Sustainability and Law: Possible institutional answers

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1. Introduction

It is easy to take a critical direction in the analysis of the achievements of Environmental Law. Were either the unbelievable amount of legal rules and regulations, or the insertion into constitutions and international declarations a right to clean development able to halt the process of ecological degradation in most countries? Where do we stand in terms of the global balance of environmental degradation resulting from the transfer of impact activities?

Staffan Westerlund's statement that "*environmental law as an academic discipline has not really achieved anything of significance for ecological sustainability*"(2008, p.49) exemplifies this critical view which points out a mismatch between the increase of environmental legal rules at different levels (national and international) and the progressive degradation of the biosphere.

In fact, since the environment became a concern in public opinion in the 1960s, the fields of Economics and Law both began to focus on the relation of economic activity and growth with its ecological aspects and the creation of the legal rules to restrict impact and avoid environmental harm. In spite of those endeavors, the processes responsible for degradation are still intense and threaten nature's ability to provide services to humanity.

Because of the perception of the limits of assumptions and solutions created in the past, both the Law and the Economic fields have been proposing new approaches as well as new instruments in order to meet the sustainability goal. This paper aims to present some of the

approaches and instruments, mainly at national level, that could be incorporated in order to duly consider the ecological basis of society and economy.

Before sketching those approaches, I present a critique of the mainstream paradigm of the Economics approach to environmental problems as well as of the common legal answers to them in an effort to point out limitations and identify directions that changes could take.

The reason for the economics focus on sustainability lies in its institutional construction to deal with the relationship between human needs and increasingly scarce natural resources. Law mediates that relation defining its own principles and values that interact with the economic approach. Both fields influence the other.

2. The economic answer to environmental problems. Two approaches

Environmental Economics' origins are found in the 1960s in the context of the environmental movements that made the subject a top public opinion priority. This new branch of economics focuses on the relation of economic activities and the environment within which the former are inserted and tracks from where the activities take their resources such as materials and fuels and to where it disposes different kinds of waste, including pollution.

The development of Environmental Economics was affected by the discussions that took place at the Stockholm Conference in 1972 and by publications produced in preparation of the Conference. The study prepared by a MIT team named *The limits to growth* (MEADOWS, 1972) was especially influential. It used computer models to project the combined effects of factors such as population growth; industrialization; food production; and natural resources depletion

and reached a very drastic conclusion about future environmental crises. The recommendations of the study included a target of zero economic growth.

As expected, such recommendation was subject to dispute and opposition by developing countries at the Conference. The discussions of the international community there on strived to reconcile environmental aspects with economic growth and reduction of social inequality. One important result of those efforts was the reference to "*sustainable development*," defined by the World Commission on Environment and Development in 1987 as "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (WCED, 1987).

The result of this process is the recognition that the concept of sustainable development embraces three dimensions: environmental, economic and social. The general meaning of that construction is the comprehension that the goal of environmental preservation ought to be pursued in connection with improving social conditions and combating poverty. Economic activity should allow such endeavors but cause the least harm to environment.

In order to respond to those aspirations, Environmental Economics was developed under the methodological grounds of mainstream Economics, mainly the individualistic approach and the definition of the decentralized decision model of markets (AMAZONAS, 2002, p. 108). Among the main issues developed by environmental economics are the analysis of environmental pollution as an external cost (externality); the valuing of nature and natural resources and the application of a cost benefits analysis for the decision about acceptable levels of environmental quality and pollution. Finally, there is a consideration of policy instruments for the implementation of environmental goals and limits that often regards the choice between

command-and-control (mandatory rules) and market-based instruments (that create incentives for behavior) (TURNER et al, 1993, p 4).

Pollution of the air, water and land is one of the top and most sensible environmental problems and its analysis by Environmental Economics is influenced by Pigou´s formulation of the 1920s that distinguished between the private costs of production and consumption (labor; raw material; energy) and social costs – such as pollution that is borne by third parties or society but not by the producer. The solution proposed by Pigou and environmental economists involved putting a price on the external costs in order to internalize them. Taxes and other pricing measures would be adequate for that purpose.

