Safe and Sustainable by Design – what to expect for chemicals of the future?

MAVESZ Chemical Industry Conference

19 October 2022

The European Chemical Industry Council, AISBL – Rue Belliard, 40 - 1040 Brussels – Belgium
Transparency Register n°64879142323-90

The CSS Vision – Towards a toxic-free environment

Interplay of regulatory measures and innovation support

REACH review, ESPR, …

Safe and Sustainable-by-Design

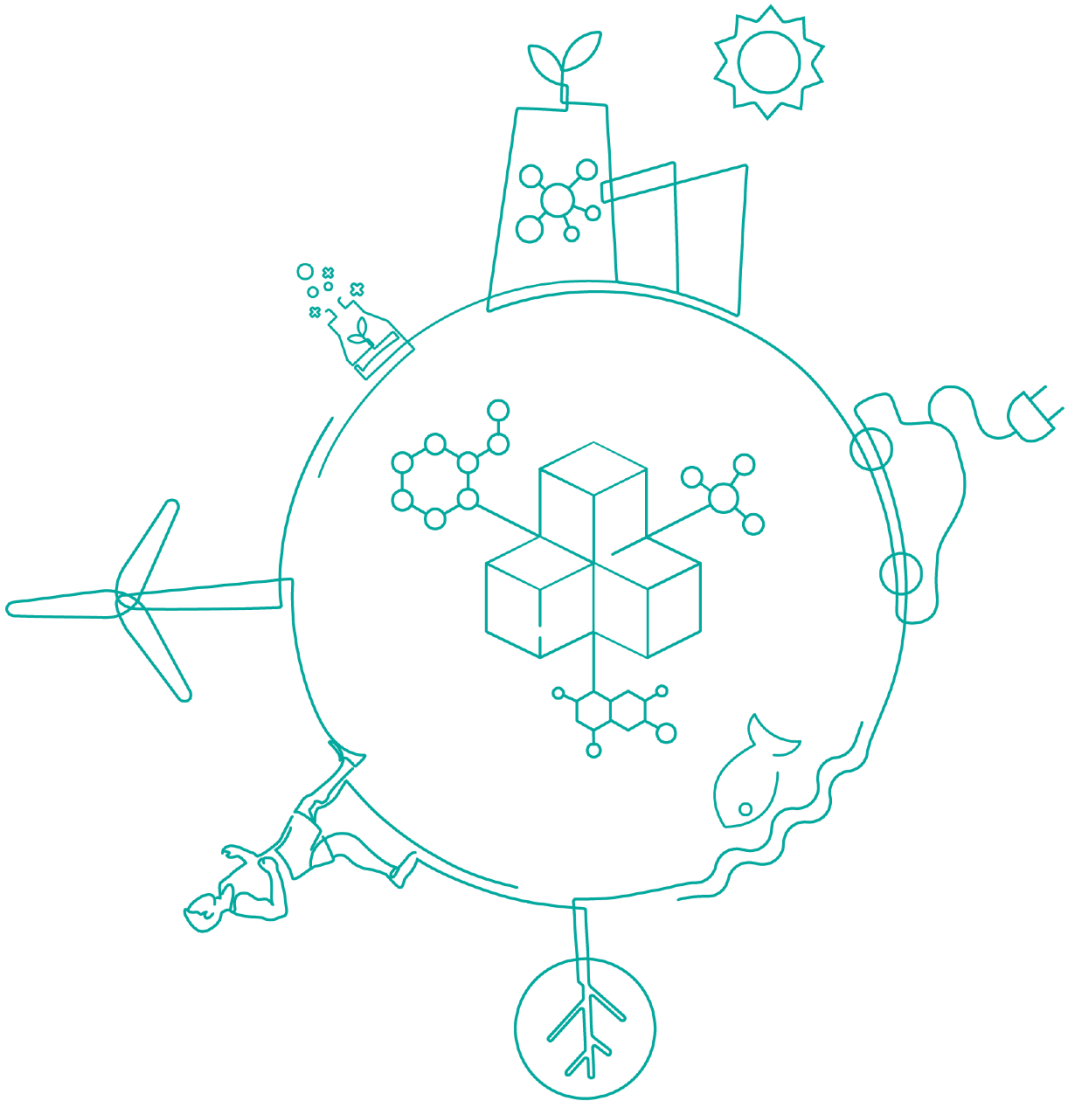
SAFE AND SUSTAINABLE BY-DESIGN:
BOOSTING INNOVATION AND GROWTH WITHIN THE EUROPEAN CHEMICAL INDUSTRY

The European Chemical Industry Council, AISBL – Rue Belliard, 40 - 1040 Brussels – Belgium - Transparency Register n°64879142323-90

"Chemicals are produced/used in a way that maximises their benefits to society while avoiding harm to planet & people and production and use of safe and sustainable chemicals in Europe becomes a benchmark worldwide…"

As the European chemical industry, we share this vision from the Chemicals Strategy for Sustainability

Safe and Sustainable-by-Design is the way to get us there



How does Cefic define Safe and Sustainable-by-Design?

