

SAFE AND SUSTAINABLE-BY- DESIGN

Chaired by:

Myriam Tryjefaczka
Director Sustainability and
Public Affairs at Tarkett



Eva Leinala
Principal Administrator
Risk Reduction, Good
Laboratory Practice &
Mutual Acceptance
Data Programmes at
OECD



Pascal Sanders
Scientific Director
at ANSES



Emma Strömberg
Expert polymeric
materials at IVL
Swedish
Environmental
Research Institute



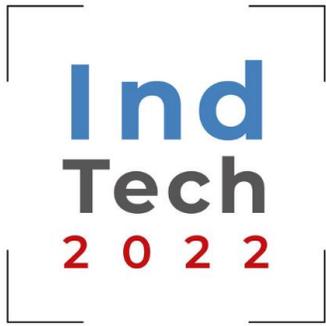
Barbara Tišler
Head of project
office at The
National Institute
of Chemistry



Aleksandra Małyska
Policy Research
Officer in DG RTD at
DG R&I, European
Commission



Daniel Witthaut
Executive Director
Innovation at
Cefic



A Chemicals Perspective on Designing with Sustainable Plastics

Eeva LEINALA
Organisation for Economic Co-operation and
Development (OECD)
27-29 June, Grenoble France



38 Member countries, many partner countries and other stakeholders work together to develop and co-ordinate activities on chemical safety and biosafety on an international basis. One of the core aspects of the work relates to the Mutual Acceptance of Data.

- The main objectives of the Programme are to:
- Assist OECD Member countries' efforts to protect human health and the environment through improving chemical safety and biosafety
 - Make chemical control policies more transparent and efficient and save resources for government and industry; and
 - Prevent unnecessary distortions in the trade of chemicals, chemical products and products of modern biotechnology.



<http://www.oecd.org/chemicalsafety/>

OECD Substitution and Alternatives Assessment Toolbox

Welcome to the OECD Substitution and Alternatives Assessment Toolbox (SAAT) – a compilation of resources relevant to chemical substitution and alternatives assessment. Visit the four resource areas below to learn more about chemical substitution and alternatives assessments and get practical guidance on conducting them.

What's an Alternatives Assessment?
A process for identifying, comparing and selecting safer alternatives to replace hazardous chemicals with the objective of promoting sustainable production and consumption. [Read more definitions...](#)

Alternatives Assessment Tool Selector
A filterable inventory of chemical hazard assessment tools to identify tools most relevant to your substitution and alternatives assessment. A list of non-hazard assessment tools is also available.

Alternatives Assessment Frameworks
A summary of the current frameworks that can be used to set other resources for conducting a chemical substitution or alternatives assessment.

Case Studies and Other Resources
Links to case studies, toolkits, and product rating systems that and lessons learned on substitution and alternatives assessment.

Regulations and Restrictions
A list of regulations and restrictions throughout OECD member states that have increased the need for chemical substitution and alternatives assessment.



Substitution of Harmful Chemicals

Economic Features of Chemical Leasing

Series on Risk Management No. 37

OECD
www.oecd.org/riskmanagement

CONSIDERATIONS AND CRITERIA FOR SUSTAINABLE PLASTICS FROM A CHEMICALS PERSPECTIVE
BACKGROUND PAPER 1

OECD Global Forum on Environment
Plastics in a Circular Economy
Improving sustainability through better chemical perspectives

OECD
www.oecd.org

Sustainable Chemistry

Working Party on Risk Management

Created in 2021!

STRATEGIC PAPER ON PER- AND POLYFLUORINATED CHEMICALS (PFCS)

WORKING TOWARDS A GLOBAL EMISSION INVENTORY OF PFAS: FOCUS ON PFCA - STATUS QUO AND THE WAY FORWARD

RISK REDUCTION APPROACHES FOR PFAS - A CROSS-COUNTRY ANALYSIS

Shifting towards Safer Alternatives for PFAS Substances (OECD/UNEP Global PFC Group)

OECD
UNEP

Portal on Per and Polyfluorinated Chemicals

HOME ABOUT PFCs RISK REDUCTION ALTERNATIVES PRODUCTION AND USE COUNTY INFORMATION NEWS

Help us raise awareness about perfluorinated chemicals

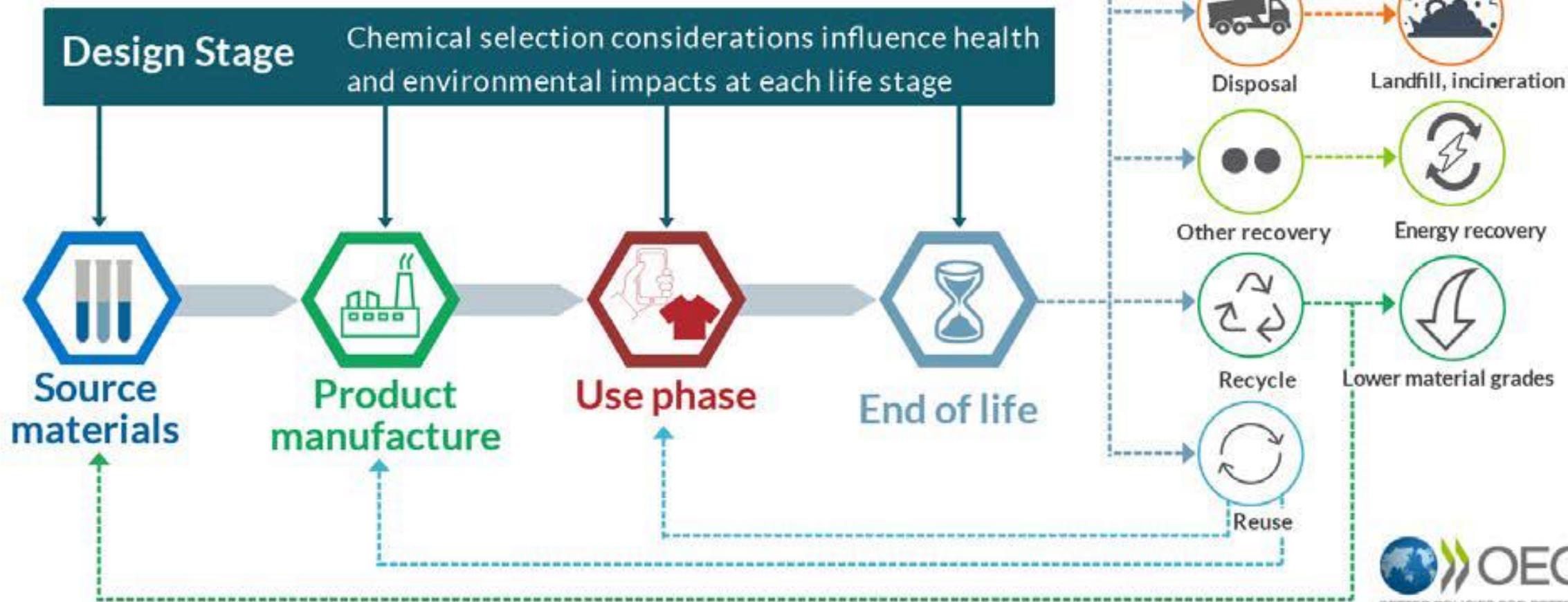
Why this Portal?
This Portal aims to facilitate the exchange of information on per and polyfluorinated chemicals (PFAS) between scientists, industry, regulators, and the public. It provides a platform for sharing information on the latest research.

What's new
The OECD is leading the work of the International Council on Chemicals (ICCC) on PFAS, in collaboration with the UNEP, to develop a global inventory of PFAS. The OECD is also leading the work of the International Council on Chemicals (ICCC) on PFAS, in collaboration with the UNEP, to develop a global inventory of PFAS.

Recent webinars
1. PFAS: A Global Challenge for the 21st Century
2. PFAS: A Global Challenge for the 21st Century

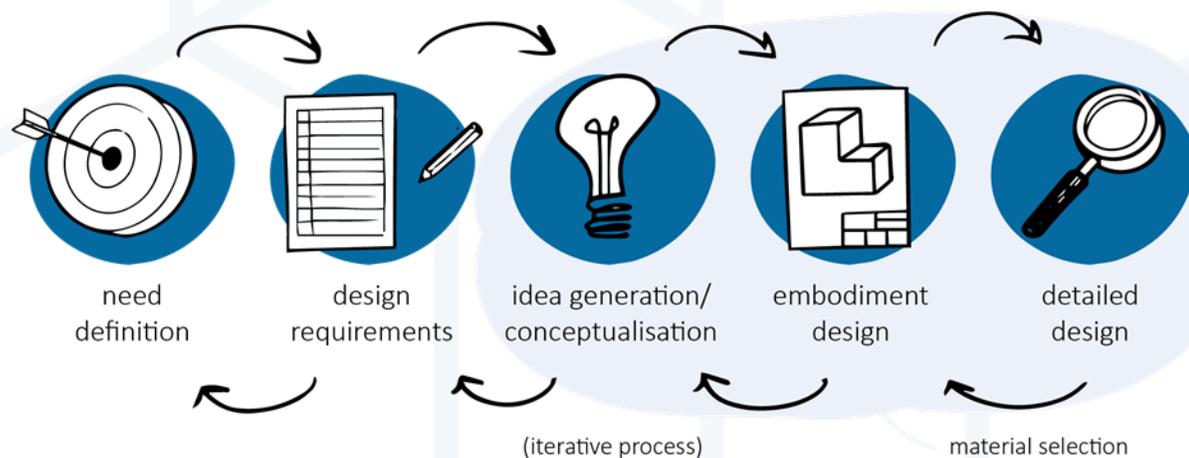
Risk Management Tools and Approaches Including Socioeconomic Analysis

Plastic Product Design and Life Cycle Stage



Development of Considerations for Sustainable Design of Plastics From Chemicals Perspective

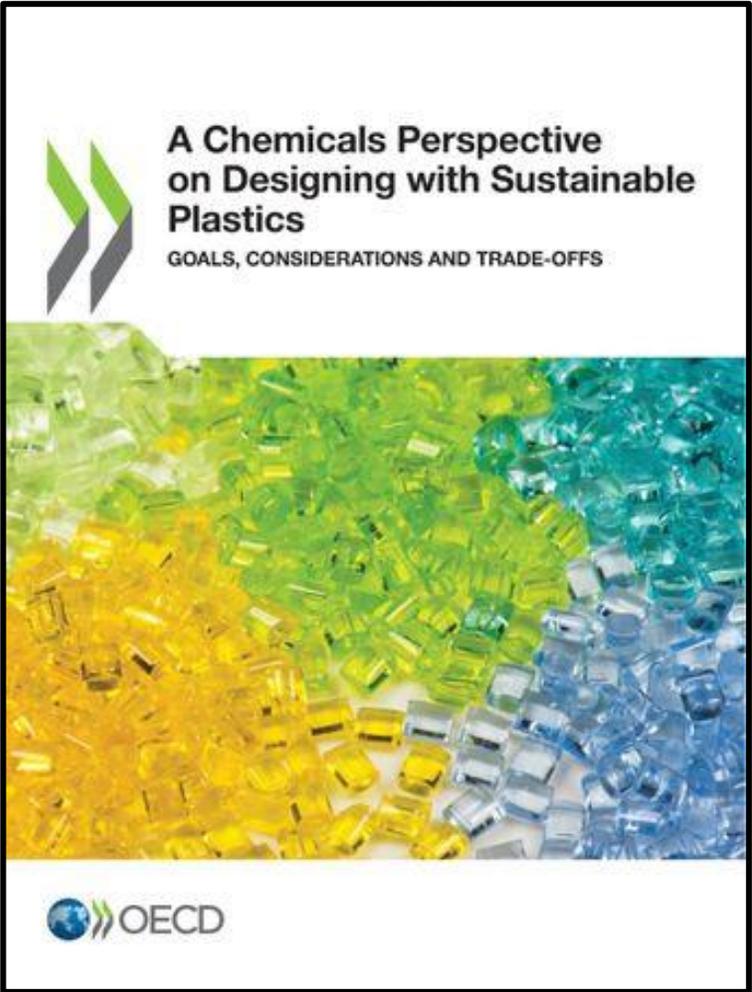
- Conducted case studies to inform the considerations development
 - plastic packaging (biscuit wrappers & detergent bottles) and construction material (insulation & flooring)
- Draw more general learnings from the case studies to inform the development of a considerations document



oe.cd/chemicals-plastics



A Chemicals Perspective on Designing with Sustainable Plastics: Goals, Considerations & Trade-offs

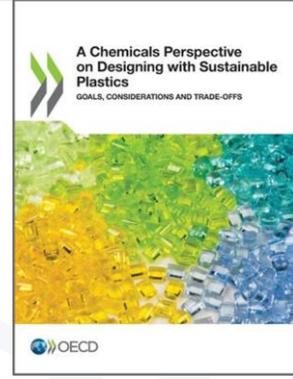


- Enable the creation of inherently sustainable plastic products by integrating sustainable chemistry thinking in the design process
- Equip designers and engineers with knowledge of how to manage the complexity of finding the most sustainable plastic for their products with a view of relevant chemical considerations and support better outcomes.

