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RETOS SSbD PARA MATERIALES AVANZADOS  
29/JUNIO/2023



## *Seguro y Sostenible por Diseño: Motivación Política y Estratégica.*

HORIZONTE  
  
EUROPA  
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- Contexto Político
- SSbD Framework
- SSbD en Horizonte Europa:
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# Policy context for SSbD

## The EU Green Deal



Zero pollution



Climate neutrality



Circular economy

## Chemicals Strategy for Sustainability (CSS)

Strengthen the protection of human health and the environment

- driving innovation to design and develop safe and sustainable chemicals and materials
- phase out the **most harmful substances** and
- substitute, as far as possible, **substances of concern**, and otherwise minimise their use and track them

## CSS Action Plan

Develop safe and sustainable-by-design (SSbD) criteria for chemicals



# SSbD in the EU CSS



- *Safe and sustainable by design can be defined as a **pre-market approach** to chemicals and materials design that focuses on providing a function (or service), while **avoiding volumes and chemical and material properties that may be harmful to human health or the environment, in particular groups of chemicals likely to be (eco)toxic, persistent, bio-accumulative or mobile.***
- *Overall sustainability should be ensured by minimising the environmental footprint of chemicals and materials in particular in relation to **climate change, resource use, and protecting ecosystems and biodiversity, adopting a lifecycle perspective.***

*(Definition adapted from EU Chemicals Strategy for Sustainability).*

**Framework** to define safe and sustainable by design (SSbD) criteria for chemicals and materials that should contribute to achieve the CSS ambitions, **beyond current regulatory compliance.**

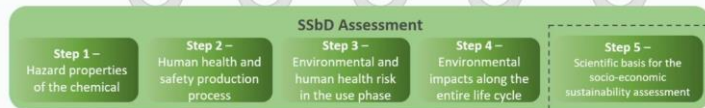
\*Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. **Chemicals Strategy for Sustainability** Towards a Toxic-Free Environment COM (2020) 667 [https://ec.europa.eu/environment/strategy/chemicals-strategy\\_en](https://ec.europa.eu/environment/strategy/chemicals-strategy_en)

# SSbD framework: The objectives

- ✓ Drive innovation toward **Safe and Sustainable by Design new** chemicals and materials
- ✓ Providing **guidance** on criteria development for the design of **new** 'safe' and 'sustainable' chemicals/materials;
- ✓ **Minimising or, as far as possible, eliminating the impact on human health, climate and the environment** (air, water, soil) along the entire chemical's and material's life cycle;
  - Phase out the **existing** most harmful substances
  - Substitute, as far as possible, **existing** substances of concern, and otherwise minimise their production and use and track them
- ✓ Enabling **comparative assessment of new/existing** chemicals and materials based on safety and sustainability performance for a given function or application context.

Strategies and principles can be followed such as:

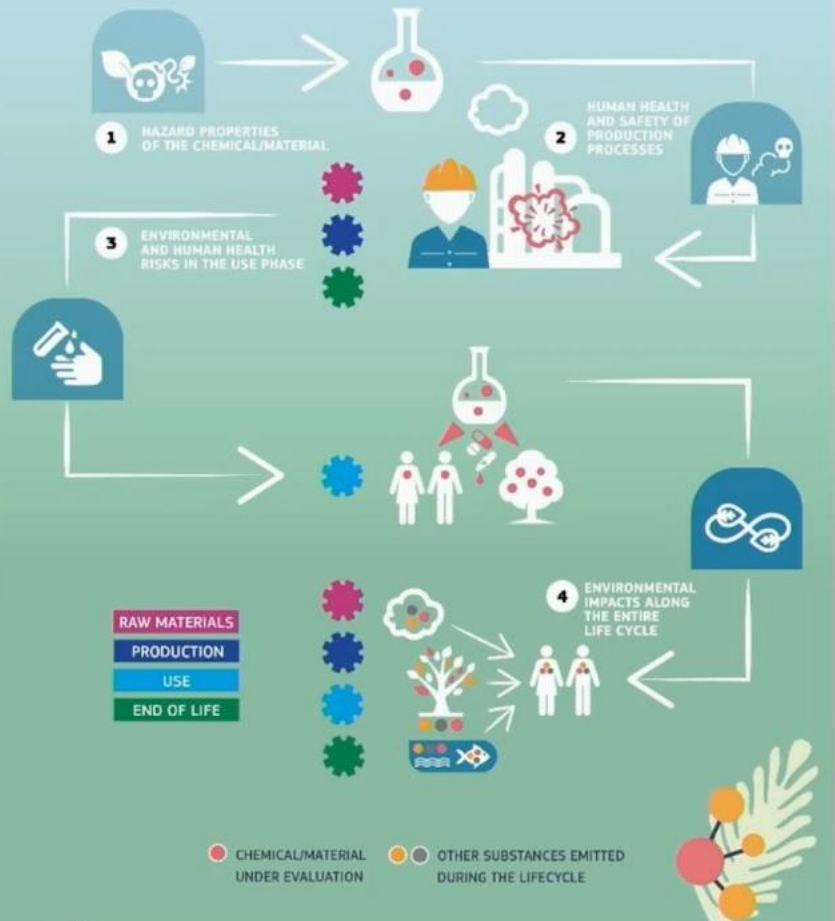
- Green chemistry
- Green engineering
- Sustainable Chemistry
- Safe by design
- ...



