



European Policy Brief

Innovation for sustainability (I4S)

Implications for Public Policy

Policy recommendations for enhancing innovation for sustainability in business

Innovation for Sustainability (I4S) has been the central theme of a European Commission Marie Skłodowska-Curie Initial Training Network (ITN). This research group explored innovation for sustainability with entrepreneurs, SMEs, MNCs, and international organizations, around the world. The ITN included PhD Students and Senior Researchers in a consortium of 8 universities, coordinated by ABIS in Brussels. This brief provides recommendations to EU policy makers on how to enhance innovation for sustainability, informed by our I4S research findings.

28 October 2016¹

Key Messages

Innovation for Sustainability involves:

Sustainable Technology Development. Developing new technologies within SMEs, such as sustainable energy technologies, involves different organizational competencies, routines and culture, as well as top management cognition, vision and long-term commitment. Clear and predictable policies and incentives are required to foster long-term SME investment in R&D for sustainability.

Business Models for Sustainability. Innovation for sustainability entails innovations in the 'business models' of companies and social enterprises – that is, in the way companies create, distribute and capture value. Business model transformation involves complex institutional dynamics. Strong public policy support for sustainability is required to reinforce the evolution of business models for sustainability.

Collaboration for Change. Innovation processes increasingly involve collaboration between multiple stakeholders, through innovation ecosystems, platforms and hubs. Collaboration facilitated by some international organizations, working across scales, is also driving systemic change. EU policy should further foster the establishment of open platforms to address complex sustainability challenges.

Sustainability Standards. Standards, such as sustainable building standards, are emerging through creative company 'demonstration projects' and 'living labs'. These involve multiple, dynamic interactions between standards makers, policy makers, homeowners, users, and others. EU policy should leverage the productive interface between companies and government, in the setting of sustainability standards.

Nature-Based Models. Learning from nature has inspired innovations for sustainability at product, process, organizational and system levels. Nature based models have the potential to help society reconnect to the living planet – a necessary prerequisite for the regeneration of our socio-ecological systems. Public policy should further explore nature-based solutions to sustainability challenges.

Values-Based Leadership. Leaders with broader system perspectives often hold ecological and social values, as well as economic ones. Values, which connect purpose with profit, are a source of motivation within the workforce, enable collaboration within and between organizations, and can be cultivated with firms. Policy should help support a shift in such mindsets and values to support systems transformation.

1. This has been prepared by Sally Jeanrenaud, Business School, University of Exeter, UK in close collaboration Monique Ritter, as well as Erik Hansen, Steve Kennedy, Katre Leino, Taryn Mead, Mario Pansera, Felix Philipp, Sally Randles (I4S Chief Scientist), Andreas Rasche, Annemieke Roobeek, Stefan Schaltegger, Kosheek Sewchurran, Samuel Wicki, Amanda Williams, and ABIS, Brussels, Belgium.

1. Introduction and Research Focus

The overarching aim of the I4S Project was to better understand the processes and practices that foster business innovation for sustainability, and to provide insights into how the EU can better achieve “smart, sustainable, and inclusive growth” as set out in Europe’s Horizon 2020 Strategy.

Our project went beyond the classical approaches to the study of innovation in business, namely to understand how innovation in business can contribute to sustainable development. Innovation for sustainability involves making changes to an organization’s philosophy and values, as well as products, processes, and business models, to serve the specific purpose of creating and realizing social and environmental value in addition to economic returns.

A variety of terms are used to describe innovation for sustainability, such as sustainability-oriented innovation, sustainability-led innovation, and sustainability-driven innovation. Each has a slightly different meaning, but the basic message is the same. The big societal challenges of our era – climate change, water, resource and energy security, loss of biodiversity, pollution, poverty and rising social inequalities – are rapidly changing the contexts in which business operates, as well as transforming the role of business in society.

Sustainability issues present many challenges to business, such as risks of climate change to supply chains, logistics and operations, or the impact of new sustainability legislation. However, they also present many new business opportunities, such as the reduction of costs through waste minimization, the development of green markets, the creative engagement of citizens to co-evolve solutions, and the enhancement of value through positive brand reputation.

The I4S consortium involved 8 research projects across the EU and one from South Africa (see Annex), involving collaboration between academia, business and other stakeholders. Our research attempted to get inside the ‘black box’ through which innovation processes and practices are managed to understand the forces at work shaping people, processes, and business models for sustainability. Each research project offered a unique glimpse into the dynamics of change.

