Knowledge for sustainability transitions in Europe

EEA Scientific Committee, October 2015

The Committee reviewed "The European environment — state and outlook 2015" (SOER 2015) report's findings and their implications for future knowledge developments.

This note summarises the outcomes of the Committee's deliberations including opportunities for knowledge innovations by the EEA, with Eionet and the Environment Knowledge Community,[1] and through the European Union Research and Innovation Programme – Horizon 2020.

SOER 2015 report overall findings

The report's findings come at a time when Europe stands roughly halfway between the initiation of European environmental policy in the 1970s and the European Union's 2050 vision of "living well within the limits of the planet" as set out in the Union's 7th Environment Action Programme.

Underlying this vision is a recognition that Europe's economic prosperity is intrinsically linked to its natural environment, and that consumption and production systems are increasingly unsustainable, in part because of the increasingly global nature of socio-economic and environmental drivers, megatrends and their impacts.

The report informs on the progress and successes with 40 years of European environmental policy implementation. It shows that overall European policies have been more effective at securing resource efficiency gains than securing ecosystem and social resilience, and that many of the 2020 policy targets will be achieved.

It also points to the increasingly systemic nature of environment and climate challenges and the importance of social, technological, economic, environmental and political global megatrends in this regard.

The report argues for fundamental transitions in the systems of production and consumption that are the root cause of environmental and climate pressures – especially food, energy and mobility – through profound changes in dominant practices, policies and thinking.

It also considers that neither current policies, nor economic and technology-driven efficiency gains are likely to be sufficient to achieve transitions to sustainable consumption and production systems and ultimately sustainable societies.

Finally, the report discusses the challenges and opportunities that transitions bring for Europe's environment, society and governance, and considers the opportunities to align policies, knowledge, investments and innovations with the 2050 vision.

[1] An initiative by five European Commission services - ENV, CLIMA, ESTAT, JRC, RTD - and EEA to work in a more strategic and collaborative way on the development of knowledge needed for the implementation of the EU 7th EAP, including the 2050 vision therein.

SC views on overall findings

The indicative summary of environmental trends and outlooks presented in Table 6.1 of the SOER 2015 synthesis report (EEA, 2015a) is overall consistent with available evidence. There is, however, emerging scientific evidence suggesting even more concern with respect to some longer term outlooks (e.g. marine biodiversity, chemicals).

The Committee welcomes the EEA being transparent, if brief, on the logic and methodology behind the assessment of trends. More details on the methodological approach used for assessing past trends, short-term and long-term outlooks should be a priority for SOER 2020.

The conclusions around inter-linked systemic challenges and especially the need to recognise planetary boundaries (e.g. Steffen et al. 2015) point to the need for more holistic approaches to knowledge and policy that encompass ecosystem and social resilience (social-ecological systems).

Greater efforts are needed to address multiple stressors and design systemic approaches to managing established and emerging risks, technological and other, using foresight techniques.

The uncertainties inherent to systemic challenges should be more explicitly recognised in future assessments. They also justify the need for continued application of the precautionary principle in cases where stakes are high and/or effects potentially irreversible (EEA 2001, 2013).

The systemic perspective in the report linking resource efficiency, ecological and social resilience and human well-being highlights that the current mainstream economic approach has so far failed to align efficiency objectives alongside securing environmental sustainability and increasing societal welfare, and that a paradigm shift in our economic thinking and practice is urgently needed.

The solutions to systemic challenges go beyond the domain of environment and climate policies and most often lie in socio-economic policies – energy, food, transport/ mobility, finance, fiscal. This underlines the increasing and urgent need for much deeper alignment and integration between policy domains, e.g. in support of the transition to a green circular economy.

Looking ahead: marrying visions, policy and knowledge

Meeting the 2050 vision of "living well within the limits of the planet" requires new thinking and actions now. The Committee supports the proposal in the report to recalibrate existing approaches to policy and knowledge in support of sustainability transitions and exploring further what that means in terms of governance, investments and innovations.

The Committee suggests that the four environmental principles of the EU Treaty – polluter pays, prevention, precaution and rectification of damage at source –taken together could provide a basis for establishing systemic priorities within existing EU legal frameworks and agreements.

Reframing existing policies can be facilitated by, but can also facilitate, more interdisciplinary research. For example, integrated health and well-being policies would both trigger and draw on research into lifestyle factors and diseases, alongside the exposures of vulnerable subpopulations to chemicals and other hazards, and the risks and uncertainties around long-term exposures to chemicals mixtures and nanomaterials.

Developing knowledge for sustainability transitions should bring together natural, social and political scientists, economists and legal experts, as well as be supported by the Environment Knowledge Community to ensure maximum use of existing EU knowledge and research.