# Important information

- SSbD is an **R&I approach** to promote use of the latest scientific knowledge, **harmonize assessments** and to meet ambitious levels for **safety and sustainability in innovation**.
- SSbD is **voluntary** and promoted **within R&I actions** across EU research programmes, especially Horizon Europe. Member States, industry, academia and RTOs are invited to promote the use of SSbD in innovation.
- **SSbD is neither a regulation, nor mandatory**

## Safety and sustainability assessment



## SSbD framework: The assessment

- The safety and sustainability assessment includes four steps:
  - **Step 1** - Hazard assessment of the chemical/material
  - **Step 2** - Human health and safety aspects in the chemical/material production and processing phase
  - **Step 3** - Human health and environmental aspects in the final application phase
  - **Step 4** - Environmental sustainability assessment

For each step the framework refers to:

Aspects and indicators

Methodology and tools

Proposal for the definition of criteria

Evaluation procedure



European Commission

# Testing the Framework: Case studies



Group of chemicals	Application
Plasticisers ( <i>non-phthalate</i> )	Food contact materials (FCM)
Surfactants	Textiles processing (e.g. scouring)
Flame retardants ( <i>halogen-free</i> )	Information and communications technology (ICT) products

## Lessons learned:

- It can be applied !!
- DATA is the main challenge
- Adaptation of assessment steps to each innovation stage.
- Develop guidelines for decision making.



# The EC Recommendation: Purpose and scope

Proposes a **European framework** for 'safe and sustainable by design' chemicals and materials for **R&I activities**.

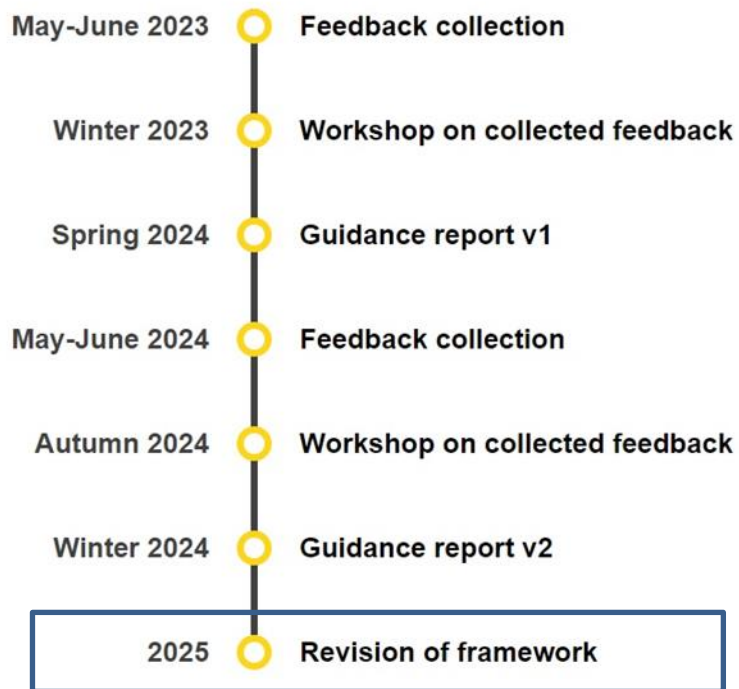
Addressed to Member States, industry, academia and research and technology organisations (RTOs).

