

# How to convert science as public good into driver of economy of small countries

## Challenges for Science in the region

**Acad. Ilirjan Malollari**

*Today, we'll be exploring the significant challenges facing the scientific community in a region with immense potential: the Western Balkans."*

## *How can science become a driver of economic transformation in small countries like Albania?*

Science is our most powerful public good. But in small countries like Albania, its economic potential remains largely untapped. To change this, we must rethink the entire **ecosystem—from infrastructure to innovation.**"

Turning science into an economic engine—especially in smaller countries like Albania—requires more than just good research. It demands a full ecosystem shift. Based on recent developments and structural realities in Albania, here are the critical issues the Albanian Academy of Sciences might need to address to make science a true driver of the economy:

### ➤ *Fragmented Research Infrastructure*

- Many research institutes were moved from the Academy to universities, weakening centralized coordination.
- Lack of synergy between academic research and industrial needs limits commercialization potential.

### ➤ *Brain Drain and Talent Retention*

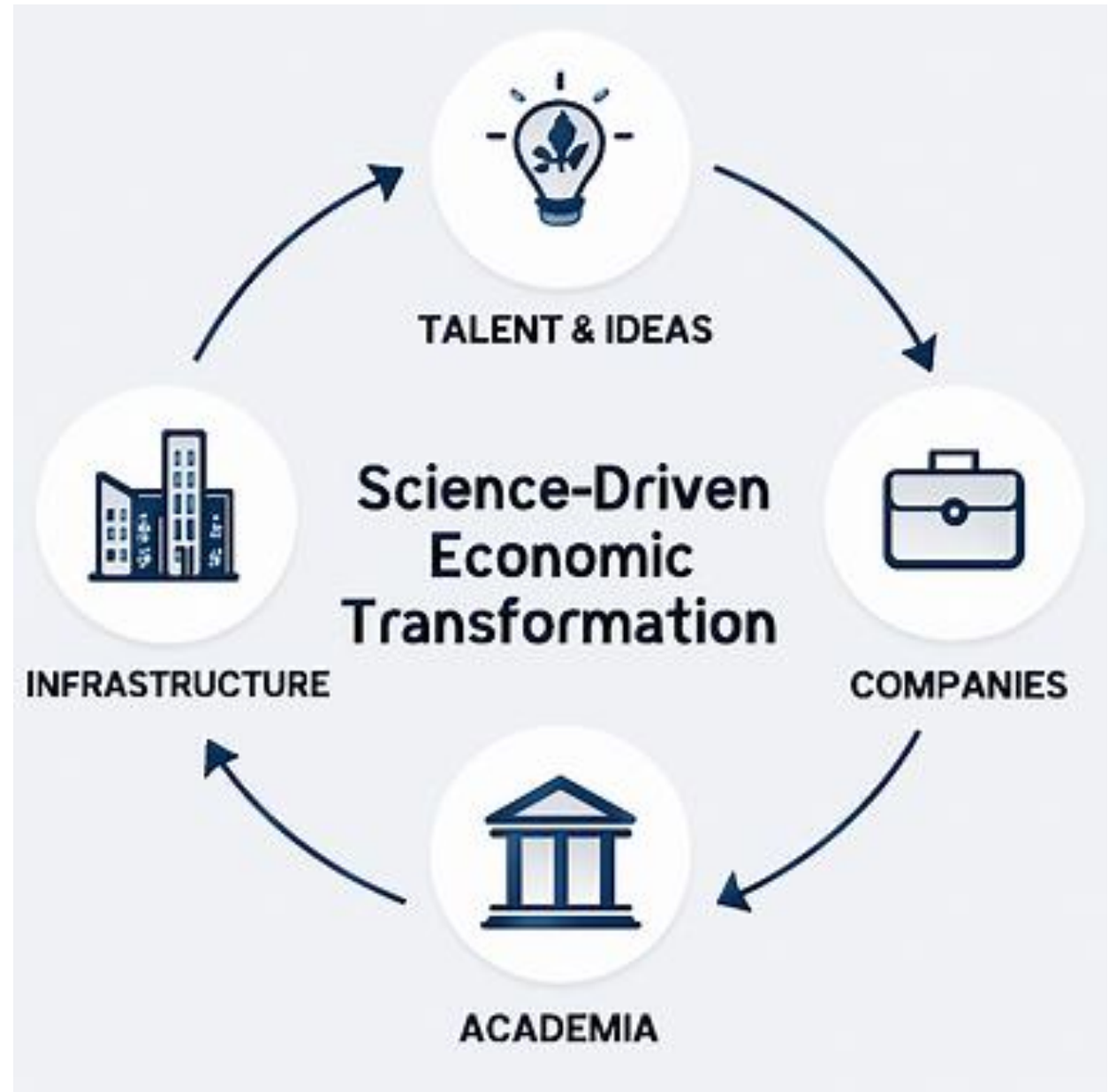
- Over **40%** of Albania's top scientists and professors emigrated between **1990–2000**.
- Young researchers often lack incentives to stay due to poor funding, outdated labs, and limited career prospects.