We found that innovation for sustainability is taking place at an organizational level, as well as at a wider systems level. Innovation occurs within social enterprises, SMEs, MNCs and other organizations, as well as between firms, and within the community, and can involve diverse stakeholders. Innovation for sustainability processes also involves complex multilevel dynamics, and the coevolution of social, economic, political and technological systems.

We recognize that global and EU policy frameworks, such as Horizon 2020, the Innovation Union, and the Circular Economy agendas actively support such innovation for sustainability. However, within the single market, each member state has its own national context, opportunities and barriers, which can drive or hamper innovation processes and outcomes.

Policy makers have a crucial role to play shaping business innovation for sustainability. They create the ‘enabling conditions’ for change. They set long-term goals and targets, establish rules and legislation, reduce existing barriers to innovation, supply financial incentives, and build physical infrastructure. They also lead by example (e.g. through their own sustainable public procurement policies), and by investing in initiatives, which are too risky for private investors.

They have a role to play in encouraging systemic change. Many countries in the EU are now at a stage where a lot of existing legislation needs overhauling to support a shift away from the linear take-make-waste economies based on fossil fuels, towards a circular economy powered by renewables. Metrics of success are also shifting from a sole emphasis on GDP, to new measures of success which consider people and planet, as well as profit. These changes are also shaping innovation contexts.

Policy makers also have a role play a role in stimulating and supporting initiatives from diverse stakeholders in society, and in fostering the emergence of ideas from the bottom-up. They can facilitate knowledge generation and exchange through inclusive learning forums. These innovations are beginning to happen.



2. Innovation for Sustainability – Policy Context

The United Nations' 2030 Sustainable Development Agenda, agreed by 193 nations in 2015, emphasizes the roles of People, Planet, Prosperity, Peace and Partnerships in shifting the world onto a path of inclusive, sustainable and resilient development. This new agenda outlines 17 Sustainable Development Goals (SDGs) to end poverty, fight inequality and injustice, and tackle climate change by 2030. Innovation is critical to tackling all the SDGs, and is specifically highlighted in SDG 9 'Industry, Innovation and Infrastructure', where it is seen as a way of finding solutions to urgent global societal challenges.

Europe 2020 Strategy – the European Union's ten-year plan – aims to achieve smart, sustainable and inclusive growth across its member states. Launched in 2010, the strategy has five main targets, which cover employment; research and development; climate/energy; education; social inclusion and poverty reduction. The target is to invest 3% of EU's GDP into research and development, to support innovation for jobs and growth.

The Innovation Union – a flagship initiative of the Europe 2020 strategy – aims to create an innovation-friendly environment that makes it easier to get ideas turned into products and services, and to generate growth and jobs. It has over 30 action points, many relating to the role of the public sector in boosting innovation by setting the right framework conditions to support innovation. A recent review of progress recognized that much progress had been made to date but that the world is evolving quickly, particularly through the impact of digital technologies that is making science and innovation processes more open, collaborative and global. It has three new goals for EU research and innovation policy since 2015, called the '3 Os': Open Innovation, Open Science and Open to the World.

The EU's Circular Economy Action Plan (COM/2015/0614 final) – launched in 2015 – is a more recent addition to Europe's efforts to develop a sustainable low carbon, resource efficient, and competitive economy. This has an ambitious action plan for "closing the loop" of product lifecycles through greater recycling and re-use. It aims to decouple economic growth from resource use. The Circular Economy package covers product design, production processes, consumption choices, waste management, including the legislation that supports this reorientation of production and consumption. The transition to a circular economy may be the biggest revolution and opportunity for how we reorganize production and consumption in our global economy in the last 250 years.

3. Results of our Project

Six key findings are outlined below

3.1 Sustainable Technology Development – better policy support for SMEs needed

Some well-established engineering and technical SMEs in Europe have the potential to develop sustainable energy technologies. Such changes would help governments achieve their renewable energy targets, and help companies diversify their product portfolio and develop competitive advantage. However, developing new sustainable energy technologies in SMEs requires significantly different organizational competencies, routines and culture, as well as top management cognition, vision and long-term commitment and investment in R&D. Policy makers can support such innovation processes by providing very clear policy and legislative guidelines; ensuring predictable incentives that encourage company investment in R&D; and by building the public infrastructures needed to support sustainability transitions (e.g. renewable energy grid systems).

