

Alternative Chemicals and Materials integrating Safety, Sustainability, new Production technologies and Socio- economic aspects (**AlChemiSSts**)

HORIZON-CL4-2024-RESILIENCE-01-24

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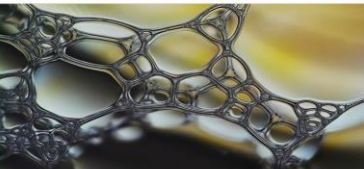
Date: 29 – November - 2024



Overall view

Goal → to **test and demonstrate the applicability of the SSbD framework to develop innovative chemicals or materials to replace SVHC in high-impact markets**, including surfactants, plasticizers, and flame retardants in relevant value chains, including metal working fluids (MWFs), lubricants, insulation foams and paints, safety boots and wellies, battery cases and sports mats..


Value Chain 1. Alternative Surfactants



Substitution of Petrol based Surfactants

- Paints
- Metalworking Fluids and industrial oils (lubricants)

Value Chain 2. Alternative Flame Retardants



Substitution of Sb2O3 and MCCPs

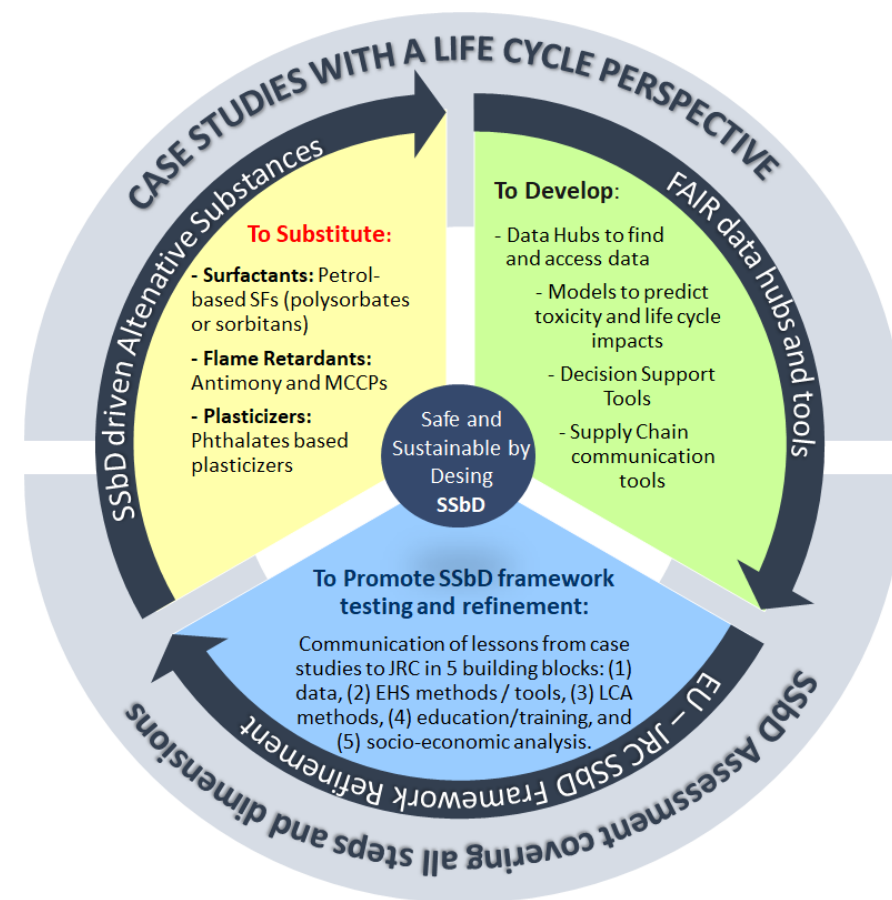
- Safety footwear
- Insulator foams
- Battery cases

Value Chain 3. Alternative Plasticizers



Substitution of phthalates-based plasticizers

- Coated textiles
- Rubber boots (wellies)