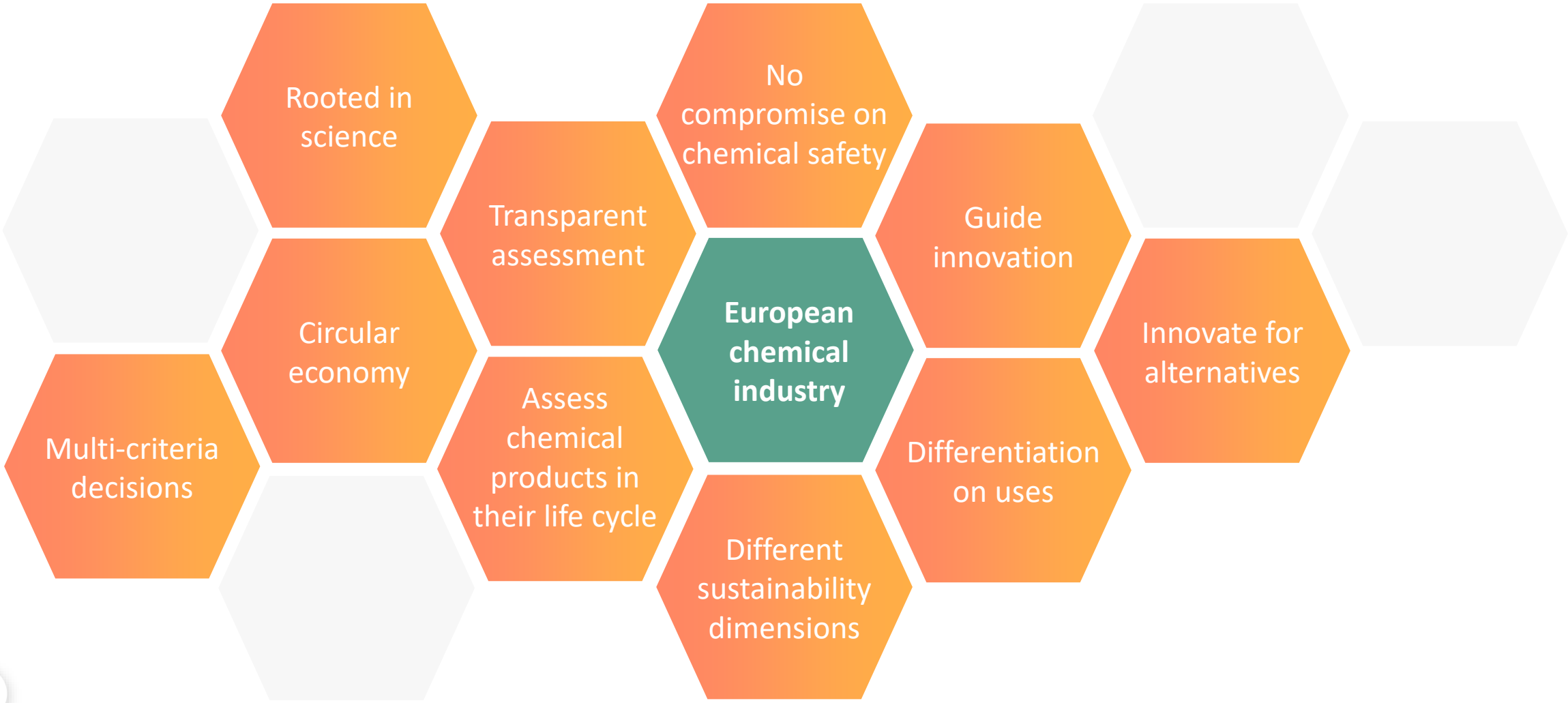
Safe and Sustainable-by-Design is a process to innovate and put on the market chemicals, materials, products and technologies that are:

- safe, and
- deliver environmental, societal, and/or economical value through their applications.

ENABLE:

- Accelerating the transition towards a circular economy and climate-neutral society
- Preventing harm to human health and the environment throughout the life cycle

Principles taking the concept forward

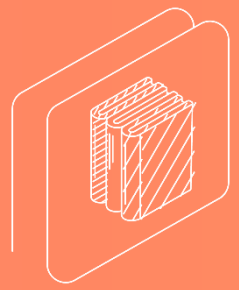


Towards design criteria

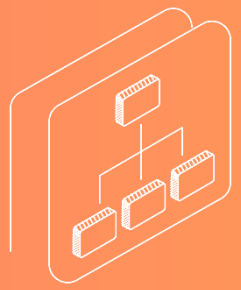
Taking the Safe and Sustainable-by-Design concept successfully forward will need a set of harmonised criteria and an assessment framework.

Cefic proposes 4 steps to define criteria that can be used to assess the impact of a new or alternative process or product throughout an innovation process.

