



# **EU RESEARCH STRATEGY**

## **Nanotechnologies and Advanced Materials**

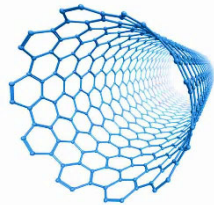
### **Now, 2020, and beyond**

# **Delivering Safe Nanotechnology**

**Dr. Carlos Eduardo Lima da Cunha**  
**European Commission**

*Research and  
Innovation*

- € 1.8 billion in FP7
- € 1.4 billion in Horizon 2020 + **€ 0.5 billion until 2020**



## Application Field

### Nanomaterials

- Health (medical devices)
- Food (packaging, food additives)
- Textile (materials, antimicrobial)
- Cosmetics
- Environment (water, soil)
- Transport (light, self-healing)
- Electronics
- Construction (coatings)



## Cross-Cutting Issues

### Nano- risk governance

- Nanodefinition
- **Risk governance**
- EU-OECD: Testing guidelines
- Standardization
- EU Observatory on nanomaterials
- Nanosafety Cluster
- Societal Acceptance
- Citizens Engagement and protection
- Industry: **Safe by Design**
- Nanosafety Council



## EU nanosafety research policy basics

**Policy:** Nanotechnologies innovation can only succeed if all possible or perceived as possible risks are convincingly managed

**2004-2006:** First efforts in nanosafety with 12 projects under FP6

**2007-2013:** Continuation with 48 projects under FP7

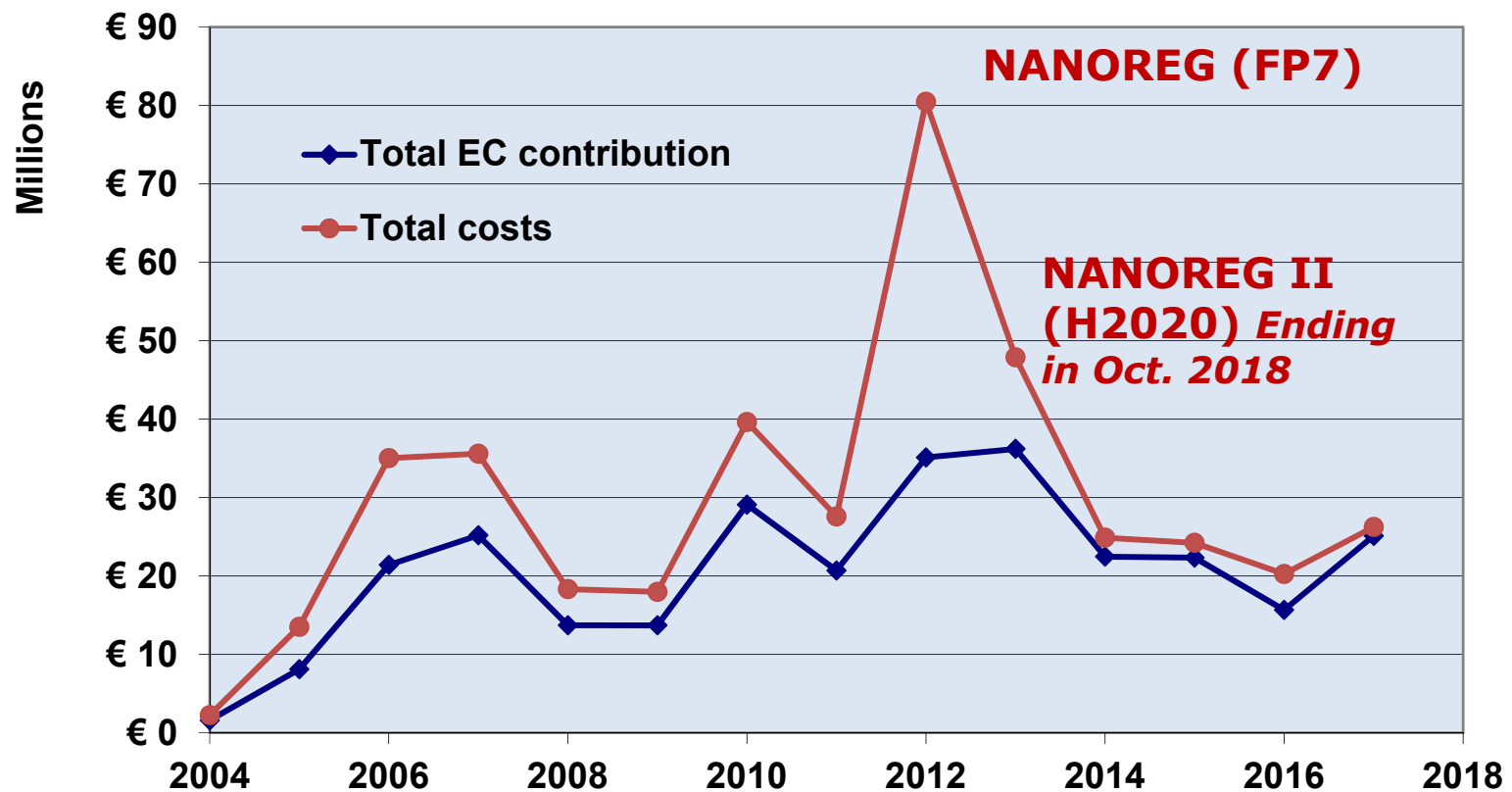
**2009:** EU nanosafety research policy actions shaped along the lines of:

- Completeness: All technical areas to be addressed: Hazard – Exposure – Risk Assessment - Safe-by-Design
- Consistency: All safety management layers to be addressed: Science and technology– regulatory research – market
- Efficiency: Synergy with Member States and International cooperation
- Continuity: A challenge

**2017:** Efforts continue under H2020 with 12 projects until now

<https://www.nanosafetycluster.eu/>

# FP7/H2020 Nanosafety Research Investment



NB: These figures do not include safety research in application-oriented projects nor nanomedicine <sup>4</sup>



## Breakthrough outcomes: White Paper from NANOREG (FP7) and PROSAFE (H2020)

### Regulatory research on risk assessment

#### **NANOREG**

50M€ joint action supported by FP7 (20%), Member States and FP7-associated states and industry (80%)

- Brings together EU MS and industry contribution to the OECD-WPMN
- A credible reply to the EP resolution of 2009 for a special fund
- Contributions from Brazil and Korea 2M€ each

#### **PROSAFE**

CSA PROSAFE complemented NANOREG and supported International cooperation

*White Paper with contributions from several EU projects has been presented and discussed in a conference at OECD Paris, on 29/11-1/12/2016 and published in March 2017. Currently under consideration at the OECD-WPMN*

<http://www.oecd.org/env/ehs/nanosafety/>



## Promising Horizon2020 projects

### ***ACEnano and npScope started on 1<sup>st</sup> Jan. 2017***

- *Analytical techniques and tools in support of nanomaterial **risk assessment***

### ***EC4SafeNano started on 1st Nov. 2016***

- *Promoting safe innovation through consolidation and networking of **nanosafety** centres*

### ***PATROLS started on 1st Jan. 2018***

- *Advanced and realistic models and assays for nanomaterial **hazard assessment***

### ***GRACIOUS started on 1st Jan. 2018***

- *Framework and strategies for nanomaterial characterisation, classification, grouping and read-across for **risk analysis***



## Upcoming Horizon2020 projects

### **RiskGONE**

- *Risk Governance of Nanotechnology*

### **NANORIGO**

- *Establishing a Nanotechnology Risk Governance Framework*

### **Gov4Nano**

- *Implementation of Risk Governance: meeting the needs of nanotechnology*

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### **NanoSolveIT**

- *Innovative Nanoinformatics models and tools: towards a Solid Verified and Integrated Approach to Predictive (eco)Toxicology*

### **NanoInformaTIX**

- *Development and Implementation of a sustainable Platform for Nanoinformatics*



## NMBP 2018-20 nanosafety main directions

- **Integration of:**
  - scientific, regulatory and market phases
  - civil society for governance
  - additional funding from MS sources or industry possible
- **International cooperation** strongly encouraged
- **Cross project collaboration** necessary
- Launch of **specific calls** possible
- **Open access and open data** access applied
- **Respect of ontology** and of data logging format
- Strong **support to EU regulatory bodies**, OECD, ISO, CEN