➤ **Insufficient Funding and Investment**

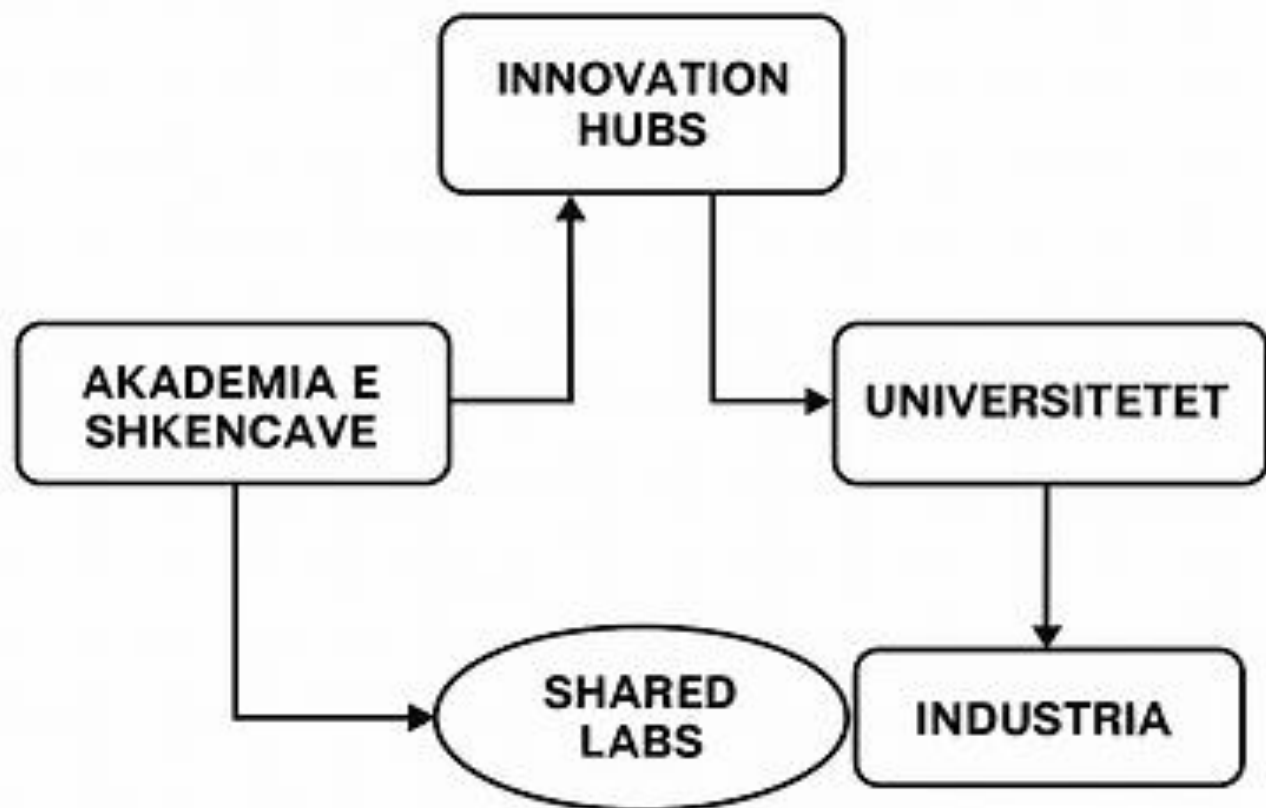
- R&D spending is still under **0.1% of GDP**, though it's increasing.
- Without **sustained investment**, scientific breakthroughs rarely reach the market or attract private sector interest.

➤ **Weak Science-Industry Linkages**

- Scientific institutions often **operate in isolation from business** and entrepreneurship.
- There's a need for translational research centers that bridge academia and industry—especially in **biotech, AI, and energy**.

