Innovation Gap

[session will be in Dutch]

Moderator

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As the Director Energy Transition of the Erasmus Centre for Energy Transition (ECET) at Erasmus University Rotterdam (EUR), Sarah co-leads a multidisciplinary team that supports transdisciplinary research, experienced based education, engaging and impactful driven programs that address the complex and urgent challenges of the energy transition.

With over 17 years of experience in the energy sector, she brings a wealth of knowledge and insights from engineering, operations, project management, and transformational leadership within roles in Canada, United States and China.

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Here's some background to our discussion of filling the Innovation Gap:

The literature on socio-technical transitions speaks of *sustainable innovation journeys* to refer to the short- and long-term trajectories travelled by sustainable niche innovations – and the various barriers, lock-in and scaling challenges they must overcome – before they finally become integrated, institutionalised and anchored in mainstream markets and provisioning systems. Innovations are thereby broadly defined: they comprise not only technical but also social, organisational, and business model innovations.

Sustainability-oriented innovation (SOI) has consequently been defined as 'the intentional creation and realisation of new (or improved) products, services, processes or practices which aim at environmental and/or social benefits in addition to economic returns throughout the physical life cycle'.

SOI can target green, eco and clean tech solutions that mostly contribute to the ecological environment, but also the social, inclusive, and frugal innovations that add to social cohesion and economic viability. The Innovation Gap occurs where organisations do not develop these types of innovations. The bigger the gap, the more legitimacy private organisations have, and the more their effective management of innovation processes becomes a precondition for sustainable business model innovation – this covers activities involved in the process of idea generation, technology development, manufacturing, and commercialisation.

We tend to focus on innovation as technological innovation, for which Research and Development expenses are key. In many areas of sustainable innovation, however, there's a paradox: technologies are available, but the implementation of them at speed and at scale proves difficult to achieve, and it's not always because they lack a business case. For instance, the business case for solar power and other ecological innovations (green steel, 3D printing, wind-turbines, etc.) has already been made, but requires that leaders use metrics for a longer-term return on investment than for older technologies. To create the eco-systems that can help this type of innovation get implemented, smart collaboration between companies, civil society (trade unions) and governments is needed.
The Innovation Gap is not only relevant for high tech industries. On the contrary, the business case for frugal innovation can also be made, but requires that organisations focus their innovation strategy on serving needs rather than selling products. Filling the Innovation Gap requires leaders to have a different mindset. There is also increasing evidence that the

innovation journey cannot be successfully implemented without collaboration with employees and external stakeholders.

Reaping the obvious benefits of systems change requires not only for individual companies to invest, but to set up whole ecosystems that enable innovation.

What actions can fill the Innovation Gap? Should we first wait until governments create the preconditions for systems innovation, or invest in organisational and business model innovation? Or should we focus on gradual or radical technological innovation? Or do we need to do all of these at the same time?

In any case, the SDG agenda suggests that the answer lies in counting on the effect of interconnections (nexus) that could produce benefits from achieving interrelated goals that trigger interrelated innovative change, which can also be scaled over time and across countries through private sector involvement.

Organisations and their leaders face fundamental trade-offs and key tipping points in their decisions about the most appropriate actions to fill the gaps, and they sit among these three types of paradoxes that are also interrelated:

a) an *innovation paradox* holds that the processes, structures, mindsets and practices that underpin an organisation's enduring operational excellence also prevent it from developing breakthrough innovations. Managing this paradox implies a balancing act between the 'need for stability' and the 'need for creativity', between 'sustaining' and 'sustainable' innovation activities, and between short-term and long-term time horizons.

b) a *design paradox* means essential knowledge may only become available when the design is already too constrained to be modified according to these vital insights. The effect is notably on unforeseen negative impacts or under-utilised opportunities for scaling positive spill overs. Managing this tension has a bearing on how innovation processes can be organised and improved.

c) an *openness paradox* – also known as the double externality problem – denotes that much-needed investments in innovations for the common good are discouraged, even in the presence of conducive push and pull conditions when the societal return from each party's investment in collaboration or open innovation cannot be sufficiently translated into private returns and benefits. Whereas the *creation* of innovations often necessitates openness because of the intensity of its use of resources, the *commercialisation* of innovations requires the ability of innovators to seize returns from innovation activities.