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# **SCHUMPETER AND THE RISE OF MODERN ENVIRONMENTALISM**

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## **ABSTRACT**

In *Capitalism, Socialism and Democracy* (CSD, 1942), Schumpeter presents his paradoxal thesis that capitalism will destroy its own foundation, not by failure but by its success. He argues that the emergence of unfavorable circumstances will activate strong opposition from social critics and intellectuals. Considering the recent growth in national and international environmental legislation and the subsequent emergence of rather vague ecological concepts like sustainable development and the precautionary principle – both challenging economic growth – one could argue that modern environmentalism is one of the most powerful forces that will further impact capitalism as we know it. Did Schumpeter foresee this evolution and what are the mechanisms that did lead to this situation? We discuss aspects of Schumpeterian issue entrepreneurship and relate these to theories on the emergence of environmental regulation, the expansion of environmental organizations, the use of new instruments in environmental policy and pro-active business strategies. Where possible, recent developments in climate policy, acid rain policy and biotechnology policy are integrated in the analysis.

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## **1. Introduction**

Environmental policy is a strongly growing area in government regulation. Since the 1980s a growing number of international environmental agreements has been negotiated and integrated in national legislations. International organizations such as the World Bank have ambitious environmental programmes. Environmental policy also proves to be a very innovative domain in government policy. New instruments and approaches have been applied and institutionalized.

Since environmental policy aims at correcting externalities and therefore impacts market forces, environmental protection can change the course of capitalism. Since *The Limits to Growth: A Report for the Club of Rome* (1972) and more recently *Our Common Future* (1987) or the Brundtland Report, many pioneers of the sustainable development movement even argue that the course of the global free market economy absolutely needs to change. The challenges they see are very demanding : ‘These challenges cut across the divides of national sovereignty, of limited strategies for economic gain, and of separated disciplines of science (World Commission on Environment and Development, 1987).’

When the strategies for economic gain are challenged, did we finally arrive in the phase when social critics and intellectuals will develop a strong enough opposition to stop the progress of capitalism, as foreseen by Schumpeter in *Capitalism, Socialism and Democracy* (CSD) in 1942? To answer this question, we will first analyze the relevant paragraphs in CSD, then concentrate on Schumpeterian issue entrepreneurship and relate this concept to theories of environmental regulation, the expansion of environmental organizations, the use of new instruments in environmental policy, pro-active business strategies and new ecological concepts.

## **2. Intellectuals and the Demise of Capitalism**

‘Can capitalism survive? No, I do not think it can (CSD, p. 61).’ These are the daring opening sentences of part II of Schumpeter's *Capitalism, Socialism and Democracy*. The capitalist system ‘inevitably creates conditions in which it will not be able to live and which strongly point to socialism as the heir apparent (CSD, p. 61).’

The second part of the above statement has been rejected by the course of history. The Soviet Communism experiment seems already to belong to a distant past. Although Schumpeter clearly overestimated the abilities of the socialist bureaucracy, this does not automatically undermine the first part of the statement. Will capitalism eventually dig its own grave? The

obvious criticism that capitalism is still alive today, is also not a sufficient argument to reject the hypothesis. Schumpeter himself noted that at the eve of the Second World War ‘the various components of the decline were everywhere discernible but nowhere fully revealed’. But, as he concludes, ‘in these things, a century is a 'short run' (CSD, p. 163).’

Why should capitalism necessarily come with a 'self-destruct mechanism'? Schumpeter points at several inside and outside effects that are detrimental to the capitalist society. The 'evaporation of the substance of property' is one of these inside 'cancers'. As firms become larger, property rights get split up. In the end nobody can say that he owns this particular machine, or that particular building. Every stockholder owns an intangible part of the total firm. Schumpeter argues that this will eventually kill the roots of capitalist motivation. Nobody will fight for his property, because nobody really knows what his property is.

The outside 'virusses' that threaten the capitalist society are twofold. First, the importance of the entrepreneurial function is constantly being eroded over time. This evolution has fundamental consequences since Schumpeter posits the entrepreneur at the heart of economic development. In our work we will, however, focus on the second virus: the effects of capitalism upon the cultural sphere of society.

Capitalism is responsible for the rise of a 'rationalist individualism'. While such an attitude could be seen as a positive evolution characterized by a higher stage of moral development, it nevertheless incorporates certain risks to the social order in place. ‘When the habit of rational analysis of, and rational behavior in, the daily tasks of life has gone far enough, it turns back upon the mass of collective ideas and criticizes and to some extent 'rationalizes' them by way of such questions as why there should be kings and popes or subordination or titles or property (CSD, p. 122).’ So capitalism could create a hostile hyperrational climate.