Published 7 December, 2021

oe.cd/chemicals-plastics

- **Design principles of sustainable chemistry and engineering (ACS):**
 - Maximize resource efficiency
 - Eliminate and minimize hazards and pollution
 - Design systems holistically and using life cycle thinking
- **Sustainable design goals:**
 - Select materials with an inherently low risk/hazard
 - Select materials that have a commercial ‘afterlife’
 - Select materials that generate no waste
 - Select materials that use secondary feedstock or biobased feedstock
- **General considerations for sustainable design from a chemicals perspective** were identified as key elements for designers to take into account for **each life-cycle phase** when selecting material composition culminating with whole product optimization.



Focused on embedding sustainable chemistry thinking at the design stage

- Complexity is high but can't be ignored
- Systems level approach needed
- Requires involvement of many stakeholders
- Significant information needs
- Will lead to choices between different policy priorities



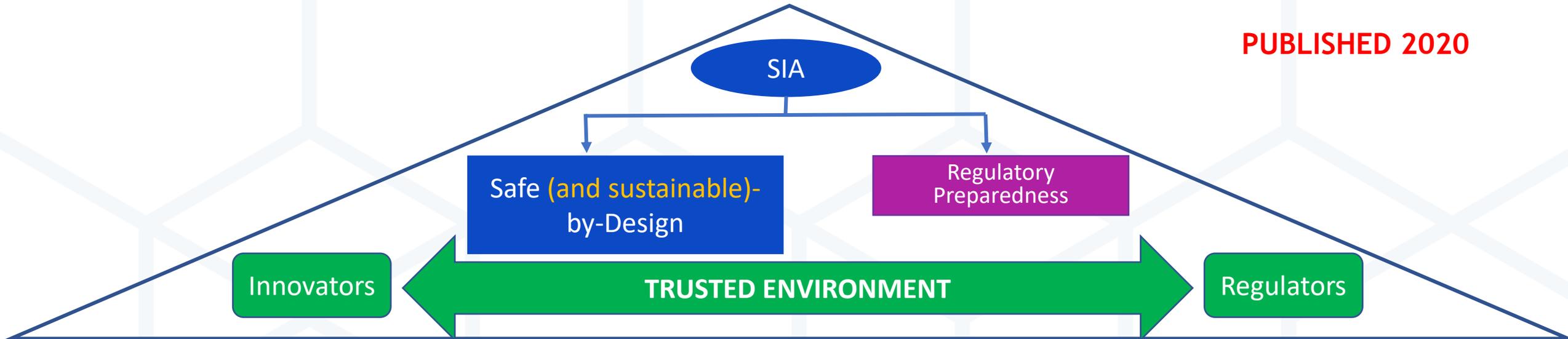
Economic, Regulatory or Technical Barriers to Sustainable Design from a Chemicals Perspective - How Can Policy Makers Help?

Goal

- Examine from a specific sector viewpoint (flexible food grade packaging) the economic, regulatory and technical barriers to implementing the considerations
 - Identify challenges and barriers
 - How can governments help? Identify what policies or approaches governments could put into place to further incentivise sustainable design for flexible food grade packaging.

Moving Towards a Safe(r) Innovation Approach (SIA) for More Sustainable NMs and Nano-enabled Products

PUBLISHED 2020



Working Descriptions

- Safe(r)-by-Design
- Regulatory Preparedness
- Safe(r) Innovation Approach (SIA)
- Trusted Environment
- (Draft) Sustainability
- (Draft) Safe and Sustainable by Design SSbD

Safe(r) Innovation Approach: Risk Assessment Tools, Frameworks and Initiatives related to Safe(r)-by-Design

Anticipatory Governance/Regulatory Preparedness: Inventory of Strategies for Awareness and Decision-Making

SIA next step is to integrate sustainability and address issues to make this approach applicable

————— Maintain updated the inventories of tools and frameworks on:

- Safe by Design (SbD)
- Regulatory Preparedness (RP)

————— Sustainable-by-design and sustainability

- Develop an inventory of aspects, criteria, tools and frameworks for Sus-b-D

————— Sustainable-by-design and sustainability

Develop a working description of Sustainable-by-design (Identifying the element of sustainability that need to be considered) (linkage with other initiatives)

————— Bring SIA closer to practical applicability

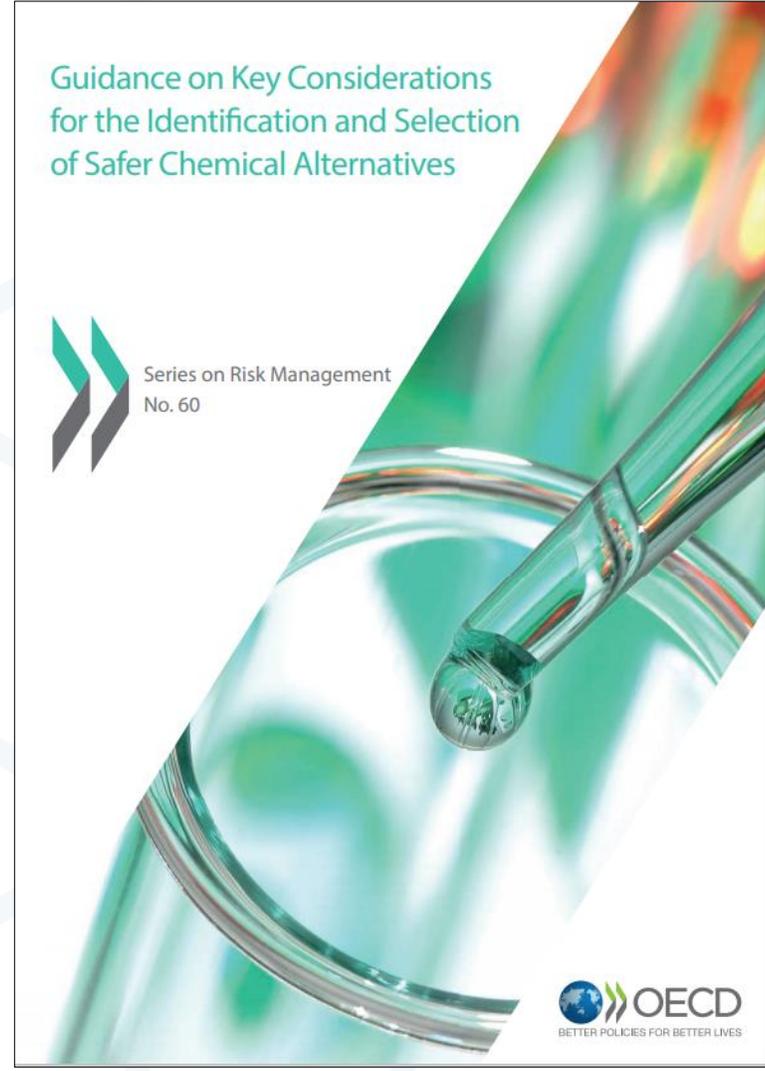
————— SIA platform for regulators to share knowledge

Guidance on Key Considerations for the Identification and Selection of Safer Chemical Alternatives

Goals of the guidance:

- Define “safer” chemicals in the context of alternatives assessments
- Advance a consistent understanding of the minimum requirements needed to determine whether an alternative is safer

<https://www.oecd.org/chemicalsafety/risk-management/substitution-of-hazardous-chemicals.htm>

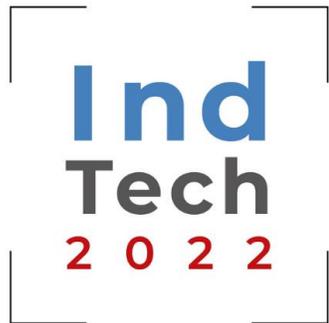


Proactive consideration at the design stage ...

- ... enables chemicals through-out their life-cycle to be better managed - in the sourcing, manufacturing/processing, use, product and end-of-life



Thank you!

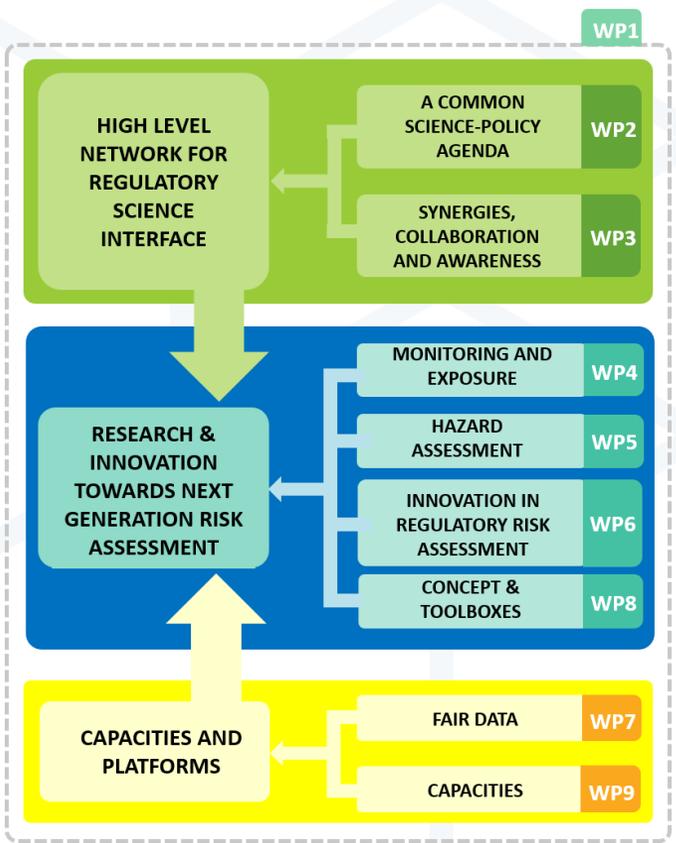


European Partnership for Assessment of Risks from Chemicals (PARC) Safe & Sustainable by Design - Concepts and Toolboxes

Sanders Pascal
PARC Coordinator
27-29 June, Grenoble France



Co-funded European Partnership for the Assessment of Risks from Chemicals (PARC)



Our general objective is to **consolidate and strengthen** the EU's Research and Innovation capacity for chemical Risk Assessment to **protect human health and the environment**

