

# Capitalism and Sustainable Development\*

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## *Abstract*

*The crisis has shattered confidence in the public opinion on the capacity of the capitalist system to regulate itself to avoid catastrophic situations as presently observed in the world.*

*The question is to know whether the capitalist system will be able to evolve toward a business model compatible with the objective of sustainable development.*

*To the firm, the challenge is formidable: how to conciliate the profitability imperative with the necessity to reduce waste, pollution and carbon emissions?*

*The models of a loop economy and of a functional service economy are complementary and propose new business models promising solutions for developing an eco-responsible capitalism.*

**Keywords:** Capitalism; Global Economic Crisis; Sustainable Development; New Business Model; Functional Economy

## **1. The Global Economic Crisis**

The ongoing planetary financial and economic crisis has generated a flurry of articles and comments from various social observers announcing the end of the capitalist system and calling for a drastic change of the world economic organization. The crisis has shattered confidence in the public opinion on the capacity of the capitalist system to regulate itself to avoid catastrophic situations as presently observed in the world. The question is to know whether the capitalist system will be able to evolve toward a business model compatible with the objective of sustainable development, a central preoccupation for the world economy confronted with climatic changes. To the firm, the challenge is formidable: how to conciliate the profitability imperative with the necessity to reduce waste, pollution and carbon emissions? New business models can contribute to amend the capitalist system and to support the objective of sustainable development by decoupling economic growth and environmental destruction.

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\* Invited Article

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## 2. Searching a New Business Model

Today, the 20 percent of the world population living in industrialized countries consumes 80 percent of the world resources. The traditional business model follows a linear process – raw material extraction, manufacturing, distribution, consumption and accumulation of waste, what can be described as a “*cradle to grave*” process. The globalization of this industrial model is not feasible. For the entire world to live as an American or European, we would need two more planets earth to satisfy everyone, three more still, if population should double, and twelve earths altogether if worldwide standards of living should double over the next forty years<sup>1</sup>. The performance economy model developed by Stahel<sup>2</sup> makes a distinction between three types of economies:

- the industrial economy, or called a *River Economy*, which is characterized by high annual resource consumption and fast replacement of goods, a model which is unsustainable in the long term (a “*cradle-to-grave*” approach);
- the *Functional Service Economy*, where the focus is placed on assets management and on utilization and use capabilities, rather than on physical goods delivery, thereby creating in-sourcing jobs (a “*cradle-to-cradle*” approach);
- the *Loop Economy* which starts at the end of a good utilization’ period, when used products become consumer waste (a “*grave-to-cradle*” approach).

The models of a loop economy and of a functional service economy are complementary and propose promising solutions for developing an eco-responsible capitalism. These two new business models can contribute to amend the capitalist system and to support the objective of sustainable development by decoupling economic growth and environmental destruction.

## 3. The Functional Economy

A functional economy is possible when the firm is selling a performance, a result, and not simply a product. The sale of a service, i.e. the product’s function or solution provided, is substituted to the sales of a physical product. Underlying the concept of solution is the idea that a customer is looking for a solution to his/her problem and for not the product itself. The physical product is simply a mean used to obtain the desired outcome?

□ *Carrier, the world ‘s leading maker of air conditioning equipment, reasoned that customers don’t want what an air conditioning system is; they only want what it does. Carrier is offering “cool services” and contracts to keep a client’s house or apartment within a certain temperature range in hot weather during certain hours at a certain cost, taking advantage of the very efficient and reliable equipment’s operating benefits.*

□ *Similarly, Schindler the leading Swiss maker of elevators makes 70 percent of its earnings by leasing “vertical transportation services” rather than by selling elevators. Schindler’s lifts are more efficient and reliable than many competing brands, so by leasing their services, the company can capture the operational savings. Its lease provides the service, not the equipment.*

Can this view be extended to the whole economy? In a functional economy, consumers buy individual mobility instead of buying a car, a climatic comfort instead of air conditioning system, a gardening maintenance service instead of a set of gardening machines and tools, etc. Functional sales then take the form of short or long term leasing contracts or of mutual ownership of goods. For the manufacturer, the economic objective is to create the highest possible usage value, during the longest period possible while using the smallest possible quantity of resources. Instead of being motivated to sell products having a short life time to stimulate replacement demand, the manufacturer is induced (by an invisible hand) to optimize the long term usage of the products that the customers do not need to own. The products owned by the manufacturer become capital goods providing sustainable revenues. It is the manufacturer’s best interest to design reliable products that lend themselves to re-manufacturing, repairing and recycling without an externalization of the costs, risks and wastes.