However, why should this be the case? Capitalism has occurred simultaneously with all kinds of social improvements (although this does not necessarily imply that capitalism *caused* these improvements). Why should people protest against a society that has improved their lives markedly? Schumpeter states that ‘unlike any other type of society, capitalism inevitably and by virtue of the very logic of its civilization creates, educates and subsidizes a vested interest in social unrest (CSD, p. 146)’. In this process the so-called intellectuals have a determining role. As capitalism allows for an impressive educational apparatus, it creates a large class of highly educated people. A problem arises when this class becomes *too* large. The excess supply of 'white collar workers' results in a group of unemployed (and even unemployable) 'discontent intellectuals'. Others that do find work are disillusioned because of their low wages or the lack of

job satisfaction. These discontent intellectuals 'lead, organize and verbalize the protest movement (CSD, p. 153)'. In addition, the increasing standard of living and amount of leisure time, and the growing importance of books, newspapers and radio are favourising the critical mind of the masses. Still, there is little doubt in Schumpeter's mind that the workmen will not lead the protest movements themselves: 'he (i.e. the workman) disapproves because he is told to do so (CSD, p. 211).'

The fact that Schumpeter assigns a very dominant role to the intellectuals can be learnt from his explanation of why socialism did appear in the USSR, but not in the US: 'the US did not, until the end of the 19<sup>th</sup> century, produce an under-employed and frustrated set of intellectuals (CSD, p. 331).'

In short, the successes of capitalism have a malicious by-product: the protest movement against its existence. Moreover, by promoting the rational individualism capitalism also weakens its defences against such kinds of protest movements. 'The freedom it disapproves cannot be crushed without also crushing the freedom it approves (CSD, p. 150)'. Capitalism cannot control the intellectuals since that would be in contradiction to the very essence of the capitalist process. In this aspect capitalism clearly differs from socialism.

Although Schumpeter's analysis seems to be obsolete in several aspects, some of his arguments are still valid nowadays. For instance the discussion about the disappearance of the substance of property rights is clearly reflected in the recent corporate governance debate. It seems that the only really effective way to keep the management under control, is the presence of large stockholders (they have a clear interest in monitoring the managers). This is more or less what Schumpeter already argued in 1942.

In the context of our work, we should note that capitalism has indeed created a critical mind. The mass media provide tons of information, and quality education for everybody provides the necessary tools to deal with it. One important reflection of this critical mind is the success of the ecological movement. However, it does not seem to be the case that the 'green intellectuals' and their adherents will cause the destruction of the capitalist society although some recent ecological concepts question the notion of economic growth. Maybe environmental concerns can, next to being a threat, turn out to be an opportunity for the capitalist entrepreneurs

### **3. Environmental Policy and Issue Entrepreneurs**

Since the 1950s, developed countries have taken important steps to design, elaborate and enforce environmental protection policies. In many cases, environmental regulatory measures were directly related to very specific - often local - environmental problems. In the United Kingdom, the passing of the 1956 Clean Air Act was one of the many consequences of the growing public pressure on policymakers after the dramatic 'killer smog' of 1952 that caused the death of 3800 Londoners (Elsom, 1995). This new environmental regulation was the final result of a growing consensus over many social groups at that time. It would probably not be correct to ascribe it to the active opposition from social critics and intellectuals on industrial production and city expansion that Schumpeter expected to emerge. Although some individuals did play an interesting role in coordinating the public pressure, the political process is that of the Schumpeterian political entrepreneur who makes it possible that 'even if strong and definitive [volitions] remain latent, often for decades, they are called to life by some political leader who turns them into political factors. This he does, or else his agents do it for him, by organizing these volitions, by working them up and by including eventually appropriate items in his competitive offering (CSD, p.270)'. By this mechanism, non-organized wishes and interests in the population may become part of political programmes and actions. For Schumpeter, the entrepreneurial alertness takes place in the mind of the politician and the consequences can be compared with those of a technological innovation, namely to reform or revolutionize the pattern of production by exploiting an invention. Schumpeter uses the term Manufactured Will.

How can we relate this alertness for new issues by political entrepreneurs to the social criticism of intellectuals? Since Schumpeter did solely focus on the politician to create new issues, does he assume that social critics do not have the entrepreneurial capabilities to launch new social themes? Or do we need to conclude that for Schumpeter the active opposition from social critics on negative aspects of capitalism deals only with problems that are at a specific moment in time not considered as threatening enough by the majority of public opinion? The negative aspects seen by social critics are then too far away from short-term marketability by entrepreneurial politicians. But even if we hold the latter hypothesis, without interactions among population groups there would never be a new marketable social issue so we need to foresee the possibility to discover new issues by politicians as well as by social critics and the public, followed by general dynamic processes that push them on the agenda.

For Schumpeter, the arguments of critics – the environmental problems they refer to – are not necessarily related to real existing problems. ‘For, first, it is an error to believe that political attack arises primarily from grievance and that it can be turned by justification. Political criticism cannot be met effectively by rational argument.... It does not follow that rational refutation will be accepted. Such refutation may tear the rational garb of attack but can never reach the extra-rational driving power that always lurks behind it (CSD, p.144).’ The distinction between threatening and not yet threatening is therefore not always relevant. To the contrary, social critics can base their attitude on subjective, extra-rational values. This makes it very difficult to counter their opinions by rational arguments. The entrepreneur that can launch these extra-rational values therefore differs from ‘normal values’ entrepreneurs.

