

Safe(r) and Sustainable Innovation Approach (SSIA)



Safe(r) and Sustainable Innovation Approach (SSIA)

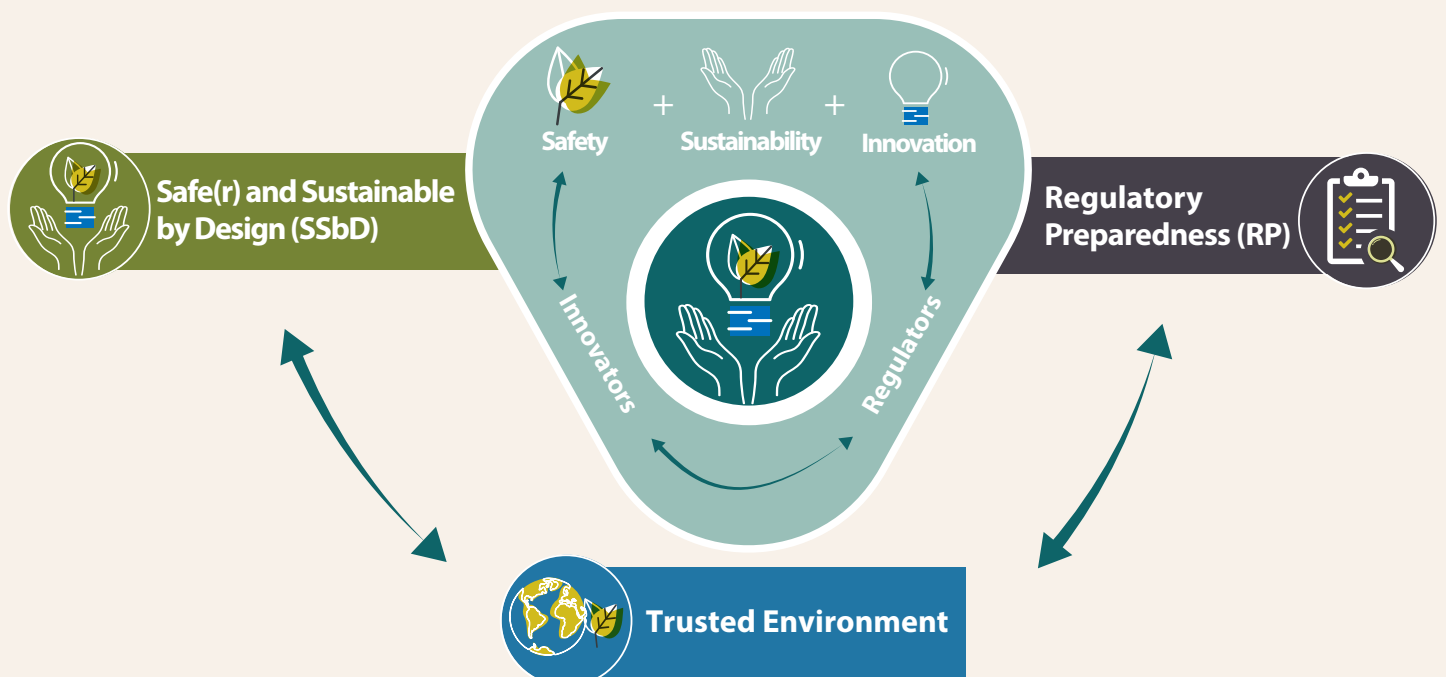
WHAT IS SSIA?

The **Safe(r) and Sustainable Innovation Approach (SSIA)** seeks to enhance the ability of all stakeholders to address the safety and sustainability assessment of innovations in a robust yet agile manner. SSIA aims at reducing the time gap between the emergence of technological innovations and the development of suitable risk assessment tools and frameworks. SSIA combines:

- **Safe(r)-and-Sustainable-by-Design (SSbD)** concept, which recommends innovators to integrate safety and sustainability considerations as early as possible into the innovation process.
- **Regulatory Preparedness (RP)** aims to improve the anticipation of regulators in order to facilitate the development of adaptable (safety and sustainability) regulation that can keep up with the pace of knowledge generation and innovation of nanomaterials, nano-enabled products, and advanced materials.

Both **SSbD** and **RP** concepts are supported by a process to share and exchange knowledge, information and views in a **Trusted Environment (TE)**. SSIA thus relies on dialogue between innovators and regulators.

