

# Oportunidades 2022 no Cluster 5: Clima, Energia e Mobilidade

11 jan 2022

# Horizonte Europa @ ANI

## Pilares II & III

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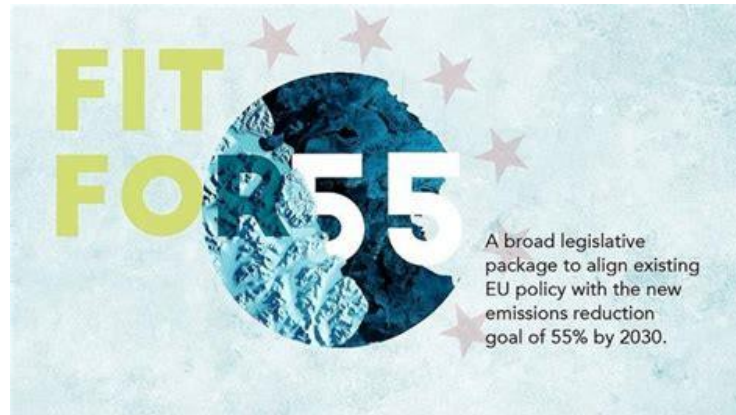
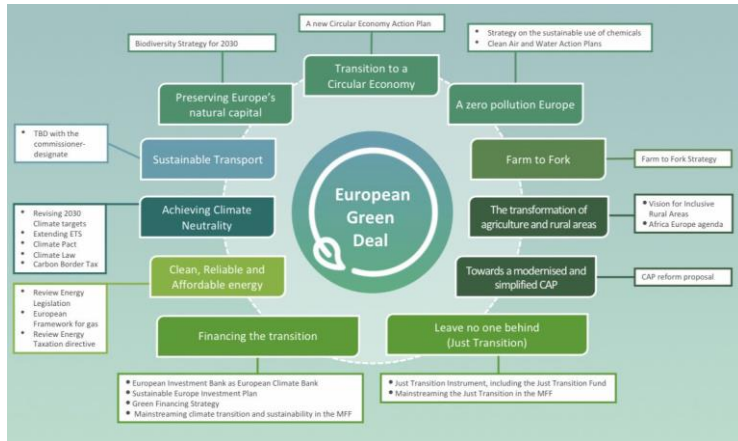
**RITA  
SILVA**



**SOFIA  
AZEVEDO**



**SOFIA  
BRAVO**



## European Green Deal

## Fit for 55 package

## Action plan on the digitalisation of the energy sector



HE  
95,5 mM€

# Horizon Europe (2021-2027)

25,01 mM€



## Pillar I EXCELLENT SCIENCE

European Research Council

Marie Skłodowska-Curie

Research Infrastructures

53,5 mM€



## Pillar II GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS

Clusters

- Health
- Culture, Creativity & Inclusive Society
- Civil Security for Society
- Digital, Industry & Space
- Climate, Energy & Mobility
- Food, Bioeconomy, Natural Resources, Agriculture & Environment