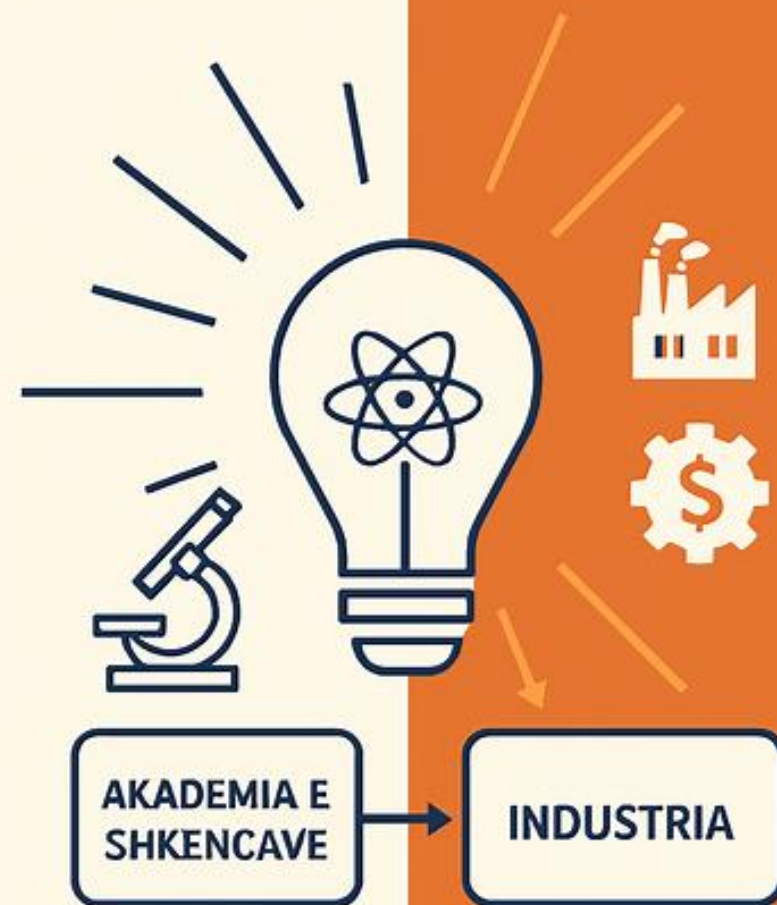


## Connected knowledge ecosystem in Albania

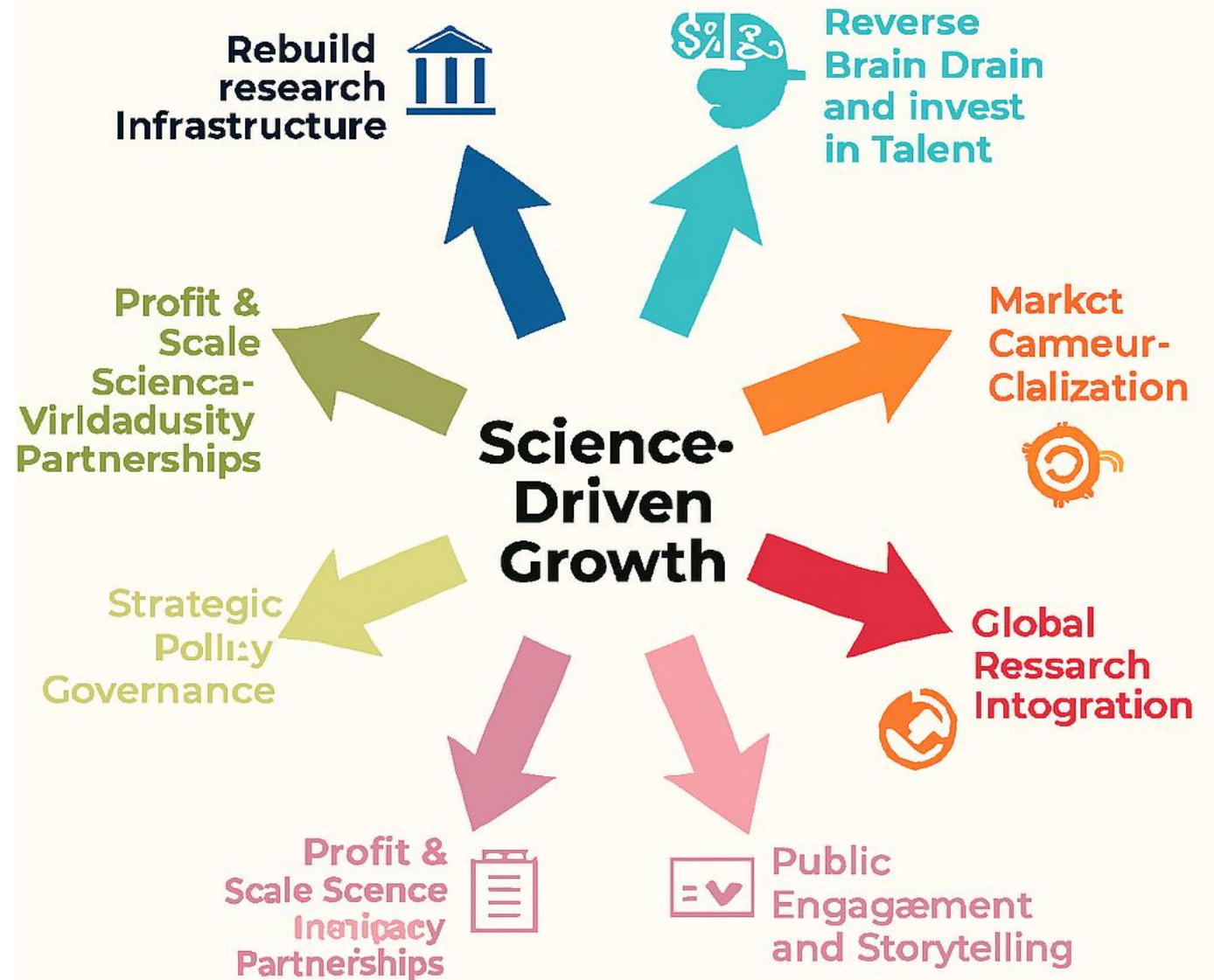


**SCIENCE**

**ECONOMIC  
TRANSFORMATION**



- *Lack of Commercialization Pathways*
  - Few mechanisms exist **to turn scientific discoveries into startups or products.**
- *Global Integration and Collaboration*
  - Albania's **scientific community needs stronger ties with EU research programs and global networks.**
- *Public Perception and Cultural Value of Science*

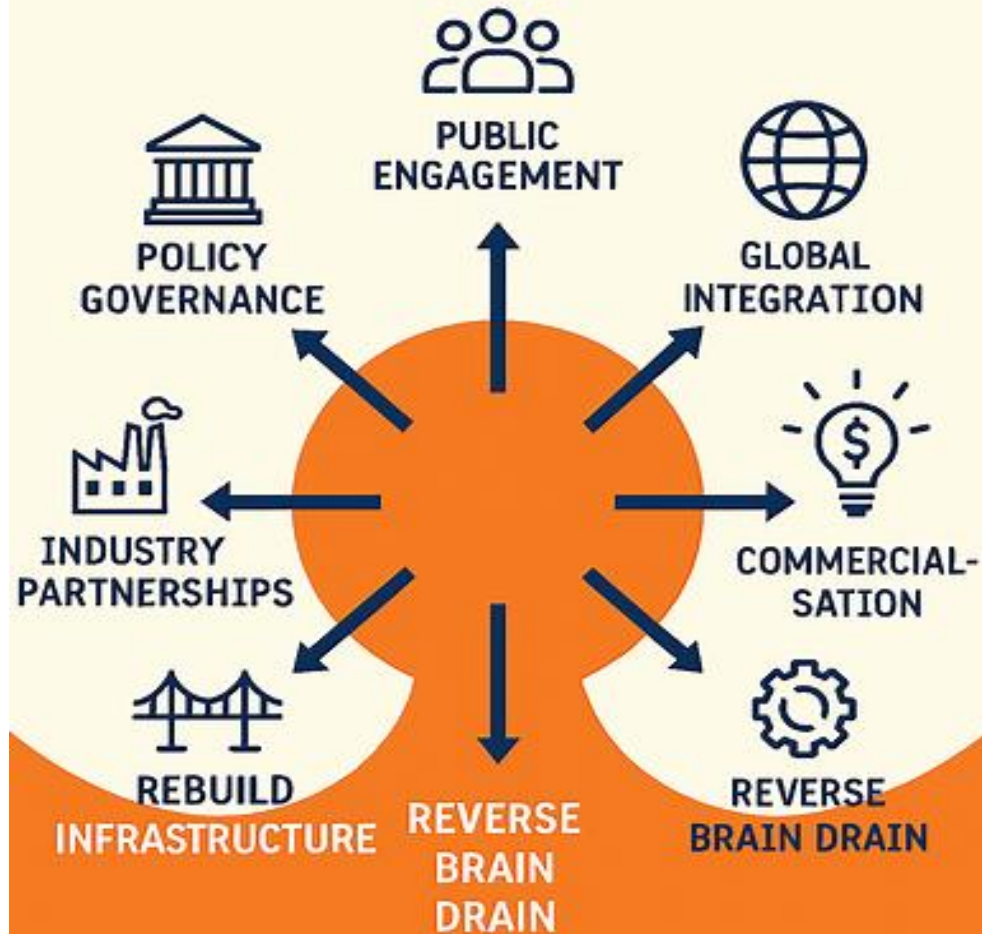


# Our Strategic Priorities

According to my opinion, the Academy's key priorities for the coming years, are:

- ✓ *Rebuild and modernize our **research infrastructure***
- ✓ *Invest in talent and reverse brain drain Through **fellowships, diaspora engagement, and mentorship networks.***
- ✓ *Forge science-industry partnerships By incentivizing joint R&D and **launching Science-to-Market forums.***
- ✓ *Strengthen policy and governance* The Academy will serve as a strategic advisor to government, ensuring science policy is not just written—but implemented.