3.2 Business Models for Sustainability – policies influence business model evolution

Innovation for sustainability entails innovations in the business models of companies and enterprises – that is, in the ways they create, distribute and capture value. Transforming business models for sustainability in large, well-established companies involves processes of embedding new values within organizations, and the blending of commercial and sustainability logics. Small entrepreneurs, on the other hand, have greater flexibility to develop prototype business models, which can be tested in the market, and then adjusted quickly. Policy makers can support the evolution of business models for sustainability, by establishing strong sustainability policies, which send clear market signals. Even small changes can have a significant long-term effect on the value propositions

of large companies, because of their scale (e.g., regulations to have fridge doors on supermarket display cabinets to save energy).

3.3 Collaboration for Change—involves multiple stakeholders in innovation processes

Innovation for sustainability increasingly involves collaboration between diverse stakeholders in innovation ecosystems, platforms, and hubs. The importance of partnerships, alliances, and networks is not new; but it is increasingly needed in light of the complex sustainability challenges. Technology also makes it easier for organizations to engage multiple actors. Collaboration builds bridges between sectors, leverages the creative synergies of the group, and is of key importance for creating systemic sustainable impact. Dynamic communities of actors create and capture new value through sophisticated models of both collaboration and competition. Innovation ecosystems for sustainability have a greater chance of success if organized around certain themes, such as 'advancing towards a circular economy'. Policy makers can support, facilitate and participate in these entrepreneurial, and multi-stakeholder innovations for large-scale systems change.

3.4 Creating Standards—involve citizens and users in creative ways

Sustainability standards have a powerful influence on the way we do business. They influence practice and shape legislation, particularly that concerned with reducing CO2 emissions. Standards in the building sector are evolving in creative ways. For example, companies showcasing new buildings, through demonstration projects, or living labs, are facilitating dynamic interactions between standards makers, policy makers, homeowners, users, and others. Standards and norms are emerging and being legitimized through more exploratory and reflexive processes, which invite multiple perspectives on problem solving – what some call 'experimental governance'. Policy makers can make greater use the 'interface' between the solutions generated by business on the one hand, and a government's need to establish legislation on the other.

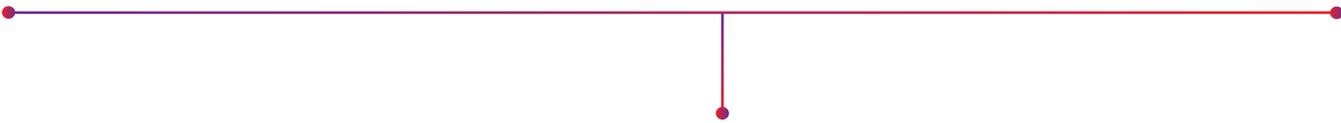
3.5 Working with Nature—nature based models help us reconnect to the living planet

Innovation for sustainability has a lot to learn from nature. Biologically inspired innovation (or biomimicry) seeks to understand how we can 'work with the grain of life', rather than against it. It has stimulated innovations at product, process and system levels. For example, the Circular Economy is inspired by the biological principle that there is no such thing as waste in nature – the byproducts of one organism become the resources for another – summed up by the formula waste=food. Biomimicry is an increasingly popular innovation approach, especially in the larger MNCs. There are many factors that contribute to the success or failure of biologically inspired innovation processes. However, our research shows its potential in helping society reconnect to nature – a necessary prerequisite for the regeneration of our socio-ecological systems. Policy makers can further encourage these perspectives.

3.6 Values-Based Leadership—systems change involves institutionalizing new values

Innovating for sustainability requires new mindsets and values, both within companies, and for systems change. Business leaders are often motivated by a sense of higher purpose. Some hold a larger systems view of the environment in which their business operates, such as an awareness of the vulnerability of their supply chains, or of the social and ecological impacts of company products. Such perspectives often go hand-in-hand with holding social and ecological values, as well as commercial ones. Such values are critical to building a shared higher purpose within the company, and to give it direction. They are a source of motivation, commitment, and conflict resolution within the workforce; they enable collaboration within and between organizations. The more they are cultivated through every day actions, the more they have the potential to transform company culture.





