Treball de final de grau:

Private sector and environmental conservation managment:

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Agraïments:

A la meva família que és una continua font d'inspiració i coneixement.

Els meus amics que m'han animat i ajudat en aquest projecte.

Els meus companys de feina que hem varen ajudar a formar i organitzar les meves idees.

El tutor d'aquest treball per les hores i paciència invertides.

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1. Introduction:

The future of human society is entitled to the fate of environment. We can no longer ignore the impact that markets make in our ecosystems and how human necessities are linked to its fate. For this is important that we analyse how markets act on these conditions to manage its consequences on environment.

To do so in this paper we will try to answer the question: Is private sector capable to manage environmental conservation? Our objective will be to analyse if market mechanisms are able to manage their impact on natural environments.

We will take as cases of study the economic reforms discussed at the conference on "*Conservation Capital in the Americas*" held in January 2009. All of these cases are examples on economic interventions, public and private, aiming to finance conservation of environmental resources.

2. Theoretical approach:

First of all, we understand environmental management as a result of: efficiency in natural resources production, contributing to the conservation and equal distribution of goods.

Addressing the concept of efficiency, the main theory is illustrated by the concept "Pareto efficiency": it states that efficiency is related to the concept of distribution. If distribution can't be changed in a way that one gains wealth without aggravating the others, then is optimal in terms of Pareto. This theory also has two fundamental theorems: first that any competitive economy is efficient in Pareto terms, secondly that any allocation, with the help of initial redistribution, can accomplish Pareto efficiency by mechanisms of competitive markets.

We understand competitive markets to be formed by a large number of consumers and producers, therefore, none have control over the price or quantity of goods produced so allocations are given by competition.

The situation when market isn't efficient is called *market failure* and is the main argument for public intervention. Types of market failure are: to start with *Imperfect competition* on markets, such as *monopolistic* or *oligopolistic* markets, creates inefficiency in trade and production of goods. Secondly, *Public Goods* that are unlikely to be financed by consumers because of its non-excludable characteristic, and doesn't suppose rivalry in consumption because all consumers can benefit at the same time. In addition, *Externalities* are actions that affect third parties in a positive or negative way; if a person looks after his garden neighbours enjoy the benefits of view however, if the owner decides to cut all trees neighbours will be affected negatively.

As we have introduced with *Public goods*, how we finance and enjoy goods affect their characteristics: first of all, *excludable goods* give seller capacity to charge for benefits of

consumption. If a person decides to apply a fee to enter his garden, and has the possibility to ban not payers, that garden is excludable because use requires payment. On the other hand, *rival in consumption goods* can't be enjoyed by all consumers. For instance, apple trees produce a limited amount of fruit therefore, the consumption of one apple is rival to the consumption of more by others. As a result of these characteristics market failure can occur.

Also, another effect with Public goods is the *free rider problem*, it consists on consumers benefiting of a service but don't contribute. These effect is generated by the non-excludable characteristic of these goods. A good example would be "public parks": despite everybody is able to benefit not all consumers have actually contributed to maintenance or construction. On the other hand, *free rider problem* also occurs when there is overconsumption of shared resources, also known as "The tragedy of the Commons". *Common goods* such as "fisheries", are non-excludable but rival in consumption, therefore, individuals will probably act on self-interest instead of regarding the sustainability of their action. For example, not regulated "fisheries" are at risk since one fisherman may take a higher catch than others risking the fish stock in the area and availability.

Other type of market failure are: *Imperfect access to information* due to lack of transparency from enterprises and uninformed costumers. Also *Incomplete markets* situation where some goods are not provided by private market even though the cost of producing is less than the cost paid by consumers. Finally, *Economic perturbations* such as unemployment can also suppose market failure.

Even though in some situations public intervention can be effective Ronald Coase suggests that private intervention will be effective if: first it granted the existence of property rights, then the existence of few actors involved and finally the cost of agreement would be low. As a result of these: primarily private actors will create an agreement without public intervention, therefore solve the externalities caused by booth parts and internalize the problem. Let's take as an example the pollution of a river by a chemical industry and the negative externality caused to fishermen: to start negotiation ownership must be settled, then fishermen can ask for fare share due to their loss and in the end if costs are low for booth parts agreement will take place.

It's important to notice that all Coase theorem requisites are an extension of transactions costs concept. The need for mediation of ownership or existence of too many actors often suppose greater costs enabling possibility of agreement, public policies have a preponderant role on diminishing these costs and applying initial redistribution.

In conclusion, efficiency is affected by the existence of market failure. On environmental management we'll mainly work with: *Public Goods*, *externalities* and *Common Goods*. Depending on situation public intervention will be useful to achieve efficiency, on the other hand,

if Ronald Coase requirements accomplish private action will also be achievable. Our goal consists on identifying which, public or private, were used in our cases of study and if it suited the purpose intended: efficiency on environmental management.