Another approach to externalities is inspired by the work of Ronald Coase who proposed transactions over the social costs in his famous article "The problem of social cost" (COASE, 1960, p.7). Regardless of the tool proposed (tax or emissions permits trade) Environmental Economists agree about a *socially optimal level of pollution* defined by the interaction of the costs of abatement and the benefits of the polluting production (HANLEY et al, 2007, p. 47).

The analysis of the use of non-renewable resources relates mostly to mineral extracting and to the optimal rate and amount at which deposits should be extracted and undertake a deep economic analysis of future discounting and its costs. It also highlights the problem of open access to the non-renewable resources and to some renewable common pool resources (forests, fisheries), that tends to increase the extraction rates beyond adequate and/or reposition levels. Solutions such as property-rights or the development of usage rules for communities are discussed in order to avoid the fast depletion of reserves.

The use of resources relates strongly to the discussion of what represents a sustainable level of use, taking the interest of future generations into consideration. The main position of Environmental Economics is that man-made capital (such as technologies and machines) could substitute for natural capital (SOLOW, 1993, p. 180).

The valuing of nature by the Environmental Economists illustrates well the adoption of a utilitarian individualistic approach. The definition of values is based on the rationality of individuals and their capacity to coherently define preferences. The methods for the valuation are similar to those used to value marketable goods and services, based on individual preferences expressed as the willingness to pay for preservation and the willingness to accept compensation for the loss of a natural resource or decrease of its quality.

As so, it is defined as a choice among options with monetary comparison rather than a search to identify its full value as a result of ecological, social, cultural and religious aspects. As Ramon Ortiz (2003, p. 82) notes,

> *What is being valued is not the environment or the environmental resource, but people preferences about changes in the amount or quality of an available environmental resource.*[1]

In spite of the fact that values arise from a technique of individual expression of preferences for the preservation of identified environmental resources, environmental economists include many different categories of values for the environment that can be broadly classified in use and non-use values. The latter refers to intrinsic values ascribed to the existence and bequest of nature for future generations. The final value is the sum of both categories (use and non-use) (TURNER et al, 1993, p. 111-114).

[1] ORTIZ, Ramon A. Valoração econômica ambiental. In MAY, Peter et al. *Economia do meio ambiente*. Rio de Janeiro: Elsevier, 2003. p. 82, translated from original.

The broad sketch of Environmental Economics is complete with the reference to its proposed policy tools. As mentioned above, in order to achieve the goal that economic activity causes less impact and harm to the environment, two approaches to direct the behavior of firms and people are considered.

The command and control mechanism defines mandatory rules that may define total emission limits for pollutants or define a “best available technology” to be adopted by a pollution source or require a land owner to preserve a part of its land. On the other hand, market-based instruments try to establish a “price” for pollution, carbon emissions, etc. They may be based on tax and other kind of specific prices, or also on the definition of market for the trade of emission allowances, preserved areas, etc. (NUSDEO, 2012, p. 97-101). The concern with policy instruments results from the fact that Environmental Economics is the mainstream approach to the relation between environment and economy and is required to discuss and present solutions for the specific environmental problems the different societies face.

The set of analysis and propositions of environmental economics became subject of a criticism by a group of scholars that have been formulating a body of ideas about the relationship of the economy and the environment since the 1970s and are called Ecological Economists.

The proposal of Ecological Economy is to understand the economy analogously to the laws of thermodynamics where processes tend to produce dissipated high entropy energy that cannot be used. It is a critique of the approach of mainstream Environmental Economics which takes its model from mechanical physics, conceptualizing the economy as a constant flux (CAVALCANTI, 2010, p.3).

In addition, ecological economists criticize the mainstream economic approach that assigns value to environmental resources only where it is relevant as an ore or raw material and proposes that the entire biosphere has value because it provides the physical processes by which raw material and energy are available for production and where waste is discarded afterwards.