SAFE(R) AND SUSTAINABLE INNOVATION APPROACH (SSIA)



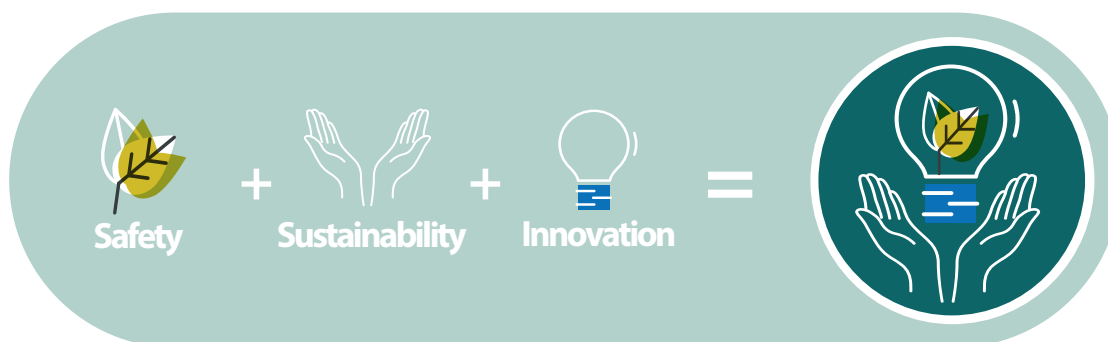
HOW DOES SSIA WORK?

SSIA brings two significant cultural changes in comparison to current innovation management.

First, by incorporating SSbD considerations **as early as possible in the innovation process** the scope shifts **from remediation to prevention**. SSIA considers any concern on safety and sustainability, which may be generated by the innovation, from the design phase to the end of full life cycle of any materials or articles obtained by this innovation.

The second cultural change brought by SSIA is **the incorporation of communication and/or collaboration channels between innovators and regulators**, as an inherent aspect at the starting phase of the design. This improvement is mainly to anticipate and develop efficient and timely regulations, while reducing the burden to innovative implementation. **Anticipation and communication/collaboration** are both key concepts at the origin of the operational efficiency of SSIA.

Bringing significant cultural changes, the development and successful implementation of SSIA need the support and compromise of the upper management of all the involved organisations, e.g., public authorities, international organisations, research centres, or industry.



WHY REGULATORY PREPAREDNESS (RP)?

RP empowers regulators and policy makers in order to **better anticipate and adapt governance** to keep up with the pace of knowledge generation and innovation of nanomaterials, advanced materials and nano-enabled products (i.e., modify and/or develop regulatory tools for risk assessment/risk management decisions). This requires that regulators become aware of and understand innovations sufficiently early to take appropriate action, and that appropriate regulatory tools are modified or developed as needed.



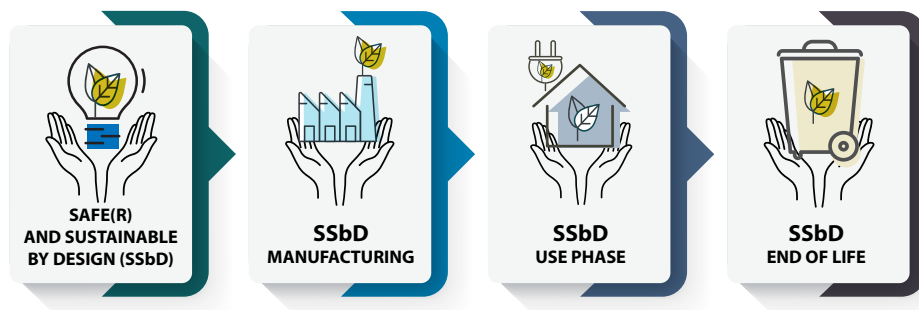
WHY A TRUSTED ENVIRONMENT (TE)?

A TE is a physical or virtual space in which industry, innovators, governmental institutions, and other stakeholders can **share and exchange knowledge, information, and views** on new technologies (e.g., innovative nanomaterials, nano-enabled products, and advanced materials). A TE invites trust by **ensuring confidentiality and protecting intellectual property**. This dialogue ideally starts at an **early stage of the innovation process**.

WHY SAFE(R)-AND-SUSTAINABLE-BY-DESIGN (SSbD)?

SSbD can be described as an approach that focuses on providing a function (or service), while avoiding onerous environmental footprints and chemical properties that may be harmful to human health or the environment.