- The purpose of this Recommendation is to test the framework and get feedback to be able to improve relevance, reliability and operability.
- Results obtained from applying the framework will make it possible to define 'safe and sustainable by design' criteria.



# Testing Period: 2 years

## Timeline





## Presupuesto Horizonte Europa: lo que sabemos, 95.517 MEUR

PILAR 1 – CIENCIA EXCELENTE	25.011	PILAR 2 - RETOS MUNDIALES Y COMPETITIVIDAD INDUSTRIAL EUROPEA	53.516	PILAR 3 – INNOVACIÓN ABIERTA	13.597
ERC - Consejo Europeo de Investigación	16.004	Clúster 1 - Salud	8.246	EIC- Consejo Europeo de Innovación	10.105
MSCA - Acciones Marie Skłodowska-Curie	6.602	Clúster 2 - Cultura, creatividad y sociedad inclusiva	2.280	Ecosistemas de innovación europea	527
Infraestructuras de investigación	2.406	Clúster 3 - Seguridad	1.596	EIT - Instituto Europeo de Innovación y Tecnología	2.965
		<b>Clúster 4 - Digital, industria y espacio</b>	<b>15.349</b>		
		Clúster 5 - Clima, energía y movilidad	15.123		
		Clúster 6 - Alimentación, bioec. recursos naturales, agricultura y MA	8.952		
		JRC – Centro Común de Investigación	1.970		

<b>Ampliar la Participación y Fortalecer el Espacio Europeo de Investigación</b>	<b>3.393</b>
Ampliar la participación y difundir la excelencia	2.955
Reformar y mejorar el sistema europeo de la I+i	438

Incl 5.000 M€ Next Generation EU

Incl 4.000 M€ (acuerdo político MFP)

# SSbD en Horizonte Europa

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## 2021-2022

Primeros topics de SSbD (58 M€)

- CSA: IRISS
- RIAs: polymeric materials, metallic, organic and hybrid coatings

*Informes del JRC y PARC toolkit*

## 2023-2024

Topics de SSbD en cluster 4 (132 M€)

- RIAs: Desarrollo de métodos, modelización...
- IA: desarrollo de casos de estudio.

Referencias al SSbD framework en topics de cluster 5 y 6.



# Topics SSbD : WP 2021-22

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## Primeros topics de SSbD (58 M€)

- HORIZON-CL4-2021-RESILIENCE-01-08: Establishing **EU led international community** on SSbD materials to support embedding sustainability criteria over the life cycle of products and processes **(CSA)**
- HORIZON-CL4-2021-RESILIENCE-01-11: SSbD **polymeric materials** (RIA)
- HORIZON-CL4-2021-RESILIENCE-01-12: SSbD **metallic coatings and engineered surfaces** (RIA)
- HORIZON-CL4-2022-RESILIENCE-01-23: SSbD **organic and hybrid coatings** (RIA)

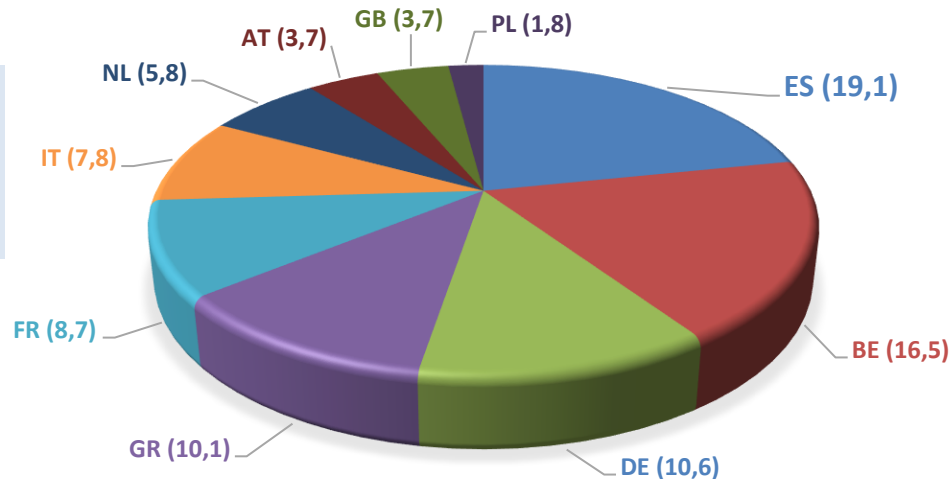


# Resultados provisionales SSbD 2021

**España país con mayor participación en topics SSbD**  
**90% propuestas con participación ES**  
(27 de 30 propuestas presentadas)

