



WORLD BIOECONOMY ASSOCIATION



A Status of the Global Bioeconomy

Opportunities of the bioeconomy to European industry

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Bioeconomy and Competitiveness Days: Challenges and Opportunities
for Europe
Pampolona



Bioeconomy landscape

Bioeconomy Concept – three visions

Global Policy momentum

Financing the scale-up

Europe's competitiveness starts in its regions

Implementation challenge

Governance readiness = market readiness

Key takeaways



World Bioeconomy Forum

- **Founded:** 2018
- **Mission:** A global platform to drive the circular bioeconomy, focusing on sustainable solutions for climate change and resource preservation.
- **Four-Pillar Structure:**
 - The Bioeconomy: People, Planet, Policies
 - Corporate Leaders and Financial World
 - Bioproducts Around Us
 - Looking to the Future
- **Activities:** Online roundtables, conferences, and the **Annual Declaration** to outline future directions.



The Bioeconomy: People, Planet, Policies



Corporate Leaders and the Financial World



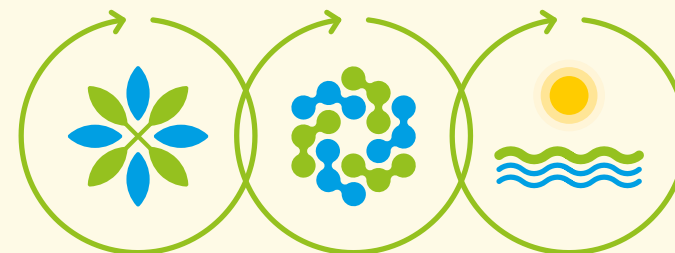
Bioproducts around us



Looking to the Future



- **Founded:** 2023
- **Mission:** A hub uniting stakeholders to grow the bioeconomy across sectors and regions.
- **Bioeconomy concept:**
 - **Bioresource Vision:** Enhancing research and technology for biomass conversion from agriculture, marine, and forestry sectors.
 - **Biotechnology Vision:** Promoting biotechnology and biomanufacturing research for diverse industrial applications.
 - **Bioecology and Social Vision:** Optimising ecological processes to promote biodiversity, strengthen crops, and protect soil quality.
- **Activities:** Engages in knowledge sharing, public outreach, advocacy, and collaborative research to promote responsible use of global resources



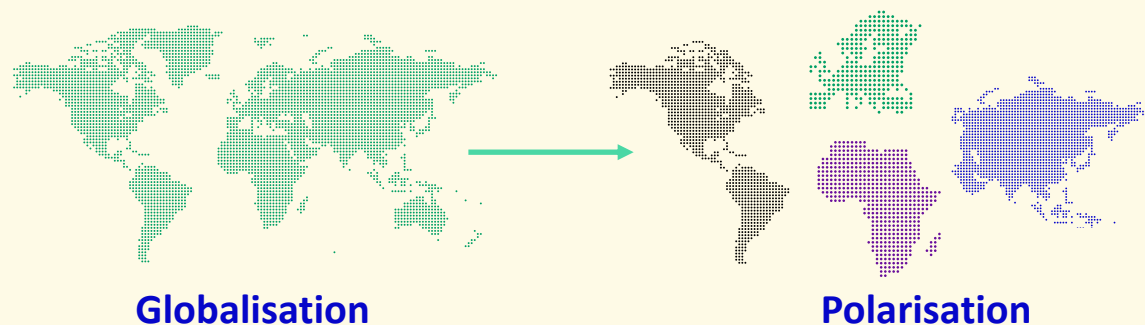
BIORESOURCE

BIOTECHNOLOGY

BIOECOLOGY

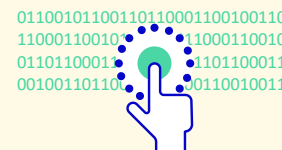


The bioeconomy race is accelerating

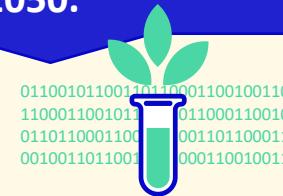


- The shift from **globalisation to polarisation** could fragment the bioeconomy, making international collaboration more difficult and leading to more regionally focused bioeconomic strategies.
- **Rising divisions** threaten international collaboration, slowing progress on global challenges like climate change and biodiversity.