The general process of transforming raw material and energy into products, waste and dissipated energy is called by Ecological Economists “throughput flow” (DALY, 1997, p 22).

As a major consequence of Ecological Economics assumptions, a key aspect of its proposals is the need to keep the economic system within a scale that is compatible to the biosphere and its processes of production of ecosystem services. That belief led Herman Daly, an outstanding ecological economist, to defend a *steady state economy (SSE),* where the physical basis of the economy should not be growth. In the SSE the flux of materials and energy must be minimum in all levels of production and consumption. However, quality of production and distribution may change, as well as the production of valuable services such as culture may increase (1967, p. 14). The SSE proposal is so controversial that it is not shared by all ecological economists. Most prefer defend a process of growth under the lowest possible entropy.

The most important point for our discussion is not the real possibilities or convenience of a SSE but the need to maintain the use of resources and production of wastes within a biosphere resilience limit. Defining those limits however is a huge challenge that needs knowledge and research in different fields.

Under this set of assumptions, pollution and waste production are not simply an external cost that should be liquidated, nor can the value of nature be defined on an individual preferences model. Rather, valuing should address the ecosystem functions.

The discussion and a possible legal answer to the problem can take the evolving knowledge about ecosystem services that the Millenium Ecosystem Assessment[2] has as an important base. The study was commissioned by the United Nations in 2000 and in addition to stress that two thirds of the services provided by nature to mankind are in decline worldwide, it presented a very useful classification of ecosystem services into three categories: First, provision of food; fresh water; wood; fiber; fuel; etc. Secondly, the regulation service by which nature regulates or mitigates climate, natural disaster, and disease, also including services such as the purification of water and the pollination of agriculture and plant life. Finally, cultural services refer to the cultural, aesthetic and religious values social groups ascribe to nature.

The focus on ecosystem services allows the research on different fields to make efforts to understand the dynamics of ecosystems, as well as the resilience of its parts to impacts in order to define conservation goals and impact thresholds.

Finally, it is important to add that the different assumptions of the Ecological Economics do not impact much the policy tools that can be used for its targets, and its economists consider command and control and conservation actions as significant means to achieve its goals. Also emissions trading mechanisms (cap-and-trade) are accepted. As Daly (2005, p. 4) states:

> The cap-and-trade system is an example of the distinct roles free markets and government policy…Properly functioning markets allocate resources efficiently, but they cannot determine a sustainable scale or just distribution

[2] Ecosystems and Human Being:Synthesis, Wasington, DC:Island Press, 2005.

Suggestions concerning taxation that would focus on throughput flow instead of income and production try to approach the needed structural change of national economies (DALY, 2005, p. 5).

3. The Law´s answer to environmental problems: Environmental Law

Once environmental harms were perceived as a problem, the law field was called to provide answers as well. Statutes and regulations started to set limits for pollution emissions and to define compensation payment from polluters to those harmed by environmental damages, since existing statutes or case-law were not enough for that purpose. Chronologically, these processes start in the 1960s and parallel the economic debates described above.

Although taking the risk of oversimplification, we can consider as main features of the present environmental law the following: opposition to preventive and repressive approaches to environmentally harmful practices and behaviors; the importance of damages awards; the trend towards defining principles and justifying rules under them.

The preventive approach is considered as one of the foundations of Environmental Law since the reason of its existence is the conservation of the environment and the avoidance of damages. On behalf of prevention, environmental doctrine promoted the rise of a “prevention principle”, that settles the basis for rules that establish a prior control. The most important mechanisms of prevention created are the licensing of projects and activities and the undertaking of Environmental Impact Report (EIR). The former requires prior authorization of certain activities by environmental authorities and the last forecasts effects of actions on the environment. EIR developed as an instrument of planning of an activity because it includes

aspects such as the choice of sites, selection of technologies, establishment of management practices, etc.

