

# Rethinking Business Models from the Perspective of ESG

By Enrico Guarnerio, Paola Radaelli, Fabio Iraldo, Marco Frey and Natalia Marzia Gusmerotti

Environmental, social and governance (ESG) issues are causing energy firms to change from linear, resources-products-waste model (see Figure. 1), which has been in place since the Industrial Revolution, to a new circular business model (see Figure 2) that employs a resources-products-reuse approach.

Figure 1: Traditional Linear Model

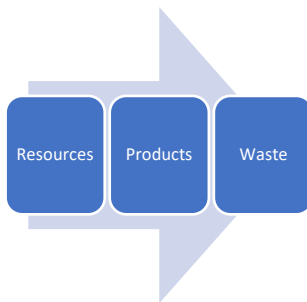


Figure 2: Future Circular model



A key aspect of ESG issues is the availability of virgin resources. Excessive consumption has reduced the availability of raw materials and has caused significant environmental damage, conflicts, and exploitation of populations.

Moreover, the continuous growth of the global population will inevitably exhaust the Earth's natural resources if we do not take timely action. It is extremely important for risk managers to understand and monitor these macro changes so that they can suggest timely mitigations.

This paper describes the changes in business models that enterprises may take into consideration as they are incorporating ESG issues into their missions and strategies.

## Introduction

To mitigate the issue of the scarcity of virgin raw materials, it is necessary to implement a circular, not exhausting, regenerative economy.

The word "regenerative" is used because processes are designed to return materials of biological origin to the biosphere. Tracing and removing toxic chemical products helps with this process, as well as the reuse and recycling of products at the end of their lives. In addition, renewable energy sources are used for production.

The process is "not exhausting" because synthetic materials (i.e., not biodegradable virgin raw materials) circulate in the market with minimal loss of quality during use, and their use is minimized during production to reduce waste and excessive consumption. Moreover, the lifecycle of a finished product is extended, and the possibility of reusing deployed raw materials is increased. To enhance understanding of the factors that may facilitate or hinder mitigation options, we discuss each below.

## Greater Use of Discarded and Secondary Raw Materials

Often, consumers and producers are not informed about the environmental impact of a product or service, or the collective external costs (that is, there is information asymmetry). Consequently, consumers can develop performance or price biases, even when they are willing to adopt virtuous behaviors; in other words, they can be attracted by a product's lower price or better performance.

Products that cause more pollution are generally cheaper than those that cause less pollution. This is because their prices do not reflect the environmental impact costs of their production chains. Polluting enterprises bear lower costs than other enterprises because they transfer the cost of environmental impact to the collectivity; for this reason, they can apply lower costs (price bias).

We must also consider that products manufactured from virgin raw materials may be of higher quality than those manufactured from secondary raw materials. Thus, consumers who purchase goods manufactured from secondary raw materials should be prepared to accept their relatively lower performance.

However, an enterprise can seize other opportunities to attract customers and sustain its business. To align with stakeholders' ethics, values, and beliefs about ESG issues, an enterprise can develop a strategic plan with a longer time horizon and revise its business model to one that contributes to the circular economy.

Enterprises can also develop reverse logistics processes, that is, create consumer-to-producer networks. For example, an enterprise could increase product reuse or enhance the recycling of used raw materials and discarded products. However, establishing reverse logistics is difficult to realize in markets oriented toward globalization.

It is worth noting that changes in regulations may offer additional opportunities. For example, an easing of constraints on the use of secondary raw materials may open up new avenues for enterprises.

### **Extending a Product's Lifecycle**

There are several ways to extend a product's lifecycle.

A company can extend the lifecycle of a product by reviewing its design and manufacture, and potentially redesigning it to use more resistant raw materials. Customers can also be offered the choice of upgrading their existing products rather than replacing them (e.g., to keep up with technological innovations). A company can implement efficient maintenance and repair services to upgrade and restore product functionality and avoid products being discarded prematurely.

