchain de Catalunya**

**Catalonia.ai**

**Estratègia New Space**

**Estratègia de integració de la Intel·ligència Artificial**

Health

**Pla de Salut de Catalunya 2016-2020**

**ENAPISC**

**The Catalan Information Systems Master Plan**

**paiss**  
pla d'atenció integrada social i sanitària  
Llei 3 Model d'atenció integrada al sector sanitari  
Model català d'atenció integrada social i sanitària a l'entorn domiciliari

**EBC2030**  
ESTRATÈGIA DE LA BIOECONOMIA DE CATALUNYA 2030

Industrial resilience

**RIS3CAT**

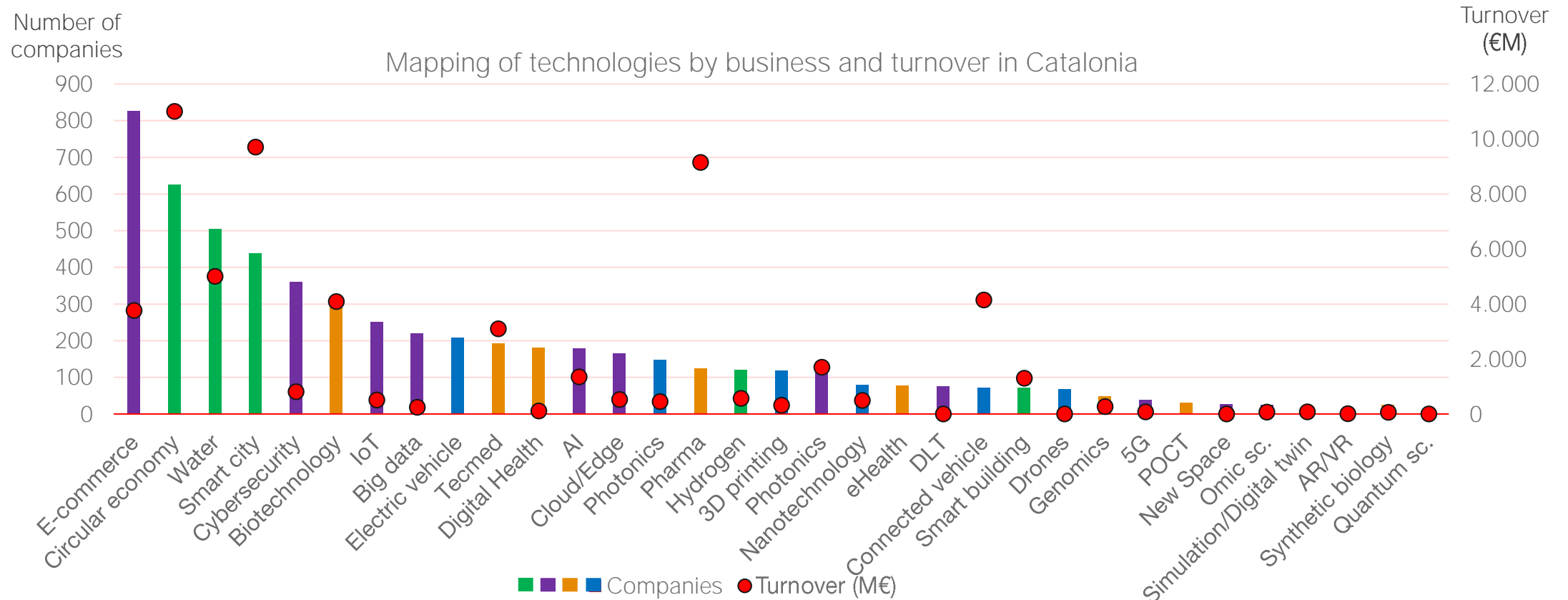
**40 PROACCIÓ**

**Planificació per a la indústria**

**PACTE NACIONAL PER A LA SOCIETAT DEL CONEIXEMENT**



Catalonia has a strong critical mass in many of the technology trends identified, and emerging trends are detected in which the ecosystem must be strengthened