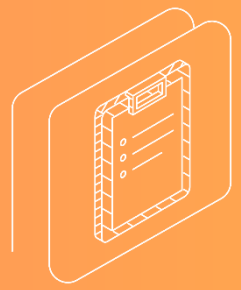
1
MAP EXISTING CRITERIA



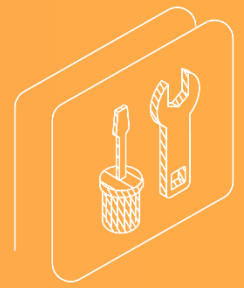
2
ASSESSMENT FRAMEWORK



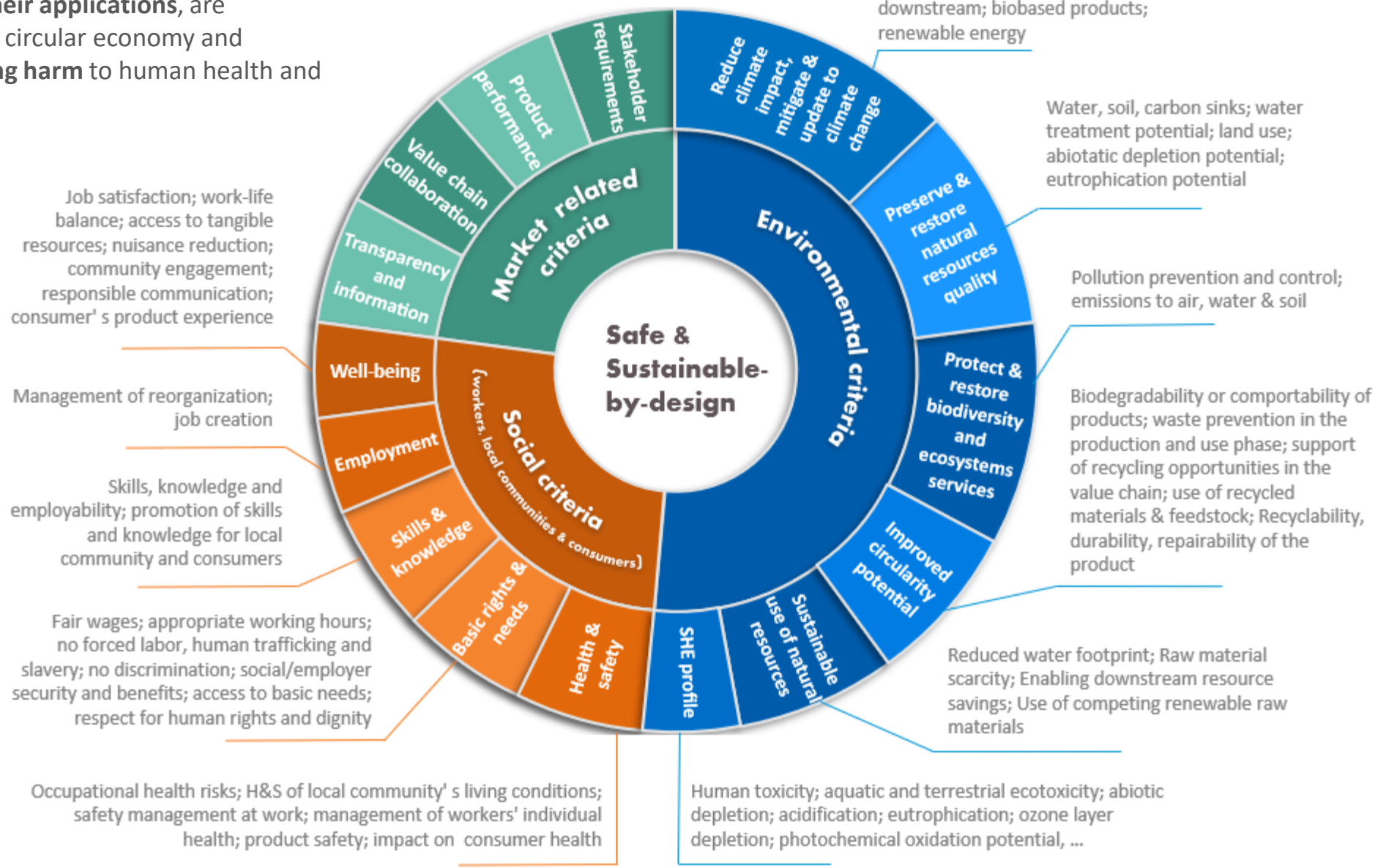
3
KEY CRITERIA FOR EVALUATION



4
TOOLS & DATA INVENTORY



Safe and sustainable by design: process to bring **products & technologies** to the market that are safe, bring environmental, economic and social value **through their applications**, are **accelerating the transition** towards a circular economy and climate-neutral society and **preventing harm** to human health and the environment.



We are talking about an innovation journey

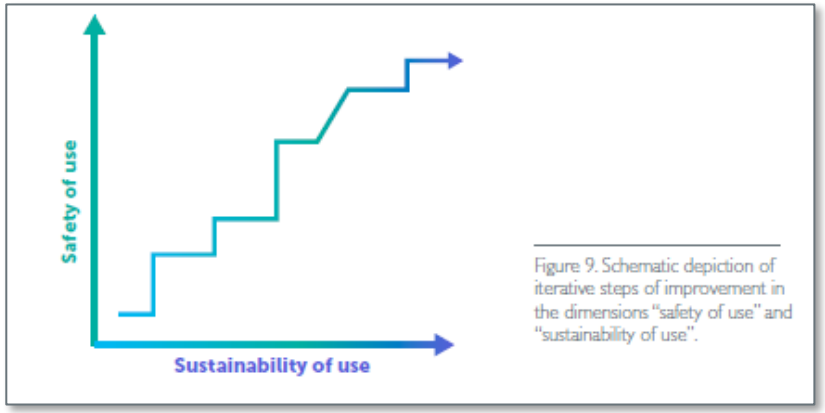


Figure 9. Schematic depiction of iterative steps of improvement in the dimensions "safety of use" and "sustainability of use".