## **NMPB WP 2018-20 Nano-related calls**

### **GOVERNANCE, SCIENCE-BASED RISK ASSESSMENT AND REGULATORY ASPECTS**

**2018:** Risk Governance of nanotechnology (OECD Test Guidelines and GLP documents to be supported)

**2018:** Nanoinformatics: from materials models to predictive (eco)toxicology

**2019:** Safe by design, from science to regulation: metrics and main sectors

**2020:** Safe by design, from science to regulation: behaviour of multi-component nanomaterials

**2020:** Regulatory science for medical technology products

**2019 - 2020: An additional topic is proposed for supporting documentary standards (OECD, ISO/CEN)**



## NMPB WP 2018-20 Nano-related calls

### Materials Characterisation and Computational Modelling

**2018:** Open Innovation Test Beds for Characterisation (IA)

**2019:** Real-time nano-characterisation technologies (RIA)

**2018:** Accelerating the uptake of materials modelling software (IA)

**2019:** Adopting materials modelling in manufacturing processes (RIA)

**2020:** Open Innovation Test Beds for Materials Modelling (IA)

**2019:** Sustainable Nano-Fabrication (CSA)

[cooperation with the nanomanufacturing programme of USA-NSF and the NNI Signature initiative]



## NMPB WP 2018-20 Nano-related calls

### FOUNDATIONS FOR TOMORROW'S INDUSTRY OPEN INNOVATION TEST BEDS

- 2018:** Lightweight, nano-enabled multifunctional composite materials and components (IA)
- 2018:** Safety Testing of Medical Technologies for Health (IA)
- 2019:** Nano-enabled surfaces and membranes (IA)
- 2020:** Bio-based nano-materials and solutions (IA)
- 2020:** Functional materials for building envelopes (IA)
- 2020:** Nano-pharmaceuticals production (IA)

# European Union Observatory for Nanomaterials (EUON)

## Aims of EUON

1. Trustworthy **source of information** for different audience: regulators, scientists and researchers, consumers and general public, workers, NGOs, industry and other stakeholders...
2. Objective and reliable information on the market and safety of nanomaterials in the EU:
  - Collection and analysis of information from a wide variety of existing sources
  - Supplement existing information with external studies
  - Present the information on uses and safety of nanomaterials in a user friendly way

<https://euon.echa.europa.eu/>



Commission proposal for  
**Horizon Europe**

THE NEXT EU RESEARCH & INNOVATION  
PROGRAMME (2021 – 2027)

