

# SUSTAINABLE MANUFACTURING FORUM

*Brought to You By Chamber of Eco Commerce*



Chamber of Eco Commerce is hosting **Sustainable Manufacturing Forums** to discuss and discover how innovation can result in new technological and systemic solutions to environmental challenges and contribute to a wider range of work aimed at the development and diffusion of eco innovation.

Managing operations in an environmentally and socially responsible manner – “sustainable manufacturing” – is no longer just nice-to-have, but a business imperative. Companies across the world face increased costs in materials, energy, and compliance coupled with higher expectations of customers, investors and local communities.

Many businesses have already started to take important steps towards eco innovation – ensuring their development is economically and environmentally sustainable. Their pioneering experiences largely show that environmental improvements **go hand in hand with profit-making and improved competitiveness**. However, many small and medium-sized businesses (SMEs), that account for approximately 99% of all enterprises and two thirds of employment across the OECD, have not yet embraced these great opportunities. They may be struggling with their short-term survival, or cost pressure from clients, or lack of knowledge and resources to invest in environmental improvement, or simply not know where to start.

If your business is looking to tackle sustainability - this event is for you! You will learn what sustainability means, how it relates to your business, and how you can benefit from eco innovation.

The **OECD Sustainable Manufacturing Toolkit** is a great place to start. Measuring performance is a vital first step to improvement. The toolkit provides a set of internationally applicable, common and comparable indicators to measure the environmental performance of manufacturing facilities in any business size, sector or country. To make things simpler for those with little experience in this area, the Toolkit offers two components – this step-by-step Start-up Guide and a Web Portal where technical guidance on measurement and relevant links are provided.

We think it is important to have the right tools, but also to be informed about what works. You will learn about a range of best practice case studies that illustrate the many benefits of sustainable manufacturing. **Saving money, improving your products, making your operations more efficient and increasing sales are all possible for those taking up this new challenge.**

Please contact your local CEC chapter, or email: [info@ChamberofEcoCommerce.com](mailto:info@ChamberofEcoCommerce.com)

## **SUSTAINABLE MANUFACTURING & ECO INNOVATION**

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### **Background**

Expanding economic activity has been accompanied by growing concerns about energy security and scarcity of natural resources. While industries are showing greater interest in sustainable production and are undertaking a number of corporate social responsibility (CSR) initiatives, progress falls far short of meeting these pressing challenges.

Moreover, improvements in efficiency in some regions have often been offset by increasing consumption in other regions, while efficiency gains in some areas are outpaced by scale effects.

Raising efficiency in resource and energy use and engaging in a broad range of innovations to improve environmental performance will help to create new industries and jobs. The current economic crisis should thus be seen as an opportunity to shift to a greener economy.

Incremental improvement is not enough, however. Industry must be restructured, and existing and breakthrough technologies must be applied to realize growth. Short-term relief packages deployed today can stimulate investments in technologies and infrastructures that help innovation and enable changes in the way we produce and consume goods and services in the future.

Industries have traditionally addressed pollution concerns at the point of discharge. Since this end-of-pipe approach is often costly and ineffective, industry has increasingly adopted cleaner production by reducing the amount of energy and materials used in the production process.

Many firms are now considering the environmental impact throughout the product's lifecycle and are integrating environmental strategies and practices into their own management systems. Some pioneers have been working to establish a closed-loop production system that eliminates final disposal by recovering wastes and turning them into new resources for production. Eco-innovation helps to make possible this kind of evolution in industry practices. While more integrated practices, such as closed-loop production, could potentially yield substantial environmental improvements, they can only be realized by combining a wide range of innovation targets and mechanisms, and both technological and non-technological changes. This is often referred to as system innovation.

A study of eco innovation from three industry sectors suggests that the primary focus of current eco innovations tends to rest on technological developments and advancements. Nevertheless, a number of non-technological innovations, such as establishing separate environmental divisions or creating inter-sectoral or multi-stakeholder research networks, have spurred technological developments. Some industry leaders have even begun to explore systemic innovations that are changing the way their businesses fulfill consumer demands.