Overall view



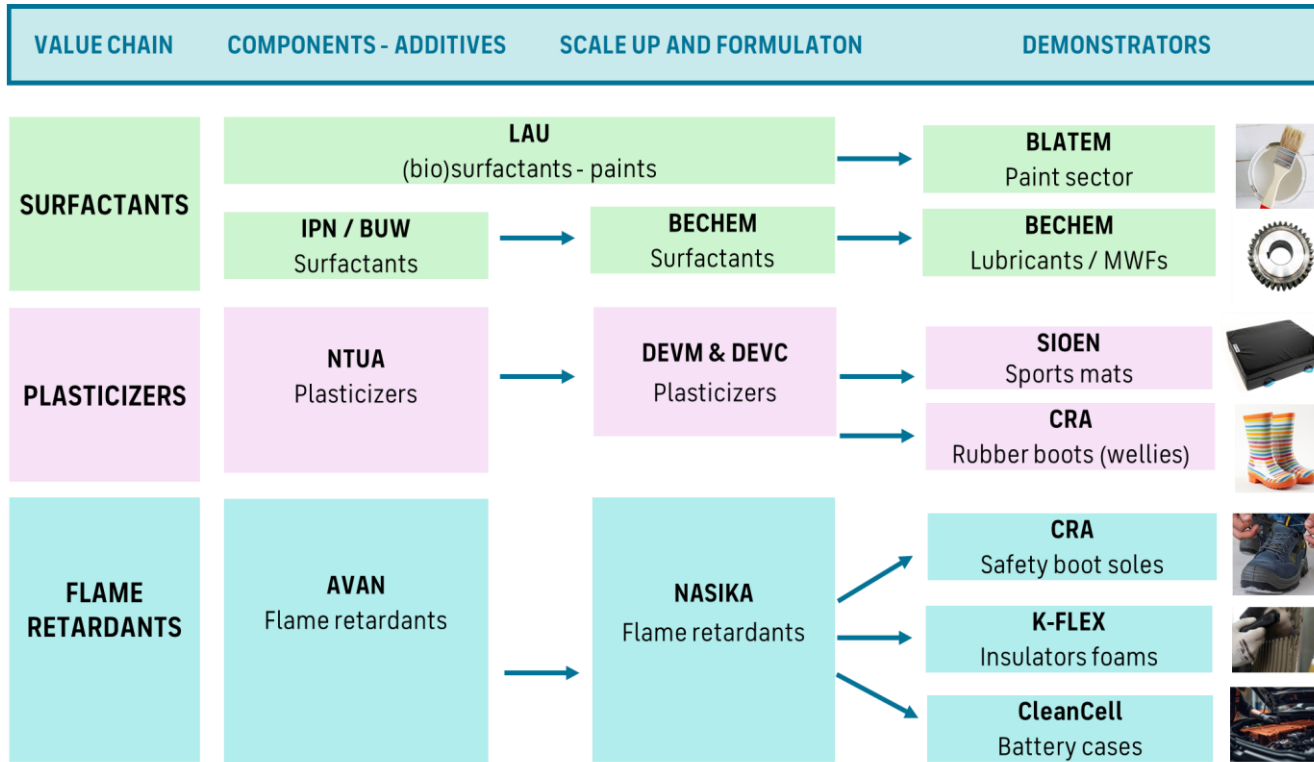
Key Objectives

- Develop **new SSbD-driven alternatives** with surfactant, flame retardant or plasticizing functionalities
- Generate **evidence and documentation for a “Proof of Concept” of the applicability of the SSbD Framework**
- Develop a **SSbD certification methodology** to promote SSbD implementation.
- Implement **integrated approaches and tools to support safety, sustainability and social assessment** based on interoperable FAIR data and models
- **Demonstrate the application of the SSbD framework** to targeted applications and use cases,

Key Numbers

- 25 Members
- Duration: 48 Months
- Case studies: 7 cases / 8 companies

Case studies and value chains



Objectives

SO1.1. Development of alternatives for Surfactants Value Chain.
 Sugar-based fatty acid esters from glucose, sorbitol or acylated proteins **to substitute ethoxylated polysorbates or sorbitans** used in paints, **alkoxy ester or fatty acids** in metal working fluids, and **zinc salts and naphthenic acids** additives in lubricants.

SO1.2. Development of alternatives for Flame Retardants Value Chain. Phosphorus-based additives, inorganic salts, and biobased additives, such chitosan, lignin, alginate **to substitute Sb₂O₃** used in safety footwear, and Medium chain chlorinated paraffins (**MCCPs**) in insulation foams and battery cases.

SO1.3. Development of alternatives for Plasticizers Value Chain
 Vegetable oil-based epoxy fatty acid esters and rosin or furan-based esters **to substitute in use very harmful phthalates-based plasticizers** (e.g., DEHP, DOP, DIBP or DBP).