Did you know? Today's global bioeconomy is estimated to be valued at US\$4 trillion, with growth potential to US\$30 trillion by 2050.



3rd Industrial Revolution
Digitalisation



4th Industrial Revolution
Biorevolution

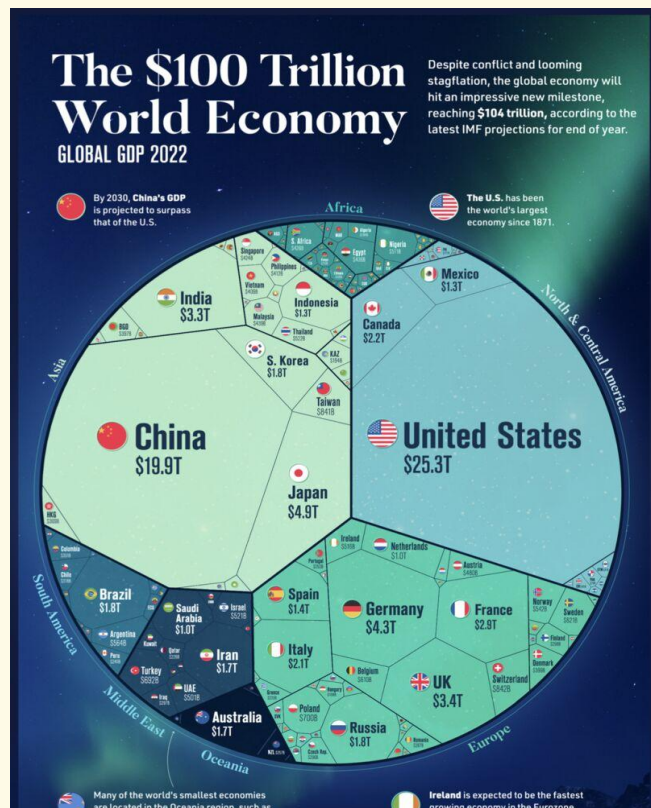
Opportunities in the **Bio Revolution**:

- **Biotechnology advancements**, like genetic engineering and synthetic biology, are driving new markets and business models.
- **Ethical and regulatory challenges** may arise in a polarised world.

Success and growth in the bioeconomy hinges on navigating these global dynamics.