Start: 01/05/2022
Duration : 7 years
Horizon Europe

Budget: 400 M€
EU 50/50 MS,AC

~200 Partners

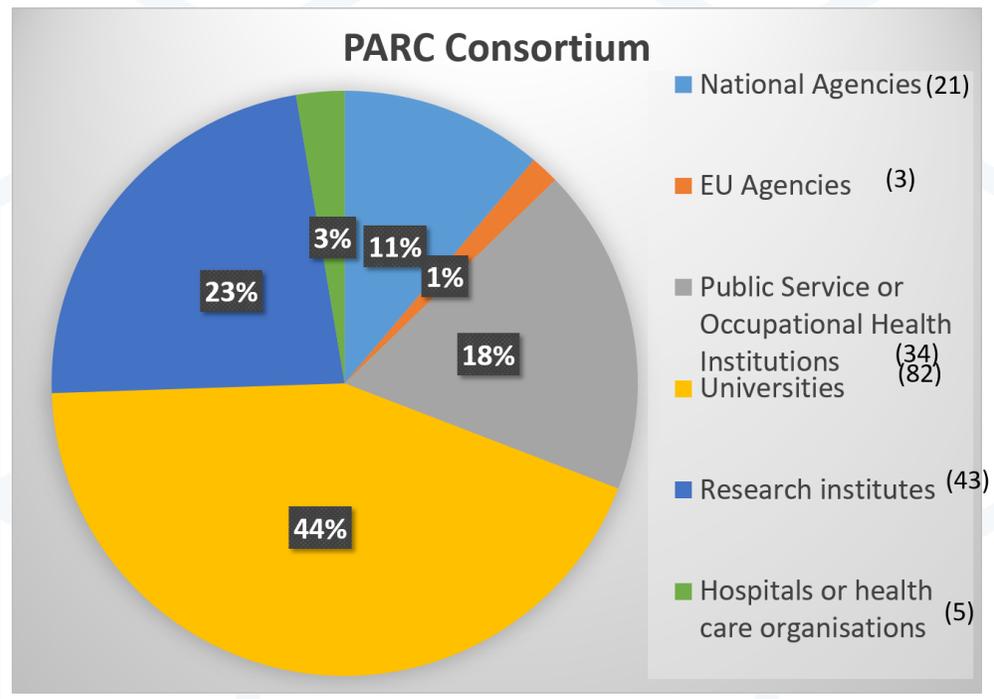
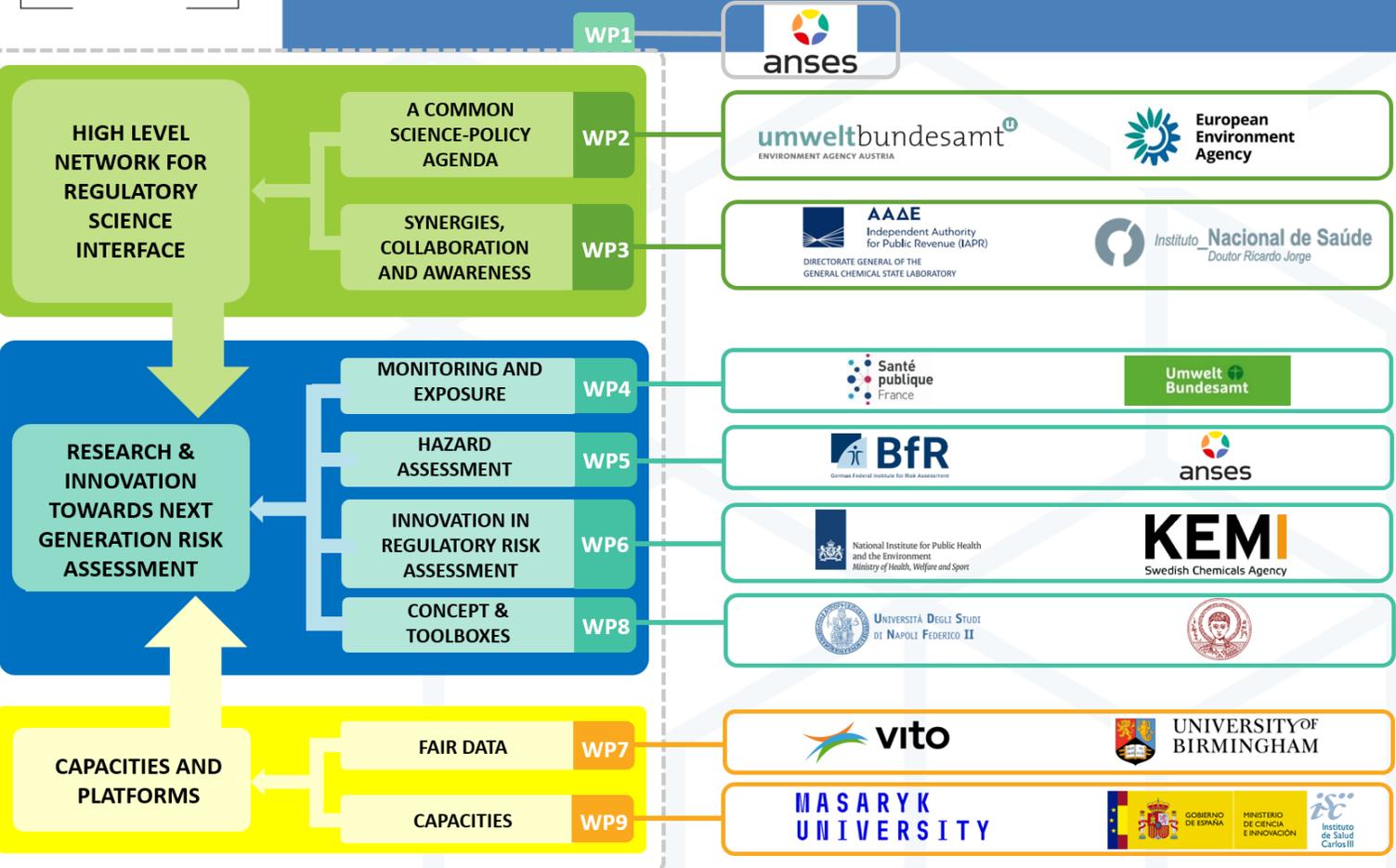


28 countries
23 Member States: Austria (AT), Belgium (BE), Croatia (HR), Cyprus (CY), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (EL), Hungary (HU), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Netherlands (NL), Poland (PL), Portugal (PT), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE)
3 Associated countries: Iceland (IS), Israel (IL), Norway (NO)
2 Non-associated Third countries: Switzerland (CH), United Kingdom (UK)

3 European Agencies :

Co-funded by the European Union

PARC Partners



PARC and Safe and Sustainable by design

• SSbD Aims

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

• SSbD Conceptualisation

- Support the **pre-market approach to SSbD chemicals**
- Provision of a function that would avoid volumes and chemical properties, processes and materials that may be harmful to human health or the environment.

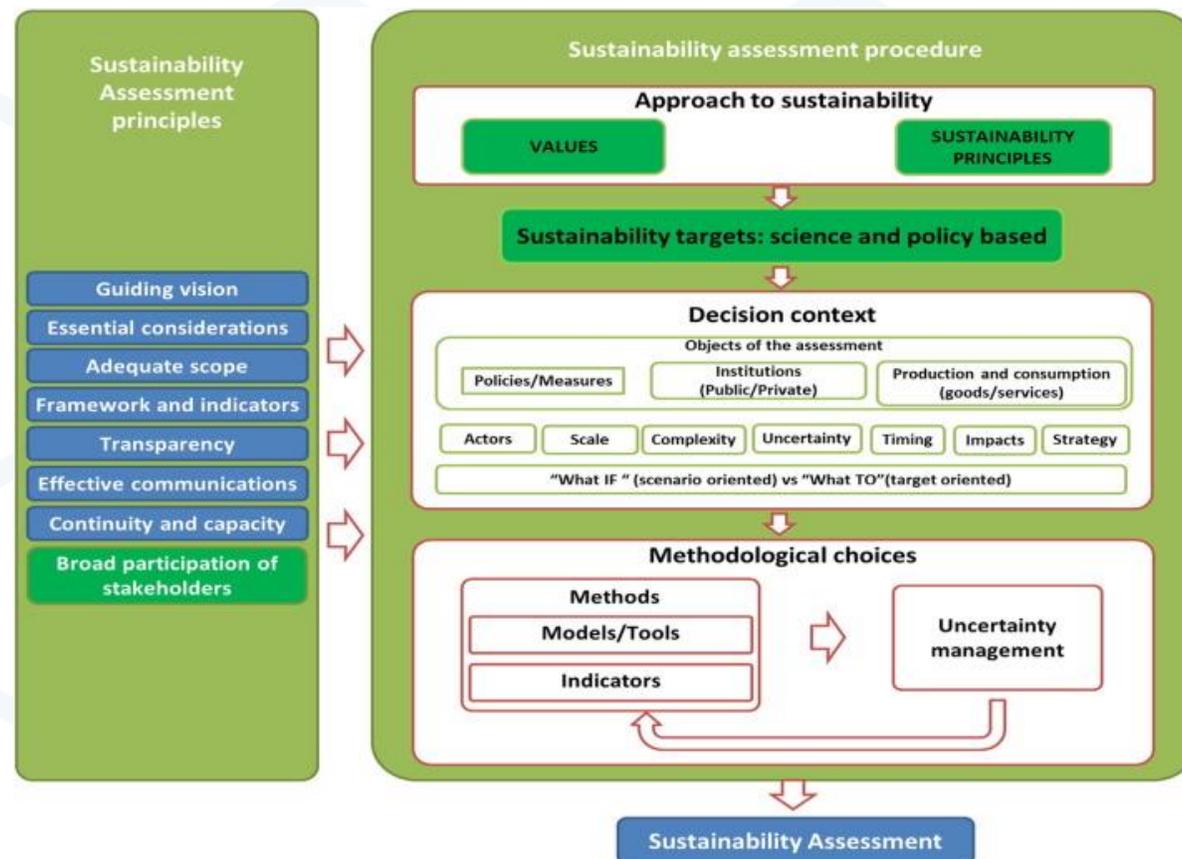
• Actions foreseen in PARC:

- Translate EC SSbD criteria & methodology towards operationalisation
- SSbD Toolbox development, testing and implementation



SSbD Sustainability aspects assessment

- The European Green Deal presents a roadmap for making the EU's economy sustainable by turning climate and environmental challenges into opportunities across all policy areas and making the transition just and inclusive for all.
 - boost the efficient use of resources by moving to a clean, circular economy
 - stop climate change,
 - revert biodiversity loss
 - cut pollution.
- The European Green Deal covers all sectors of the economy, notably transport, energy, agriculture, buildings, and industries such as steel, cement, ICT, textiles and chemicals.
- As one of the Horizon Europe Partnership, PARC was initiated to implement a **Responsible Research and Innovation Agenda in Regulatory Risk Assessment with a high level science to policy interface.**



SSbD assessment tools and methods in PARC

SSbD criteria and methodology will be translated into a toolbox, integrating tools for safety and sustainability assessment coming from different policy areas and strategies as well as new tools developed in PARC.

- Environmental emissions
- Environmental, consumer and occupational and exposure assessment / toxicokinetics
- Hazard assessment
- Life cycle impact analysis
- Discrete Event Simulation (DES) in combination with Life Cycle Assessment (LCA)
- Process Flow Modelling
- Economic and social dimensions

Weighing of safety and sustainability criteria will be explored.

Stakeholders will be engaged to test the applicability of the SSbD toolbox

Use cases in various sectors will be selected to test the SSbD practical applicability through a learning-by-doing approach.

Indicators to measure progress on sector applicability of the SSbD toolbox to support monitoring activities of the EC regarding the transition towards the SSbD implementation

Thank you!

Partnership contact details

parc@anses.fr

Pascal Sanders: pascal.sanders@anses.fr

Christophe Rousselle: christophe.rousselle@anses.fr



IRISS - the InteRnational ecosystem for accelerating the transition to Safe-and-Sustainable-by-design materials, products and processes

Emma Strömberg
IVL Swedish Environmental Research Institute
Grenoble, 29 June 2022



Overarching scope



The IRISS project aims to connect, synergize and transform the SSbD community in Europe and globally towards a life cycle thinking

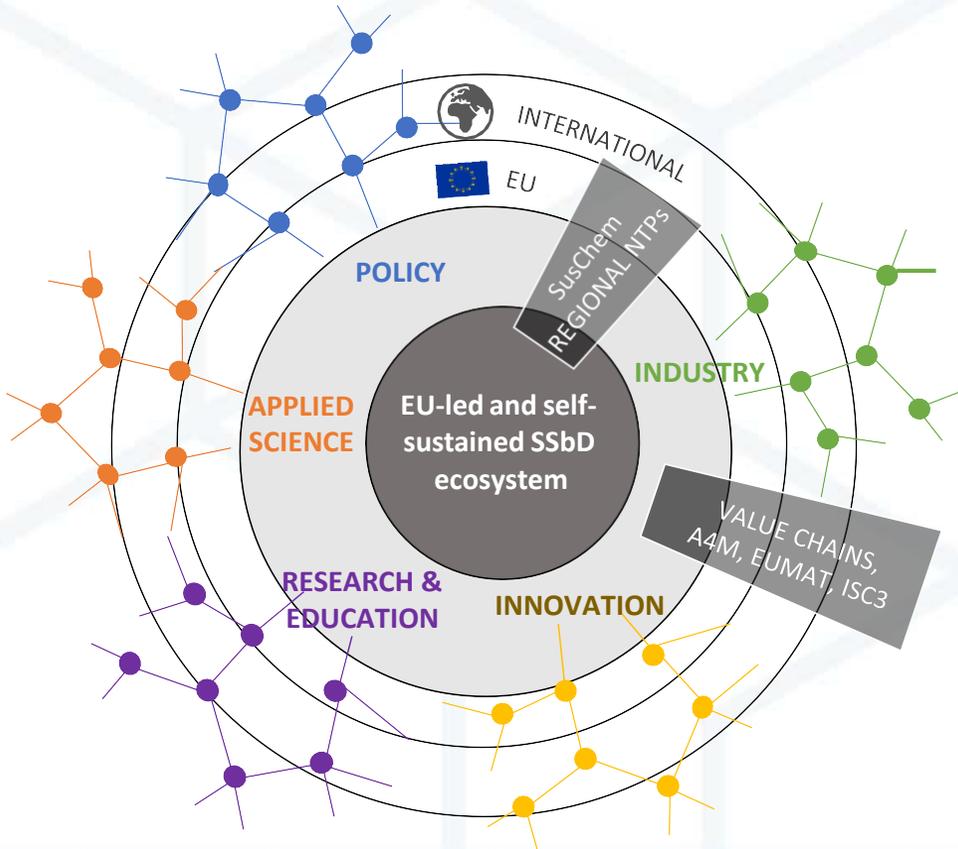
- Strongly support the SSbD implementation in industry to achieve more safe and sustainable products for society
- Focus on materials including both products and processes, considering the extensive progress to-date in chemicals and nanotechnology fields
- Develop a global permanent network for long term cooperation between the networking members, engaging partners beyond the consortium, throughout and beyond the duration of the project

Project activities



- Compiling SSbD criteria and guiding principles
- Building skills and identifying competence gaps
- Co-creating and regularly updating roadmaps that ensure alignment between R&D, governance and industry
- Developing a working framework for establishment of an expanded SSbD community, creating a common mechanism to engage, mobilize and bring together diverse stakeholders

IRISS consortium



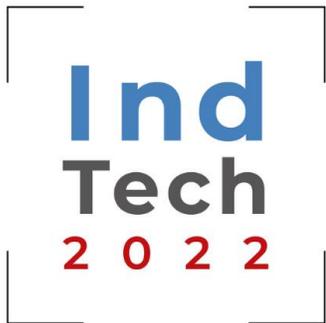
Thank you!