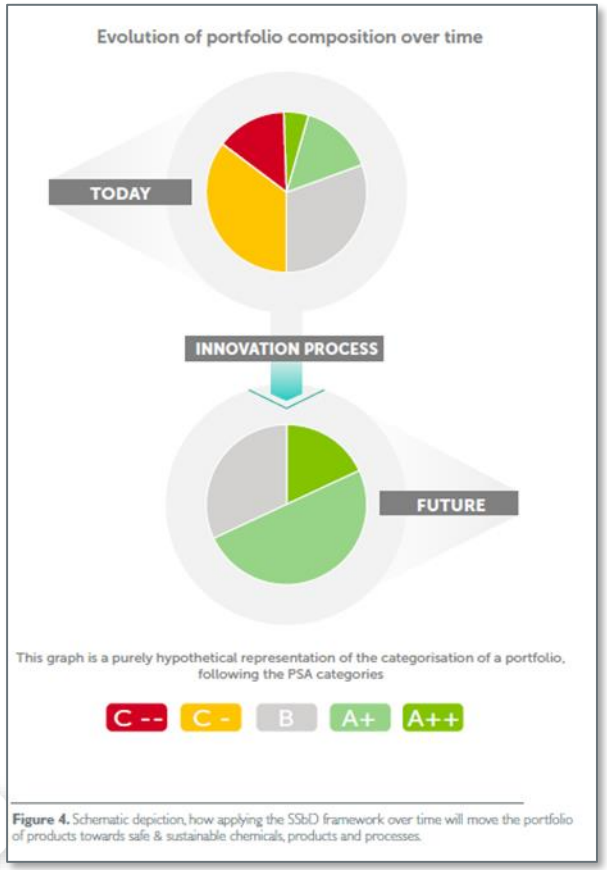
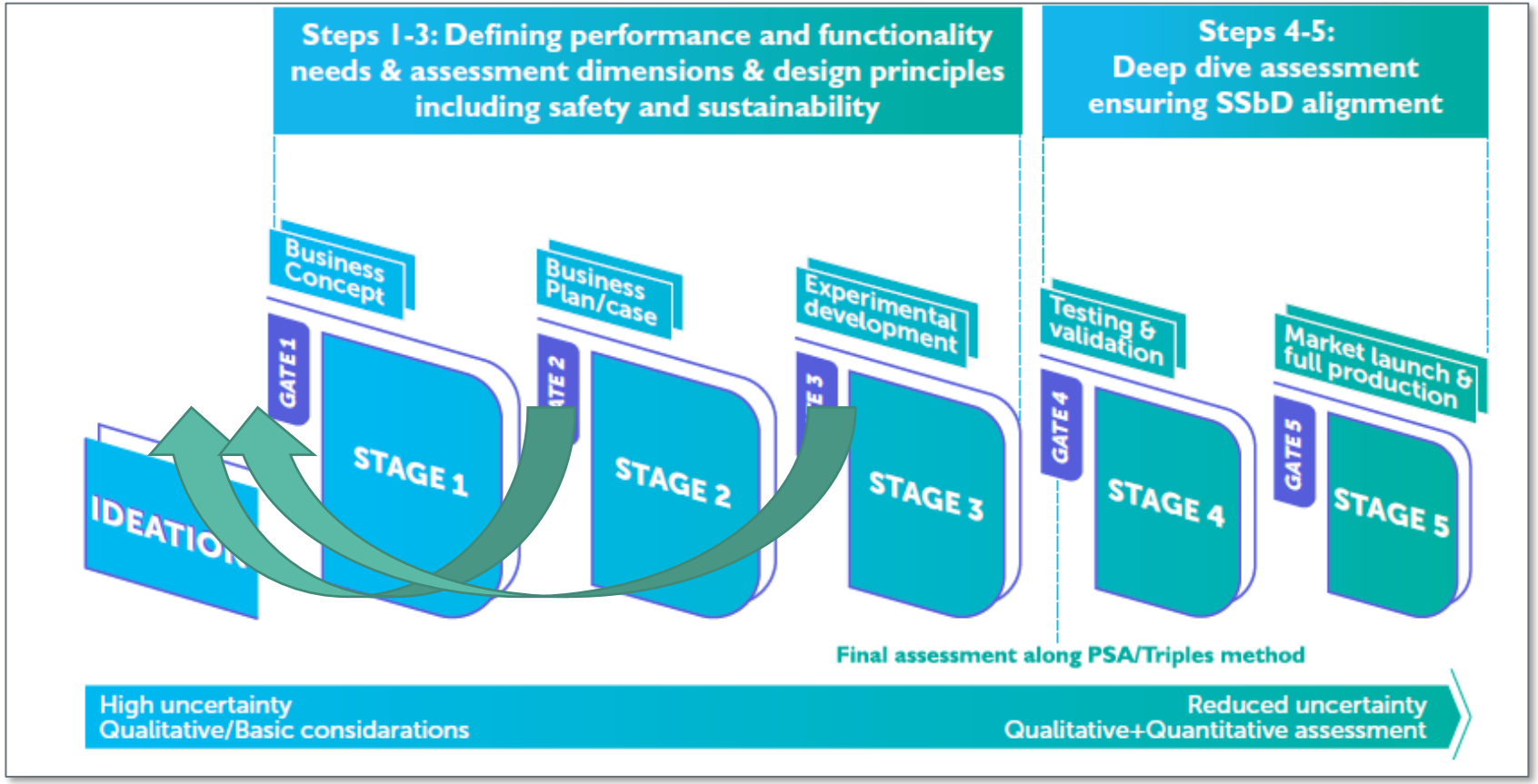


Figure 4. Schematic depiction, how applying the SSbD framework over time will move the portfolio of products towards safe & sustainable chemicals, products and processes.