4. Recommendations to Policy Makers for Innovation for Sustainability

Our research shows that more could be done to unleash the innovativeness of entrepreneurs, SMEs, MNCs and other stakeholders to enable them to participate in and drive this systemic shift to a smart, sustainable and inclusive economy. Towards this end we urge policy makers to:

Recommendations

- 1. Facilitate Open Policy Processes.** Governments should address big societal challenges by involving key stakeholders in inclusive, collaborative, visible and accountable policy processes.
- 2. Establish Enabling Policy Frameworks.** Governments should set long term targets and establish an enabling network of laws, rules, agreements and norms that advance business models for sustainability, and systems transformation.
- 3. Encourage Green Markets:** Governments should employ a range of market-based instruments and financial incentives that encourage company investment in sustainable R&D.
- 4. Support Learning and Innovation Groups.** Governments should stimulate and support a range of learning groups, entrepreneurial networks, innovation labs and hubs, and demonstration projects that foster knowledge generation and exchange.
- 5. Assess Wider Sustainability Impacts.** Governments should provide clear guidelines for assessing innovation impacts, incorporating ecological, social, economic and governance criteria.

4.1 Facilitate Open Policy Processes.

Policy makers can support innovation for sustainability by creating inclusive, collaborative, visible and accountable policy processes. Responding to big societal challenges requires consultative processes with multiple stakeholders such as business, governments, scientists, entrepreneurs, financiers, consumers, and other civil society groups. Open policy processes help foster wider systems perspectives; generate creative solutions to problems; fuller consideration of the effects of policies on people and planet, across sectors at local, regional, national and international levels. They encourage the setting of science-based policy targets, and help legitimize the legislation and standards that support sustainable product and service development. They also improve monitoring and evaluation of the performance of policies intended to stimulate activities for a sustainable future. However, citizens and business do not have equal innovation capacities or access to the benefits of innovation. Improving the inclusiveness of both innovation process and policy processes is critical for a sustainable future.

4.2 Establish Enabling Policy Frameworks.

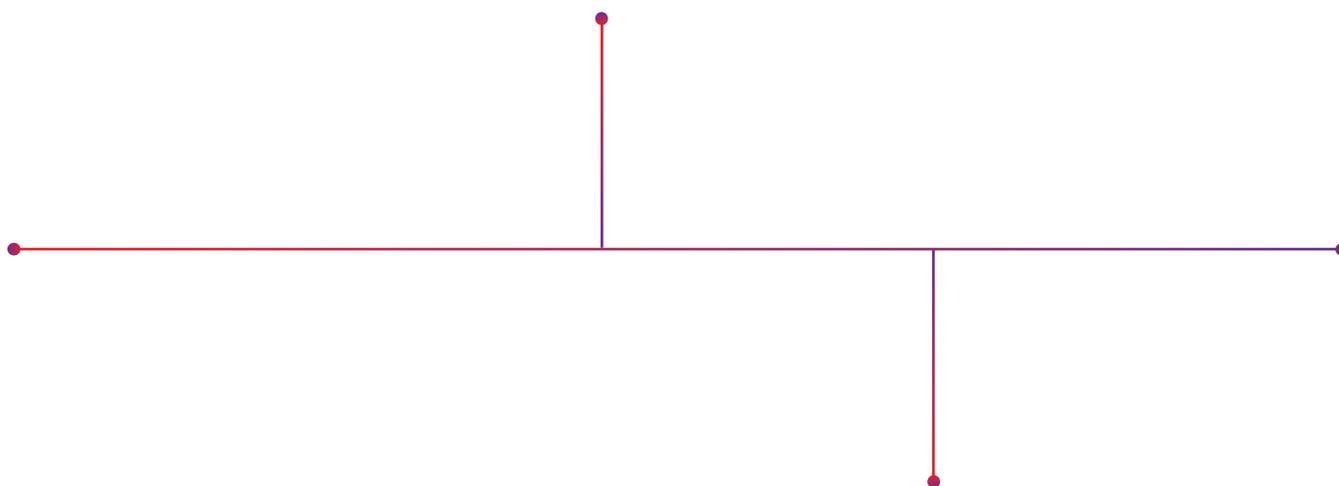
Policy makers can support innovation for sustainability through establishing a network of enabling laws, rules, agreements, standards and norms that encourage the development of new business models, and promote systems change. Enabling policies protect the environment, encourage the sustainable use of resources, and inclusive growth, and they also foster new economic opportunities, and change processes. They send clear signals to companies that encourage the development of new business models for sustainability, and support long-term investment in sustainable R&D. Existing legislation, which 'locks' companies, and other groups, into unsustainable practices and act as barriers to innovation, require reform. Governments can support SMEs, by providing clear guidelines to interpret policy contexts. Enabling policy frameworks are also required for long-term, large-scale

systems change for sustainability (e.g. power, food, mobility systems), beyond incremental policy changes; and these can be fostered through more open innovation and policy processes.