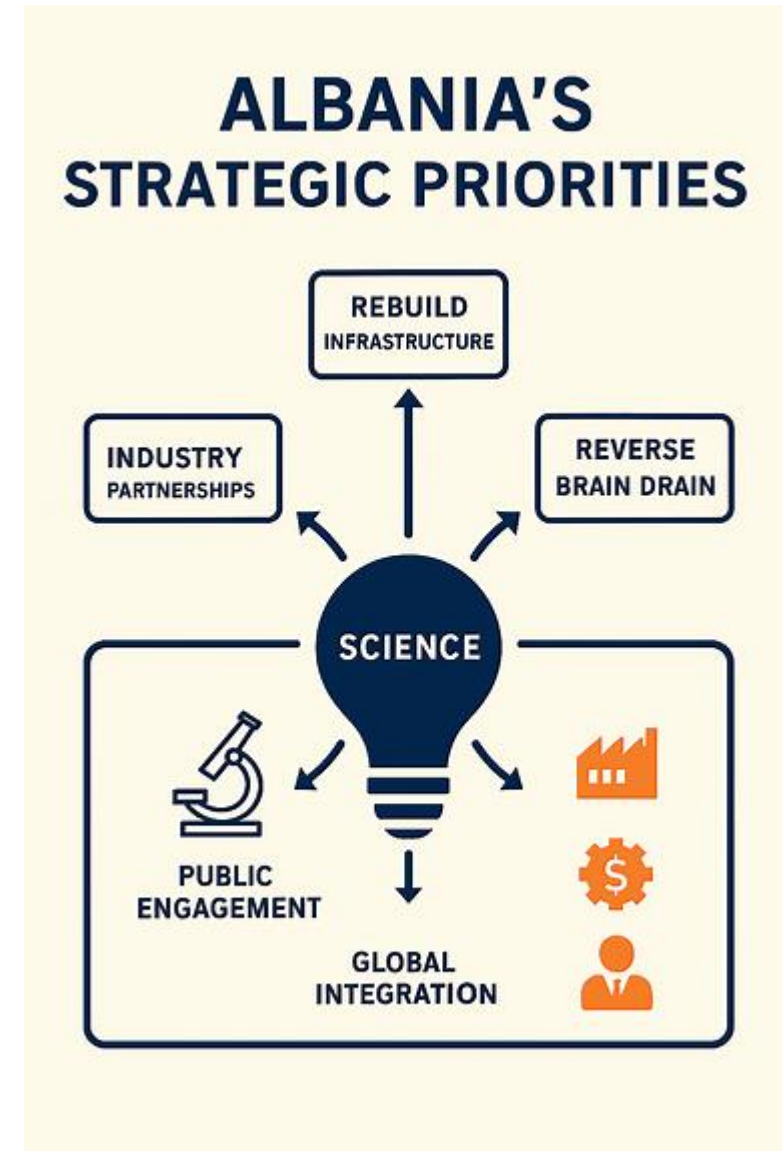
# STRATEGIC PRIORITIES FOR ALBANIA



# ALBANIA'S STRATEGIC PRIORITIES



- ✓ *Create commercialization pathways*  
Including a **National Technology Transfer Office** and a venture fund for science-based startups.
- ✓ *Deepen global integration* We will expand our **participation in Horizon Europe** and build new bilateral research agreements.
- ✓ *Engage the public* Through campaigns, education, and storytelling that **make science accessible and inspiring.**



# KEY STRATEGIES FOR SCIENCE-DRIVEN GROWTH

## 1. Invest in Applied Research & Innovation

- Prioritize funding for research **with direct industrial, agricultural, or environmental applications.**
- Create public-private partnerships to commercialize academic discoveries.

## 2. Build Inclusive Scientific Infrastructure

- Establish **regional research hubs** with accessible labs and digital platforms.
- Ensure participation of marginalized groups, including persons with disabilities, in STEM.

## 3. Strengthen Education–Industry Linkages

- Align university curricula with market needs** (e.g., energy, biotech, AI).
- Promote internships, co-research projects, and innovation challenges.

## 4. Leverage EU Collaboration & Funding

- Tap into **Horizon Europe, Erasmus+, and COST programs.**
- Facilitate cross-border research and technology transfer.

## 5. Support Startups & Spin-Offs

- Provide **seed funding, incubators, and mentorship for science-based startups.**
- Simplify IP protection and patenting processes.

## 6. Promote Science Communication & Public Trust

- Use media and schools to raise awareness** of science's economic value.
- Encourage citizen science and community-driven innovation.

## The Promise and the Paradox)

- **Headline:** A Region of Potential
- **Points:**
  - Rich history of scientific contribution.
  - Strong foundation in engineering, mathematics, and medicine.
  - Highly skilled and talented researchers.
  - **The Paradox:** This potential is underutilized due to a complex web of systemic challenges.