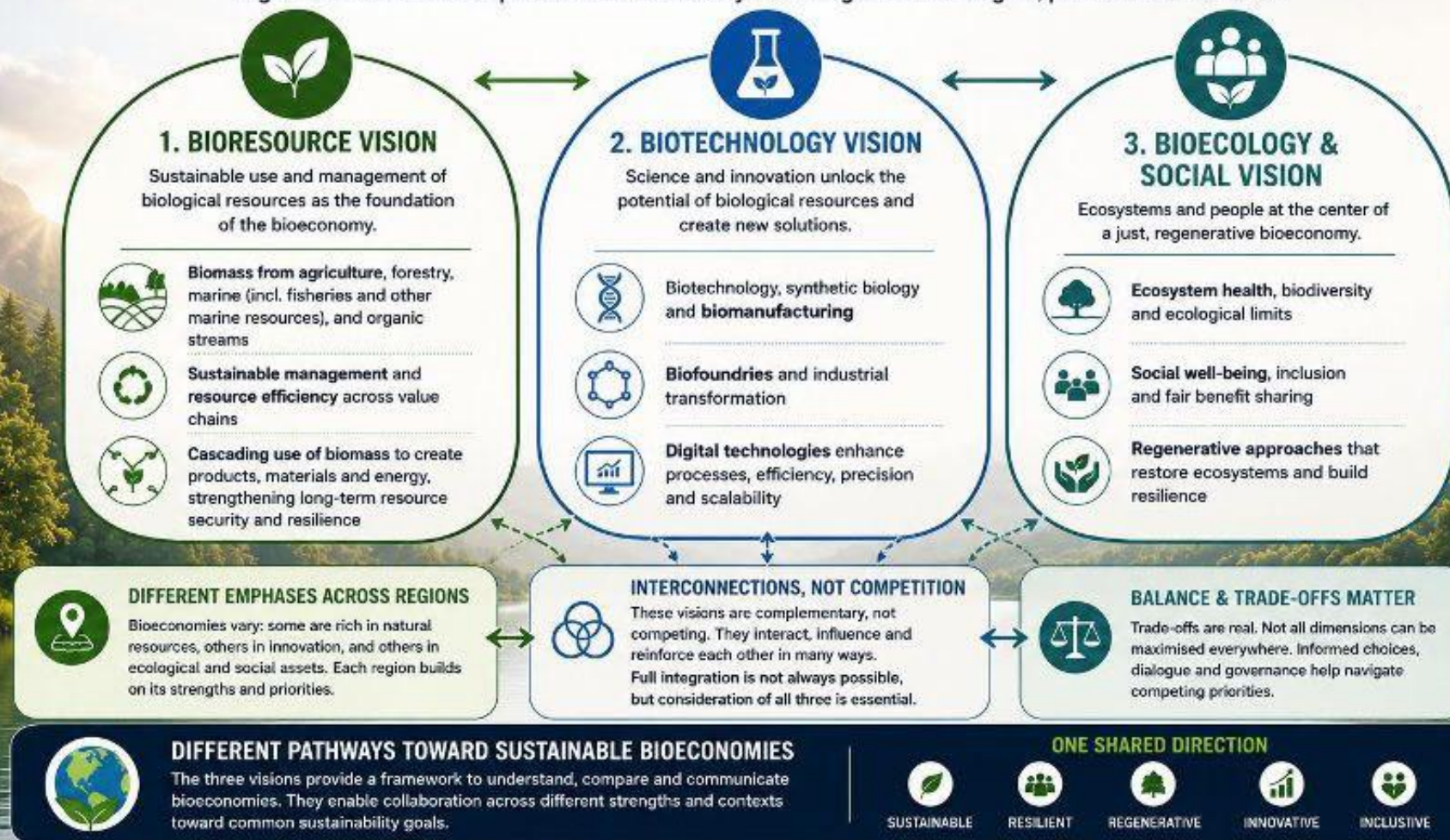
The world is investing in the bioeconomy



THREE CORE VISIONS OF THE BIOECONOMY

Different perspectives. Different strengths. Shared transformation.

The bioeconomy can be understood through three complementary visions.
Regions and countries emphasise them differently according to their strengths, priorities and contexts.



THE BIOECONOMY IS NOT A SINGLE MODEL. IT IS A DIVERSITY OF PATHWAYS
GUIDED BY THESE CORE VISIONS TOWARD A REGENERATIVE FUTURE.



A major milestone: G20 High-Level Principles (Sept 2024) Carried on during the South Africa G20 Presidency in year 2025





COP30 Belém: Bioeconomy enters the climate mainstream



- First time on the official UNFCCC agenda
- Shift from commitments to implementation
- Launch of the **Bioeconomy Challenge (2025–2028)**
- Four workstreams:
 - **Metrics | Finance | Trade & Markets | Socio-bioeconomy**





Bioeconomy Challenge - Turning principles into coordinated global action



What it is?

- A global multi-stakeholder platform launched at COP30 until 2028
- Aligns actors around the G20 High-Level Principles on Bioeconomy
- Bridges climate, biodiversity, finance, trade and development agendas

How it works?