Following Kirzner’s theory of entrepreneurship with the concepts of alertness – defined as the ‘knowledge’ of where to find market data - and discovery, the entrepreneur possesses this knowledge only through his capacity to act on it (Kirzner, 1973). How to deploy new found information is as crucial as the finding process. The political entrepreneur sees the information and the political opportunities while the social critic only sees the information. When capitalism will be destroyed by its success, the strong opposition from social critics can only be a decisive factor if critics also become issue entrepreneurs themselves or become issue suppliers to political entrepreneurs. We can assume that social critics will prefer the former option, otherwise their opposition could have a less significant impact on society and the capitalist system. Social critics will be aware of politicians’ capacity to compromise.

As a result, social critics need themselves to be very active in communicating their concerns. This is an evolution that Schumpeter probably underestimated. Kuran (1995) concludes that these activities and processes entail costs and need skills since the public’s attention is fundamentally scarce and ephemeral. He argues that society’s agenda has a limited ‘carrying capacity’. So when social critics will try to convince public opinion of the seriousness of the new issue, they hope and work for a sudden change of attitudes of the general public. They become what Sustain (1996) and Wohlgemuth (2000) call ‘norm entrepreneurs’ who deliberately aim at inducing a swing in opinions and values. These entrepreneurs work with a normal business plan (funding campaigns, allocation of labor to new campaigns), plan media strategies, select target groups and try to achieve a significant market penetration for the new issue. Similar roles are attributed to activists or scientists – or coalitions of both groups - who deliberately launch controversies to catch the attention of the media. Boehmer-Christiansen (1994) identified four

steps that especially scientists and activists with scientific issues deliberately follow to gain power and attract media attention and funding :

1. Raise an issue ;
2. Create a concern ;
3. Demonstrate scientific relevance ;
4. Abstain form solving the problem.

Other authors present a public opinion product life cycle that starts with a latent phase during which only a small group of citizens is aware of the potentially important new issue. Some of the latent issues succeed in attracting enough attention after political entrepreneurs and social critics have successfully invested in promoting the issue (Wohlegemuth, 2000). Then the issue is taken up by large 'issue retailers' like interest groups and the media. Some of these retailers possess the capabilities to transform the issue into political demands and start a discussion in which the general public becomes involved and tries to formulate an opinion. During this phase, the issue entrepreneurs can earn temporary pioneer profits. Without these profits, there are no issue entrepreneurs : 'For such an atmosphere to develop it is necessary that there be groups to whose interests it is to work up and organize resentment, to nurse it, to voice it and to lead it (CSD, p.145).'

#### **4. Theories for Environmental Regulation**

A more systematic approach to policies for the environment started in the early 1970s when the most advanced countries created Ministries or Departments for the Environment. Since then, pollution control regulation for air, water and soil has developed strongly with positive impacts on emission patterns. The current regulation does focus on emissions like carbon dioxide (CO<sub>2</sub>), a pollutant that is not toxic at all – people exhale CO<sub>2</sub> – but can have possibly negative consequences for climate stability, at least if one accepts the results predicted by the general circulation models for the year 2100. For climate policy critics, the interesting but very complex scientific debate on the assumed stability of climate and in their eyes uncertain need to regulate CO<sub>2</sub> emissions can illustrate the modern economic theory of bureaucracy with an oversupply of public goods – environmental protection regulation – that are produced in an inefficient manner. Schumpeter has however a more positive view on the role of bureaucracies. He actually considers



bureaucracy as the main counterforce to amateurish democratic government (Frey, 1982). Frey argues that Schumpeter is well aware that public bureaucracy does not function in an ideal way, but ‘the readers should not allow themselves to be unduly influenced by the associations the term carries in popular parlance (CSD, 1942).’ Schumpeter is convinced of the devotion and efficiency of some public bureaucracies in Europe, so his vision differs from recent public choice thinking.

In public choice schools, environmental regulation can be analyzed from the broader perspective of the study of government regulation, institutions and policies. It is interesting to divide this literature into three approaches to explain government regulation, namely demand-driven explanations, supply-driven explanations and explanations incorporating the interaction between demand and supply (Keohane, Revesz and Stavins, 1998). The economic theory of regulation (Stigler, 1971 ; Posner, 1974 ; Becker, 1983) suggests that much regulation is not imposed on firms but is demanded by them. For some industries, new regulation can be a powerful instrument in rent-seeking strategies when market entry and prices can be influenced according to the interests of existing firms. Regulation then could simply go to the highest bidder. To obtain special preferences, firms will have to convince the political entrepreneurs and regulators that they protect their own interests when they offer protection to specific industries. For instance, when national industries suffer from competition from less developed countries (LDCs), they can lobby for protection in case their competitors face no or less stringent environmental regulation. Politicians can defend this type of protection as a measure that protects national employment as well as the environment in LDCs.