Contact details:

Emma Strömberg

emma.stromberg@ivl.se

Follow us on LinkedIn: [IRISS - International SSbD network](#)



NATIONAL INSTITUTE
OF CHEMISTRY

I FEEL
SLOVENIA

Active membership as reinforcing capacities

Name: dr. Barbara Tišler, Head of project management office

Organization: National Institute of Chemistry, Slovenia

Date and location: Grenoble, 29 June 2022

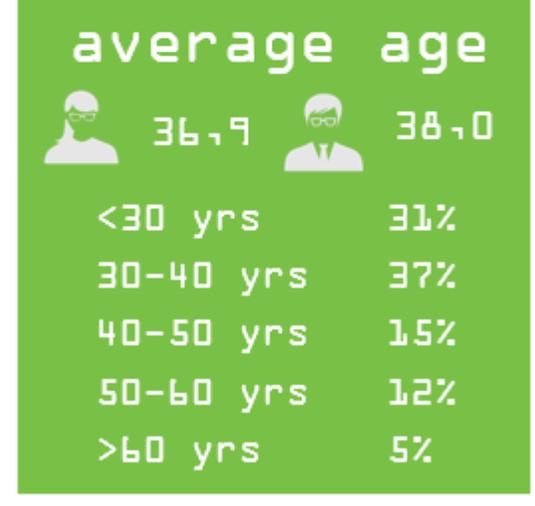
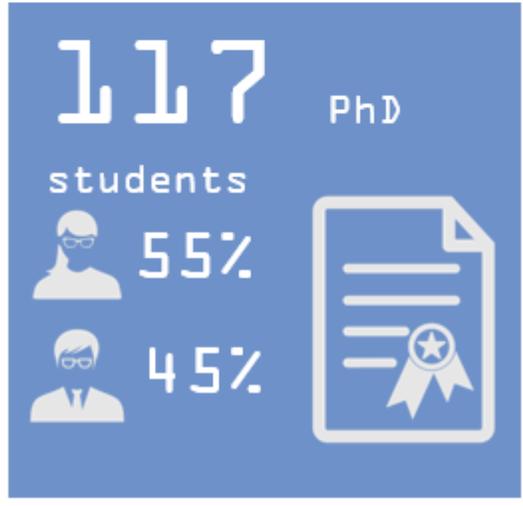
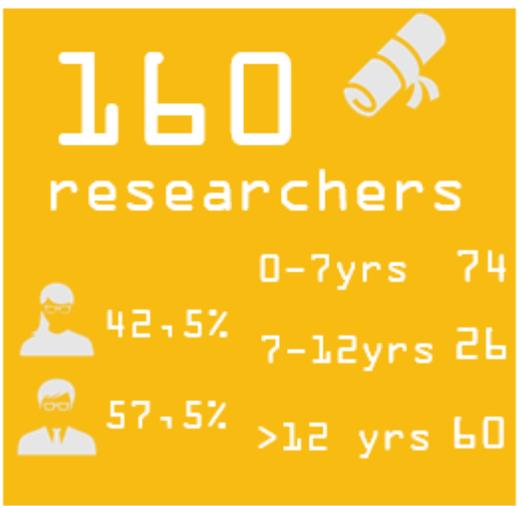
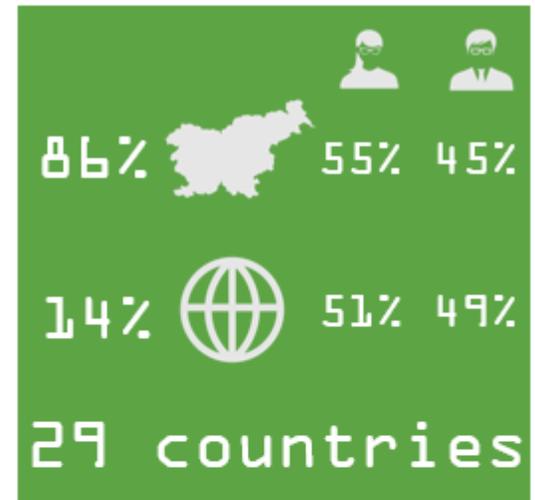
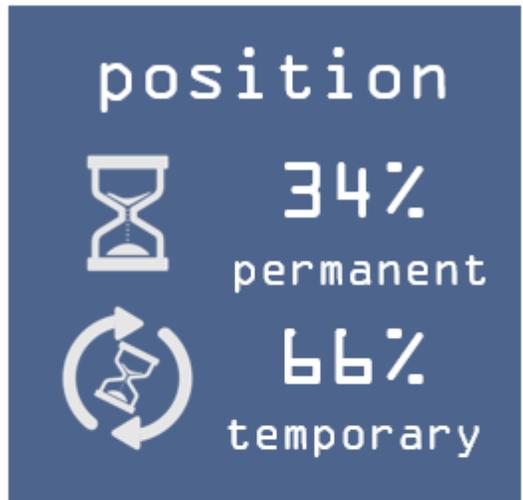


National Institute of Chemistry, Slovenia

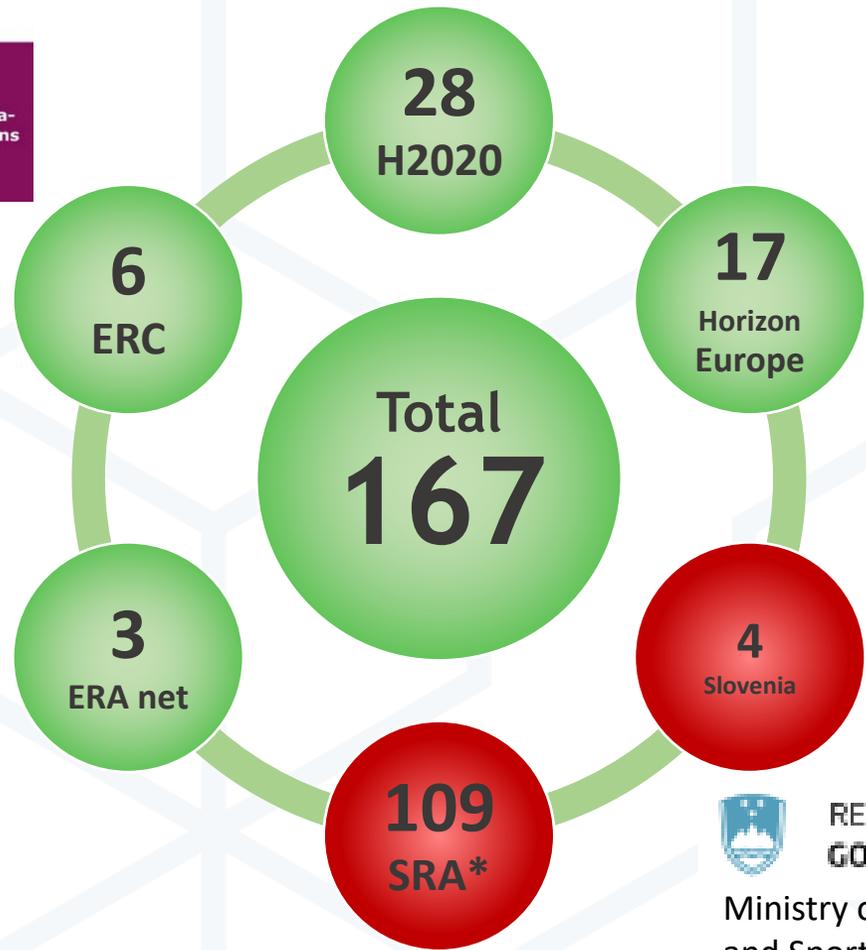
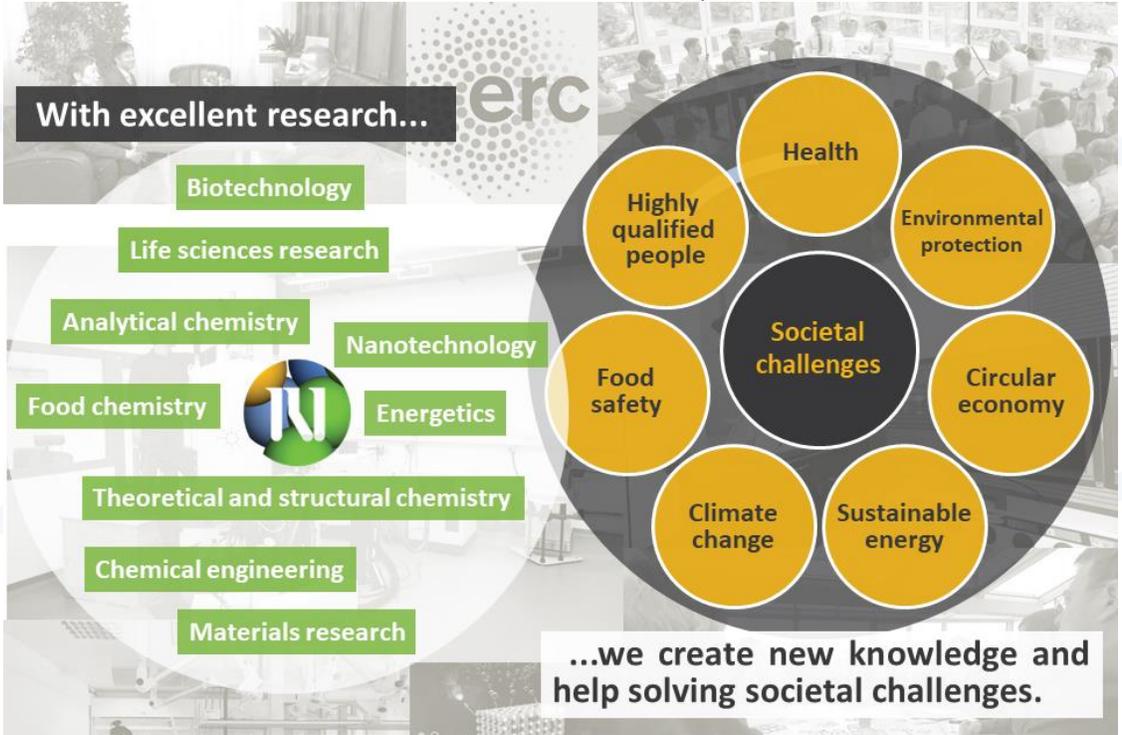