The service economy is a crucial component in extending the lifecycle of products. This involves freeing users from product ownership obligations, and providing a service. For example, if a car manufacturer retains ownership of the cars it produces, it can use its tools and knowledge to maintain and extend the functionality of the vehicles for longer periods with lower environmental costs.

### **Additional Enabling Factors**

The use of big data and data analytics may support the extension of a product's lifecycle. By collecting and analyzing data on a product's design, materials, and components, it is possible to better evaluate the product's residual life and plan preventive and predictive maintenance, which further extends the product's lifecycle. In addition, combining product data with customer data may allow a company to understand and satisfy new clients' needs, thus preventing product cannibalization.

Another option is to tap into behavioral economy studies. These can provide information that can be used to identify and mitigate risks associated with fashion transience and to support projects designed to more fairly distribute costs within a circular economy. This will help limit price bias by supporting customers'

acceptance of slightly higher prices for products of slightly lower quality. In turn, this will permit the introduction of informed choices related to ESG issues and, in the meantime, increase customers' empowerment.

### **A Practical Example: Recycling Unused Concrete**

Concrete is the most used construction material, and each year, 10 billion cubic meters are produced, with a consumption of 3.5 tons per capita. Its success comes from its universality, versatility, harmlessness, and cost-effectiveness. Despite these positive properties, we cannot ignore the important environmental issues linked to its production, such as the contribution to global warming, the exploitation of natural resources due to mining, and waste production.

The main waste stream is concrete that, for various reasons, is not used on building sites and is returned to production plants in concrete mixers. The proportion returned to the production plant can vary from a minimal amount left over from a project to the entire quantity of mixed concrete, which can occur when the concrete sent to the building site is not compliant with the project's requirements.

In the United States, unused concrete may account for up to 5% of total production, and in Japan and Europe, it may account for up to 2%. Conventionally, unused concrete is sent to landfills, which has a significant impact on the environment, and the European Union wants to abolish this practice.

Mapei, a company partner of Bocconi University's Green Economy Observatory (GEO), has developed RE-CON ZERO, an innovative additive that transforms mixed concrete into a granular material that can be used as an additive in the production of concrete. RE-CON ZERO works within a few minutes, does not require an expensive treatment plant, and does not produce any waste. Furthermore, RE-CON ZERO can be used as a partial or complete substitute for natural additives in concrete production.

RE-CON ZERO has the following advantages from an environmental perspective:

- Recycles unused concrete;
- Does not produce waste;
- Reduces the use of natural additives;
- Reduces road transport; and
- Cuts the cost of final disposal.

The development of RE-CON ZERO represents an interesting example of the circularity concept. Taking into account the procurement, consumption, and post-consumption phases has resulted in a product that extends the lifetime of concrete, eliminates early landfill disposal, and reduces the quantity of dangerous or difficult-to-recycle products or processes.

### **Risk Managers' Conclusions**

To mitigate the scarcity of raw materials, it is necessary to implement a circular economy that restores, regenerates, and better uses raw materials and products.

The adoption of new business models is required, namely, models that extend the lifecycle and lifetime of products and reduce the production of waste. The development of such models requires out-of-the-box thinking. These new types of models could include, for example, making use of reverse logistics, the service economy, big data, and behavioral economy studies to overcome stakeholders' biases.

The RE-CON ZERO example demonstrates that changing to a business model that considers ESG issues will be rewarded with success.

*The introduction and conclusion of this paper were written by Enrico Guarnerio, CEO of Strategica Risk Consulting, and Paola Radaelli, Vice President of Associazione Nazionale Responsabili Assicurativi ANRA and Senior Consultant at Strategica Risk Consulting.*

*The body of this paper was authored by Professors Fabio Iraldo (Scuola Superiore Sant'Anna, Pisa, and Green Institute of Bocconi University), Marco Frey (Scuola Superiore Sant'Anna, Pisa), and Natalia Marzia Gusmerotti (Scuola Superiore Sant'Anna, Pisa).*