As a result, environmental regulation is not necessarily introduced only to internalize external effects of production and consumption. This argumentation by Stigler (1971) has been interpreted as breaking with the previously dominant position among economists that regulation was initiated to correct market imperfections. In this policy auction model, private industry will be regulated when the benefits from regulation are highly concentrated, but the costs are widely dispersed (Keohane *et al.*, 1998).

Supply-driven regulatory explanations do focus on voting behavior and the institutional structure of the legislature. When new issues are successfully launched, there can always be an important potential in terms of votes. Other points of interests are the role of campaign contributions and optimal policy positions maintained by candidates that balance the need to get votes with the need to secure campaign funds.

In the models that concentrate on the interactions between regulatory demand and supply, the choice of the regulatory instrument is considered as the equilibrium of a game between interest groups and legislators. When new issues emerge, the rules of the game can change.

Environmental regulation is of course only the formal characterization or regulatory framework of a much broader movement that can be described as modern environmentalism. The broad environmental movement did bring important environmental issues to the attention of the media and voters. In some European countries, a part of the environmental movement developed into political parties instead of just trying to influence existing parties and movements. Citizen's preferences became greener during the last decades and in classical public choice approaches, politicians take these preferences as given, just like entrepreneurs take prices as given in neoclassical models of 'perfect competition'. But since these perfect competition models with homogeneous goods and fixed prices do not offer room for innovative entrepreneurs, the neoclassical logic of choice is barred from recognizing the Schumpeterian view that politicians act as entrepreneurs who create and change voter's preferences and opinions, or introduce new political products and forms of organization (Wohlgemuth, 2000). Schumpeter wrote in CSD that the electorate's choice 'does not flow from its own initiative but is being shaped, and the shaping of it is an essential part of the democratic process (Schumpeter, 1942).' Public opinion is more than the sum of private preferences because each political preference consists of a combination of evaluative and cognitive components (Vanberg and Buchanan, 1989). This implies that preferences depend on specific results (what voters want) as well as on theories about the effect of certain actions (assumed causal relationships). Every voter or consumer wants an effective protection of the environment – this is a known preference – but not everybody will agree on the means to realize this goal. Only by offering attractive but realistic environmental protection strategies, politicians and businesses can benefit from green voters' and consumers' preferences.

As the environmental movement did grow, new actors, new instruments, new approaches and new products followed. We will concentrate – from a Schumpeterian perspective - on the growth and institutionalization of the environmental movement into professional organizations, the rise of new instruments, and the role of business.

## **5. Environmental Organizations**

Since the early 1970s, the environmental movement underwent an impressive evolution. If we take the example of Greenpeace, this well-known environmental organization changed from a

spontaneous group of like-minded volunteers into an international organization with a net income (gross income minus fundraising expenditure) of USD 101 million in 1998 and 2.4 million financial supporters (Greenpeace, 1999). Just like every large organization, Greenpeace aims at optimizing efficiency and effectiveness. For instance, in order to direct resources more effectively into campaigning work, Greenpeace Sweden, Finland and Norway merged in 1998 to form the Greenpeace Nordic Region. Greenpeace is also carrying out feasibility studies with a view to improving its presence in South East Asia and India due to the increasingly strategic importance of those regions. And successful fundraising programmes in Hong Kong, China, Argentina, Brazil and the Czech Republic are paving the way for creating a strong base for an active role in those regions.

Greenpeace worldwide operates as a life-style multinational that wants to explore new markets for its products. Greenpeace wants to sustain growth, just like every other business. The local offices follow the strategies set out by the international headquarters - all local Greenpeace websites are similar – and take over the international campaign issues. These global campaigns are divided over only six issues : oceans (18%), forests (12%), genetically modified organisms (8%), toxics (20%), climate (25%) and nuclear & disarmament (17%). The issue of genetically modified organisms (GMO) did increase strongly in importance and can become the most visible Greenpeace campaign for the coming years. When the GMO-issue will be retailed by a large enough group of activists and political entrepreneurs, Greenpeace can reap temporary issue profits.

Since genetically modified agricultural crops promise to be the future of worldwide agriculture, the active opposition against plant and agricultural biotechnology offers a good illustration of how active opposition by activists can stop - or at least seriously impact - technological progress in capitalist market economies. The current European moratorium on the imports on GMO's is therefore very illustrative.

But is this the pattern Schumpeter predicted? What we recently see in the current GMO-debate, especially in the United States and the United Kingdom, is the rise of a strong countermovement in defense of biotechnology, especially agricultural biotechnology. This movement consists of associations and councils of scientists, biotechnology business federations, agricultural and science administrations, etc... This countermovement raised the issue of 'responsible science' in the daily practice of agricultural biotechnology. They concentrate on the scientific consensus that there are no unique risks involved with agricultural biotechnology (U.S. Committee on Science, 2000). Since each conventional hybrid crop can have a negative impact on certain aspects of ecosystems, why only try to ban biotech crops when every new crop brings

some risks? So what happened is that a new category of issue entrepreneurs entered the limited – maybe already congested - market for social and environmental issues. Business federations and corporate and academic scientists noticed that GMO-activism threatened their existence while this opposition is not based on sound scientific arguments. So instead of waiting until politicians decided on the future of agricultural biotechnology, they started to entrepreneur their issue of ‘sound and responsible science’ in order to reduce the market share of the ‘genetic pollution and genetic holocaust’ issue as advocated by groups like Greenpeace.