3. Cases:

Tax-related

- Massachusetts and the community preservation act: *"real state transfers"*

Massachusetts was the first State to create public parks, land trust and local land banks in the United States. It has a long tradition on environmental conservation, a good example is the "*community preservation act*": this legislation gives towns and cities the tools to ensure financing environmental conservation to preserve natural heritage by intergovernmental partnership.

The major economic measure by this law was the creation of the "*real estate transfer tax*" or RETT, born on Nantucket Island with the creation of the "*Nantucket Islands Land Bank*". This tax includes a 2% transfer of each property selling value by these land banks. Mainly it was conceived as a way for local governments to find revenue to acquire, hold, and manage endangered land. It's relevant the role of the "*trust for public land*", a non-profit conservation organization, for the application of these measures and the acquisition of land in order to protect it all around United States and especially in Massachusetts.

The main market failure in this case of study were Common Goods: first of all the lack of unified property made that some constructers started diminishing the natural value of the area by building properties. Secondly owners acted in self-interest, selling their land without regarding patrimonial interest, which endangered their conservation. This also created a negative externality to society due to loss of environmental richness.

There are wide economic effects by these measures: first of all the application of taxes aims to equal the private benefits with the social costs related to environmental impact, therefore, finance environment conservation and deterrence those who make benefit of illicit construction, also, these contributes to lower house prices due to the decrease in offer and the conservation of historical and natural patrimony. Secondly it defines property rights for natural resources, if there was no defined owner the risk of natural depletion would be greater, also the social demand would be unknown. In addition by becoming owner state gets the capacity of excluding users, for example by selling tickets or deciding who manages those resources. Finally the "*free rider problem*" is solved by paying taxes, which makes everybody contribute to their impact on natural environment and finance it.

Under this law everybody was able to enjoy the benefits of these resources and individual motives were restrained. There are several reasons why public intervention was used instead of private: first of all the asymmetry of information regarding property value made it easier for companies to acquire land at a cheaper price than society valued. Secondly the existence of multiple ownership's made impossible unified management of land, which made the number of parties involved too numerous to set negotiation. Finally the costs on buying all the land were too expensive making the transaction costs unaffordable.

In conclusion the RETT have: created property recognition, have involved little number of parties and has had low transaction costs. Accomplishing those criteria has made environmental conservation affordable and reachable to all, has protected property value and has distributed resources more efficiently.

Carbon-related

- The Kyoto protocol: carbon emissions markets

The great impact that greenhouse emissions do to our environment and climate are a big threat to our economies and lives. It's important that developed nations accept their responsibility on these changes and that developing nations get new mechanisms to grow without spoiling left soils and forests which have potential to fight global warming. In the 1990's the United Nations Framework Convention on Climate Change (UNFCCC) and the subsequent Kyoto Protocol were established creating mechanisms to reduce greenhouse gas emissions.

Market failure in this case is produced by *Public goods*, the characteristics of "air" make difficult for market to take care and provide this needed resource, also, the contamination of it creates a negative externality to society. Furthermore, the needs of developing countries to grow risk the fight on climate change effects.

The most important mechanism to our interests was the European Union emissions trading system or ETS. It started in 2005 and established a new commodity market and set trading rules for carbon credits to be bought and sold. The main objective was to allow companies to offset a portion of their greenhouse emissions by acquiring certified emission reductions (CER) from clean development projects on developing countries.

The main results were: first the creation of a "ceiling" on greenhouse emissions that forced companies to acquire licenses for their emissions, as a consequence a thick network appeared between companies who would like to reduce or sell their emissions. Furthermore, the existence of this new commodity market stimulated companies to develop new productive mechanisms and

projects to comply with new requirements and costs. Finally it created new clean development mechanisms (CDM) for developing countries to grow and finance natural conservation by selling CER's without implying a growth on greenhouse emissions.

The existence of these mechanisms gives new visions on the management of *public* and *common goods*, creates the possibility of solving the *externalities* caused by contamination giving that property rights are defined and establishes private mechanisms which public actors can benefit from.

- The $CHOCO_2$ project- Ecuador

One of the most diverse and unique regions of Ecuador is the "*Maquipucuna reserve*" located at the province of Pichincha. The development of the country has putt at risk the healthy environment and endangered the conservation of the unique flora of the area.

The deforestation of historical forests in Ecuador by development throughout civilizations may endanger the conservation of native trees. Because healthy and unspoiled forests are *Public goods* is difficult that consumers finance it because their effort won't benefit them more than the non-contributors.

The solution reached to finance the reforestation of the "*Maquipucuna reserve*" was to apply for carbon credits on the global carbon market, by doing so government created a source of finance. Private entrepreneurs looking for certified emission reductions could buy those carbon credits at market price, giving that creation of carbon dioxide markets creates the opportunity for goods affected by non-excludable characteristics to be affordable on market criteria.

The interesting thing is that there is a strong relation between public and private means: first of all, these actions enable public governments, such as Ecuador's, to set property rights by establishing a value on a *Public good*. Secondly creates an environment on which governments and enterprises are able to negotiate in order to finance reforestation while booth gain benefits. Finally, these markets make possible a cost of transaction acceptable by both parties.