Some steps ahead, there is a claim for the application of the "precautionary principle" that means the adoption of measures and behaviors to avoid potential damages even if it is uncertain that those damages happen. The principle is usually claimed when scientific knowledge to describe the potential harm and its risks is lacking. Examples are new technologies and techniques, such as GMOs and electric magnetic pollution.

The importance of harm redress is justified by the need to cease harmful activities and restore environmental conditions when possible. So, the cleaning up of water, decontamination of land and restoration of vegetation are obviously aims of environmental law. For this purpose, the polluter-pays principle was substantially deepened in the doctrine. It establishes strict liability for polluters and in some jurisdictions, like the Brazilian, allows substantial flexibility on the definition of the responsibility for the harm that can be the real author or a third party that indirectly influenced the result. This interpretation has being allowing the responsibility of government when there is a serious failure of enforcement[3]. In Brazil, it also developed in the sense that a specific remedy, for the actual environmental restoration is preferable over the payment of a monetary compensation.

The importance of the principles may be understood as a consequence of the fact the environmental law is a very finalistic branch of law. Principles are norms that state substantive reasons or goal reasons within a legal system (ÁVILA, 2009, p. 49), since they are formulated for the achievement of goals that range from the reduction of pollution impact to the

[3] The polluter-pays principle has also a preventive approach that may fundament green taxes and other imposition of prices in order polluter internalize the external costs of their actions.

achievement of a sustainable development. If principles are understood as an "optimization mandate" (ALEXY, 2008, p. 90-91) under fact and legal circumstances, so the referred principles shall be implemented as much as possible in its conflicts to other rules and rights (freedom of enterprise, property rights, or even the feasibility of the goals). In order to avoid an insufficient protection, it is important that the legal rules define clear behaviors able to improve environmental protection.

Environmental legal rules are predominantly based on command-and-control rules. Most often, they define emission limits for a set of substances; the duty to submit to licensing process and to EIR; the requirement of preservation of part of owner´s land and the presentation of relevant information. Market-based instruments have been implemented slowly. Some experiences of tradable emissions permit can be pointed out, such as the Regional Clean Air Incentives Market (RECLAIM) in the United States and the (EUTS) in Europe (McAllister,2009, p. 410). Environmental oriented taxes are not very common either. Other kind of economic instruments have been evolving in tropical climate countries and an important example is the "payment for environmental services" (WUNDER, 2005); (NUSDEO, 2012) which refers to monetary or non-monetary benefits land owners may receive for the practices of conservation, reforestation or sustainable management of the land if such behavior is able to contribute for the maintenance of some services such as water provision; carbon storage or sequestration; biodiversity conservation, etc.

Another important aspect of the Environmental law field evolving since the 1960s is the importance of information and participation, stated as principles of Environmental Law. They require relevant information to be delivered by private but mainly public entities and that people

have opportunities to take part in some decision making processes regarding the environment conservation or approval of impacting activities.

This is a short description of how the body of Environmental law, its interpretation and foundations, evolved in the last fifty years in most Western countries. If we come back to the question of whether it was able to halt a progressive degradation of the environmental conditions in the biosphere, we can face a discussion of how and in which direction it can be improved, notwithstanding the fact environmental conditions would be much worse in its absence.

4. Criticism of the present model of environmental law

Much criticism can be addressed to contemporary environmental law. Part of it is related to its efficacy and the deficient enforcement and application of the legal rules that led to illegal degradation. Although these are important, this paper aims to discuss the limits of the rules and principles implementation that resulted in the decrease of environmental conditions because of the aggregate effect of population and consumption increase, even under some legal control. That is to say: degradation caused by legally approved activities

Two interesting contributions for that discussion must be considered. In the first, Gerd Winter discusses the three pillars of the sustainable development policy/principle – economic development, social improvement and environmental protection – as mutually reinforcing. That is the meaning of the expression “sustainable development” that arose in the Brundtland Report of 1987 (WCED, 1987), responding to a legitimate claim of developing countries that environmental considerations would not impair their development projects. After describing some texts of international declarations and European Community rules, that states the so-called