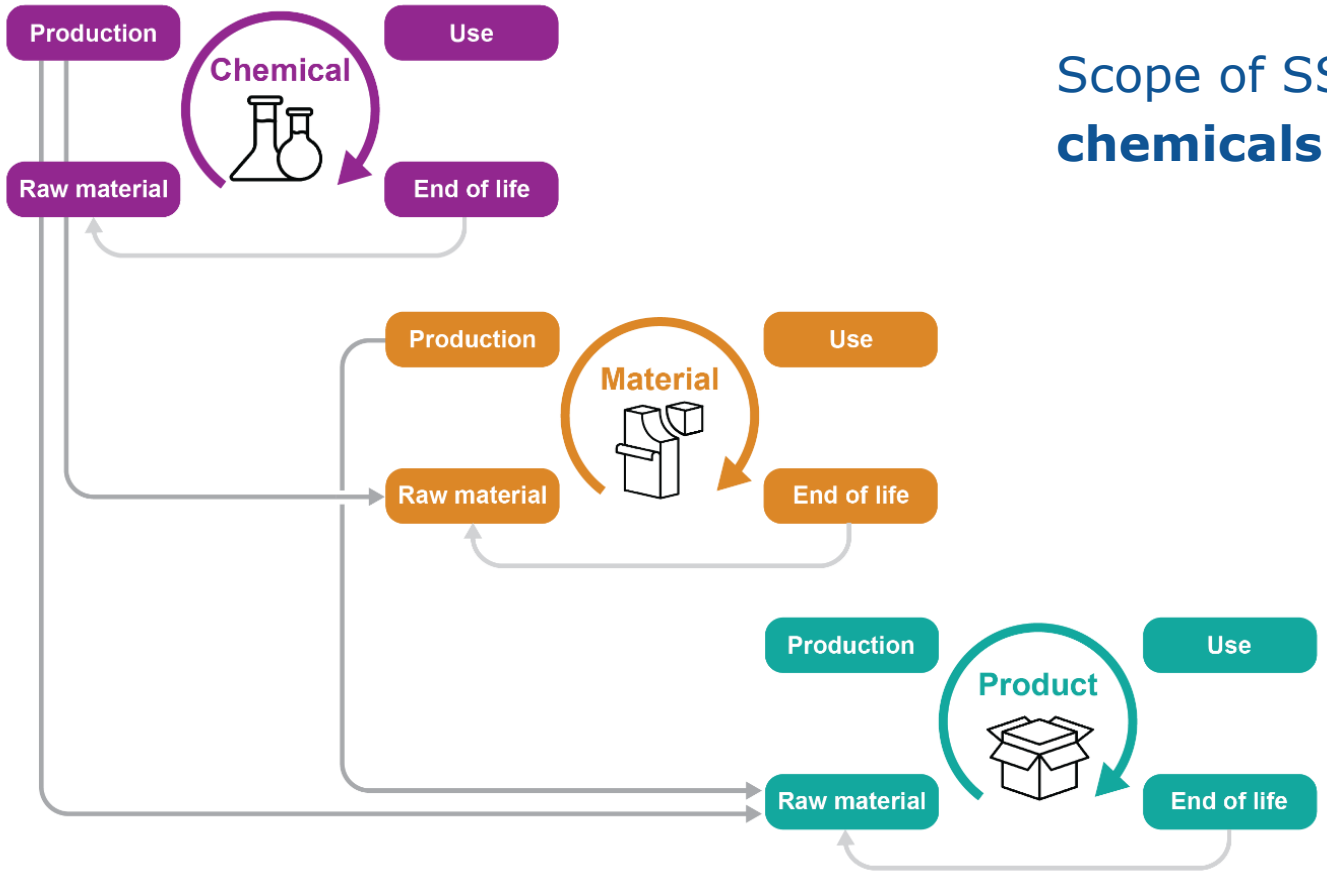


How does the European Commission see it?

The concept

Safe and sustainable by design chemicals and materials

Safe and sustainable by design (SSbD) is an approach to the design, development and use of chemicals and materials that focuses on providing a **function** (or service), while **reducing harmful impacts** to human health and the environment.