Methodology

Integrated Human and Environmental safety profiling

- **Information exchange across the entire value chain**, from raw material extraction through to waste management, reuse, and recycling
- **Tox**: data gap analysis + application of occupational models and NAMs to generate data
- **Exposure**: data gaps + hot spots definition using models + advanced models and monitoring
- **Consumer**: data gaps + hot spots definition using models + advanced models
- **Sustainability**: uses adapted qualitative questionnaires for hotspot identification and a semi-quantitative methodology for evaluating socioeconomic impacts of design alternatives
- **Data**: Multi-criteria Decision Analysis Tools and Development of an interoperable FAIR Data Hub for data sharing and management

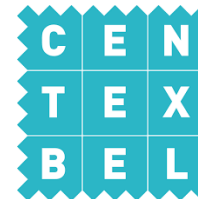
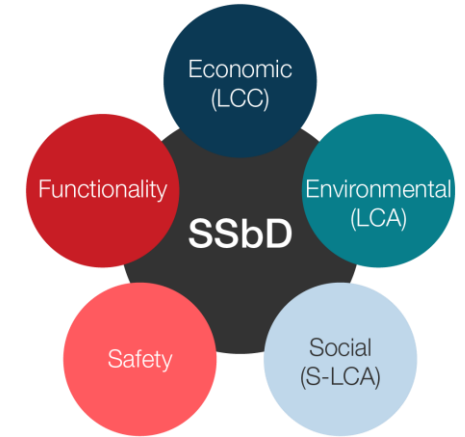


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Methodology

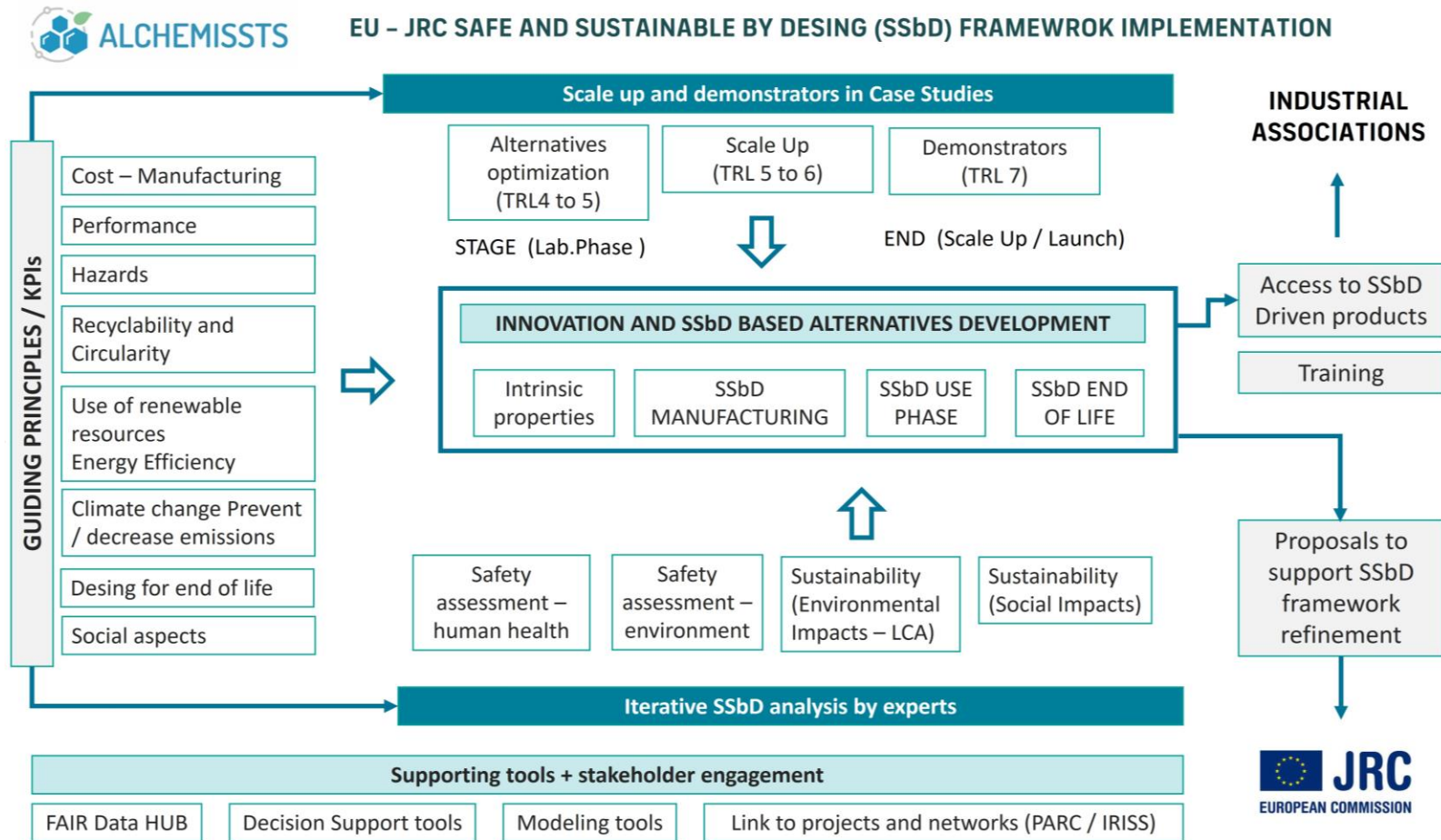
SSbD implementation

- Identify potential challenges faced by the industry to implement **SSbD criteria in realistic scenarios**,
- Provide **recommendations considering the whole product value chain and the strategic vision of the industry**,
- Define a **SSbD-based product passport** for sharing essential products' safety and sustainability information and outline a certification scheme.