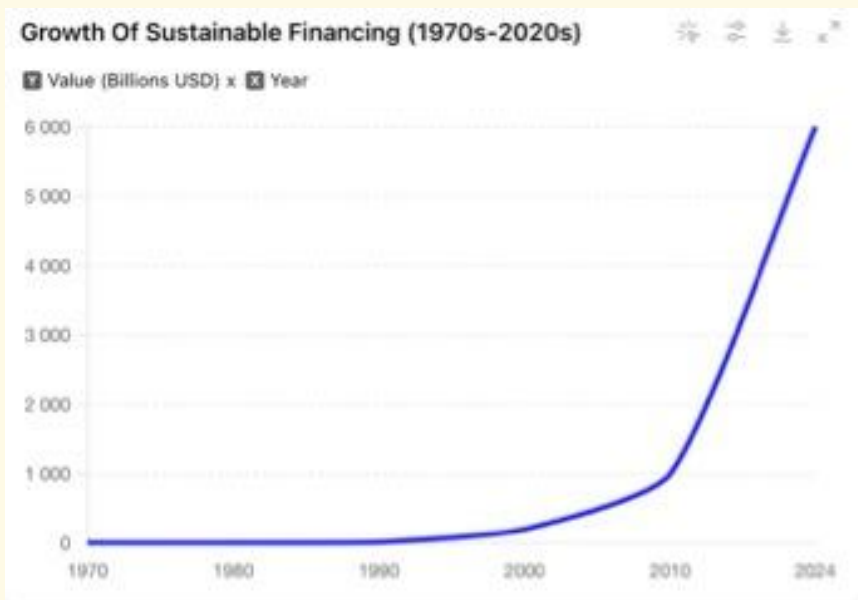
- Structured Working Groups:
 - Metrics (Coordinated by FAO)
 - Finance (IDB)
 - Trade (UNTD)
 - Socio-Bioeconomy (WRI)
- Public–private collaboration
- Action-oriented, time-bound deliverables

Why it matters?

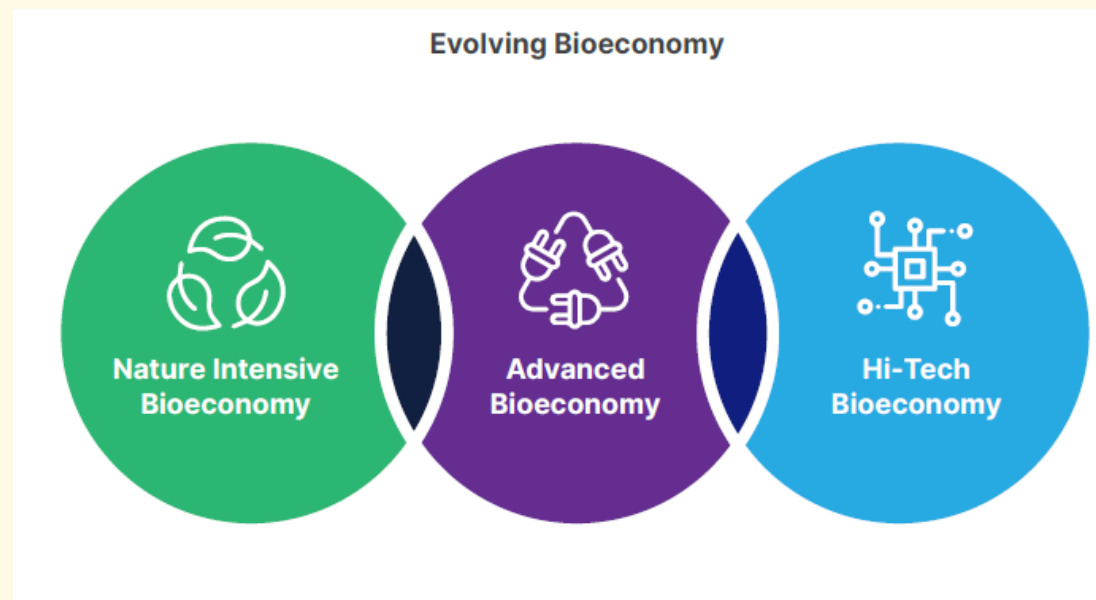
- Moves from policy dialogue → implementation
- Builds shared standards and investment frameworks
- Accelerates market readiness and capital mobilisation