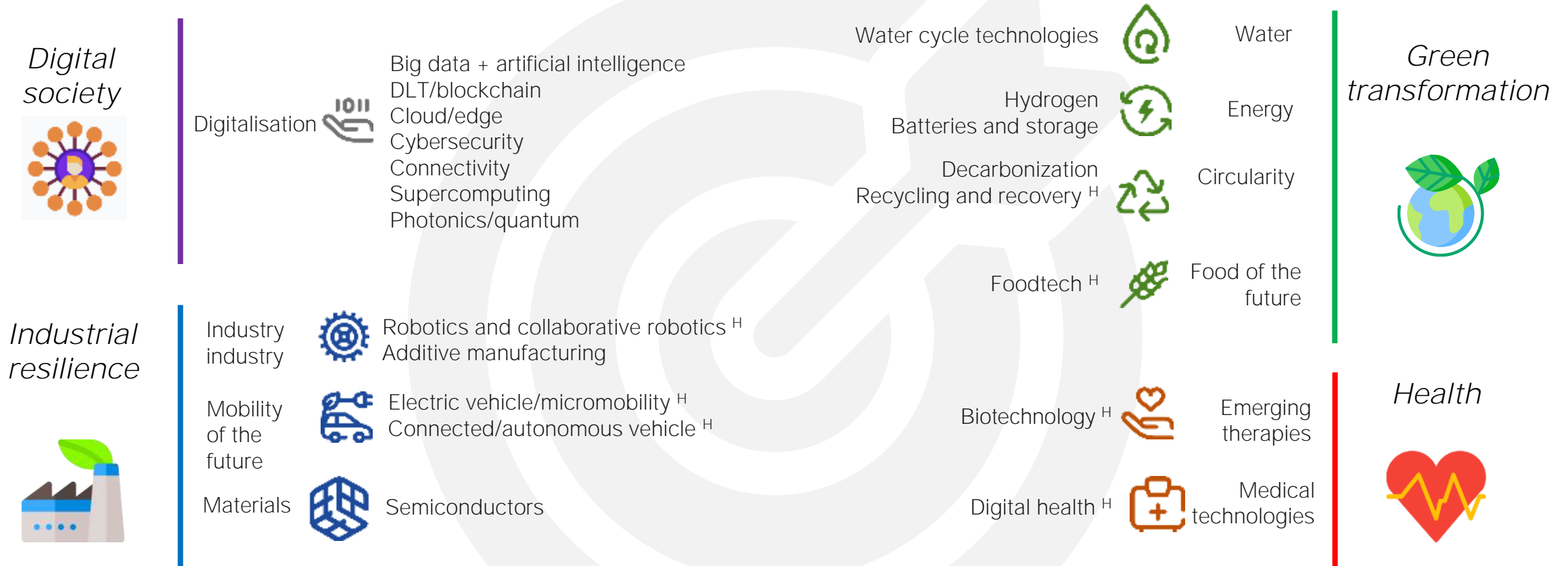
\* The technologies for which data is available have been included. The latest data available for each technology has been used. Some of the technologies represented in the graph are not included in the Target, but are linked directly to its areas.