Schumpeter probably did not foresee this countermovement by industry and scientists. His prediction on the growing power of social critics to stop capitalism is based on the assumption that social critics are better issue entrepreneurs than industry and scientists. But why should they? Social critics’s organizations like Greenpeace will face the same problems as other large bureaucracies. The pure issue entrepreneurship will gradually disappear since large organizations have to invest more resources in coordinating and streamlining day by day routine operations. When industry starts with issue entrepreneurship, this activity is not its core business and does not need to be self-sufficient as is the case of environmental groups. Therefore, the corporate or scientific issue entrepreneurs can concentrate all their energy on launching their issue and trying to take away the arguments of social critics. The real impact of social critics on capitalism will depend on the evolution or pattern of competition on the social issue market.

## **6. New Instruments, New Successes**

Economic incentives have been enacted by national and local authorities for policies that wanted to depart from the original regulatory command-and-control (CAC) approach. In principle, economic incentives should be particularly efficient when diverse sources of pollution are involved and when the necessary control technologies are still not available on the market. The most important categories of economic instruments are fiscal instruments (taxes, subsidies, tax credits and exemptions), charge systems (effluent charges, product charges, input charges, user charges, user fees, road tolls,...), market creation (tradable emission permits, tradable resource quota) and financial mechanisms (deposit-refund systems, loans, green funds, debt-for-nature swaps, relocation incentives, joint implementation, clean development mechanism,...).

These incentives can alter behavior of consumers and producers and provide market opportunities that stimulate the development of new abatement technologies.

Some authors interpret the use of economic market-based instruments as the second wave in environmental policy that follows the first wave of traditional CAC regulation (Tietenberg and Wheeler, 1998). The third wave framework consists of voluntary agreements, partnerships, information strategies (eco-labeling, environmental auditing and disclosure) and the empowering of communities.

The new instruments did influence the development and the goals of environmental policy because environmental policy goals are partly a function of costs : the lower the cost, the stricter the goal. As a result, the cost characteristics of instruments like emission trading or voluntary approaches, offer interesting options for environmental policymakers that consider the costs of traditional CAC approaches as too high. Fisher-Vanden (1997) argues that economists base their analysis on costs and benefits of a policy instrument, while policymakers choose environmental goals based on costs and political considerations with little attention given to benefits. The focus on costs is complicated by the difference between long-term and short-term solutions. The flexibility of instruments like emission trading can lower short-term costs and offer an attractive alternative to more expensive instruments. But when, in the context of climate policy, very low short-term policy costs delay the needed structural changes that impact the attitude of modern societies toward energy use, it is possible that the total costs over the long-term will be much higher than expected.

But why did it take so long for market-based instruments to gain acceptance? Were there no political entrepreneurs to promote the new issue? Was it because legislators did not want to depart at once from their legal background and needed a learning period before economic instruments were considered as an interesting alternative? Are administrative decision makers likely to oppose decentralized instruments because they did not want to undermine the prestige of their job? Or did politicians likely prefer command-and -control instruments because they tend to hide the costs of environmental regulations? Keohane *et al.* (1998) argue that voter's limited information may also lead politicians to engage in symbolic politics to attract constituent support, even when the policies are not effective. Command-and-control instruments do offer symbolic opportunities when strong statements can be combined with less visible exceptions or with insufficient or non-existent enforcement measures.

But new market-based instruments offer the advantage to political entrepreneurs of showing that more effective instruments can reduce total compliance costs for society. Politicians who can launch these categories of instruments and the issue of cost-effective environmental policy, can hope for public appreciation. A good illustration is the trading of sulphur dioxide (SO<sub>2</sub>) and

nitrogen oxides (NO<sub>x</sub>) allowances in the United States. Title IV of the Clean Air Act Amendments of 1990 created a cap on SO<sub>2</sub> emissions from electricity generating units. Phase I of this programme started in 1995 and affected 445 separate combustion units from the 263 dirtiest large generating units. Phase II started in 2000 with 700 additional sources. The SO<sub>2</sub> emission cap under Phase II is more stringent. Virtually all existing and new fossil-fueled electric generating units in the continental United States will then be subject to a cap on aggregate annual emissions (Schmalensee *et al.*, 1998).

Emissions of SO<sub>2</sub> and NO<sub>x</sub> are now successfully traded : for both pollutants 100 percent compliance under Phase I of the Acid Rain programme has been realized.

In 1996, SO<sub>2</sub> emissions were 35 % below the allowable level. NO<sub>x</sub> emissions were reduced by 33% during the period 1990-1996 (EPA, 1997a). Another important element is the relatively low cost of emission trading compared to the command-and-control approach. Before the start, EPA assessed the costs of the Acid Rain programme at \$ 1.2 billion annually in Phase I and \$ 2.2 billion annually in Phase II. Earlier estimates of total costs under CAC were between \$ 4.5 and \$ 6 billion annually. The difference is linked to the flexibility of the trading instrument.