"three pillars", he claims its interpretation became too broad and allowed "*sacrifices of nature, as commanded by prevailing short term economic or social interests may become destructive for economy and society in the long*" (WINTER, 2008, p. 28). He proposes the right interpretation should consider "*sustainable development means that that socio-economic development remains 'sustained', i.e, bearable, supported by its basis, the biosphere*" (WINTER, 2008, p.27). Therefore, the right interpretative construction should not be the three pillars, but a foundation (the environment basis) and the two pillars (the economic and social aspects).

Although that opinion can be subject to a criticism about abundant social unequal situations, the consideration of the biosphere and its resilience cannot be considered as elitist in itself, because many low income social groups depend on natural resources to live and environmental crises (lack of water or floods, reduced land productivity, etc) tends to affect them strongly. The argument in favor of the priority of environmental pillar does not contest the need for a better distribution of assets, goods and services among social groups and countries.

In the second, Staffan Westerlund´s criticism focuses on the environmental legal research that he considers re-active, because it follows legislation and court precedents creation in order to build its analysis subject. Instead, research projects should be at the 'forefront,' which means aimed at understanding environmental problems and creating solutions. In addition, the theoretical framework has been insufficient and must be adapted to the concept of sustainability and what it stands for. The criticism is extended to legislation that must also be made sustainable, otherwise, it protects "*unsustainable conduct*". The author claims for a systemic approach, although he goes not very far to explain what that means exactly. Another important aspect he proposes is the inter-compatibility of legal and natural science (WESTERLUND, 2009, p 54-59).

Both authors stress the importance of a legal approach to scales and ecological limits, compatibility and an interrelation to natural sciences in order to maintain human activities adequate for the carrying capacity of the biosphere. Their articles show also they were influenced by concepts from the Ecological Economics such as thermodynamics, in addition to the scale limits consideration.

Although abstract, the criticism of the two authors can be more specifically directed to the present features of environmental law.

The processes of activities licensing and preparation of EIR have no relation to scale and allows the indefinite use of natural resources, production of waste and pollution, even if the production became less pollutant than in the past.

Economy depends deeply on growth and this fact led to practices such as induced obsolescence of products. They may refer to many aspects. With regard to quality, planned obsolescence refers to the use of lower quality techniques and materials in order it gets out of use early. Or the launching of a new model of the product may induce the consumer to substitute for a new one. In the case of electronic devices, new programs or apps may be incompatible to older models (MORAES, 2014, p. 59). Consequently, a much desired progress of income increase in some developing countries raised the demand for goods and energy.

That increasing demand was higher than environmental gains derived from a process of prior licensing and development of less impacting production techniques and resulted in a hard pressure on ecosystems. Licensing and EIR are project limited and do not allow deep analysis of their synergic effects.

The strategies of imposing liability for environmental damages and definition of conservation areas were not sufficient to contain the process of degradation either. Sometimes economic growth results in pressures on protected areas for the construction of infrastructure such as roads and energy dams.

5. Law and sustainable development. An attempt of approach

The two items above tried to describe how Economics deals with the difficult goal of nearing economy and environmental limits and how law creates a legal infrastructure and a value orientated method for this purpose.

At first, the strategies and purposes tried to insert the environment as a factor of the economy, without much change of its assumptions. The progressive deterioration of environmental conditions presents new challenges that initiated attempts at both Economics and Law for new methodologies. Both fields' critics share understandings about the need to define biophysical limits for human activities (or target limits for conservation and use of natural resources) in order to match the "*sustainable development*". That calls for a discussion of ecosystems services maintenance that relates to their conservation and avoidance of its pollution. In addition, some serious problems such as climate change and the production techniques and energy sources substitution it requires shall be addressed.