In order to facilitate a more extensive use of environmental knowledge, research and other knowledge generating processes would have to continue to change towards more extensive incorporation of stakeholders throughout the process, in accordance with the principles of co-production of knowledge.

The Committee also wishes to underline the importance of experimentation in knowledge approaches to produce new insights, and the need to shift the balance of effort in research from "doing as usual" to "exploring the unusual".

Knowledge developments to 2020

The Committee sees an urgent need to develop epistemologies around the nature, scope, meaning and relevance of systemic social-ecological challenges and sustainability transitions.

Planetary boundaries, safe operating space, tipping points, feedback loops, regime shifts, emerging risks, precaution, foresight, sustainability criteria and *ex-post*, *ex-nunc* and *ex-ante* systemic policy evaluations are relevant knowledge developments in that regard.

More knowledge is needed on the triggers for transitions such as policy instruments, behaviours, grassroots initiatives, education, communication and innovations in governance and knowledge (public engagement, broader accounting frameworks, foresight).

Systemic approaches and transitions by their nature will also require a more systematic approach to addressing conflicts and trade-offs.

Too much emphasis is given in science and research to understanding the past and determining problems. Too little focus has been put on exploring visions for the future of Europe and the world and finding solutions to the problems we are facing. More efforts on forward looking assessments would support greater understanding of options and pathways for long-term transitions.

Learning from the past would be enhanced by the development of a small basket of *systemic* sustainability indicators which show the links at the societal level between ecological resilience, resource efficiency and human well-being trends and how they relate to GDP. Copernicus, INSPIRE and other monitoring and data integration initiatives are central to defining such basket.

One of the most widely used theories in systems' transitions research is the 'multi-level perspective', which characterises systems such as the food, energy and mobility systems as being dominated by a 'regime' including knowledge, investments, institutions, skills and cultural values.

Regime change can take place when there is a conjunction of (i) changes to the long-term, large-scale, socio-economic, demographic, political and international context, including global megatrends of the sort outlined in the SOER 2015 (EEA, 2015b); (ii) destabilisation of dominating regimes; and, (iii) niches that can form radically new regimes.

Greater financial and intellectual investments are needed to develop knowledge on transition pathways and their governance implications across these levels between now and 2020. This should be supported by a daring and ambitious European Research Area initiative under Horizon 2020, thereby demonstrating Europe's strong commitment to sustainable development.

The EEAcademy can also be the connector for steering and synthesising such knowledge and experiments for SOER 2020, in cooperation with Eionet and Environment Knowledge Community.

Looking ahead to SOER 2020

The 2020 report should start from where SOER 2015 ends. At the same time SOER 2020 assessment should on balance have more emphasis on long term prospects to 2050 and beyond.

The SOER 2020 will coincide with the final year of the 7th Environment Action Programme (EAP). A key objective therefore could be, to show the feasibility of long-term sustainability transitions and their importance for living well within the limits of the planet.

It will also be important to embrace the 2050 vision as a boundary condition within which we need to reconfigure systems of production and consumption. The work of the Environment Knowledge Community on knowledge innovations e.g. limits of the planet, natural capital accounting, foresight, citizen science, and open knowledge is highly relevant in this respect.

The 2020 report should also importantly reflect on how to bridge existing transformation initiatives to create the momentum for a broader shift in accordance/harmony with planetary boundaries.

The knowledge for SOER 2020 will have to be more vision- and solution-oriented around fundamental transition pathways, compared with the problem-focused emphasis of SOER 2015.

The assessment should also be convincing in showing how the complexities, uncertainties and trade-offs inherent to sustainability transitions offer investment and innovation opportunities for governments, businesses, civil society and citizens.

Given the knowledge challenges outlined above, it will be vital to ensure that available knowledge from research is well-organised so that the SOER project can devote sufficient time and resources to interpretation and assessment.

It would also be useful if the 2020 assessment could explicitly address perspectives across the three priority objectives of the 7th EAP and how these are intertwined with the other objectives of that programme.

SOER 2020 should focus more on embracing complexity and uncertainty throughout the assessment and showing how doing so can be of benefit for long-term thinking and actions.

The 2020 report should also avoid being overly technocratic rather embrace more the importance of visions and visionaries, provide perspectives for mobilising sustainable development (Hajer et al, 2015; Mazzucato, 2013) and resist pressures from vested interest lobbies who may find the assessment a threat to established regimes, and instead get progressive businesses on board.

In conclusion, the Committee believes Europe has the intellectual, political, cultural and material capacity to achieve the 2050 vision of living well within the limits of the planet. It hopes that the knowledge challenges and opportunities described in this note offer some direction to EEA and other European efforts on building much needed knowledge developments to 2020 and beyond.

References

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