The model of a performance economy has been promoted in France by Nicolas Hulot (2007)<sup>3</sup> in his book on an Ecological Pact. There is already a long list of firms having adopted this strategy (Rank Xerox, Michelin, Electrolux, DuPont, Dow Chemicals,.), which is a difficult option because industrial firms have to reinvent their business.

#### **4. Benefits of the Functional Economy**

This economic system has the virtuous effect to reduce industrial production and the wastes generated by consumption, while maintaining long lasting relationships with customers. Firms do not have to increase their production and their sales levels to increase revenues. The profitability of the product is assured over time: the longer it is used, the larger its amortization. When the product reaches the end of its life time with the customer, the manufacturer is induced to recycle or to repair as many components as possible and to reintroduce them in its production process without rejecting in the environment the costs and wastes. A strategy of service-life extension for durable goods – such as infrastructure, building, ships, aircraft, equipment and cars – is thus equivalent to a substitution of manpower for energy and materials. This strategy creates jobs at home, while at the same time reducing resources throughput in the economy<sup>4</sup>.

The “solution-providing” relationship, rather than the products-providing, is a major change for a manufacturer who has to adapt its culture and organization, because this new relationship requires focus on customers’ problems rather than on providing products. Before adopting the solution approach firms must have a good understanding of what a solution is and how it differs from products or bundles of

products and services. In the broadest sense, a solution is a combination of products and services that *create value beyond the sum of its parts*. Many companies are failing to become a successful solution-provider for one of the three following reasons:

1. some companies believe that they are selling solutions by merely bundling products and/or services that create little value when offered together and then have difficulty of obtaining a premium price;
2. second they underestimate the difficulty of selling solutions which cost more to develop, have longer sales cycle and demand a deep understanding of the customer problems;
3. third, many companies sell solutions (intangible services) much as they sell products and do not adopt a relationship selling strategy instead of the traditional transactional selling strategy.

Thus, a solution is not simply the bundling together of related components. It is the level of customisation and of integration that sets solutions above products or services or bundles of products and services and that justifies a price premium.

What makes a solution valuable and distinctive is that it *focuses on results* by applying some level of expertise and a proprietary method that justifies a premium price.

## 5. Obstacles to the Functional Economy

Several obstacles exist to the development of the functional economy approach. *First*, in the field of consumer goods, the service functional economy implies a drastic change in consumers' behavior, since consumers have to accept to substitute the ownership of a good by its mere usage, a renunciation difficult to tolerate when the emotional value associated to the ownership of the good is central. The needs of ownership, fashion, innovation and differentiation (conspicuous consumption) are social phenomenon observable in all market economies. In any case, the functional economy model is applicable only to products where separating physical possession and usage is meaningful, thereby excluding products and services for which consumption means destruction. Thus, the functional economy model has a more limited scope in B2C markets, where goods are "toys" designed for amusement, not to earn money, than in B2B markets where production and investments goods are "tools" used by economic actors to make money<sup>5</sup>.

*Second*, because of its insistence on the product durability, the functional economy does not promote technological innovation which is nevertheless a key factor for economic development. The functional economy model is also more difficult to implement in domains where fast technological changes prevail. Thus, in its communication to the market, the firm cannot use the arguments of novelty and change, but rather should use the arguments of service, customized quality and ecological value. Thus, educating consumers to the concept of sustainable development is necessary to support and promote the functional economy model.

A last difficulty, hard to measure, is the complexity of the contractual relationship generated by the leasing agreement between the firm and its customers, regarding

the liability of the leaseholder, including the “moral hazard” of customers who would not manage properly the rented equipment or would waste the rented energy (leaving windows open).

As a general observation, one would expect to see large market players more attracted by this model than small market players. In global markets, small players prefer the business model of the industrial economy, which limits liabilities in time and space through its “out-of-sight” “out-of-mind” approach; A small producer in China can sell goods anywhere in the world, but it is difficult to imagine its selling performance in Europe or in the US to local customers without local partners and third party guarantees.