It would be naïve to suggest a new paradigm for Environmental Law. However, I think some instruments and even institutional changes[4] can be made in order decisions can consider some relevant factors for sustainability. I will refer to some of them.

5.1. Scale and ecosystems conservation planning

Any attempt to propose that national economies should stop growing is a platitude, due to the need to increasingly employ and include people. Many ecological economists, with the important exception of Herman Daly and his followers, even avoid the discussion that seems to be a dead end for time being. However, a disregard of environmental limits tends to cause mounting economic problems, in case announced ecological disasters and even decrease of ecosystems services delivery affects economic processes and/or impact human basic needs.

The perception of that important balance, led international agreements to begin to define numeric targets for conservation and impact avoidance. A first good example is the Paris Agreement of 2015, where Parties decided to limit the Earth temperature increase to 2 degrees Celsius - and ideally, to 1.5 degrees Celsius above pre-industrial levels[5]. A second one is the Aichi Biodiversity Targets of 2010, which defines a target of conserving 17% of terrestrial and in

[4] Institutional changes , in this paper, are broadly understood as the interaction of legal rules and the processes of its creation and implementation that supposes an interaction among different social and interest groups, as well as of the inclusion of scientific knowledge in that process.

[5] United Nations. Paris Agreement, 2015, article 2, a. Available at http://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf. Accessed on 04/04/2016.

– land water as well as 10% of coastal and marine areas by 2020[6]. The success of those targets requires a consistent proposal by each country to define its actions towards the targets and really make them effective. In addition, transparency in the fulfillment of those actions and report of results is of paramount importance.

Of course, the two examples deserve a great deal of criticism. The actions proposed by countries in the Paris Agreement are not sufficient to keep the Earth increase within the 2 degree target. The Aichi targets may not be enough either and depends hardly on the other defined targets of reducing pollution of ecosystems and pressures over species (fishes, for example).

A possible success of those kinds of goals requires the best possible techniques of production in order to pollute less. That means the instruments and legal rules created by Environmental Law are still necessary. However, they should operate in a progressive logic of limits, as national countries and international community are able to define them under specific environmental targets of conservation and pollution limits. In addition, the necessary technical and technological change will require substantial cooperation on international level, in order to coordinate the public-private interests and made them widespread.

A possible innovation of a sustainability legal approach is the expansion of the prevention principle in a dialogue with conservation targets. That can be done by the improvement of planning and prior analysis mechanisms

If the licensing processes and individual EIR produced for each project seems insufficient, they could be articulated to prior planning through zoning and/or evaluation

[6] Target 11 of Strategic Goal C. Available at https://www.cbd.int/sp/targets/default.shtml. Acessed on 04/04/2016.

processes that could define preservation and restoration spaces, as well as appropriate areas for licensing activities.

One interesting instrument to improve the access to scale and conservation targets is the Strategic Environmental Evaluation (SEE). This evaluation has some technical similarities with the EIR but it is aimed not to individual projects but to programs, plans and policies, mainly governmental, although private projects could apply.

One of the important critics to EIR and individual licensing is the lack of analysis of synergic effects of individual projects as well as of their broad indirect effects, such as attraction of people, increase demand for services and other perverse incentives. In addition, they happen before decisions about a project are already taken, consequently, the burden of a prohibition or substantial change in projects are high.

The SSE, as proposed by literature can focus on different kind of decisions, such as public policies; territorial planning and strategic programs. It aims to take account of biophysical, economic, social and political consequences of decisions in the earliest possible moment (BASTOS, 2015, p. 27).

It can be formulated in different times of a program implementation. A first distinction regards the prior formulation of a plan before submission to SSE or its preparation before plans are defined. Although the second alternative seems more adequate for a planning that includes the environmental variable from the beginning, the former may work if some decisions can be changed if suggested by the SSE. As examples, we can consider an energy or transport plan (SANCHEZ 2008, p.7). At the level of project, a road may be projected and will be submitted to licensing and EIR. Instead of projecting and licensing individual roads, a transport plan for a

region can be proposed and submitted to SSE. On a broader and planning level, the SSE can be formulated to propose solutions for the transport problems in the region, in a dialogue process with the team in charge of the transport plan.