**The automotive and transport industry** has taken several steps to reduce CO2 emissions and other environmental impacts, notably those associated with fossil-fuel combustion. Combined with growing demands for mobility, the City of Paris launched popular self-service bicycle-sharing system in 2007. Bicycles are available at over 1 450 stations located throughout the city. The system runs on an innovative business model: the advertising company, JC Decaux, provided start-up financing to cover 10 years of operation and associated costs in return for full control of a portion of the city's billboards.

**Shift from products to services:** IBM offers an energy-management service to data centre clients who want to reduce energy costs. Xerox's Managed Print Services helps the company's clients to optimize energy use and reduce printing costs. Michelin provides tyre-maintenance services, according to miles/kilometers driven, through its Fleet Solutions program.

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**Advanced high-strength steel for cars:** Thirty-five steel makers from 18 countries jointly formed the Ultra-Light Steel Auto Body (ULSAB) initiative in 1994, in partnership with an automotive engineering company. Since cars built with advanced high-strength steel are lighter, their power train can be downsized, thus substantially improving the vehicles' fuel economy and reducing CO2 emissions over their lifetime.

**Sustainable Manufacturing and Eco Innovation particularly in developing economies,** many eco-innovation initiatives have focused on increasing the energy efficiency of automobiles and other forms of transportation, while at the same time improving safety. Eco innovations in the automobile industry have been realized largely through technological advancements, typically in the form of product or process modification and re-design, such as more efficient fuel-injection technologies, better power management systems, energy-saving tyres and optimization of painting processes. Yet, there are also indications that the understanding of eco innovation in the transport sector is broadening. New players are emerging through alternative business models and modes of transportation, such as the bicycle-sharing scheme in Paris, as new ways of dealing with pollutants and congestion on the roads.

Driven by increasing prices and scarcity of raw materials, the iron and steel industry has made significant progress in increasing its environmental performance through a number of energy-saving modifications and re-designs of various production processes. New ways of working within the industry have made many of these technological advances in products and processes possible.

For example, an international **collaboration between vehicle designers and steel makers** resulted in the development of advanced high-strength steel to manufacture lighter and more energy-efficient automobiles.

The **electronics industry** has so far been mostly concerned with its products' energy consumption. With consumer demand for **electronic equipment exploding**, companies are also seeking more efficient ways to **dispose of their products**. As in the above two sectors, most eco innovations in this industry have focused on technological advancements in the form of product or process modification and re-design. These, in turn, build upon a number of innovative organizational and institutional arrangements. A notable example is IBM's use of large-scale Internet discussion groups, dubbed "innovation jams", to harness innovative ideas circulating among thousands of people. Alternative business models, such as providing product-service solutions rather than physical products, have also emerged.

Supply-side measures

Equity support

Many governments have taken measures to ease access to finance for businesses and entrepreneurs developing innovative technologies through venture capital. Few specific measures or instruments have thus far been introduced for businesses developing environmental technologies or eco-friendly products and services.

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### Research and development

Most R&D programs seem to be mainly sector or technology specific, and few countries seem to focus on shifting R&D investments towards environment or eco-innovation. R&D in general purpose technologies, such as information technology, bio-technology and nano-technology, could be of great relevance to eco-innovation, but may not be identified as such.

### Pre-commercialization

Many available environmental technologies have not been successfully introduced into the market, since the market is not yet well developed or since existing infrastructures and production and consumption patterns may be obstacles to commercialization. Many government initiatives help businesses to bring their new environmental technologies to the market, though the focus is sometimes limited to promising energy and transport-related technologies.

### Education and training

Education and training programs are critical for developing the human capital needed for eco innovation and a potential labor force for new jobs. A number of countries have taken measures to mainstream environmental education in the school curricula or vocational training, but further focus is needed.

### Networks and partnerships

Many policy programs require co-operation in research projects and support the development of networks. Governments can foster public-private partnerships and networking platforms for eco innovation.

### Information services

Most advisory services for SMEs have not specifically targeted the environment, let alone eco innovation. Governments could play a key role in disseminating information on energy efficiency and environmental technologies.

### LINKS

Sustainable Manufacturing and Eco Innovation (OECD)

<http://www.oecd.org/dataoecd/34/27/42944011.pdf>

Sustainable Manufacturing Tool Kit

<http://www.oecd.org/dataoecd/22/32/48661768.pdf>

Eco Innovation Forums

<http://www.chamberofecocommerce.com/newsandevents.html>