4.3 Encourage Green Markets: Policy makers can also support innovation for sustainability by employing a range of economic incentives and market-based instruments (in addition to legislation). In order for sustainable products and services to emerge, companies need to invest in innovative technologies and processes. Governments can encourage activities directly by increasing funding for R&D into sustainable technologies (e.g. innovation funds, and low interest loans to SMEs). Carefully designed financial incentives, which are stable and predictable, also encourage companies to invest in R&D over the long-term. Perverse economic subsidies, such as subsidies to fossil fuels, and fiscal policies that tax the 'goods' rather than the 'bads' also need reforming. Market prices need to reflect the true costs of goods and services (e.g. internalizing negative externalities). Policy makers also need to develop capacity to enforce legislation, to encourage investments towards sustainable ends (e.g. fines for noncompliance).

4.4 Support Learning and Innovation Groups. Policy makers can support innovation for sustainability by encouraging learning groups, innovation platforms, demonstration projects, and 'living labs'. Knowledge generated and shared through such groups is critical to shaping new perspectives and policies. Learning needs are diverse. Top managers require confidential learning groups to reflect on strategic innovation processes in complex, fast moving environments. These might include peer-to-peer learning forums, CEO clubs, Critical Friends initiatives, mentoring and coaching groups that facilitate exchange based on high levels of trust. Government could also provide funding to entrepreneurial networks and platforms, working on projects with demonstrable public benefit. These help grow the new mindsets, values, and collaborative skills required to stimulate innovation. They raise awareness of new technologies, evolving business models, policy guidelines, sustainability impacts, access to R&D funding, and provide opportunities for networking and collaboration. Pre-market demonstration projects provide visibility to innovative sustainable technologies, non-conventional, proto-type technologies that enhance market awareness. They foster learning, generate feedback loops, and stimulate competition.

4.5 Assess Wider Sustainability Impacts. Policy makers can support innovation for sustainability in business by setting science-based policy targets, incorporating knowledge of planetary boundaries, nature-based models, and providing clear guidelines for assessing sustainable innovation impacts. These should include flexible ecological, social, economic and governance measurement criteria; and regulate for positive impacts on people and planet.



I4S Project Identity

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Researchers	Institution	Research Theme	Theme Policy Implication
Andreas Rasche Lara Hale	Copenhagen Business School, Denmark	The New Standards Paradigm in Sustainability Transitions: Insights from the Building Sector	Support role of demonstration projects and stakeholder engagement in raising awareness, facilitating feedback, and in legitimizing standards that shape legislation
Sally Jeanrenaud John Bessant Taryn Mead	University of Exeter Business School, United Kingdom	Biologically Inspired Innovation processes and outcomes for sustainability	Encourage policy frameworks and companies to reconnect to and learn from nature in innovating for sustainability
Sally Randles Oliver Laasch	Manchester Business School, United Kingdom	Business model change through embedding corporate responsibility and sustainability	Establish clear public policies that support the evolution of business models for sustainability
Steve Kennedy Gail Whiteman Amanda Williams	Rotterdam School of Management, The Netherlands	Inter-organizational dynamics of system change for sustainability	Encourage organizations to collaborate across organizational boundaries and support alternative forms of governance for systems change
Annemieke Roobeek Monique de Ritter	Nyenrode Business University, The Netherlands	Entrepreneurs and collaborative innovation ecosystems for sustainable systems change	Support entrepreneurial innovation ecosystems and hubs for innovating for sustainability at scale
Nigel Roome Katre Leino	Vlerick Business School, Belgium	The role of multi-stakeholder platforms in sustainable development	Provide start-up funding and policy legitimacy for multi-stakeholder innovation platforms
Stefan Schaltegger Erik Hansen Samuel Wicki	Leuphana University Lüneburg, Germany	Innovation processes in sustainable energy technology innovation	Provide clear policy guidelines for SMEs, and stable, predictable market signals for technology development
Kosheek Sewchurran Felix Philipp	University of Cape Town, South Africa	Systems perspectives and values-based leadership in organizations	Encourage development of systems perspectives and values-based leadership for systems transformation

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