*"The Western Balkans are no stranger to science. However, there is a clear paradox: a wealth of talent exists alongside a struggle to compete on the European and global stage. Let's break down the primary reasons for this."*

## Challenge 1 - The "Brain Drain" Crisis)

- **Headline:** The Hemorrhage of Talent
- **Visual:** A map of the Western Balkans with arrows pointing out to other EU countries and North America.
- **Key Points:**
  - **Push Factors:** Lack of funding, low salaries, and limited career prospects.
  - **Pull Factors:** Better opportunities, higher wages, and advanced infrastructure abroad.
  - **Result:** A continuous loss of the brightest young minds and experienced researchers, crippling domestic research capacity.

*"Perhaps the most critical challenge is the relentless 'Brain Drain.' Young PhDs and established professors often find their career paths blocked at home, leading them to seek opportunities elsewhere. This creates a vicious cycle, depleting the very human capital needed for recovery."*

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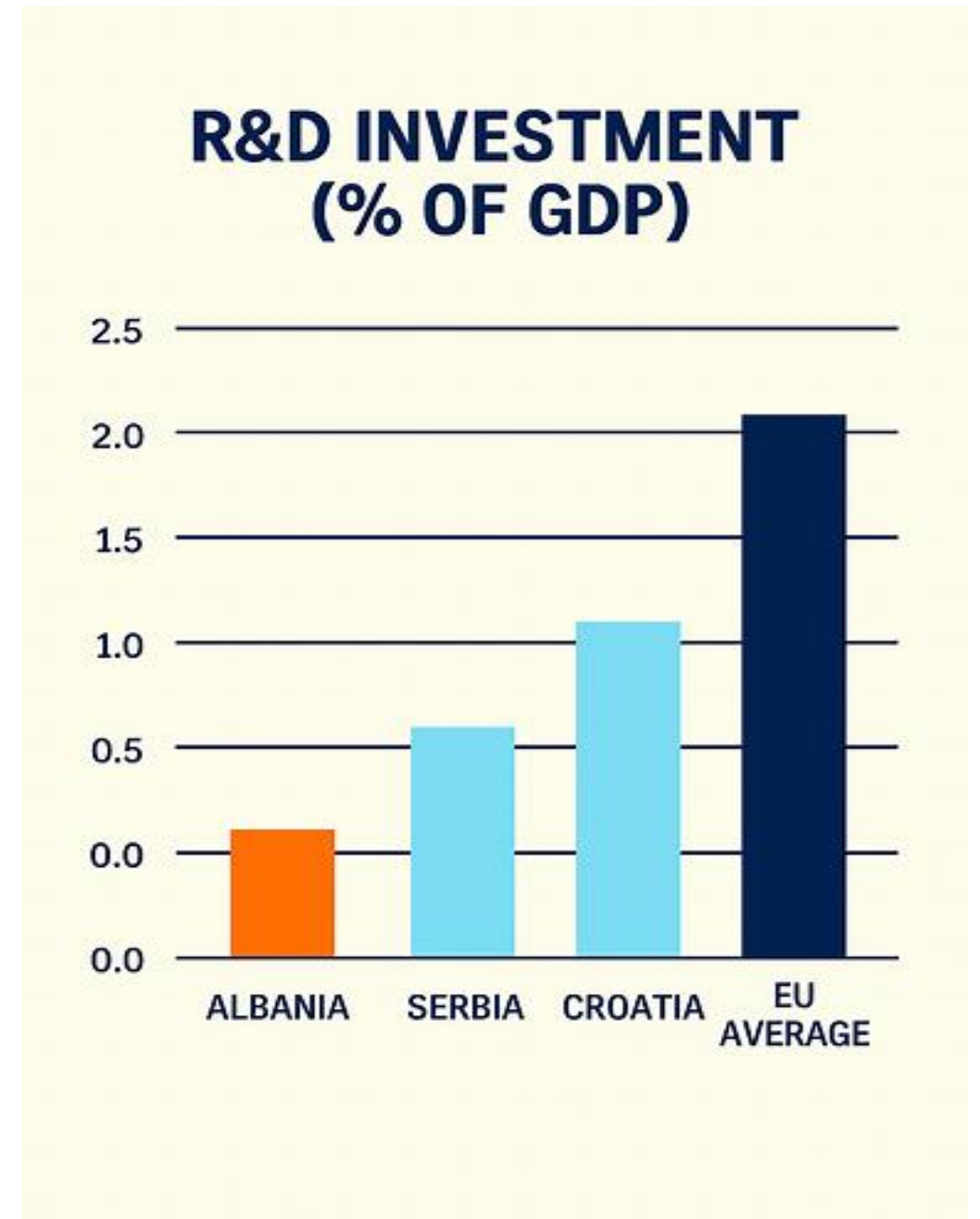
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### Challenge 3 - Outdated Infrastructure and Bureaucracy)

- **Headline:** Aging Tools and Red Tape
- **Visual:** A split image: one side showing an old laboratory, the other showing a stack of paperwork.
- **Key Points:**
  - **Infrastructure:** Laboratories and equipment are often outdated or insufficient.
  - **Bureaucracy:** Cumbersome administrative procedures slow down procurement, hiring, and project implementation.
  - **Digital Gap:** Limited access to high-performance computing and specialized databases.