located in the Slovenian capital
Ljubljana

Basic data



Projects and research themes



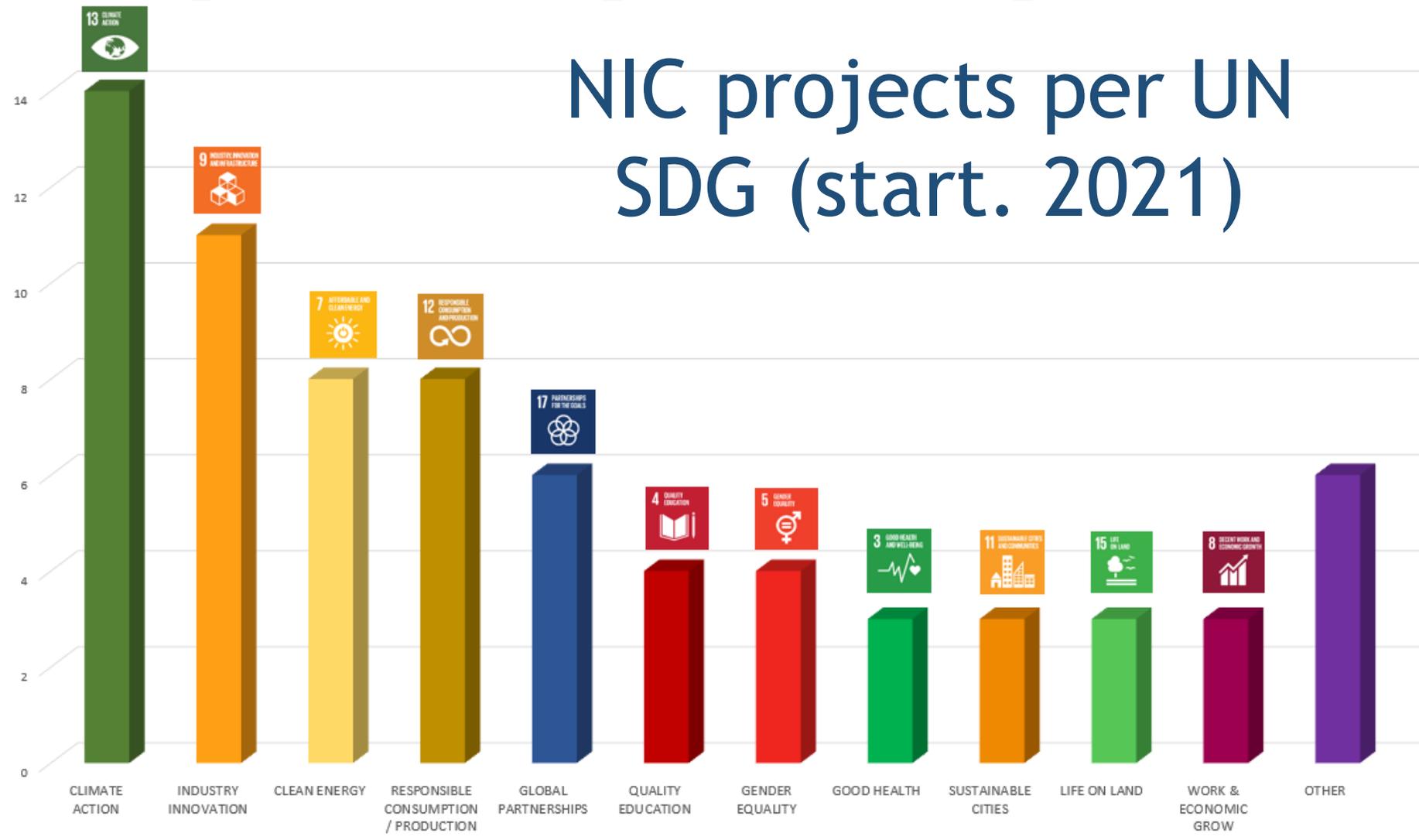
REPUBLIC OF SLOVENIA
GOV.SI
Ministry of Education, Science and Sport

*projects and programmes



Projects and UN SDG

NIC projects per UN SDG (start. 2021)

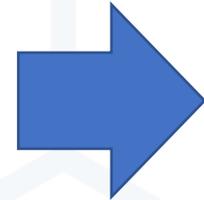


Active partner to reinforce capacities



PARC: PARTNERSHIP FOR THE ASSESSMENT OF RISKS FROM CHEMICALS

- Innovative methods and tools for toxicity testing and modelling
- Computer modelling, first focus on BPA
- *In silico* modelling tools for ecotoxicological hazard assesment



- National leader
- International experience and testbed



GA 101057014

Active partner to reinforce capacities

IRISS: The international ecosystem for accelerating the transition to Safe-and-Sustainable-by-design materials, products and processes



- SSbD methodology
- Value chains implementation
- Stakeholders group
- Communication



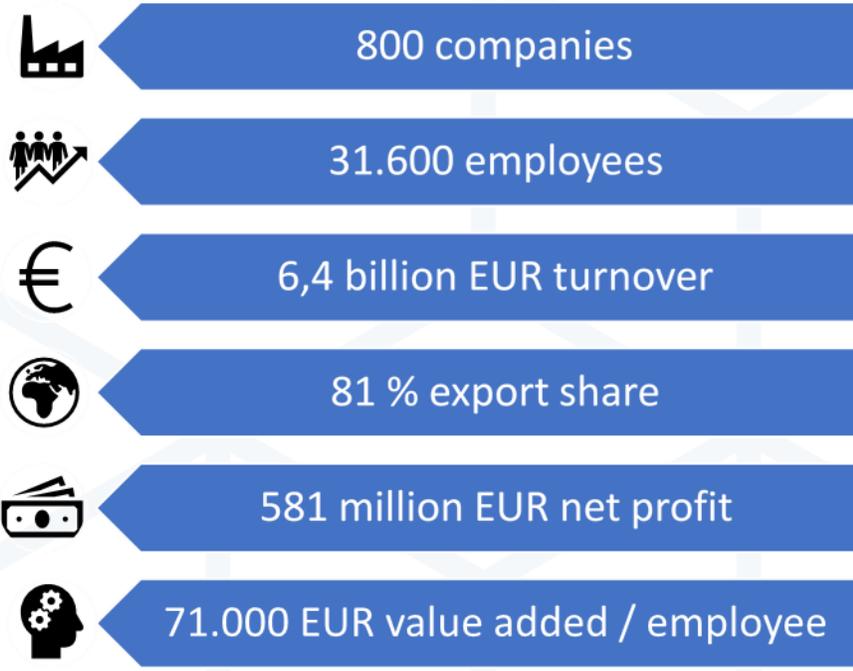
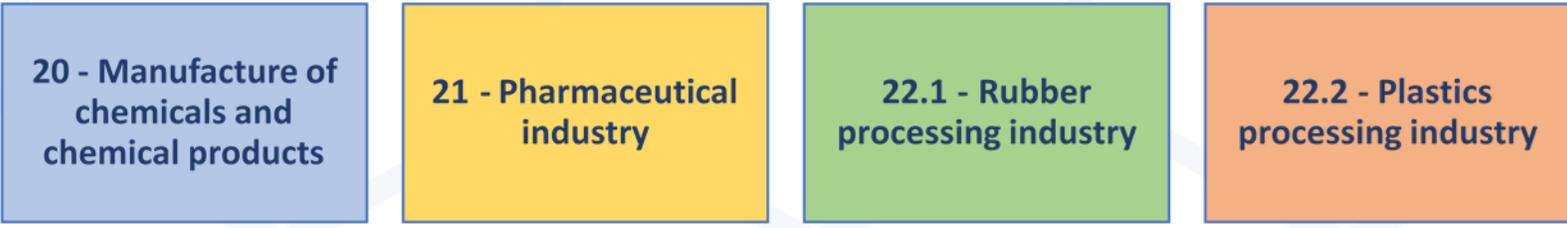
- Tools and testbed
- Industry connections in Slovenia reinforced: SSbD in industry
- New ideas for research strands
- Communication to the Balkan countries