Joint Research Centre

13,6 mM€



## Pillar III INNOVATIVE EUROPE

European Innovation Council

European innovation ecosystems

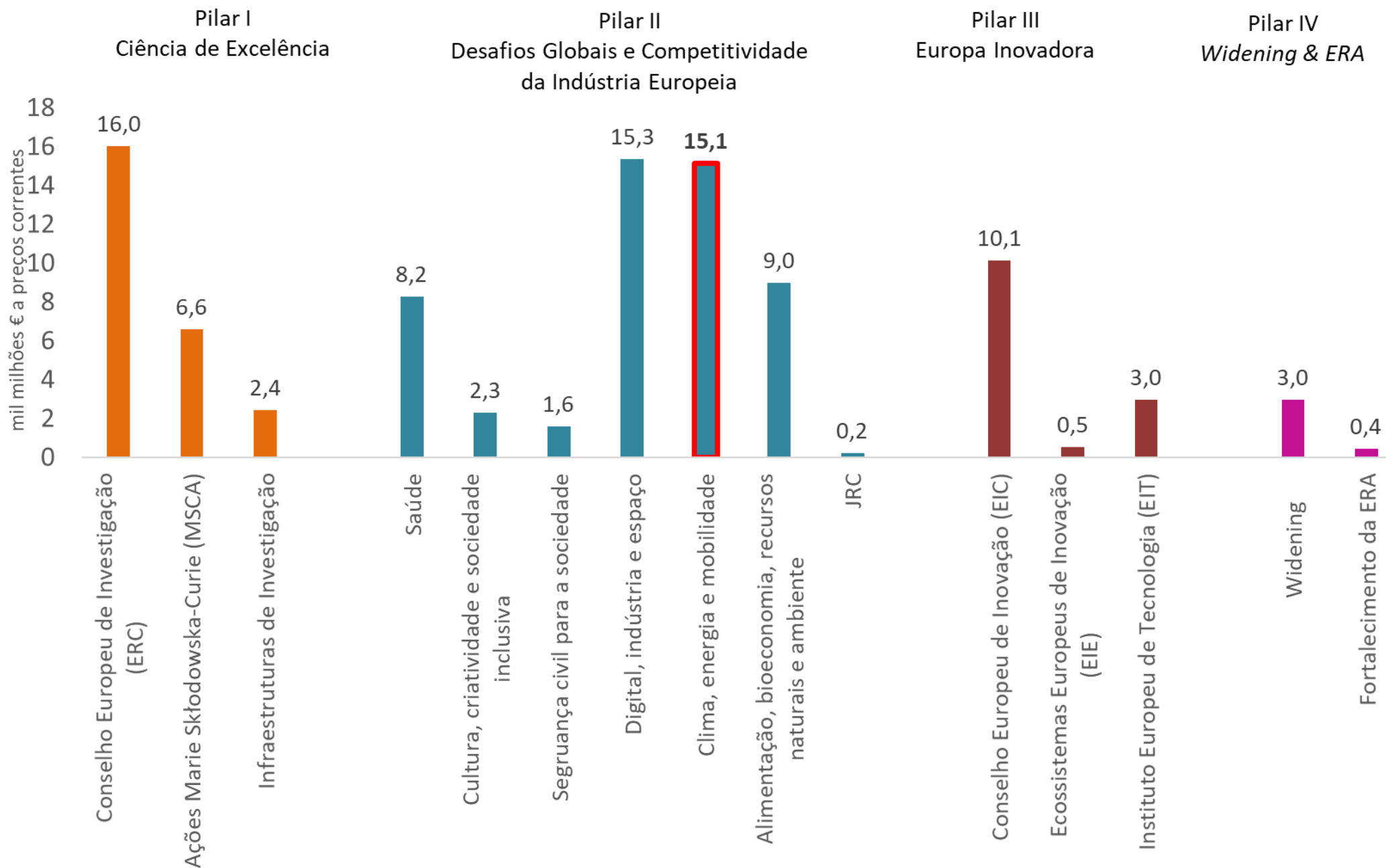
European Institute of Innovation & Technology\*

3,4 mM€

## WIDENING PARTICIPATION AND STRENGTHENING THE EUROPEAN RESEARCH AREA

Widening participation & spreading excellence

Reforming & Enhancing the European R&I system





## 2022 Work Programmes – Cluster 5

### Cluster 5

- **Climate science & responses**
- **Cross-sectorial solutions**
  - Batteries
- **Sustainable, secure and competitive energy supply**
  - Renewable energy
  - Energy systems, grid and storage
  - CCUS
- **Efficient, sustainable and inclusive energy use**
  - Buildings
  - Industry
- **Clean and competitive solutions for all transport modes**
  - Aviation
  - Waterborne transport
  - Zero-emission road transport (2ZERO)
  - Impact of transport on environment and human health
- **Safe, resilient transport and smart mobility services for passengers and goods**
  - Connected, cooperative and automated mobility (CCAM)
  - Multimodal and sustainable transport systems for passengers and goods
  - Safety and resilience