A coordinated platform to scale the global bioeconomy responsibly and inclusively more on <https://bioeconomychallenge.org/about-us/>

Financing is evolving — but scale-up is underfunded



- Sustainable financing has developed since 1970s
- Primary focusing on Climate Actions and Biodiversity



- The Bioeconomy concept is evolving
- No concrete global understanding
 - Missing metrics and harmonised standards
 - Financing on commercial terms



What makes bioeconomy investable?



DESCRIPTION



Nature Intensive Bioeconomy

Utilizes biological resources, processes, and principles to produce goods and services. Encompasses agriculture, forestry, fisheries, food, and bioenergy. Aims for sustainable growth and reduced environmental impact.



Advanced Bioeconomy

Evolves traditional practices using innovative technologies and advanced biological processes. Provides sustainable alternatives to fossil-based products and enhances production efficiency and sustainability.



Hi-Tech Bioeconomy

Focuses on high-value, specialized, and technologically sophisticated bioproducts. Characterized by advanced functionalities and higher market value.

STAGE AND LEVEL OF INVESTMENT

Mature stage, significant investments, linked to traditional industries.

Evolving stage, continuous innovation, increasing investments from public and private sectors.

Dynamic stage, substantial R&D investments, significant funding for cutting-edge projects from both public and private sectors.



Competitiveness landscape



Bioresource vision



Biotechnology vision



Bioecology vision

Annual use $\approx$ 1 billion ton

Sentiment is to constrain growing use of biomass.

Scenario on **40– 70% biomass gap by 2050.**

A balanced approach, integrating biotechnology innovations to support sustainable bio-based industries.

Stricter regulatory frameworks compared to the USA and China.

The EU emphasizes **responsible resource management**, aiming to stabilise sustainable biomass use and advocate for **circular economy principles**.

Increasing sustainable use of biomass.

Targeting **1 Billion tons of biomass annual use.**
(DOE 2023)

BioPreferred Program (2002)

The USA primarily adopts a biotechnology vision in its bioeconomy strategy, prioritising technological innovation and industrial application in their bioeconomy strategies

Focus is minimal on ecological sustainability principles compared to the EU.

However, **efforts are underway to promote sustainable practices** for resource optimisation

Biomass capacity up 3,5 billion tons.

China's annual biomass production will approach 3.8 billion tons by 2030 and surpass 5.3 billion tons by 2060.

China predominantly embraces a biotechnology vision, similar to the USA

Beginning to incorporate ecological approaches, but the focus remains less pronounced compared to technological innovation and resource-intensive strategies.



Europe's competitiveness starts in its regions



194

EU regions with
bioeconomy
frameworks*



28

Dedicated regional
bioeconomy
strategies



Regions connect industry, innovation,
talent and investment.