GA 101058245

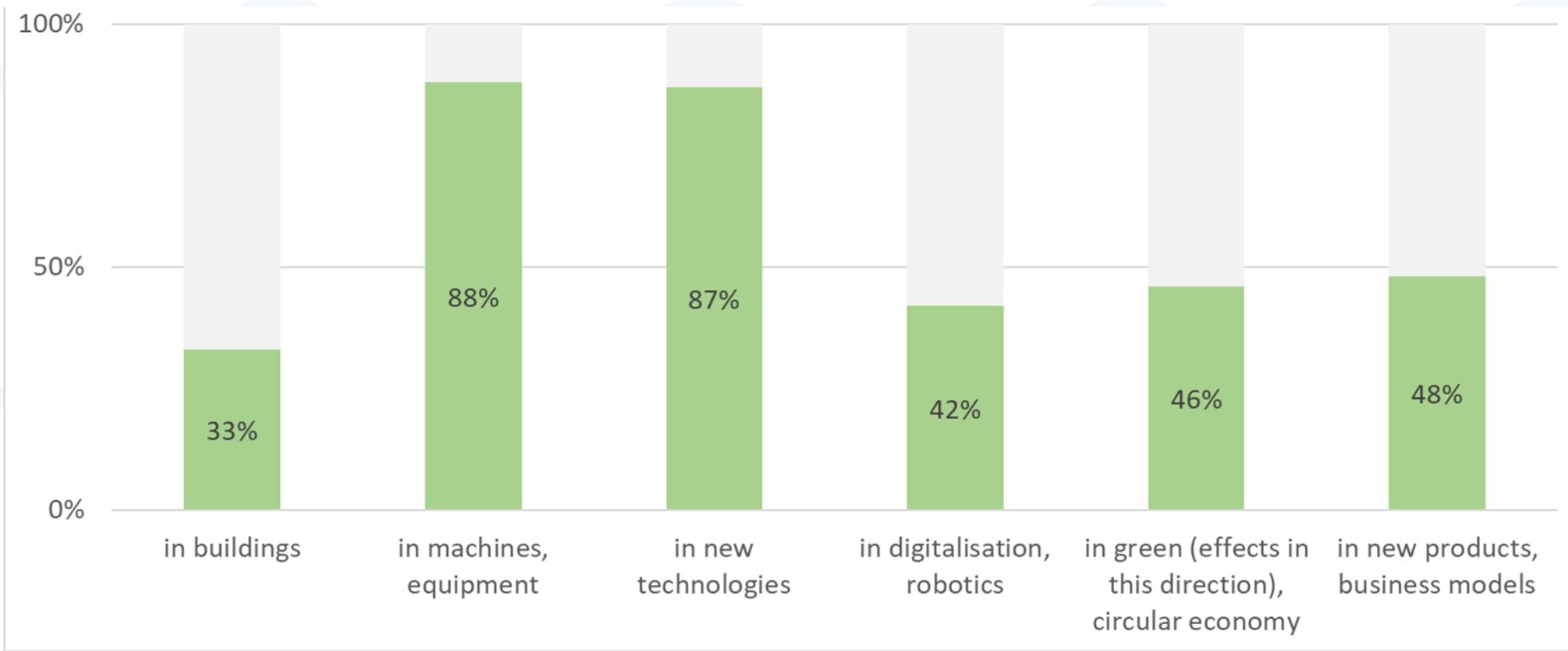
Value of EU projects to the region

Chemical Industry in Slovenia



Value of EU projects to the region

Slovenian Chemical Industry R&I Proposals



Active membership as reinforcing capacities

Thank you!
Contact details:
Dr. Barbara Tišler
E-mail: barbara.tisler@ki.si

www.ki.si



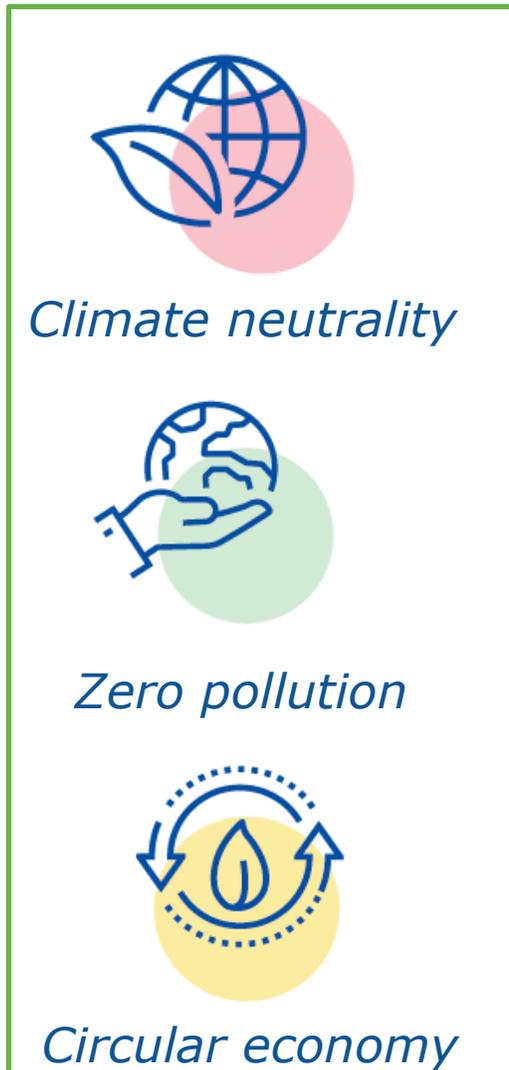
Safe and Sustainable by Design

IndTech
2 June 2022

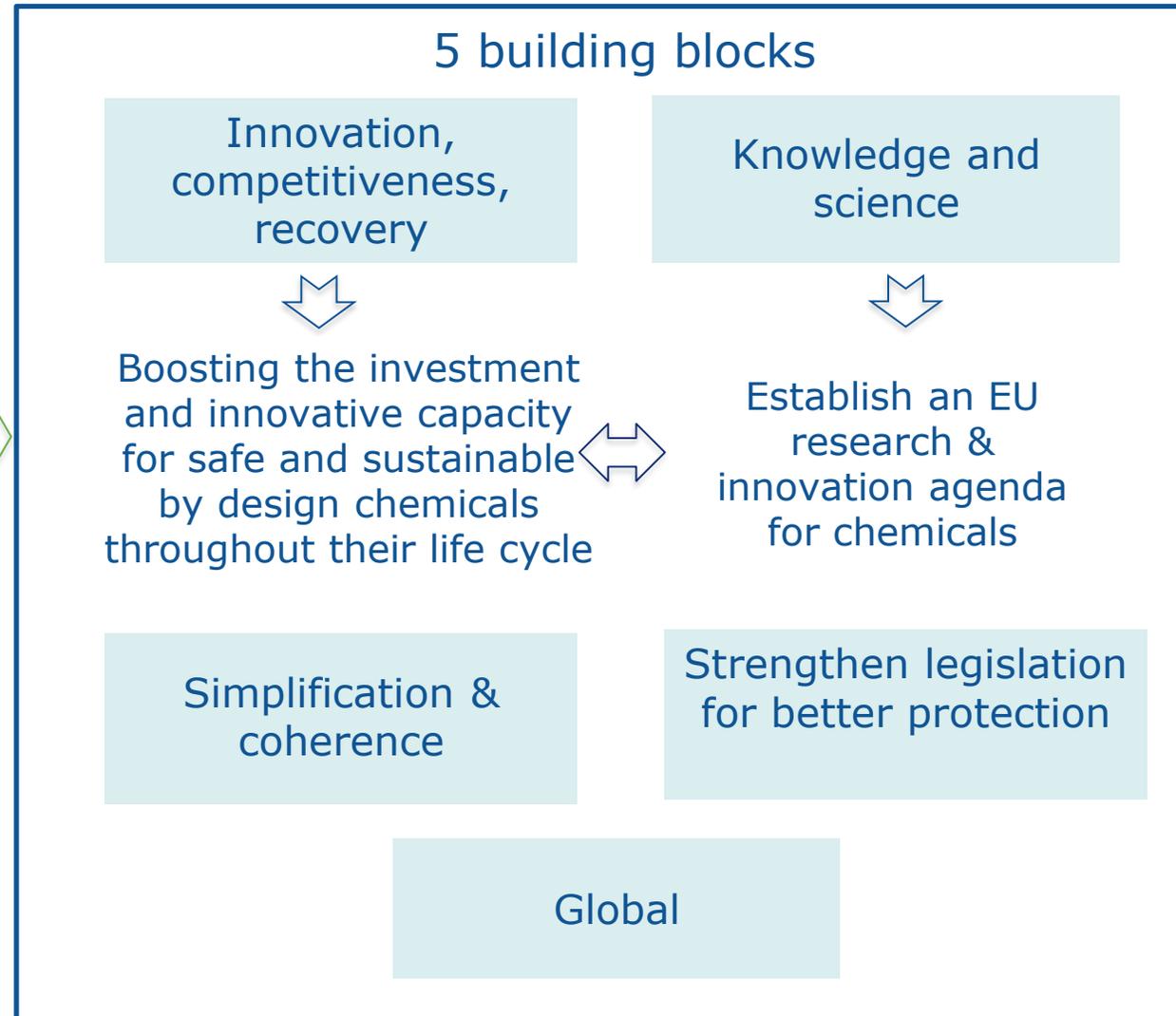
Aleksandra Małyska
Industrial Transformation
Directorate-General for Research and Innovation

Policy Framework

The Green Deal



Chemicals Strategy for Sustainability



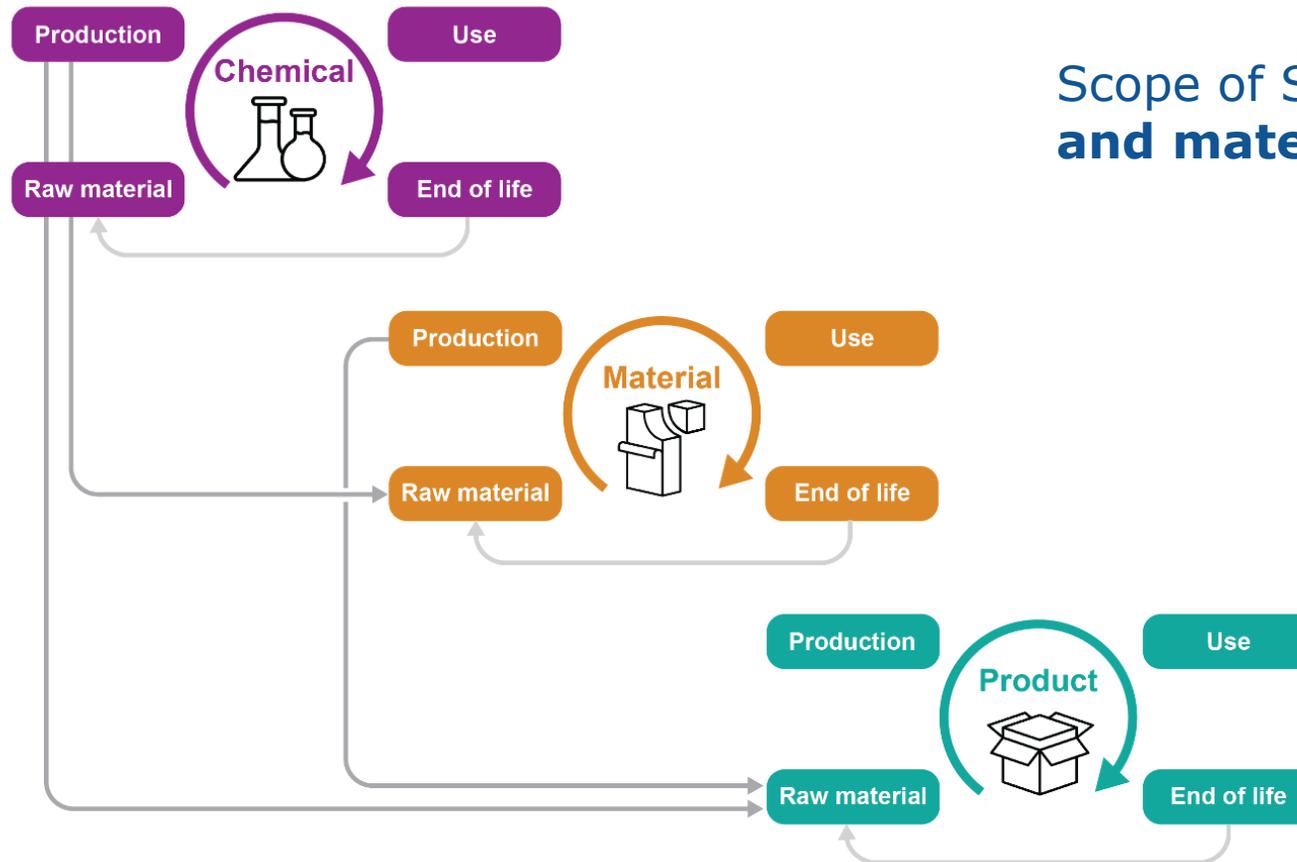
EU related initiatives

- Ecodesign for Sustainable Products
- Green claims
- Products specific (e.g. batteries)
- REACH (info on environmental footprint)
- Sustainable finance/taxonomy
- Green public procurement
- Eco-label



The concept

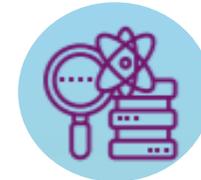
Safe and Sustainable by Design (SSbD) is an approach to the design, development and use of chemicals and materials that focuses on providing a **function** (or service), while **reducing harmful impacts** to human health and the environment.



Scope of SSbD: **chemicals and materials**

Expected applications of SSbD

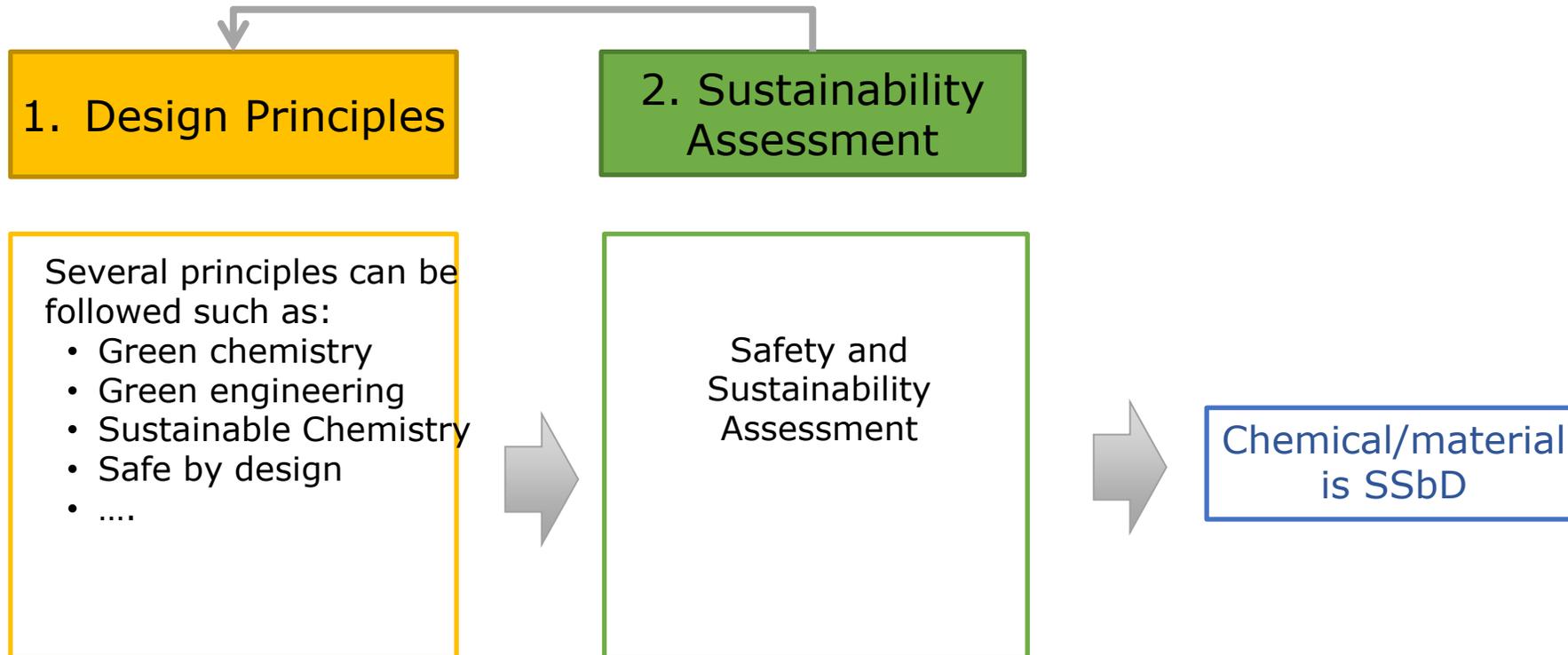
- **Steering innovation** towards the green industrial transition
- Substitute (as far as possible) or minimise the production and use of substances of concern, in line with and beyond upcoming regulatory obligations
- Minimising the impact on health, climate and the environment (air, water, soil) during sourcing, production, use and end-of-life of chemicals and materials