In 1997, the average allowance price was \$ 110 per tonne SO<sub>2</sub>. A sharp rise of the allowance price started in 1998. The first trades in 1999 did result in a price around \$200.

The pre-1989 price estimates made by industry were \$ 1500 per tonne and in 1990 EPA estimated an allowance price of \$ 750 (Anderson and Lohof, 1997). At first sight, the allowance transactions offered valuable information of realistic abatement costs for industry. But can we compare allowance prices with the initially projected costs of an emission allowance?

Smith, Platt and Ellerman (1998) argue that on this issue, many ‘apples-to-oranges’ comparisons have been made. They regret statements made by important policymakers like EPA Administrator Carol Browner, arguing ‘...during the 1990 debates on the Clean Air Act’s Acid Rain programme, industry initially projected the costs of an emission allowance ... to be approximately \$ 1500 ... Today those allowances are selling for less than \$ 100 (ibid.).’ It is important to note that statements like this have been made to defend international trading of CO<sub>2</sub> emissions for climate policy. Policymakers want to commercialize cost-effective institutional innovations on other markets than the SO<sub>2</sub>-market.

## **7. Pro-Active Business Strategy**

With the rise of environmental regulation, industry gradually developed a pro-active strategy that saw market opportunities in the new environmental instruments. We will illustrate this pro-active orientation in the field of climate policy.

Since the Kyoto Protocol (December 1997), climate policy will be evaluated by binding greenhouse gas reduction targets. This is an important change from the voluntary emission reduction exercise that started in Rio de Janeiro some 10 years ago. After the Kyoto Protocol, a few negotiation rounds followed to clarify the use of flexible instruments to trade and exchange international CO<sub>2</sub> and CO<sub>2</sub>-equivalent emissions reductions. There has been no real political progress so it remains uncertain what will be the modalities of the final international trading scheme. One could expect that the most important actors involved in climate policy would wait to experiment with these instruments until more certainty is offered. But the contrary happened. The number of business initiatives to reduce and trade emission reductions is growing from day by day and at this moment already some five countries are experimenting with national trading schemes. A well documented emission trading project is the one launched in September 1998 by BP Amoco. The purpose of the system is to reduce the cost of emission reductions by allowing the different sites of the company to find the lowest cost of abatement. Since January 2000, all activities of BP Amoco are included.

The Royal Dutch/Shell Group recently launched 'STEPS', the Shell Tradable Emission Permit System, a cap and trade system with very similar characteristics as the one previously described. The Group has set itself an overall reduction target of 10% in its greenhouse gas emissions by 2002, compared with its 1990 levels. The Prototype Carbon Fund (PCF) was launched by the World Bank in January 2000. The Fund will invest in projects in the framework of joint implementation (JI) and the clean development mechanism (CDM). It is a market-based mechanism aimed at addressing climate change and promoting the transfer and finance of climate-friendly technologies to developing countries. The PCF consists of contributions from governments and private companies.

The inertia at the international negotiation tables does not seem to hinder local and private trading agreements. This is an important institutional innovation that was difficult to predict. Of course, multinationals have many reasons to get involved in emission trading. We will not go into detail but an important reason can be that they want to take over – at least partly - the political process that is maybe going too slow in their opinion. These multinationals or organizations

became ‘policy instrument entrepreneurs’ on the political market where politicians were until recently the only players.

The emergence of private emissions trading initiatives is a good example of the new role for business with respect to aspects of environmental policy. A more general indication of the new role of industry can be seen in the increasing number of voluntary agreements between industry and regulators. In many cases, the initiative for these agreements has been taken by industry without any pressure from the regulator. This pro-active environmental strategy makes it more difficult for critics or environmental organizations to suggest that the capitalist market system is by definition leading to an ecological catastrophe while industry refuses to take up its responsibility.

## **8. What’s Next after the First Environmental Protection Programmes?**

In this section, we give some indications of the effectiveness of past environmental programmes and then shortly analyze some recent concepts that will shape the evolution of current and future environmental policies. We focus on the precautionary principle and the concept of sustainable development. Both became in no time part of environmental policies and strategies in most developed countries while there are still many different definitions and interpretations available.

### **8.a Air emission trends**

In Table I, we present air emissions trends in the United States for the period 1940-1996. These emission patterns can give some information on the effectiveness of existing environmental regulation. Only emissions of nitrogen oxides did increase since 1970. For all other pollutants, the reductions are impressive. Emissions of lead almost disappeared and actual emissions of carbon monoxide (CO), volatile organic compound (VOC), SO<sub>2</sub> and particles (PM-10) are around the level of emissions in 1940. Over the same period, economic activity in the United States did grow strongly. Since 1970, US Gross Domestic Product more than doubled, the Vehicle Miles Traveled (VMT) did increase by 150% while Total Fuel Consumption (TFC) increased by ‘only’ 45% (EPA, 1997b). These are clear signs of a tendency towards a more energy and resource efficient economic activity. For most European countries, the data follow a similar pattern.