In conclusion the $CHOCO_2$ project and the initiative of the global carbon market created by the Kyoto project aim to create private solutions to governments. The difficulties that developing countries face to protect forests are solved by financing their protection and adding value to these public goods in order to be rentable. Government acts as a private individual protecting property rights and negotiating to end deforestation caused by development.

Limited development-related

- Tourism on Galapagos islands

On 2003 the Galapagos Islands had already become a major tourism attraction. The wide variety of companies operating on the island and the ecological pressure of its visitors putted on danger the sensitive biodiversity of the area.

On this case of study, the market failure was that biodiversity on the islands ("*Common good"*) was on danger due to the numerous quantity of companies offering services. That made the availability of biodiversity endangered because of the irresponsible practices of some sellers.

The solution reached came from the Rainforest Alliance and Conservación y Desarrollo, two non-governmental organizations. They created a new certification called "smart voyager" for tour boat operators. This certification would enable these companies to communicate their social and environmental commitments and would suppose less environmental impact due to requisites of appliance.

The effect caused was that responsible companies were rewarded for doing improvements on their activities and biodiversity of the island while irresponsible enterprises were deterrence to act on such paradisiac and fragile destinations.

On this case of study private action took place before public action due to difficulties on public mechanisms. Initial redistribution was problematic because the wide existence of several companies, in order to solve the problem private actors decided to negotiate to lower their transaction costs rather than changing the allocation of goods.

These measures clarified ownership for companies with regards on natural conservation, limited the number of companies operating on the islands and made more affordable improvements on equipment and practices because it gives added value to responsible practices.

4. Conclusions:

There are several important things to consider to answer the question: Is private sector capable to manage environmental conservation? We've seen that an equal distribution of goods is crucial to manage markets. When redistribution is applied on environmental conservation markets we'll mainly work with *Public* or *Common* goods, regards on their characteristics are purposeful to decide which redistribution mechanisms should work. If transaction costs on market action are low private actors will have opportunities to manage control on these resources, on the other hand, if that doesn't occur public sector should act to lower those costs or manage those markets.

Measures on taxation prove to redistribute resources in a more optimal way than before its application. In the case studied we see that "*real state transfers*" has made that a "*common good*",

such as environmental interesting lands, acquire value on market. The tax has made possible that private sector redistributes some of the benefits of building to protect the environmental richness of these areas. Initial public intervention made possible a more optimal and fare distribution of goods and enabled protection of these resources, even though, asymmetry of information in this case creates difficulties to value impact on environmental conservation.

Measures regarding Carbon emissions control have big potential on distributing costs associated to *Public goods.* The creation of carbon emissions markets produces new economic mechanisms, such as "ceilings", that contribute on solving excludability and rivalry of these goods. Otherwise, projects financed by "certified emissions reductions" on developing countries suggest new ways to finance the protection of remaining forests on these areas. For these projects to work market and public sector have to committee to innovative methods that assure low transaction costs attached.

Finally, limited development measures have been practical on reducing impact of human action. Negative impact of tourism on "*common goods*" can be lowered by redistribution mechanisms aiming to control market influence. The case of study proves that this redistributive action by private sector can regulate costs attached to environment, even though, this measure only committee voluntarily making influence less useful than public intervention.

In conclusion private sector is more than capable to manage environmental conservation when costs of transaction are low enough. For this to happen public sector has a principal role on applying initial redistribution. Benefits of these policies will depend on the commitment arrived by market, some examples studied suggest that redistribution is capable to solve market failure occurred because *"public*" or "*common"* goods, even though, is hard to decide whether it contributes usefully to protect environment or only suppose a new allocation of goods.

Bibliography:

James N.Levitt, Editor (2010), "Conservation capital in the Americas", Lincoln Institute of Land Policy:

- *Matthew Zieper*, "The Massachusetts Community Preservation Act", part II chapter 3 pp 29

-*Brian Milder*, "Conservation finance in the Galápagos islands", part IV chapter 8 pp109

- *Ben Vitale,Tannya Lozada*, *Luis Suárez*, "Ecuador ChoCO_2 conservation carbon project", part VI chapter 11 pp 161

Paul Krugman, Robin Wells, Kathryn Graddy (2014), "Essentials of economics", Worth publishers, chapter 9 pp 275-299

Joseph E.Stiglitz (1986), "Economics of the public sector", Edward Hannaway Stiglitz Trust, chapter 1 pp 11-32, chapter 4 pp 91-108, chapter 6 pp 149-178, chapter 9 pp 247-278

James N.Levitt (2005), "From walden to wall street", Lincoln institute of Land policy

Nicholas Stern (2009), "The global deal", the Bodley Head

Lester R.Brown (2002), "Eco-Economy", Earth policy institute

Carlos M.Chacón (2007), "Regional policy on private protected areas", Central American commission on environment and development