GLOBAL BIOECONOMY RACE



EU STRATEGIES & PRIORITIES



REGIONAL ECOSYSTEMS

Regions leading the way



INDUSTRIAL DEPLOYMENT

Innovation • Investment • Scale-up



EUROPEAN COMPETITIVENESS

Growth • Resilience • Sustainability

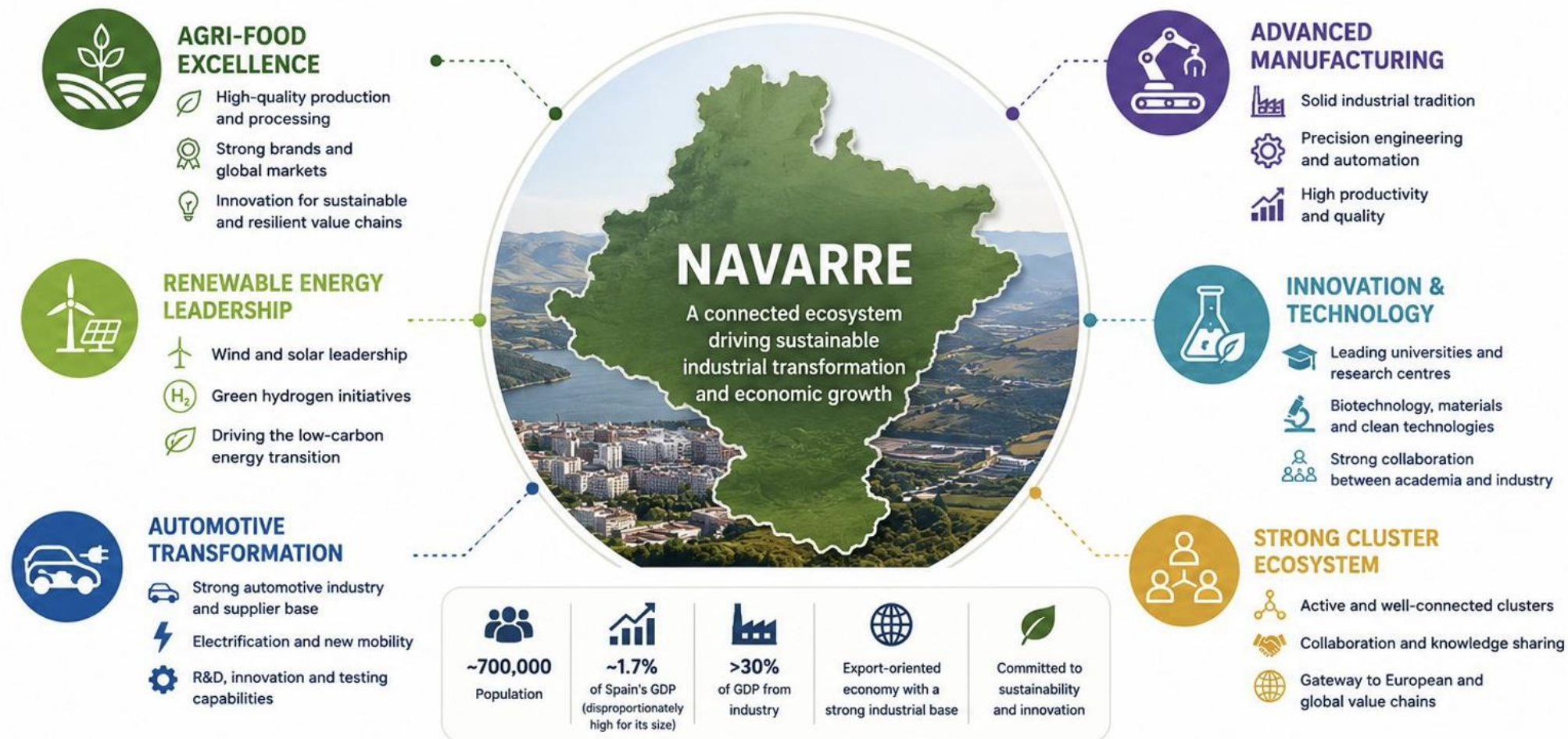
REGIONS BRING TOGETHER WHAT DRIVES COMPETITIVENESS



The future bioeconomy race is increasingly
a race between regions, not only between countries.