## Climate in Cluster 5

### Climate science & responses

#### Issues covered in topics 2021-2022

- **Carbon Dioxide Removal** (CDR) approaches;
- **Socio-economic** risks of climate change in Europe; **Social** science for land-use strategies in the context of climate change and biodiversity challenges;
- Development of high-resolution **Earth system models** for global and regional climate change projections;
- Improvement of **Integrated Assessment Models** in support of climate policies
- Supporting the formulation of adaptation strategies through **improved climate predictions** in Europe and beyond;
- Let nature help do the job: **Rewilding** landscapes for **carbon sequestration, climate adaptation and biodiversity support**

#### Implementation

- **2022: 8 topics** (total budget: 138 M€)

## Energy in Cluster 5

### Batteries



#### Issues covered in topics 2021-2022

- Raw material processing, advanced materials, recycling technologies, Li-ion batteries, solid state batteries, new generation technologies, manufacturing technologies, smart functionalities, testing, battery management, coordination activities

#### Implementation

- 2021: 7 topics (total budget: 160 M€)
- **2022: 10 topics** (total budget: 133 M€)



### Renewables

#### Issues covered in topics 2021-2022

- Solar energy, wind energy, biofuels, geothermal energy, hydro energy, CHP, energy carriers
- Disruptive technologies, cost reduction, improved efficiency, de-risking, integration, export potential, sustainability, market uptake

#### Implementation

- 2021: 20 topics (total budget: 335 M€)
- **2022: 24 topics** (total budget: 368 M€)



## Energy in Cluster 5

### Energy systems, grids and storage

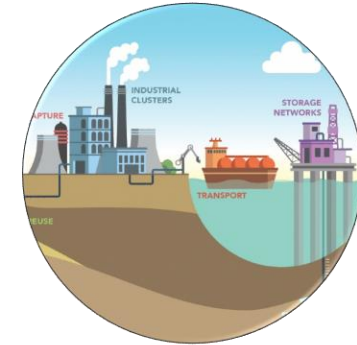


#### Issues covered in topics 2021-2022

- Energy sector integration; energy system planning and operation; grid resilience and reliability; power electronics; active consumer; markets and energy communities; digitization; thermal energy storage

#### Implementation

- 2021: 10 topics (total budget: 152 M€)
- **2022: 7 topics** (total budget: 181 M€)



### CCUS

#### Issues covered in topics 2021-2022

- CCUS hubs, application in industry, CO2 capture

#### Implementation

- 2021: 2 topics (total budget: 32 M€)
- **2022: 1 topics** (total budget: 58 M€)

## Energy in Cluster 5

### Buildings



#### Issues covered in topics 2021-2022

- Energy performance assessment and monitoring, industrialization of deep renovation, integrated technology solutions, prefabricated renovation packages, demand response, renewable intensive homes, smart buildings, design, materials, sustainability of life-cycle

#### Implementation

- 2021: 6 topics (total budget: 74 M€)
- **2022: 10 topics** (total budget: 140 M€)

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### Industry

#### Issues covered in topics 2021-2022

- Heat upgrade technologies; heat-to-power conversion; high temperature thermal storage

#### Implementation

- 2021: 2 topics (total budget: 30 M€)
- **2022: 2 topics** (total budget: 18 M€)

## Mobility in Cluster 5

*Destination 5: Clean and competitive solutions for all transport modes*

### Aviation



#### Issues covered in topics 2021-2022

- Greenhouse emissions reduction technologies; digital technologies for new aviation business models; silent and ultra-low local air pollution aircraft, etc.

#### Implementation

- 2021: 2 topics (total budget: 54 M€)
- **2022: 3 topics** (total budget: 45 M€)



### Waterborne transport (ZEWT)

#### Issues covered in topics 2021-2022

- Ammonia and hydrogen fuels; high power fuel cells; energy saving solutions; green ship operations; large battery electric power; renewable energy for shipping, etc..

#### Implementation

- 2021: 8 topics (total budget: 93,5 M€)
- **2022: 6 topics** (total budget: 96 M€)

## Mobility in Cluster 5

### *Destination 5: Clean and competitive solutions for all transport modes*

#### Zero-emission road transport (2ZERO)



##### Issues covered in topics 2021-2022

- Nextgen EV components; smart EV charging; sustainable circularity; zero-emission systems for heavy duty vehicles (BEV and FCEV); full electric urban and peri-urban Bus Rapid Transit systems, etc.