*"Even when funding is secured, scientists face two major operational hurdles. First, the physical infrastructure—labs and equipment—is often decades behind. Second, they are entangled in a web of bureaucracy that stifles agility and innovation."*



## Challenge 4 - Political Instability and Short-termism)

- **Headline:** The Shadow of Politics

- **Key Points:**

- **Science policy is often not a priority and changes with political cycles.**
- **Lack of a clear, long-term national strategy for science and innovation.**
- **This instability discourages international collaboration and private sector investment.**

*"Science is a long-term endeavor, but it operates in an environment often shaped by short-term political interests. The lack of a stable, strategic vision for science means that projects can be defunded and priorities can shift overnight, creating an environment of uncertainty."*

# The Way Forward: A Glimmer of Hope

- **Headline:** Pathways to a Solution

- **Key Recommendations:**

- **Increase & Stabilize Funding:** Commit to raising R&D investment to EU levels.
- **Create Attractive Careers:** Develop tenure-track systems and competitive salaries to retain talent.
- **Strategic Priorities:** Focus funding on areas of regional strength (e.g., green energy, AI, biomedical sciences).
- **Deepen Integration:** Strengthen ties with EU Framework Programs and regional cooperation initiatives.

*"The challenges are deep-rooted, but not insurmountable. The solution requires a concerted effort: governments must prioritize stable funding and career reform, the academic community must advocate for strategic focus, and stronger integration with European programs is crucial."*

"Unlocking the scientific potential of the Western Balkans  
is key to unlocking its future."

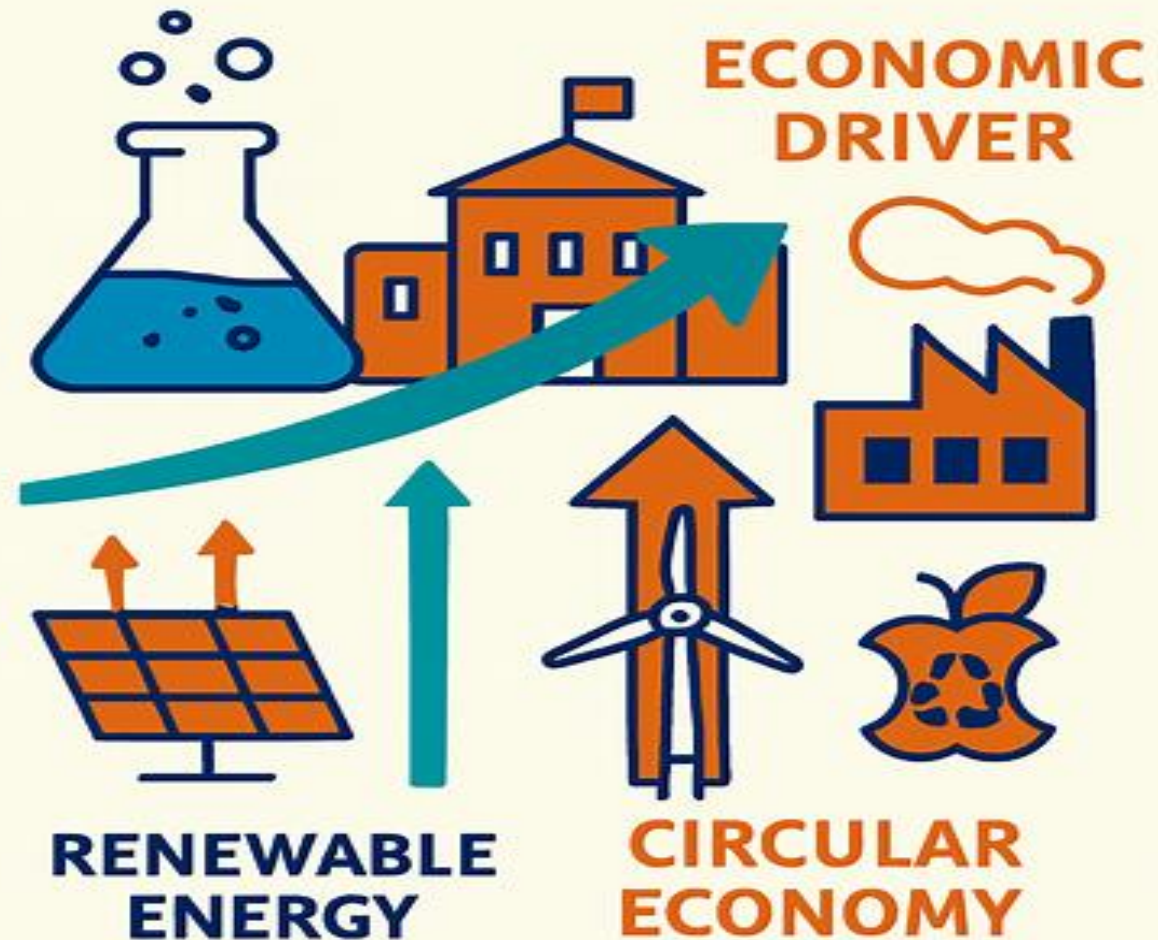
*"While the challenges we've discussed are regional, they manifest in specific ways in Albania. Here is a more focused look at the conclusions for the Albanian scientific ecosystem."*