SSbD APPROACH

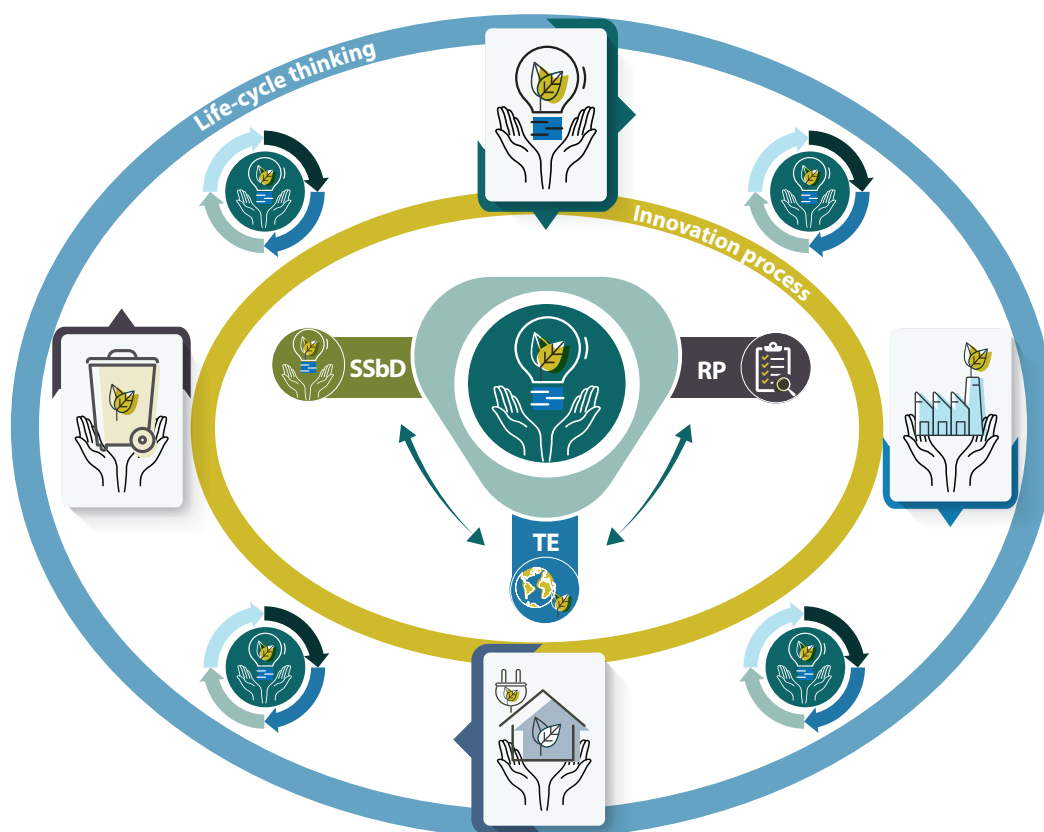


In essence, the SSbD approach aims to **identifying and minimising, at an early phase of the innovation process, the impacts concerning safety for humans and the environment and for sustainability, minimising the environmental footprint, regarding climate change and resource use and, protecting ecosystems and biodiversity, taking a life-cycle perspective.**

The **SSbD** approach addresses the **safety and sustainability** of the material/chemical/product and associated processes along the different phases of a **whole life cycle**, including all the steps of the research and development (R&D) phase, production, use, recycling and disposal. For safe and sustainable by design in nanotechnology, three pillars of design can be specified:

- Safe(r) and sustainable materials and products
- Safe(r) and sustainable production
- Safe(r) and sustainable use and end-of-life

SAFE(R) AND SUSTAINABLE INNOVATION APPROACH (SSIA)



HOW CAN SSIA BENEFIT INDUSTRY?

- Safer and sustainable products/ innovations
- Better selection of materials
- Higher consumer acceptance
- More cost-effective innovation
- Reduced time required for R&D
- Faster time to market
- Preparedness for (future) regulatory challenges
- Higher efficiency in communication/collaboration with regulators
- Shorter time to market for sustainable innovations

HOW CAN SSIA BENEFIT SOCIETY?

- Safer and more sustainable products on the market
- Promoting sustainable innovations by minimising safety and/or sustainability risks
- Early elimination of risky innovations

HOW CAN SSIA BENEFIT REGULATORS?

- Development of regulations for safer and sustainable products
- Better anticipation of emerging risks
- Prepared for future regulatory challenges (RP)
- More efficient communication/collaboration with industry
- Timely actions
- Clear contributions to regional strategies on sustainable chemistry and thereby to the Sustainable Development Goals of the United Nations

HOW CAN SSIA BENEFIT RESEARCHERS?

- Stimulate research towards impact-driven sustainable innovations
- More policy-relevant research
- Better understanding of the possible consequences of failure/success
- More effective science-policy inter-phase by ensuring new insights in research have a timely impact in assessing the safety and sustainability of innovations and in the generation of test guidances.

For more information on the Safe(r) and Sustainable Innovation Approach (SSIA), please consult the following:

- [OECD \(2022\) Sustainability and Safe and Sustainable by Design: Working Description for the Safer \(and Sustainable\) Innovation Approach](#)
- [OECD \(2020\) Moving Towards a Safe\(r\) Innovation Approach \(SIA\) for More Sustainable Nanomaterials and Nano-enabled Products](#)



OECD WORK ON SSIA:

<https://oe.cd/ssia>

CONTACT US BY EMAIL:

ehs.contact@oecd.org

SOCIAL MEDIA:

- Twitter: [OECD_ENV](#)
- YouTube: <http://bit.ly/youtube-chemical-safety>

SUBSCRIBE TO OUR NEWSLETTERS:

- Chemical Safety: <http://bit.ly/newsletter-chemical-safety>
- Biotechnology update: <http://bit.ly/biotech-newsletter>

© OECD June 2023

OECD freely authorises the use of this material for non-commercial purposes. All requests for commercial uses of this material or for translation rights should be submitted to rights@oecd.org.

IMAGE CREDITS:

All images are from Shutterstock.com unless otherwise specified.