## 6. The Loop Economy

In a traditional economy, the product life cycle is linear “*from cradle to grave*”. In a loop economy by contrast, this linear life cycle is replaced by a loop “*from cradle to a new cradle*”, by adopting re-using, re-manufacturing and technology-updating strategies and by re-cycling used products and the wastes generated by a particular production process for other productions or for other industries. Repair, reuse, upgrading, remanufacturing, recycling and down cycling are the six main closed-loop principles to keep the gift of good materials and good work moving on to other users and other uses. The smaller the loop the more profitable it is. Do not repair what is not broken, do not remanufacture something that can be repaired, do not recycle a product that can be remanufactured, do not incinerate or landfill a product that can be down cycled<sup>6</sup>.

□ *When Caterpillar, the US heavy equipment company, started to take back diesel engines for remanufacturing, it sold the remanufactured engines at a large discount. When caterpillar changes its strategy to buy the used engines back for a price that depended on its condition and completeness, the quality of the used engines significantly improved. The remanufactured engines are now sold with the same guarantee and for the same price as new ones.*<sup>7</sup>

Repair works better if the product was designed to facilitate it. Obviously, it is much easier to disassemble product for remanufacturing or reuse of its parts if it was designed with that end in mind. Renovating a building or remanufacturing a train needs nearly as much manpower as building a new one, yet conserves 80 percent of the original investment in materials and energy.

What if an item’s options for repair, reuse and remanufacturing are exhausted? Then it can be recycled to reconstitute it into another, similar product. As a last resort, it can down cycled – ground, melted or dissolved so its basic materials can be reincarnated for a lower purpose, such as a filler material.

□ *When those closed-loop principles are applied to everything from packaging to the three billion tons of construction materials used each year, a substantial amount of reclaiming is at stake – and every ton not*

*extracted, treated and moved means less harm to natural capital  
(Hawken and others, 1999, p. 80)*<sup>8</sup>.

Very frequently, only a limited fraction of the raw material or of the energy used is integrated into end-product. It has been estimated (Ayres, 1989)<sup>9</sup> that in the US economy, only 6 percent of its vast flows of materials actually end up in products. The leftover either is lost or transformed into a sub-product of low value or in waste. These sub-products however, can have value of for another industry or for another consumers group. A common observation is that the costs of re-manufacturing or of re-using high added value components are more than offset by the savings generated by the reduction of raw materials.

The Chinese government is very active in implementing this concept of a loop economy by promoting the creation of industrial eco-parks regrouping enterprises involved in an exchange system based on the recycling and on the re-using of wastes, the waste of one industry being used as raw materials of the other. The concept of a loop economy can be adopted by any eco-sensitive firm, but its adoption generally implies a form of intersectoral coordination and a substantial reorganization of the production processes. An emblematic example of this strategy is given by Rank Xerox and its successful strategy entirely focused on re-manufacturing and re-using its used products.

The recycling industry in the EU, in 2008, has a turnover of €24 billion and employs about 500 000 persons. It is made up of over 60 000 companies. Waste generation in the EU is estimated at more than 1,3 billion tons per year at rates comparable to economic growth. For example, both GDP and municipal waste grew by 19% between 1995 and 2003. One consequence of this growth is that despite large increases in recycling, landfill – the most problematic way to get rid of waste – is only reducing slowly. High standards exist for landfills and incinerators. Industry now seeks to make a profit from waste instead of dumping it.

The loop economy model can be adopted by any firm even if it implies deep changes in the organization of production systems. These changes have to be initiated by the eco sensitive management and supported by public authorities.

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## Notes

<sup>1</sup> Rocky Mountain Institute (RMI), 1998.

<sup>2</sup> Stahel W.R., *The Performance Economy*, Palgrave Macmillan, London, 2006.

<sup>3</sup> Hulot Nicolas, *Pour un pacte écologique*, Calman-Lévy, Paris, 2007.

<sup>4</sup> Stahel, p. 62.

<sup>5</sup> Stahel, p. 177.

<sup>6</sup> Stahel, p. 71.

<sup>7</sup> An example quoted by Stahel, p. 72.

<sup>8</sup> Hawken P. Lovins A. and Lovins L.H., *Natural Capitalism – Creating the Next Industrial Revolution*, Little, Brown and Company, New York, 1999.

<sup>9</sup> Ayres R.U., *Technology and Environment*, National Academy of Sciences, Washington D.C. Quoted by Hawken and others, (1999), cit., 1989, p. 14.