*It visually captures Albania's transformation from fragmented scientific institutions into a coordinated innovation ecosystem.*

*The diagram shows clear pathways linking the Academy of Sciences, Universities, and Industry, with shared labs and innovation hubs at the center.*

*This is ideal for illustrating your message at the high-level meeting: that science must be structurally supported to become an economic driver.*

## A Focus on Albania: Specific Challenges & Paths Forward



## 1. The Albanian Brain Drain: A National Emergency

- Brain drain is not just a problem; it is a **national emergency** that threatens long-term development.
- **Albanian Context:** The exodus of talented youth and academics is disproportionately high, draining the country's future intellectual capital.
- **The Path Forward:**
  - Create "**Returning Scientist**" grants with significant seed funding and streamlined bureaucracy to attract established researchers back.
  - Reform the university career system to be based on **merit and international publication**, not just seniority or internal politics.
  - Foster stronger **Diaspora Engagement**, creating formal networks for Albanian scientists abroad to mentor, collaborate with, and invest in home institutions.

## 2. From Political Rhetoric to Strategic Investment

- **Conclusion:** Scientific investment must be treated as a non-negotiable pillar of national security and economic growth, beyond political cycles.
- **Albanian Context:** Funding is often symbolic and unpredictable, with a significant gap between policy declarations and actual budgetary commitments.
- **The Path Forward:**
  - Legally mandate a **gradual increase in R&D spending** to reach 1% of GDP within 5-7 years, with a clear implementation roadmap.
  - Establish a **National Science Fund** managed by scientists and international experts, insulated from political interference, to ensure competitive, peer-reviewed funding.

## From Political Rhetoric to Strategic Investment



### 3. Leveraging Geographic and Emerging Strengths

- **Conclusion:** Albania cannot compete in all fields at once. It must strategically focus on its unique advantages.
- **Albanian Context:** Strengths exist in areas like **seismology and earthquake engineering** (a critical national need), **tourism and biodiversity, ICT and computer science**, and **renewable energy** (hydropower, solar).
- **The Path Forward:**
  - Designate "**National Research Centers of Excellence**" in 2-3 strategic fields (e.g., a Center for Seismology and Resilient Infrastructure; a Center for Biodiversity and Eco-Tourism).
  - Incentivize **Public-Private Partnerships** where the private sector co-funds research in ICT, agriculture, and energy, ensuring results have commercial and societal impact.

# Leveraging Geographic & Emerging Strengths



## SOLAR:

Strong Conditions  
ALONG the  
SOUTHERN COAST

## WIND

High  
Potential  
in the  
NORTHERN  
HIGHLANDS

## GEOHERMAL & BIOENERGY:

Emerging  
Technologies  
for  
AGRICULTURE,  
HEATING,  
RURAL  
ELECTRIFI-  
CATION



## •Geographic Strengths:

- Southern coast: ideal for solar energy
- Northern highlands: strong wind potential
- Geothermal zones: opportunities for bioenergy and heating

## •Emerging Strengths:

- Renewable energy technologies
- Circular economy models
- Rural electrification and sustainable agriculture

*This visual is perfect for showing how Albania's natural assets can be transformed into strategic sectors through science and innovation.*

## 4. Deepening Integration with the EU is Non-Negotiable

**“EU integration is not just a political aspiration—it’s the backbone of Albania’s scientific and economic future.”**

• **Conclusion:** Albania's scientific future is inextricably linked to full integration into the **European Research Area**.

• **Albanian Context:** While participation in **Horizon Europe** is possible, success rates are often low due to a lack of experience and networks.

**Visual Structure:**

**Albania at the bottom of the graph, represented as a launchpad or gateway.**

**Three upward lanes, each labeled:**

- ✓ **Research & Innovation (e.g., Horizon Europe, COST)**
- ✓ **Education & Mobility (e.g., Erasmus+, Marie Skłodowska-Curie Actions)**
- ✓ **Digital & Economic Infrastructure (e.g., EU Digital Agenda, Single Market)**

## •The Path Forward:

- Invest in **National Contact Points (NCPs)** that are true experts and can provide high-quality support to Albanian applicants.
- Mandate and fund **participation in EU Twinning projects** to rapidly build administrative and research capacity by working directly with EU member state institutions.

**Thank You !**