Navarre: A Regional engine for a competitiveness



ENABLERS OF SUCCESS



PROACTIVE GOVERNANCE
Long-term vision and business-friendly environment



PUBLIC-PRIVATE COLLABORATION
Strong partnerships across business, academia and public institutions

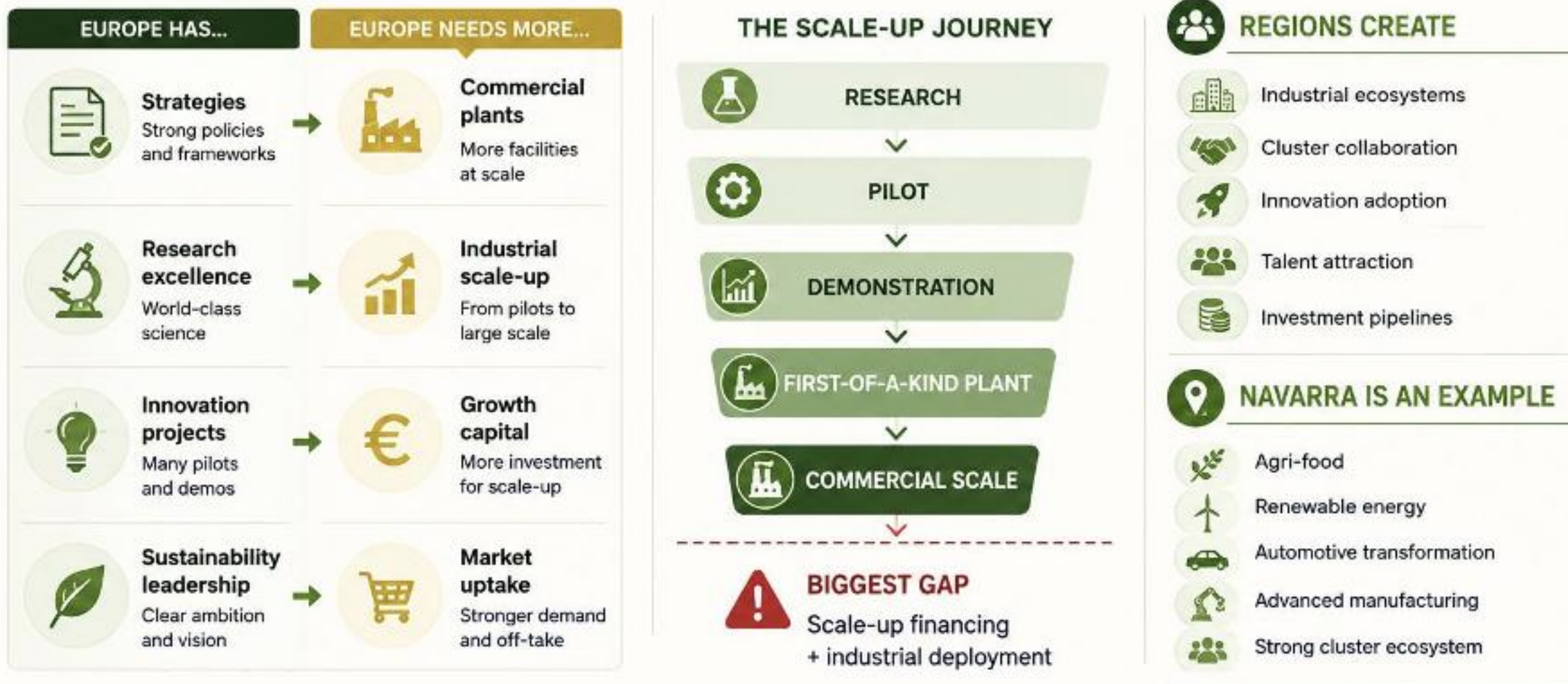


TALENT & SKILLS
Quality education, vocational training and attraction of talent



EUROPEAN CONNECTIVITY
Access to EU programmes, networks, markets and innovation funding

The implementation challenge



Europe does not have innovation challenge - **Europe has implementation challenge**

Governance readiness = market readiness





Key takeaways

- The bioeconomy is gaining strong global momentum
- Global alignment and joint stocktaking are accelerating bioeconomy development.
- Capital is available, but commercial-scale deployment remains the bottleneck
- Europe's bioeconomy is built through regional ecosystems and industrial clusters
- Success depends on turning strategy into industrial deployment



WORLD BIOECONOMY ASSOCIATION



Thank you!

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