**Resultados:**  
**ES 1er país en retorno en**  
**topics SSbD**

## SAFE SUSTAINABLE BY DESIGN RESULTADOS 2021



# Resultados provisionales SSbD 2021

22 participaciones ES  
8,4 M€ para entidades ES  
(20,6%UE / 19,1%total)

2 de 9 proyectos coordinados ES  
(22,2%): CIDAUT, CIDETEC



SAFE SUSTAINABLE BY DESIGN ES 2021  
TIPO DE ENTIDAD





# Conclusiones convocatorias 2021-22

Éxito de las entidades españolas en las primeras convocatorias de SSbD

Muy interesante seguir participando:

- Aumento presupuesto para 2023-24 (132 M€)
- Tasa de éxito mayor que en otros topics de materiales.

El concepto SSbD se va extendiendo a otras áreas/topics del programa:  
Cluster 4, 5 y 6.

# Programa de Trabajo 2023-24

## Oportunidades para Seguro y Sostenible por Diseño

### CLUSTER 4 - DESTINATION 2:

#### Safe and Sustainable by Design (SSbD) chemicals and materials

- HORIZON-CL4-2023-RESILIENCE-01-21: Innovative methods for safety and sustainability assessments of chemicals and materials (RIA)
- HORIZON-CL4-2023-RESILIENCE-01-22: Integrated approach for impact assessment of safe and sustainable chemicals and materials (RIA)
- HORIZON-CL4-2023-RESILIENCE-01-23: Computational models for the development of safe and sustainable by design chemicals and materials (RIA) (Lump sum)
- HORIZON-CL4-2024-RESILIENCE-01-24: Development of Safe and Sustainable by Design alternatives (IA)

En  
evaluación

# Programa de Trabajo 2023-24. SSbD.

2024

## **HORIZON-CL4-2024-RESILIENCE-01-24: Development of Safe and Sustainable by Design alternatives (IA)**

### Scope:

Develop one or more **new chemical /material to replace substances of concern** with surfactant, flame retardant or plasticizing functionalities. At least on industrial application.

- **Proof of concept** of the SSbD framework.

### Projects are expected to contribute to the following outcomes:

- European industry will have access to safer and more sustainable innovative alternatives of chemicals and materials with reduced substitution barriers (e.g., performance, cost and supply demand);
- Industry will be able to test and demonstrate the applicability of the Safe and Sustainable by Design framework to develop innovative chemicals or materials to substitute substances of concern ;
- Contribution of decrease of emissions through a more sustainable production and use of SSbD chemicals and materials;
- Support to the EU strategies/policies and regulation, such as the proposal for the Ecodesign for Sustainable Products Regulation<sup>200</sup>, the EU Ecolabel<sup>201</sup>, REACH<sup>202</sup> or CLP<sup>203</sup>.

Indicative budget: 59 million EUR

EU contribution per project: EUR 12-15 million

Type of Action: Research and Innovation Actions

TRL: Achieve TRL 6-7 by the end of the project



### Deadline:

7 febrero 2024

# Información Práctica

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**Registro como Stakeholder** para seguir el trabajo de Safe and Sustainable by Design:

Cuestionario - <https://ec.europa.eu/eusurvey/runner/9c66713d-15e4-b8ea-36b4-d5d1d8b471db>

**Web SSbD de la CE:**

[https://research-and-innovation.ec.europa.eu/research-area/industrial-research-and-innovation/key-enabling-technologies/chemicals-and-advanced-materials/safe-and-sustainable-design\\_en](https://research-and-innovation.ec.europa.eu/research-area/industrial-research-and-innovation/key-enabling-technologies/chemicals-and-advanced-materials/safe-and-sustainable-design_en)

+info sobre programas y ayudas CDTI  
para  
proyectos de I+D empresarial e innovación



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