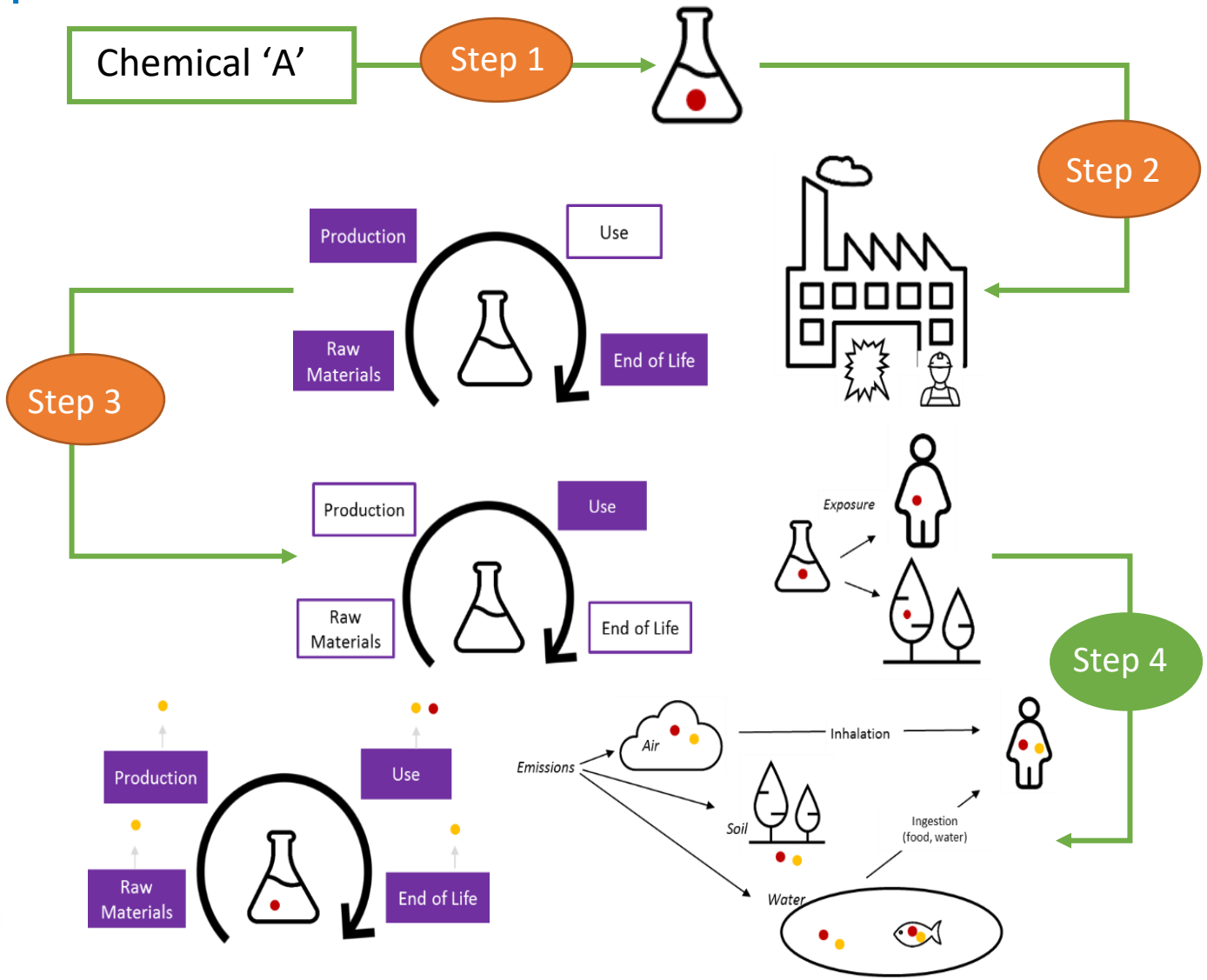
Scope of SSbD:
chemicals and materials

European Commission

SSbD Framework components

Safe and sustainable by design chemicals and materials

Safety and sustainability assessment steps



Step 1: Hazard assessment of chemical/material

Step 2: Human health and safety aspects in the chemical/material production and processing phase

Step 3: Human health and environmental effects in the final application phase (direct exposure)

Step 4: Environmental sustainability assessment (Life Cycle Assessment)

Expected applications of SSbD

Safe and sustainable by design chemicals and materials

- **Steering innovation** towards the green industrial transition

  - **Substitute (as far as possible) or minimise the production and use of substances of concern**, in line with and beyond upcoming regulatory obligations

  - **Minimising the impact on health, climate and the environment** (air, water, soil) during sourcing, production, use and end-of-life of chemicals and materials

☞ **Enabling change through R&I**

What to expect as next steps

Legislative proposal

- **Commission Recommendation on the SSbD Framework** (November 2022?)
  - —Proposes **a European reference framework** for SSbD
  - —Builds on the JRC technical report
  - —Applies **to Research and Innovation activities**
  - —Addressed to **Member States**, **industry** and **Research and Technology Organisations**

- **Testing and enhancement of the framework : 2 years**
- **Feedback** from testing will be used to refine the SSbD framework and develop SSbD criteria
- Development of **assessment tools**

Notes and references

Concerns of the chemical industry

- Purpose - further use in regulation and policy initiatives
- Scope
- Labelling/ranking
- Innovation steering

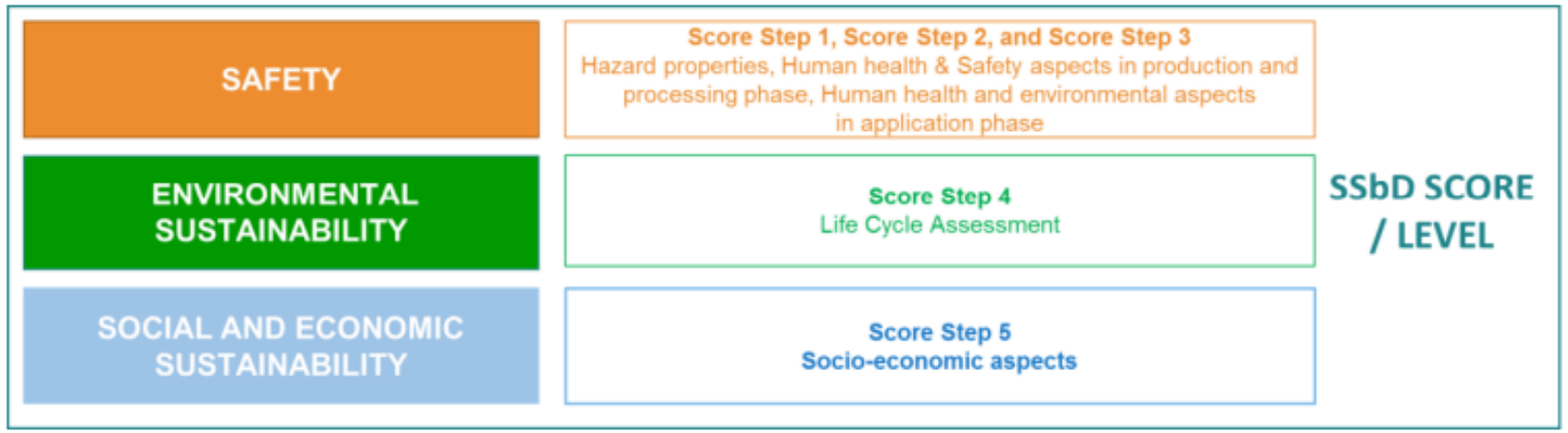
Engage in the testing phase !

BACK-UP SLIDES

The goal is to stimulate improvement

« The idea of a scoring system is to allow to rank those that are SSbD and those that ar not. Those that are not can be flagged for improvement, e.g. redesign taking into account principles for SSbD or for substitution. »

Figure 19. Overall evaluation procedure combining the assessment results of all dimensions