With respect to other pollutants, the Toxic Release Inventory (TRI) collects all releases – in the air, water and soil - of 647 chemicals in the United States. A few years after the first TRI data



collection in 1987, impressive reductions of releases are reported although there was no regulation that forced firms to reduce emissions. The only obligation for industry was simply to report emissions. For the 'core' group of chemicals, the total reduction of emissions was 45.6% for the period 1987-1995 (EPA, 1996).

**TABLE I - Emissions of air pollutants in the United States, 1940-1996**

**(in 1000 tonnes)**

<i>Pollutant</i>	<i>1940</i>	<i>1950</i>	<i>1960</i>	<i>1970</i>	<i>1980</i>	<i>1990</i>	<i>1996</i>
CO	93616	102609	109745	128761	116702	95535	88822
Index	73	80	85	100	91	75	69
NO <sub>x</sub>	7374	10093	14140	21639	24875	23792	23393
Index	34	47	65	100	115	110	108
VOC	17161	20936	24459	30817	26167	20985	19086
Index	56	68	79	100	85	68	62
SO <sub>2</sub>	19952	22357	22227	31161	25905	23136	19113
Index	64	72	71	100	83	74	61
PM-10	15957	17133	15558	13190	7287	5528	4434
Index	121	130	118	100	55	42	34
Lead				220869	74153	4975	3869
Index				100	34	2	2

Source : EPA (1997b). National Air Pollutant Emission Trends 1900-1996, EPA-454/R-97-011, December 1997

Note : for PM-10, other data that include fugitive dust and PM from agriculture and forestry are available since 1990

We realize that this limited data set does not allow to draw general conclusions like ‘environmental policy was a big success’. We can only conclude that emissions of conventional air pollutants show positive developments.

The future of environmentalism is uncertain. In states like California, environmental regulation started to deal with ‘problems’ like air and noise pollution resulting from barbecue grills and lawnmowers. It is not surprising that from time to time, this type of regulation is under attack. But the lawnmower regulation will not determine the future of the environmental movement. The evolution of environmentalism will be shaped by new broad guidelines that have been developed during the last decade.

### **8.b The Precautionary Principle**

Of all international environmental issues, climate policy can become the challenge for the future. Even when we recognize the many uncertainties about the impact of a climate change on the global economy, policymakers prefer not to wait and see but to act before it will be too late. This strategy is in line with the precautionary principle that states that cost-effective measures to prevent environmental degradation may be introduced before serious and irreversible damage occurs, even in the absence of full scientific evidence of the damage impact. The precautionary principle has been integrated in many international treaties. Especially environmental groups are strongly in favor of a narrow interpretation of the principle : when there is a risk for environmental degradation with a probability above zero, the activity should be stopped, even when there is no scientific evidence for the causal relationship. The European GMO-moratorium is motivated by this type of interpretation of the principle. Since the biotechnology industry can not prove now that there will never be a problem with transgene crops in the near and far away future, some groups argue that this is an argument to ban the technology altogether. But who can prove now the non-existence of the unknown? Schumpeter would consider this attitude as purely ideological opposition from anti-capitalist and anti-technology critics.

Since each major technological innovation – electricity, lasers, telecommunication equipment ... - can pose risks when it is used without the necessary precaution, the principle can become an instrument to stop technological progress and this was not the initial intention of the principle. Therefore, some guidelines on how to interpret the principle were needed. In early 2000, the European Commission issued a communication on the precautionary principle (EC, 2000). It states that the principle should not aim at a zero-risk society because this is simply impossible.

Applying the principle should also include a serious risk assessment. When the risks are too uncertain to assess or even describe them, the application of the principle would suggest to invest in more research and not to impose restrictive measures. This well-balanced European interpretation has been strongly criticized by some environmental groups. In their struggle with industry and politicians on the environmental issue market, the narrow interpretation of the precautionary principle could be an advantage or pure necessity for them. When all actors are green, it becomes more and more difficult to be greener than your competitors. But even the correct interpretation of the principle could offer only a limited surplus to environmental policy. If we assume that there are possible future risks, who will evaluate these risks? The group that is best qualified for this task is the group of scientists and engineers that developed the new technology or product. But why should we assume that these scientists do not work with caution? Precaution is an inherent part of scientific research so new technologies already passed the normal precautionary threshold.

### **8.c Sustainable development**

Another new concept that strongly gained importance during the last decade is that of sustainable development. There are many definitions of sustainable development and even more interpretations circulating. The Brundtland Report, which is widely credited with raising the concept to its current level of importance, concludes that ‘sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987).’ Other definitions are more vague, for instance ‘preserving opportunities for future generations as a common sense minimal notion of intergenerational justice (Perman *et al.*, 1996).’ Although these definitions attract many people, how will we ever know future generations’ opportunities and needs? If one had asked the intellectual elite in 1900 to define the needs and opportunities in the year 2000, the answers would not be that relevant...