At the territorial planning the SSE can estimate synergic and also aggregate effects of licensed projects and also bring together both conservation targets and polluting and degrading impact of plans and policy that can jeopardize conservation efforts. A progressive scientific knowledge about ecosystem dynamics should help to detail relevant decisions.

5.2. Life cycle of products and sustainability

A problem related to the pressure on ecosystems relates to the intensity of production of goods and its short duration. As Herman Daly states, a sustainable economy requires “a demographic transition”, not only of people but of the relation between the production of goods and its depreciation tax (DALY, 2005, p. 4).

Capitalism, in its search for economic growth, stimulates consumption by many strategies. In addition to massive publicity, planned obsolescence imposes artificial limits to the use life of a product.

An answer to this problem by the environmental rules would need to face some important questions. Is technically possible to regulate a minimal durability of the product? Would such regulation be possible weighted with other values such as free enterprise and commerce? Would it be more reasonable to prohibit the incompatibility of programs and apps with older models?

A certainly viable measure may be the requirement of information of an average duration of a product, to induce competition strategies to offer more durable and energetic efficient products. Although shy, this information access may produce some impacts if well combined to environmental education.

Special rules focusing on the durability of products should be combined to specific rules such as the environmental conditions of its production, a question that is addressed by the licensing of plants, emission targets and waste management rules and even the ban of certain toxic substances.

5.3. Public decisions, science and transparency

If as one of the major goals of society becomes the definition of sustainable structures for the development of economic activities and fulfillment of human needs and if that includes the ambition to define consistent conservation targets, approve new industrial techniques and defines tolerable risks, the information about the targets and decisions needs to be duly reported to society. In fact, many of those goals, targets and actions are proposed as contribution of countries in international cooperation, so transparency become one important issue also at international level.

The actions required to implement sustainability shall affect the interest of groups and economic sectors. Rules changes actually promote a process of opening and closing of markets

opportunities, because markets results from legal rules (SWANEY, 1992, p. 627), with winners and losers. Some firms profit as a result of a legal rule and some suffer losses.

The transparency of decisions, that include the scientific information production to back them and the possibility of different scientific voices be heard tends to assure better decisions regarding the likeliness of achieving the environmental goal and the distribution of costs among groups and sectors at national level.

At the international level, the transparency relates, as mentioned, to the extent the countries are duly fulfilling their compromises. If the reporting of their results are flawed, the cooperation will fail. That explains the importance of transparence issues took in the Paris Conference of the parties in the UNFCCC held in Paris in December 2015. It was agreed that enhance transparency about greenhouses inventories and information necessary to track progress on the implementation of national goals will be pursued but with flexibility, taking into account different capabilities of countries.

6. Conclusions

Environmental Law bears the challenge to improve its mechanisms, instruments and even institutional organization to cope with the increase pressure on the ecosystems.

The strategies for a change needs to take the actual model of Environmental Law rules and principles into analysis to define in which direction changes must go and in which intensity.

In fact, new mechanisms and solutions should be combined to old ones, which are still able to perform some of the functions they were created for.

As discussed in the paper, instruments such as the Strategic Environmental Evaluation, that allows a broader access of a plan, policy or program impacts; or a synergic effects of projects can be adopted in national jurisdictions and perhaps in supranational programs if it is the case. Besides, it can dialogue with specific conservation targets, defined in order to maintain ecosystem services.

The establishment of rules to incentivize a longer and more sustainable life of products was another measure presented here in order to make production processes cycles more sustainable.

The definition of conservation targets, production sustainable technologies and acceptable risks are complex decision issues that create gains and losses for different social and economic groups. As so, transparency and mechanisms for plural scientific discussions can improve decision processes and raise its chances to take the sustainability direction.

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