RESEARCH & DEVELOPMENT (R&D)

ROADMAP FOR INTEGRATED SUSTAINABILITY FUNCTIONAL BRIEF

1 FUNCTION DESCRIPTION

The core purpose of the Research and Development (R&D) function is to drive innovation, create new knowledge and discover solutions, leading to the development of new products, services or procedures or to the improvement of existing ones. It covers the application of science and engineering to develop new substances or technologies as well as the more concrete design, testing and adapting of processes, services, products and delivery systems.

2 VALUE PROPOSITION

Sustainability leaders today strive to become "part of the solution" and not just "less of a problem", by developing and delivering technologies and products that can deliver improvements in human conditions and advance sustainable development. The R&D function is thus key to transforming sustainability from a peripheral activity that can reduce negative impact from existing business models to an integral part of the company's value proposition.

In turn, research demonstrates that sustainability can drive business innovation in a very significant way. By challenging basic assumptions regarding existing solutions and adding new constraints, a deliberate attention to sustainability within R&D can serve as an impetus for companies to think differently and to overcome deeply ingrained processes, cultures and incentive systems that favor the status quo. More fundamentally, sustainability-driven innovation can by challenging existing assumptions and paradigms help deliver totally new solutions and disrupt entire industries.

Sustainability-led innovation can most obviously help the company cater to the growing customer segments, most importantly among young generations, that attribute value to more sustainable products and services. However, it also has the potential to improve the traditional performance attributes, including cost and quality, of existing products.

3 STRATEGIC INTEGRATION

The strategy and goals for the R&D function should be fully aligned with a vision for the company to differentiate and grow through sustainability-advantaged products and services. Back-casting from the company's long-term sustainability goals is a valuable exercise to understand the necessary scale of change and to define the required innovation strategy.

Sustainability-driven innovation requires R&D managers and teams to have a good appreciation and understanding of sustainability-related trends, risks and opportunities. While this can be achieved through recruitment and training, it can also be done by fertilizing close collaboration between the R&D and the Sustainability Function and configuring the innovation teams so that each R&D project involves someone who is knowledgeable about key sustainability topics.

Going even further, R&D teams can directly engage external experts and stakeholders, for example NGO's as well as customers and end-users, with a view to tap into external source of knowledge, challenge conventional wisdom and spur creative thinking.

4 OPERATIONAL INTEGRATION

Integration of sustainability into the R&D function begins with redefining needs statements and problem design questions, going beyond the immediate needs and desires customers to embrace social and environmental challenges and the concerns of a broader set of stakeholders.

Sustainability metrics should be defined to reflect these needs and formally integrated into processes and decision points at all stages of the R&D process. Rather than a "filter" applied at the end of the innovation pipeline, sustainability goals and criteria will typically create more value when it is integrated earlier in the design process, when there is still a high degree of freedom and not yet a clear idea of the type of product that needs to be developed.

To inform sustainability-specific R&D specifications and metrics, it is important to have a good understanding of the social and environmental impacts of the company's current and future product portfolio. To this end, it can be useful to apply Life-Cycle Assessments, Product Footprints, Design for Environment, stage-gate processes and other methodologies, and in some cases it may require staff to master new scientific disciplines, like toxicology and ecology.

5 CULTURAL INTEGRATION

Traditionally, the 'R&D culture' values innovation driven by science, learning, exploration, new ideas and problem solving. Except for some purely aesthetic elements of product design, R&D is guided by logical reasoning and objective product or performance criteria as defined by technology, product standards or customer preference, and there is easily a dismissal or frustration over undefined or seemingly subjective sustainability priorities of other cultures.

To support a better appreciation by R&D of the need to incorporate sustainability perspectives into the innovation processes, it is thus important to include R&D representatives directly in the company's materiality assessment processes and in the dialogue with key stakeholders. To reach its potential as an innovation-driver, sustainability must be framed as a means to strengthening innovation, productivity and long-term growth and competitiveness, rather than in relation to morals, values or principles.

Focusing the attention of R&D on solving big societal challenges, and not only intense technical details, can also be spurred by bringing in leaders and speakers that can energize and inspire the technical community and by introducing new and innovative design-thinking tools and philosophies such as Cradle-to-Cradle or Circular Economy.

6 EMERGING TRENDS AND INNOVATIONS

Purpose-driven innovation

By developing a meaningful purpose grounded in 'humanity' or 'sustainable development' - and aligning strategies and operating model with it - companies can effectively drive transformation, innovation and growth.

New design methodologies and approaches

There has over the last decade been a proliferation of new and promising design approaches and analytical tools, including Cradle to Cradle, Circular Economy, and Closed Loop resource management that can help uncover new possibilities to improve the traditional performance attributes of products, while using and re-using resources more efficiently.

Incorporating nature into R&D

Biomimicry is a way of looking at 3.8 billion years of good ideas without having to go through all those years of evolution. Using technologies evolved from nature creates an outcome that is likely very ecologically sustainable, and businesses are finding that the ideas from the natural world actually use fewer toxins, less energy, and are more resourceful with materials. Biomimicry is about bringing inspiration from science and biology to the design table.

Partnerships with civil society organizations

Civil-society organizations are not just antagonistic voices, critical of all types of business, but can become innovation partners. In line with the broader trend of Open Innovation, companies can invite civil society organizations to challenge conventional wisdom, spur creative thinking and even co-create new solutions.

Base of Pyramid innovation

Companies are increasingly developing new and innovative business models with a view to serve the billions of people living in poverty. The innovation that happens as companies focus on the needs of the poor and engage directly with local communities to adapt products and develop new business models for the markets at the so-called Base of the Pyramid can often migrate north and west to help companies develop more simple and effective products for developed markets.