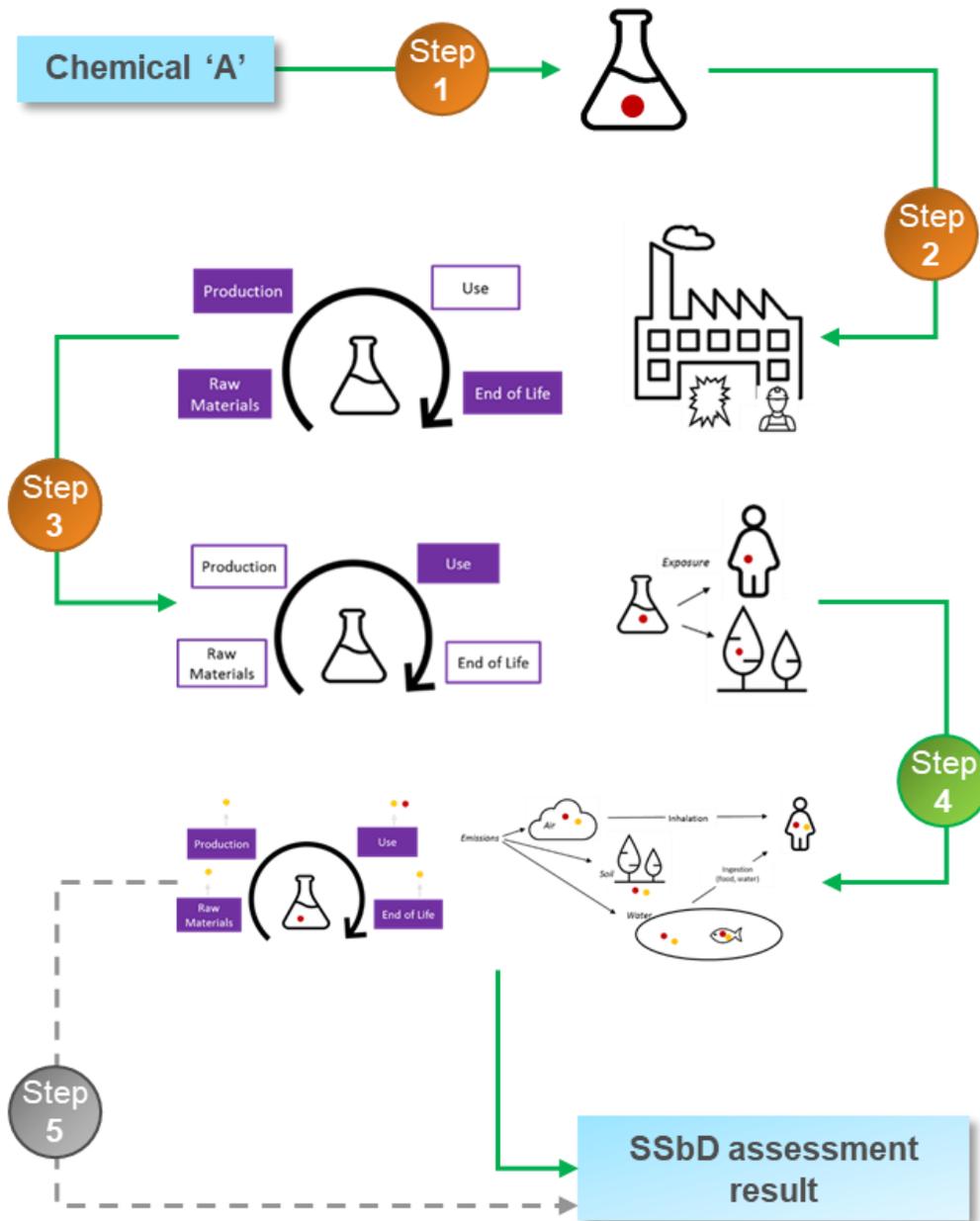
👉 Enabling change through R&I

SSbD Framework components

The SSbD framework entails two components



Safety and sustainability assessment



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)

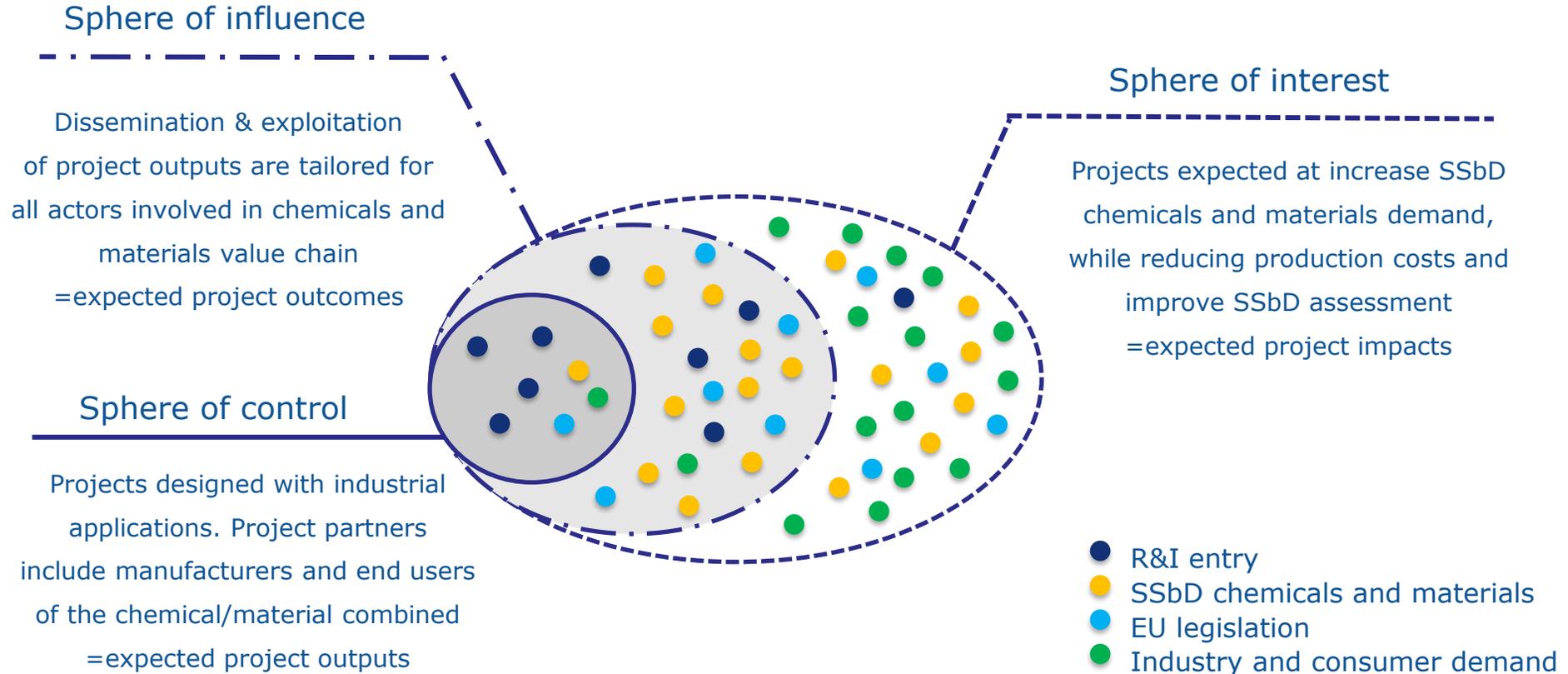
Step 4: Environmental sustainability assessment (Life Cycle Assessment)

Step 5: Social and economic sustainability assessment

Case studies to test framework

Group	Application	Description
Plasticisers <i>(non-phthalate)</i>	Food contact materials (FCM)	Case study on phthalate-free plasticisers, as an example addressing consumer exposure
Surfactants	Textiles processing	Case study on surfactants used in the textile processing during the cleaning phase (scouring)
Flame retardants <i>(halogen-free)</i>	Information and communications technology (ICT) products	Case study on flame halogen-free flame retardants, addressing circularity and also consumer exposure

Expected impact/outcome in SSbD R&I



Next steps

- **3rd SSbD Workshop** to discuss Case Studies
 - JRC will continue first case studies on framework
- **Commission Recommendation on the SSbD Framework** in Q4 2022
 - By MS in their research programmes
 - By industry in their R&I processes
- More **testing** of framework needed (theoretical and practical) as well as development of **tools**
- **Feedback loop** to refine SSbD framework



Important links

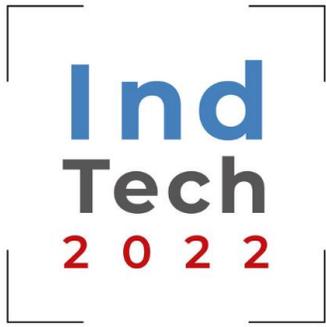
- SSbD stakeholder network registration:
<https://ec.europa.eu/eusurvey/runner/9c66713d-15e4-b8ea-36b4-d5d1d8b471db>
- First report from JRC: Safe and Sustainable by Design chemicals and materials - Review of safety and sustainability dimensions, aspects, methods, indicators, and tools
<https://publications.jrc.ec.europa.eu/repository/handle/JRC127109>
- Second report on framework and criteria – coming soon



Thank you for your attention

Register as a stakeholder:

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



Safe and Sustainable-by-Design

Dr. Daniel Witthaut, Executive Director Innovation
Cefic
29th June 2022, Grenoble



Experience:

- Since 2021: **Executive Director Innovation at Cefic**
- Since 2001 at **Evonik** in several (leadership) roles (VP New Business Development, Head of Strategy at Corporate Innovation)

Education:

- 2008: **MBA** University of Chicago
- 2001: **Ph.D. Organic Chemistry**, University of Münster

Other:

- Since 2017 **Visiting Professor** on Strategic Innovation Management at the TU Munich School of Management
- Several **Board Seats** (VCW, SusChem, A.SPIRE)



SSbD concept should focus on the “by Design” part

Safety

- “Safety first” is a long-standing commitment of the chemical industry
- “Safety” is **regulated in several laws/regulations** like REACH, CLP etc.

Sustainability

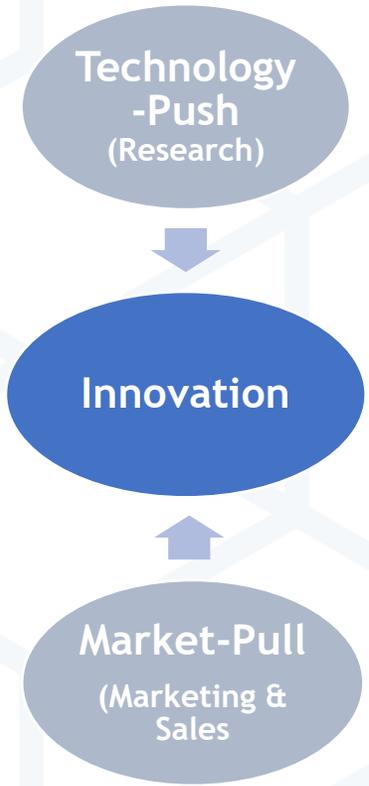
- “Sustainability” is the **guiding “North Star”** for many companies, supported and expected by stakeholders e.g., customers, investors and employees
- Can be seen as a **huge business potential** for the industry
- World Business Council of Sustainable development (WBCSD) has developed a **Portfolio Sustainability Assessment (PSA) methodology** that is applied to existing product portfolios, investments, innovation projects portfolio and M&A.