Sources: ACCIÓ mapping, Biocat, Clúster de l'Energia Eficient and CWP

## 8. Prioritisation of ACCIÓ technology trends 2022- 2025

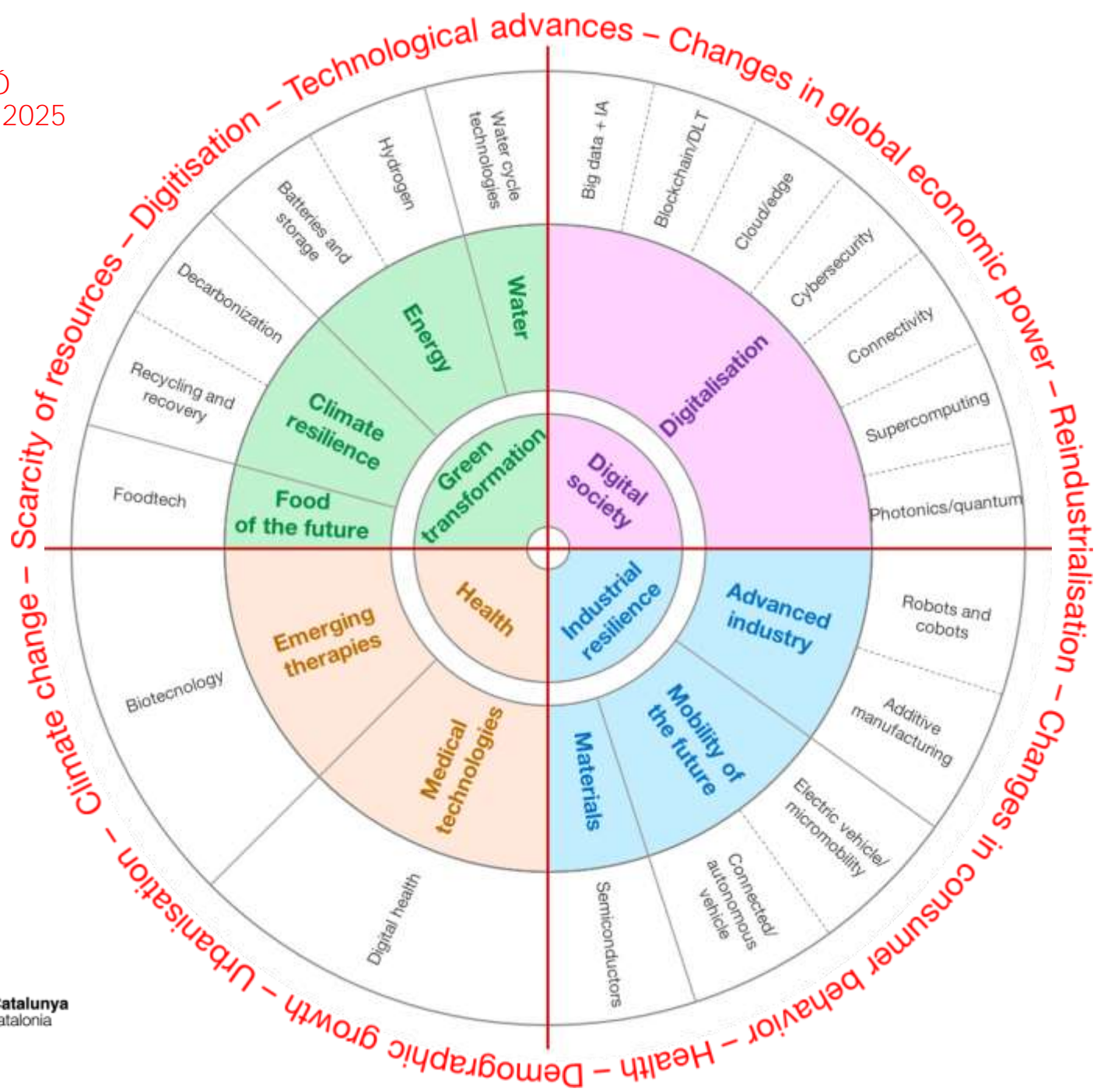
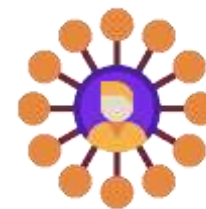


ACCIÓ prioritises 20 technology trends that will have a relevant impact on Catalonia until 2025



Prioritisation criteria: in line with initiatives of the Government of Catalonia (Generalitat de Catalunya), critical mass and potential, preparation of future ecosystems, and expected growth


Prioritisation of 20 ACCIÓ technology trends, 2022-2025



# Thank you

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