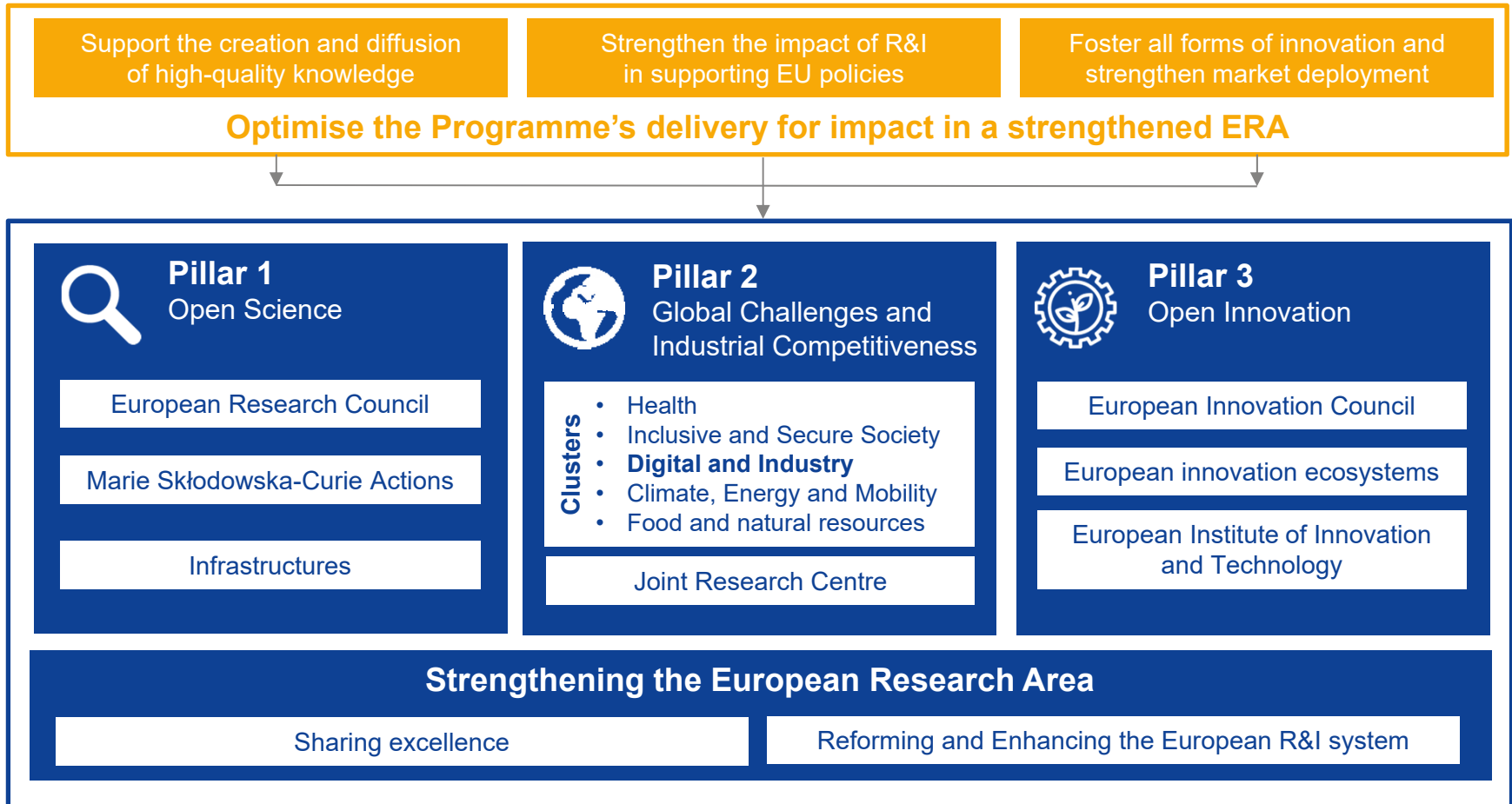
#HorizonEU



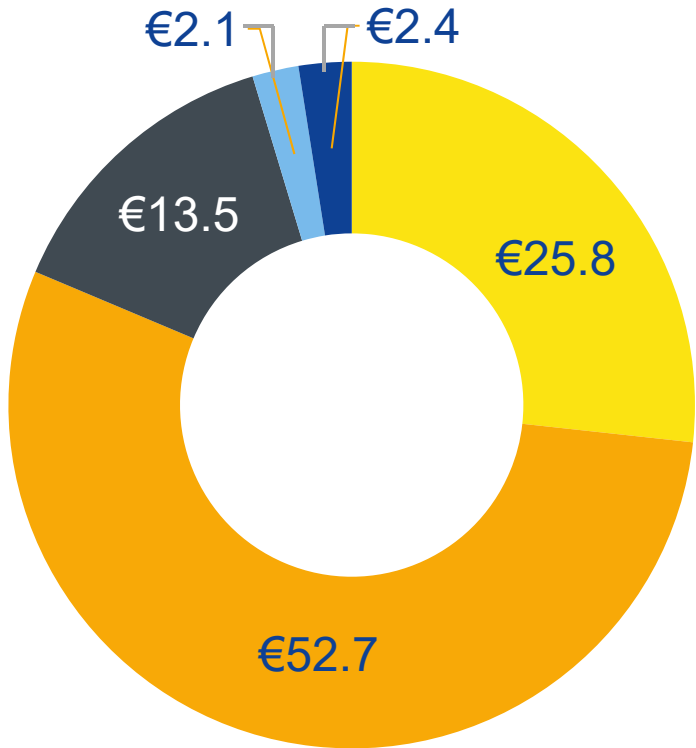
*Research and  
Innovation*

# Horizon Europe: evolution not revolution

## Specific objectives of the Programme



# Budget: €100 billion\*



€ billion  
In current prices

- Open Science
- Global Challenges & Ind. Competitiveness
- Open Innovation
- Strengthening ERA
- Euratom

\* This envelope includes EUR 3.5 billion allocated under the InvestEU Fund.



**Thank you!**  
**Danke!**  
**Merci!**

**Find out more:**

**[http:// ec.europa.eu/research/horizon2020](http://ec.europa.eu/research/horizon2020)**

**<http://ec.europa.eu/horizon-europe>**