Safe and Sustainable by Design

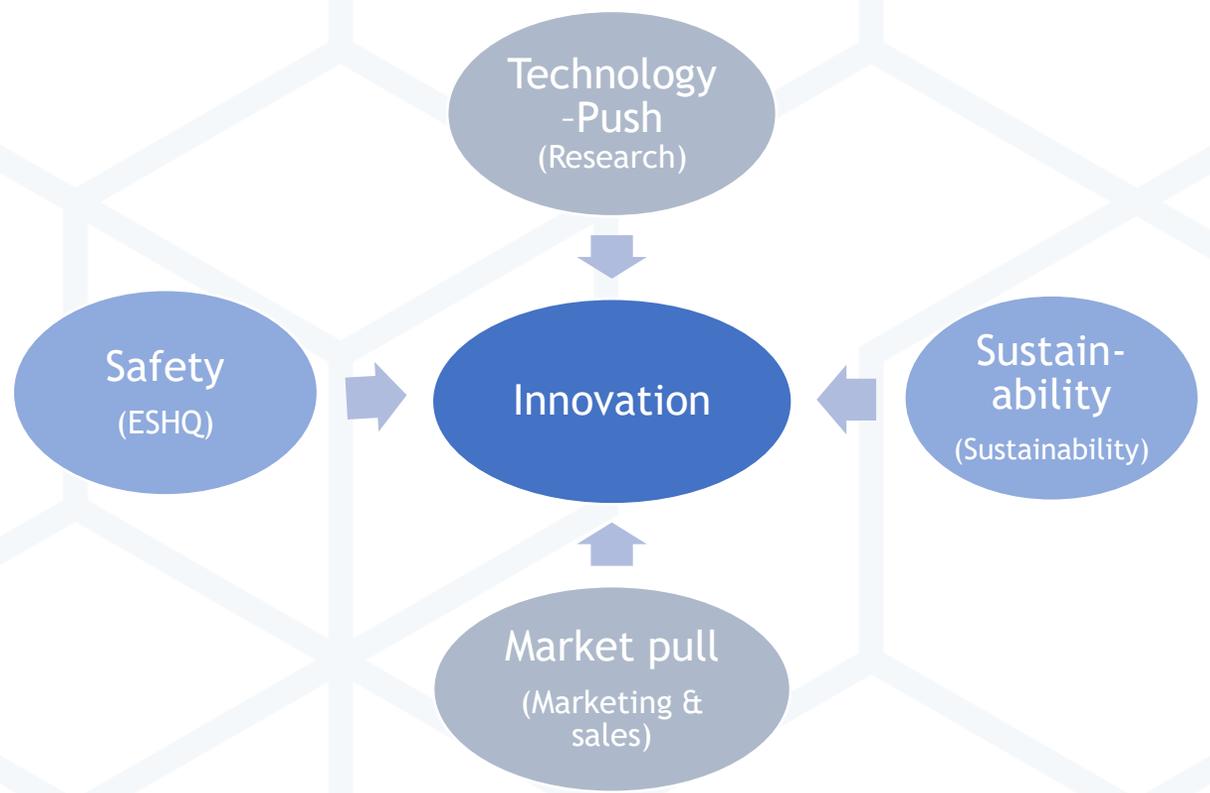
- **CSS** aims to catalyse the shift towards chemicals and materials that are safe and sustainable **through regulation** (e.g. REACH) **and innovation** (SSbD)
- **SSbD concept** can be turned into a mobilising power, **guiding and driving innovation** to enable the transition towards the CSS goals

Guiding principles for innovation have changed over the past

Past Drivers for innovation



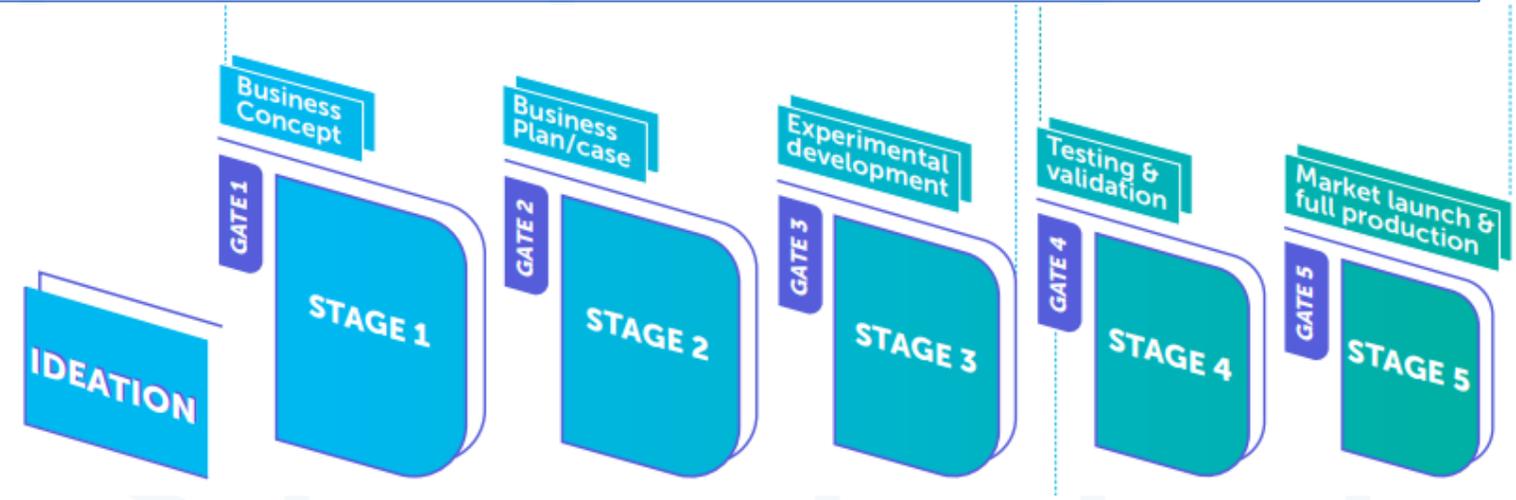
Current + future drivers for innovation



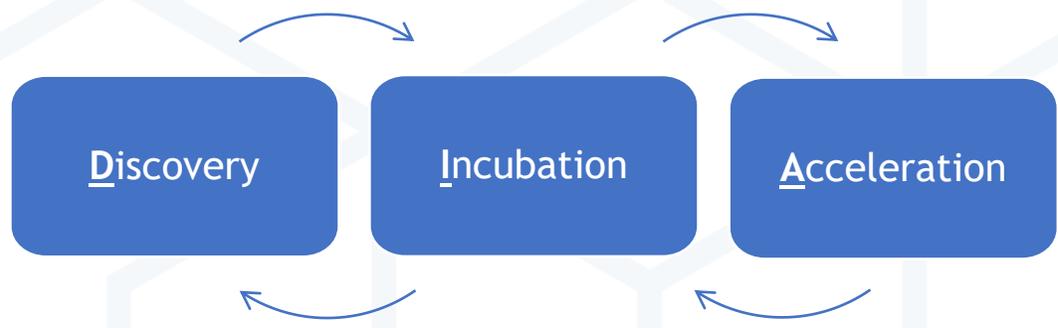
Innovation is a process that needs to create value. No Innovation without market acceptance!

Integration of SSbD concept into ONE Inno-Management Process

Example process for incremental product development: Stage-Gate process



Example process for transformational /breakthrough Innovation: DIA process



Making SSbD a highly welcomed and broadly implemented concept

- SSbD as part of the CSS is **highly welcomed** by industry and can become the “**world formula for innovation**”
- Regulation has to prioritise problematic substances, then SSbD can **serve as a driver and guiding principle for innovation**
- Opportunity for clear guidance for acceptance of chemicals which will **increase confidence for innovation and investments in the EU**
- To reach Green Deal targets, a **transition at scale is needed**, requiring that SSbD concept is implementable and operable including at SME-level (**Do not make it too complex!**)
- **Predictive tools / toxicology data sharing tools are needed** to identify red flags already at an early stage of the innovation process to avoid wasting time and resources
- **Transparency** on fulfillment of safe and sustainable criteria is needed to allow benchmarking and supporting innovators that follow the SSbD principles.

- Use SSbD concept as a **guiding principle for innovation**
→ Focus to trigger and guide the development of new/redesigned products and processes to achieve the ambitions of the EU Green Deal towards climate neutrality, circular economy, zero pollution
- Work with practitioners as well as academics to **develop and roll out one innovation management process** including the SSbD criteria, that gives guidance when facing dilemmas between safety, sustainability and performance/commercial parameters.
- **Cefic is happy to engage and support the further development** of the framework through e.g. actively participating in the IRISS project, providing case studies, piloting the concept of innovation projects at our Cefic member companies etc.

Thank you!
Contact details:
Dr. Daniel Witthaut
E-mail: dwi@cefic.be
www.cefic.org



Wrap up Safe and Sustainable By Design

Myriam Tryjefaczka
Tarkett Sustainability & Public Affairs Director EMEA
June 29th 2022



Why the Safe and Sustainable By Design initiative?

The **Chemicals Strategy for Sustainability (CSS)** was adopted in October 2020. It is one of the important milestones bringing the chemicals' sector at large into the Green Deal as part of the **Green Deal's zero pollution ambition**. From the **R&I perspective**, the strategy announces the **'safe and sustainable by design' concept**.

The ambition is that the SSBD framework becomes a global reference for steering innovation towards the **green industrial transition**; **substituting** as far as possible the production and use of substances of concern; promoting the **use of sustainable sources and feedstock** for the productions of chemicals and materials; **minimising the impact of the use and production** of chemicals and materials on climate, the environment and human health **during the entire life cycle**; and **steering research and innovation (R&I)** investments from industry and public authorities.

- The European Commission is planning to **publish the SSBD Framework** as the Commission Recommendation to provide scientists and innovators **guidance on the design of new chemicals and materials and on how to assess safety and sustainability through their life cycle**.
- The European Commission will encourage Member States and stakeholders **to use the SSBD framework in their R&I programmes and to support its testing** to ensure this framework is applicable for the industry, RTOs, academia and other users.

European Partnership for Assessment of Risks from Chemicals (PARC) Safe & Sustainable by Design - Concepts and Toolboxes

- In the implementation of the Safe and Sustainable by design concept, PARC will contribute in the **translation of criteria and methods in operation**, through the participation in discussion about the concepts, the collaboration on methods and models and the development of a **Toolbox integrating tools for safety and sustainability assessment, coming from different policy areas and strategies.**
- The participation of scientists from **national and European agencies in charge of regulatory risk assessment with scientists from academia** in the implementation of use cases in various sectors will contribute in the regulatory preparedness and the **transfer of knowledge from regulators to innovators to support a responsible research and innovation in chemistry.**
- Through **collaboration with academia** and development of **synergies between Horizon Europe partnerships**, PARC will contribute to the regulatory preparedness to move towards a **safe® innovation approach.**

IRISS - the InteRnational ecosystem for accelerating the transition to Safe-and-Sustainable-by-design materials, products and processes

The IRISS project aims to **connect, synergize and transform** the SSbD community in Europe and globally towards a **life cycle thinking**

- **Strongly support the SSbD implementation in industry** to achieve more safe and sustainable products for society
- **Develop a global permanent network for long term cooperation**

Key deliverables

- **Compiling SSbD criteria and guiding principles**
- **Building skills and identifying competence gaps**
- **Co-creating and regularly updating roadmaps that ensure alignment between R&D, governance and industry**

Beyond European Union OECD's role in building up sustainable chemicals management capacity: Chemical and Biosafety Programme

OECD member countries, many partner countries and other stakeholders work together to develop and coordinate activities on **chemical safety and biosafety** on an international basis with the following objectives

- assist OECD Member countries' efforts to protect human health and the environment through improving chemical safety and biosafety;
- **make chemical control policies more transparent and efficient** and save resources for government and industry; and **prevent unnecessary distortions in the trade** of chemicals, chemical products and products of modern biotechnology.

The proactive consideration of chemicals at the design stage in the context of SSD approaches **enables chemicals through-out their life-cycle to be better managed** - in the sourcing, manufacturing/processing, use, product and end-of-life.

- Safe & Sustainable by Design at the OECD

The OECD has been working over 50 years on aspects related to chemical safety ([see key milestones](#)). Beyond the work on [test guidelines](#) and [hazard/exposure assessment](#), activities related to Safe & Sustainable Design have included [definition of sustainable chemistry and associated activities](#), and guidance on the [identification of safer alternatives](#). Recent work has focused on [Sustainable Design of Plastics from a Chemicals Perspective](#) as well as a [Safer Innovation Approach \(SIA\)](#) for nanomaterials.

Challenges

- **Foster collaboration across European Union:** Networks like CERIC ERIC, EARTO and SUSCHEM, are key. Specially within SUSCHEM, also the voice and expertise of *small countries*, is important and valuable, enabling them to be in the center of European activities, though located away from Brussels.
- A framework might be more complex at the beginning but it can avoid time loss. Overall it needs to be **simple for small companies and avoid additional complexity.**
- “By design”, connects to innovation and what should be considered as guiding principles for products to **fulfil criteria before being put on the market** - toxicology, predictive studies, simulation tools, **dynamics between sustainability and commercial performance and applicability for the whole industry** -
- SSBD is a must but still not enough. A system for **Innovation management** supporting performance, while adapting the industry should support the **European Industry competitiveness** .
- Regulation (REACH-CLP) has to prioritise problematic substances, then SSbD can **serve as a driver and guiding principle for innovation.**
- **Transparency** on fulfillment of safe and sustainable criteria is needed to allow benchmarking and supporting innovators that follow the SSbD principles.