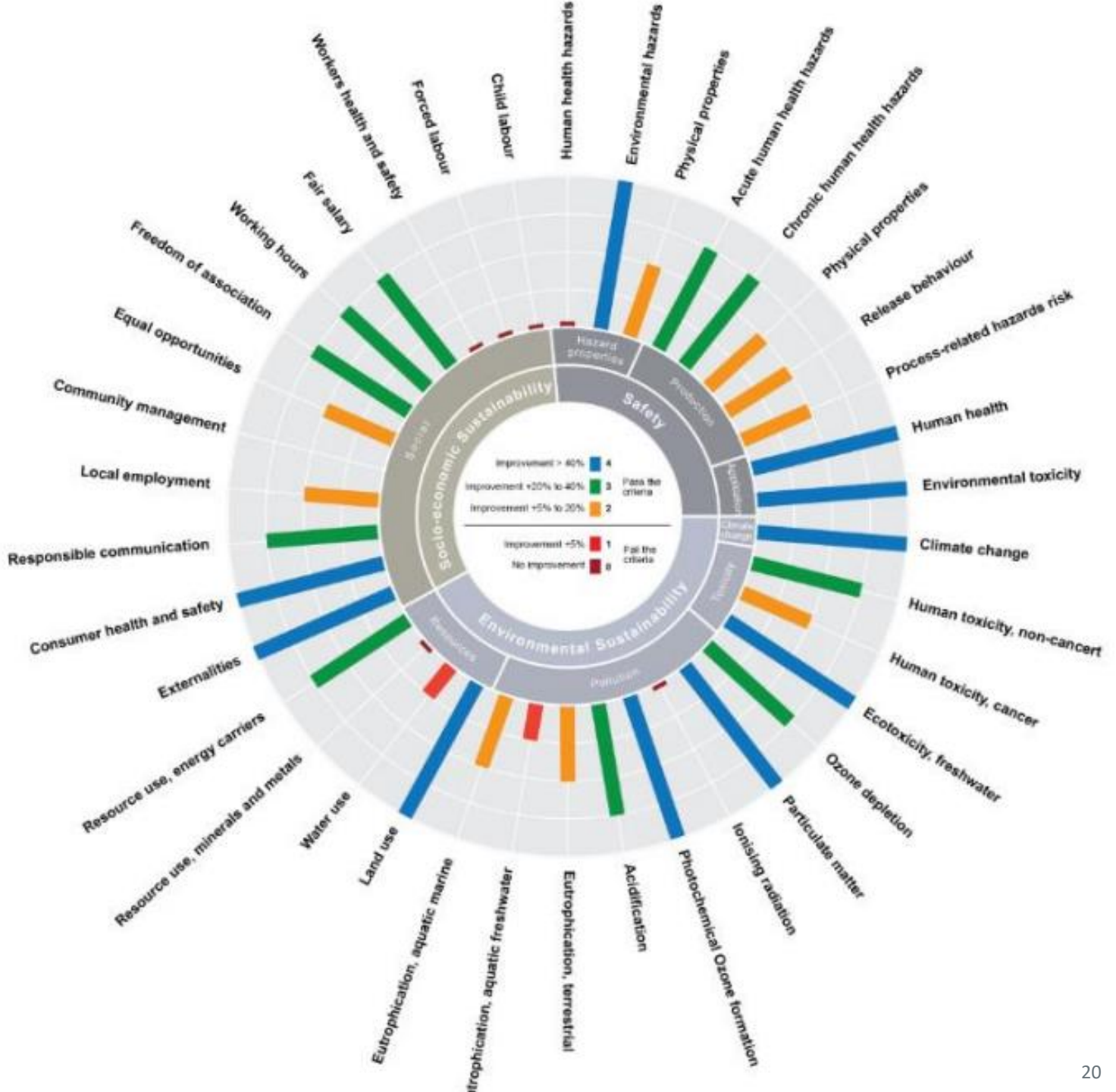


JRC report: Safe and Sustainable-by-Design – Framework report

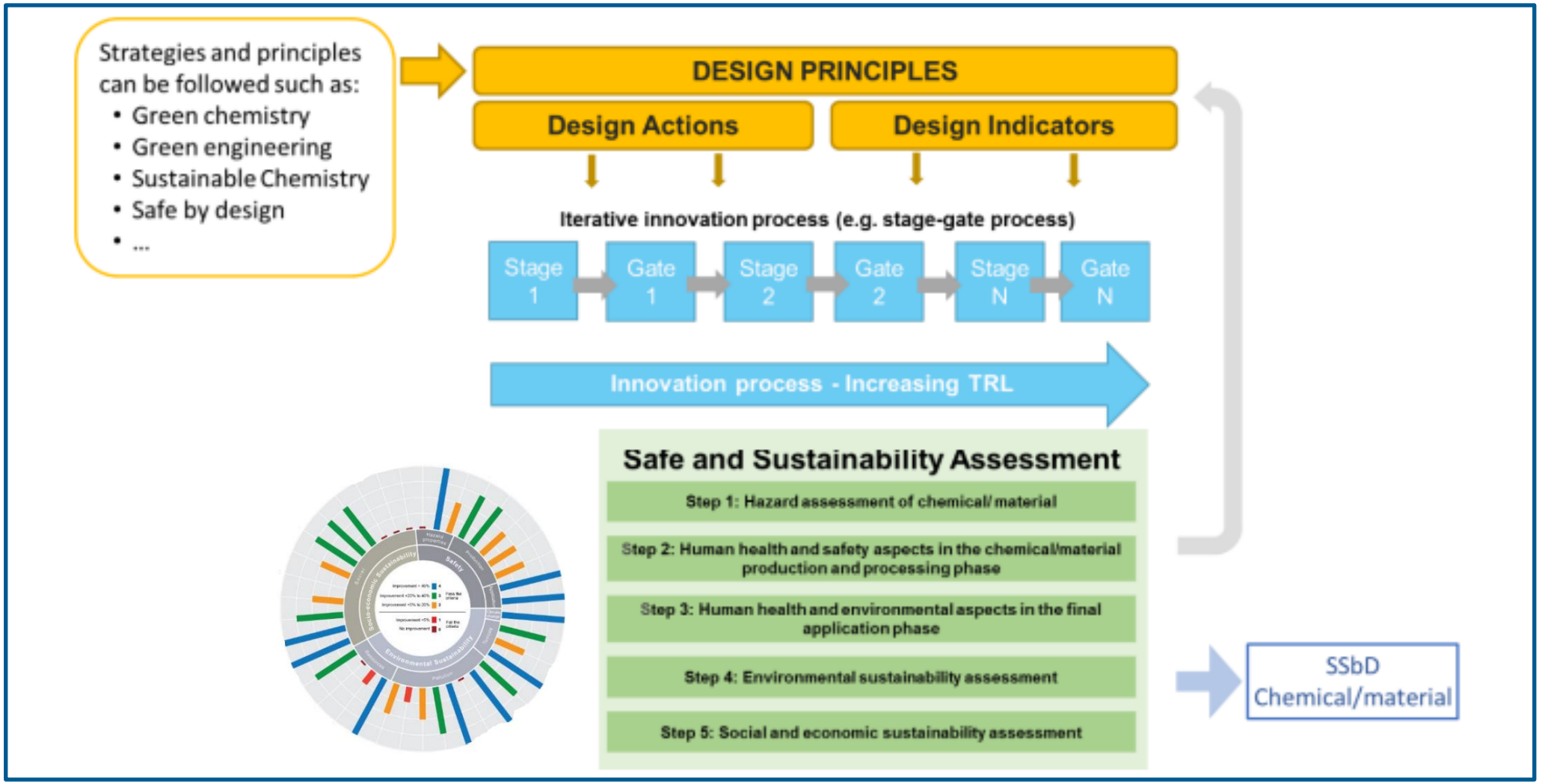
Illustrative example

Figure 19. Overall evaluation procedure combining the assessment results of all dimensions

SAFETY	Score Step 1, Score Step 2, and Score Step 3 Hazard properties, Human health & Safety aspects in production and processing phase, Human health and environmental aspects in application phase	SSbD SCORE / LEVEL
ENVIRONMENTAL SUSTAINABILITY	Score Step 4 Life Cycle Assessment	
SOCIAL AND ECONOMIC SUSTAINABILITY	Score Step 5 Socio-economic aspects	



Improvement process in an iterative innovation process



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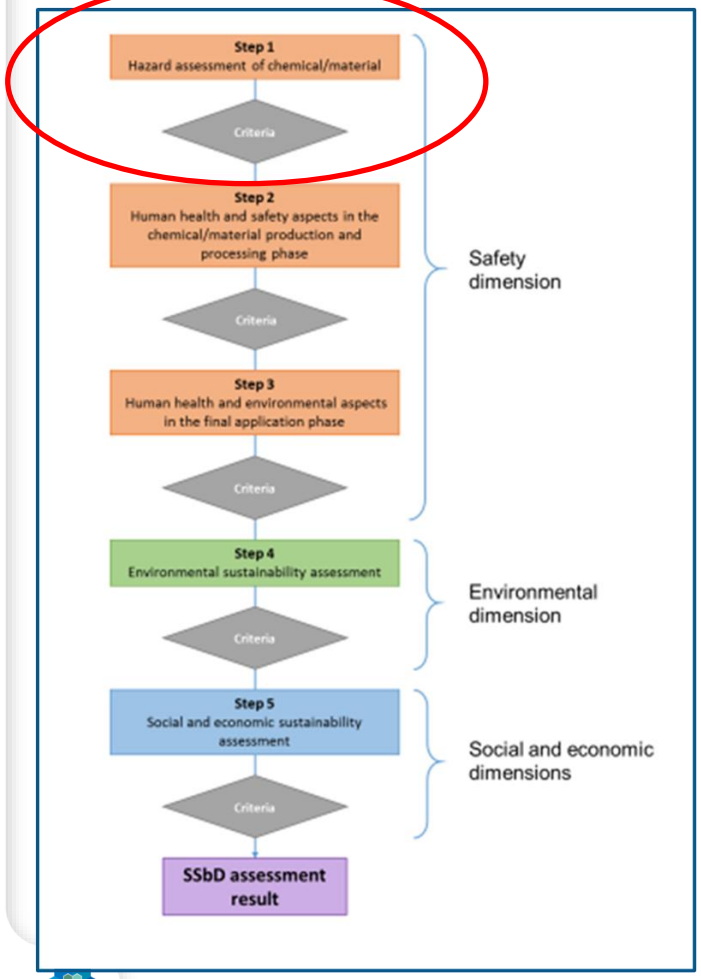
Step 1 evaluation is proposed to make a link to the CSS

Assessment – improvement balance; SSbD is NOT a regulatory approach



Group definition	Observations for chemicals and materials not passing the criteria
Includes most harmful substances (CSS), incl. SVHC	• Prioritised for substitution • Re-designed to reduce adverse effects • Only allowed in use proven essential • Controlled use and exposure over life cycle • Tracked
Includes substances of concern, as proposed under the ESPR	• Substituted as far as possible • + others
Includes the other hazard classes	• Flagged for review and eventually reduce toxic effects • Ensure their safety along the life cycle until less hazardous alternatives are available

JRC report: Safe and Sustainable-by-Design – Framework report

Important links

- Cefic reports: Safe and sustainable-by-design - cefic.org
- SSbD stakeholder network registration: https://ec.europa.eu/eusurvey/runner/9c66713d-15e4-b8ea-36b4-d5d1d8b471db
- First report from JRC: Safe and Sustainable by Design chemicals and materials - Review of safety and sustainability dimensions, aspects, methods, indicators, and tools https://publications.jrc.ec.europa.eu/repository/handle/JRC127109
- Second JRC report on Framework for the definition of criteria an evaluation procedure for chemicals and materials: JRC Publications Repository - Safe and sustainable by design chemicals and materials - Framework for the definition of criteria and evaluation procedure for chemicals and materials (europa.eu)
- OECD report on safer alternatives: https://www.oecd.org/chemicalsafety/risk-management/guidance-on-key-considerations-for-the-identification-and-selection-of-safer-chemical-alternatives.pdf