Nevertheless, it is amazing how fast the concept has been institutionalized. Almost every developed country has now a council or committee for sustainable development. These institutions often act as think tanks for environmental policy and most of their proposals are very similar to traditional environmental policy experiences. Maybe the most important difference with ‘conventional’ environmental policy is the broader involvement from more social actors (cities,

pressure groups, NGO's,...) which can result in original approaches or in more complicated decision mechanisms.

As in the case of the precautionary principle, the concept can of course be interpreted from a very narrow point of view. When economic activity is seen as the source of all evil, it is very easy to argue for a zero economic growth or even negative growth. Especially anti-capitalist groups use this kind of interpretation of the concept. As Schumpeter predicted, many intellectuals followed the same road although their thinking is not so clear. Steady-state economics has been presented as an alternative to ecological decline by authors like Douglas Booth (1998). One of the strange elements with these schools is that they first present emissions patterns like as in Table I – and even conclude that emissions are strongly reduced (Booth, p.27) - but then start in a next chapter with presenting a non-growth economic alternative to stop this environmental decline. But what decline? Most developed countries already passed their 'pollution peak'. Only the emissions of CO<sub>2</sub> continue to increase for the obvious reason that these emissions are a proxy of economic activity. Somehow, it seems to be problematic to prove that current development is not sustainable, even for those who want to change course to a more sustainable development. They only succeed in interpreting current trends as unsustainable.

Long essays can be written on the usefulness of the concept of sustainable development, so we limit our comments to some basic elements. First of all, it is questionable whether we should really be that concerned for the next generations which will be much richer than ours. If future prices of conventional energy services will double as a result of further depletion, is this really a problem when the average income level of the population has tripled by then?

Furthermore, economic theory shows that when the prices of conventional energy sources will rise, the supply of alternative energy sources will increase. Critics of this economic option of substitutability could then argue that future generations will prefer the conventional energy sources to the alternatives ones. But if they are prepared to pay higher prices, they can.

Secondly, why should we now be concerned about resource stocks and price developments for the next hundred years? It is in this respect revealing to analyze current price developments of most primary commodities. Why are the long-term price trends declining? Sachs (2000) sees in this trend a side-effect of innovation. The consumption of copper is falling down because copper is displaced by fibre optics that offer spectacular improvements of technical performance. Natural rubber and jute are displaced by new synthetic materials. Does it really make sense to preserve a certain quantity of copper for future generations? For which products will they use it?

Thirdly, societies and economic structures evolve over time and the basic law of life is that time cannot be turned back. Those born after 1969 have not seen the first steps of man on the Moon in a life broadcast. Who will complain that this violates intergenerational solidarity? Maybe they will see in 2069 – or much earlier - the first step of man on Mars.

The supply of fossil fuels will be lower at the end of next century, but the supply of technological innovations will never deplete. Furthermore, societies are organic and have other needs than the sum of the needs of individuals (Swaney, 1987). Societies have their own social capital that keeps people connected and is essential for the social and economic conditions. A crucial element is that societies have a much longer life expectancy than individuals. People also have longer perspectives than their own life expectancy. When parents own a house, they will prefer to give it to their children or grandchildren in a good state. Therefore, the assumption that people are not interested in the next generations could be just a very reductionist approach of human nature.

When an organic society needs the conservation of natural resources as an essential element for its survival, it will develop mechanisms that ensure this conservation. What we need, is the conditions that can make societies prosperous, adaptive and flexible. A rigid zero growth approach of what some groups call now sustainable development can hinder the development of these adaptive capabilities and should therefore be considered with the necessary precaution.

## **9. Conclusions**

Schumpeter was right when he predicted that more welfare in capitalist systems can lead to more education and a growing group of social critics and intellectuals whose mission is to create strong opposition against the dominant structures in society. After the collapse of communist experiments all over the world, capitalism or what we call the free market economy can only be challenged from within, i.e. by concentrating on the negative production and consumption externalities for society. The rise of environmental regulation was a necessary and adequate answer to many serious problems. Meanwhile, most developed countries passed their ‘pollution peak’ but the ‘environmental issue’ kept on gaining importance. New concepts have been launched, even when the definitions, the underlying assumptions and the many interpretations can be questioned. Not only rational arguments seem to enter many environmental debates. This has been foreseen by Schumpeter when he wrote that social critics based their arguments also on extra-rational values... We do not want to discredit the sustainable and precautionary movement, but one could argue that

they are partly the result of very effective 'issue entrepreneurs' that were searching for a new market after the pollution peak. Recent analyses show that these entrepreneurs will face competition on the issue market from business and scientific groups. These groups are far more resilient than Schumpeter anticipated. By anticipating the 'ecological critics' and taking proactive measures, these groups were able to weaken the position of green protest movements. Because Schumpeter concentrated especially on the political entrepreneurship, he could not foresee this course of events. However, when we extend this entrepreneurship to social critics, here environmental organizations, interesting insights can be gained. In capitalism, also social issue entrepreneurship is open for competition and market dynamics. The future will reveal the best issue entrepreneurs, on the rational and extra-rational value markets...

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