##### Implementation

- 2021: 4 topics (total budget: 94 M€)
- **2022: 4 topics** (total budget: 105 M€)



#### Impact of transport on environment and human health

##### Issues covered in topics 2021-2022

- Retrofit solutions for tailpipe and brake polluting emissions; assessment of noise and particle from real driving conditions; smog, etc.

##### Implementation

- 2021: 2 topics (total budget: 15 M€)
- **2022: 1 topic** (total budget: 7 M€)

## Mobility in Cluster 5

*Destination 6: Safe, Resilient Transport and Smart Mobility services for passengers and goods*

### Connected, Cooperative and Automated Mobility (CCAM)



Issues covered in the topics 2021-2022

- Decision-making technologies; connectivity and cooperation; cyber security; socio-economic and environmental impacts of autonomous vehicles; human behavioural models; demonstration pilots, etc.

#### Implementation

- 2021: 6 topics (total budget: 74 M€)
- **2022: 5 topics** (total budget: 88 M€)



### Multimodal and sustainable transport systems for passengers and goods

#### Issues covered in topics 2021-2022

- Multimodal freight transport; delivery methods; resilient transport infrastructure; urban logistics; shared mobility services; construction, maintenance and and decommission of infrastructures, etc.

#### Implementation

- 2021: 3 topics (total budget: 53 M€)
- **2022: 7 topics** (total budget: 91 M€)

## Mobility in Cluster 5

*Destination 6: Safe, Resilient Transport and Smart Mobility services for passengers and goods*

### Safety and resilience



#### Issues covered in topics 2021-2022

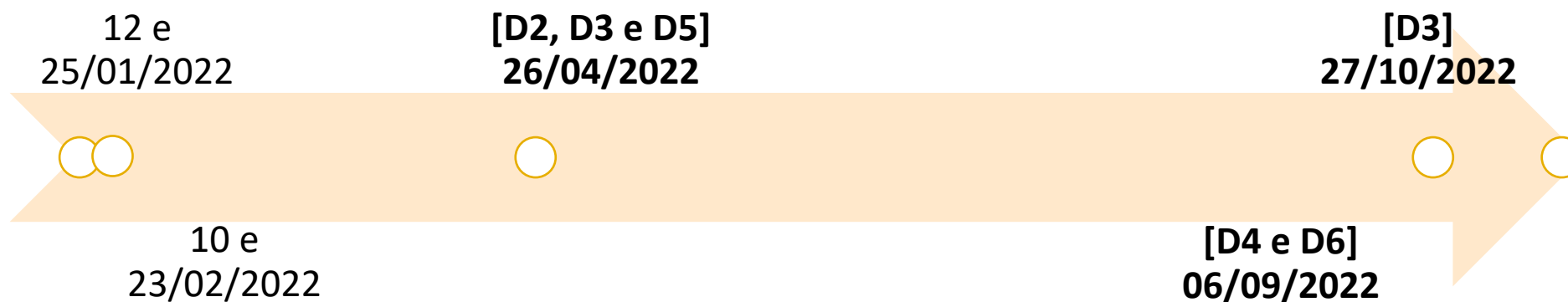
- Safe lightweight vehicles; road safety in Africa; infection on large passenger ships; human factors in aviation; safer urban environment for vulnerable road users; containership fires, etc.

#### Implementation

- 2021: 4 topics (total budget: 40 M€)
- **2022: 3 topics** (total budget: 34 M€)



## Calendário 2022



[Tópicos de I&I a concurso em 2022 nos Pilares II e III do Horizonte Europa](#)

[Climate, Energy & Mobility Info Day, 3 feb 2022](#)

# PERIN

Portugal in Europe  
Research and Innovation Network

**FCT** Fundação  
para a Ciência  
e a Tecnologia



**AICIB** AGÊNCIA DE  
INVESTIGAÇÃO  
CLÍNICA  
E INOVAÇÃO  
BIOMÉDICA

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