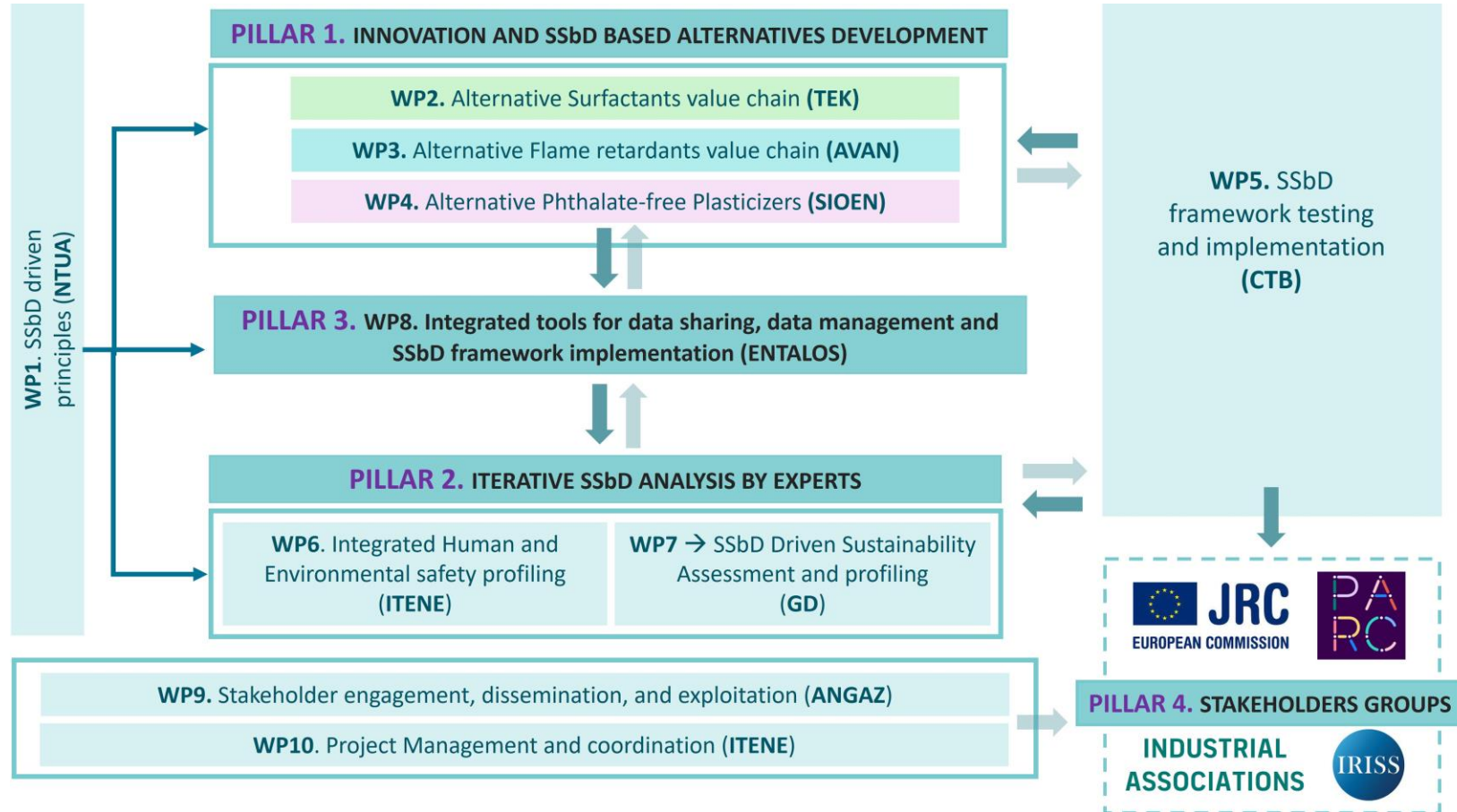


Center for Social
Innovation

Methodology



Methodology





Thank you!

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